SHAREHOLDING DECISIONS OF MULTINATIONAL FIRMS FOR FOREIGN AFFILIATES

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ABSTRACT. We focus on the difference between fully-integrated foreign affiliates and partially-integrated ones, which are jointly owned by foreign multinational firms and local firms. In the data of Japanese MNEs and Asian affiliates established during 1996-2002, as many as 59% of those are jointly owned. In this paper, we ask what are the determinants of co-ownership and then how two parties agree on the equity allocation. We find that industries achieving high local procurement ratio under the status quo will induce joint-ownership for a new entrant's corporate structure. In contrast, if MNEs have prior FDI experience, they will likely to choose full-integration for their next affiliates in the same host country. In addition, both effects are stronger in machinery sector rather than in non-machinery sector. These findings are in line with our theoretical discussion, assuming cooperative behavior of the two parties. Local procurements work as the signal of on average absorptive capacity of local producers. With higher absorptive capacity, a MNE either offers lower equity shares for joint-ownership or offers outsourcing, whereas a local procuder either requests higher equity shares or accept outsourcing. Joint-production is feasible where these conditions match.

1. INTRODUCTION

From the 1970s, multinational firms start to involve in quasi-FDI or non-FDI activities, such as buying and selling goods and service across borders, without having fully-integrated foreign affiliates.[1] For example, in foreign affiliates of Japanese multinational firms located in several Asian countries, jointly owned affiliates comprise the majority: 59% of the all entrants (during 1996 - 2002) choose joint ownership, and the ratio increases to 64% for the data of manufacturing affiliates. In spite of this major presence, as for now, the comparison of the two corporate structures for FDI has been paid scarce attention. However, the difference whether a foreign firm has any participation of local capital, or any local co-owner or not,

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[1]De Mello Jr. (1997), for example, gives broader definition for FDI in his survey: "the international inter-firm co-operation that involves equity and/or management control of foreign enterprises, quasi-investment arrangement (licensing, leasing, franchising, etc), joint ventures and R&D cooperation."

may practically have influential effects when we question the distinctions regarding productivity growth, spillover effects or formation of backward linkage with local industries.

In this paper, we ask what are the determinants of joint-ownership and how they agree on an equity allocation between the two parties, after the destination of FDI (location and industry) is defined.[2]

We have in mind a situation where a production plant is (potentially) set up jointly by a multinational firm and a local producer. As discussed above, we classify "Integration" into two categories: a fully foreign-owned entity or a partially-owned entity. To refine the relation between the two parties (foreign and local owners), we assign formal and real effects of equity/capital ownership on production activities. Such effects consist of the followings. First, 1) the share specifies the binding payoff allocation, and 2) the share facilitates the influence of managerial control. Equity shares also define 3) legally appropriable residual claims on fixed assets, which remain at the time of liquidation. These legally acknowledged claims on fixed assets are thus related to the amount of fixed assets each party is willing to provide. To put differently, the equity share is practically the limit for the provision of parent-oriented fixed assets (plants, equipment, machinery and tools).[3]

Theoretically, we present the model where multinational firms (the main providers of capital) and potential local capital providers will face the common profit maximization problem as the co-owner of the affiliate. In contrast to the comparison between "integration or outsourcing" assuming incomplete contracts under outsourcing, and the risk of hold-up, we assume more complete and enforceable contracts. (We assume that capital and labor investments, or required level of effort are enforceable and verifiable within a firm, and between owners. It is an innocent assumption since a local stakeholder, as an owner of the entity, will not have an incentive to cause inefficiency by shirking or under-investment.)

The additional feature is that, both MNE's side and local side have been originally endowed with different set of knowledge. Specifically, multinational firms have advanced technology of R&D, and product processing.[4] What matters here is the absorptive capacity of local producers to acquire a certain technological requirement. The similar notion to the "absorptive capacity" is employed in other research. For example, Rauch and Casella (2003) denote it as "the quality of the producers' match", and Grossman and Helpman (2003) call it as "productivity difference between specialized and integrated producers of inputs". Puga and Trefler (2002) indicate it as "the degree of substitutability between the creative efforts." In contrast, local sides have location-specific know-how or network regarding employment and procurement. So, to put differently, a MNE's relative level of unfamiliarity, or lack in knowledge for local business environment matters.

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[2]In general, equity allocation under vertically related firms is vulnerable to financial, legal, or accounting issues, but, we could fortunately minimize these disturbance, primarily because foreign affiliates are waived from MNEs' consolidated tax burden, and also it is because foreign affiliates' equities are closed-held and they are little influenced by the volatility of stock market. Affiliates are yet subject to the restriction or regulation of their hostcountries. We will minimize the disturbance by limiting the years to survey.

[3]We assume that owners design the total amount of investment efficiently, and the parent provides first, according to its equity share. Then a local producer provides the rest as prespecified, without an incentive to underinvest.

[4]Recall that we are assuming vertical relation from North to South FDI.

Each will benefit from utilizing those expertise if that are within the boundary of a jointly owned firm, although each incurs cost to adapt to the other. Therefore, through these cost and benefit comparison, we assume joint-ownership arises, if multinational firms' preference over other structures (i.e. full integration, or outsourcing) and local stakeholders' preference over the other structure (i.e. being franchisees or being independent) successfully match.

We next test the pattern and determinants for "full-integration or joint-ownership" decision using establishment-level data. We select affiliates with the following characteristics; 1.) Export-platform, which exports products to North market, 2.) Entrants between 1996 to 2002, specifically, the information at the year of entry, and 3.) Located in China, ASEAN, or NIES. With these selections, we homogenize the affiliates' characteristics across countries, limit time-variant effects, and design the compatibility with our theoretical assumptions.

For econometric specifications, we first apply Probit estimation given the fact that the choice of full integration or joint-ownership is the two distinct choices. Then next, after the discrete choices of the first stage, we employ Heckman's estimation for the decision over a certain equity share. The results show the support of our theoretical predictions, described by factors such as local content ratio, capital intensity of production, and degree of market competition, and parent's adjustment cost to acquire local knowledge.

The rest of the paper is organized as follows. Section 2 gives the literature review on selective related issues. Section 3 describes our sketch for empirical research. It discusses the matching possibility of a MNE and potential local producers. Then we specifies the conditions for each organizational form (i.e. full integration, joint-ownership, and outsourcing). Section 4 describes the data used. Section 5 shows econometric evidence. The last section provides concluding remarks.

2. Literature Review

In what follows, we briefly skim the literature discussing the corporate structure such as boundary of firms, its determinants, and the spillover effects. We also add some remark on the research on Japanese firms with related issues, as this paper also relies on the Japanese firm-level data.

2.1. **Full Integration and Partial Integration.** In the literature, the discussion for the boundary of organizational forms starts from the two assumptions: 1) There are two people with two tasks, respectively, and 2) Each task is attached to the input (assets) it requires. And the two people start negotiating how to control assets and how to own these assets. (The early work are by Coase (1937); Klein, Crawford, and Alchian (1978); Williamson (1985). The more formal descriptions are given by Grossman and Hart (1986), Hart (1995), and Aghion and Tirole (1997). See Gibbons (2004) for the summary.)[5]

[5]We can enlarge the discussion, in international setting. That is to define the boundary of 1. Domestic outsourcing, 2. Foreign outsourcing, 3. Domestic integration, and 4. Foreign integration (FDI). What matters here, in additional to the conceptual framework of the 'boundary,' are difference in factor prices, contractual environment (institutional quality, cultural distance), transportation cost (distance, tariffs), sunk cost, and intensity for headquarter-business. Spenser (2005) and Gattai (2005) both document complehensive survey of the literature. Or, see Grossman and Helpman (2003, 2004, 2005), Antras and Helpman (2004).

The assumption is widely used for current empirical work. For example, Antras (2003) assumes that capital investment are held and controlled by a principal, whereas labor investment (at foreign plant) is held and controlled by an agent. In Acemoglu, Aghion, et al. (2004), in their research on integration activity in U.K. firms, a principal decides the employment of principal-specific input (technology), and an agent is in charge of supplier-specific input. Feenstra and Hanson (2004), in their investigation of outsourcing decision by foreign enterprises in China, a principal (a multinational firm) is responsible for processing products, and an agent (a Chinese local firm) can be in charge of procurement and storage activities as intermediate suppliers. In this paper, too, we assume MNE has a task of innovation and efficient product processing, and local producers have a task of making the best of its location specific knowledge about local labor or local materials, (although both MNE and local producer can afford to do both activities by themselves)

The literature highlights the difference of "outsourcing" from "integration," stating that 1) Actions are not-fully contractible, and hence the efficient investment/effort is not enforceable. 2) Parties are involved in ex-post Nash bargaining over the realized payoff (since it is ex-ante, not specifiable.) The literature, thus, emphasizes this contractual incompleteness, agency problems (hold-up), and the resulting importance of organizational design (e.g. task allocation, compensation scheme, and assignment of authority and control), since two parties, if independent, are assumed to have different payoff maximization problem. Then, the difference between outsourcing and integration is now, at least theoretically, clear.

However, we do not yet have the formal discussion to determine the choice of co-ownership of firms, or single-ownership (full integration), especially in closed relationship like a parent firm and its affiliate.[6] Now that they are not 'principal and agent,' but 'two owners of a single firm', we need to modify some assumptions used to explain outsourcing decision. The distinct difference between co-ownership and outsourcing is that, co-owner of the firms (not hired managers), share the same payoff maximization problem. In other words, they are expected to be cooperative, and expected to act complementary.

Though incomplete contracts still exist due to unforeseen contingencies, and also there are inability of the court to verify the compliance and to enforce contracts, the parties usually tie themselves up in a very detailed decisions and information for the products to be produced (e.g. orders in spec, design, quantity, delivery and other dimensions). These can presumably limit (or clear away) the hold up.[7] In addition, underperforming the agreements lead to severe punishment in their business relationship under the setting of repeated interactions. Lafontaine and Slade (1998), for example, state a set of empirical regularities in franchiser and franchisee relation. They state surprisingly high degree of compliance to contracts,

[6]Corporate Finance literature discusses the topic of separation of ownership and control, and organizational designs. But the focus of the literature considers the market determined effects on those (specifically those by stock market).

[7]Some empirical research implicitly assume hold-up risk within a firm. But most of the situation they deal with is the relation between 'owners and hired-managers' not the relation 'between owners.' See Antras (2003), Baldenius (2000). They discuss integration as a way to reduce the bargaining power of the other.

Some other research, yet, discuss the sub-optimal behavior by owners. (e.g. Jensen and Meckling [1976]) They assume that owners' utility comes from corporate profit as well as from perquisite. But such setting is not what we assume here.

and uniformity across franchisees. Lafontaine and Oxley (2001) further show that this compliance extends across national boundaries (e.g. U.S. and Canadian firms' operation in Mexico.) [8]

So given these characteristics of joint-ownership, the focus is not discussing how severe the hold-up will be between the two parties, but discussing what trade-offs we have between retaining and ceding ownership within the two parties.[9] In this paper, we assume that the assignment of ownership to be bundled with shares of profit streams.[10] Hence, the full contracting problem rests in a choice of ownership allocation.

2.2. **Researches on Japanese Firms.** Tomiura (2005b), using the large firm-level data of 1998, discusses firms' entry decisions on foreign outsourcing activity and its amount, then state that the FDI experience encourage a firm to do cross-border contracting out, where less than 3% of the surveyed firms do. He also state that the amount of outsourcing is higher for more productive firms. This research is informative as the test of the theory by Antras and Helpman (2004) and Antras (2003), though not all the theoretical prediction is supported. It also provide us with the description of outsourcing behavior by Japanese multinational firms. However, due to the limitations (cross- sectional nature) in the data, the results are subject to endogeneity and also to collinearity of the variables.[11]

Armadjian and Oxley (2001), using the firm-level data of manufacturers of transportation equipment in 1987, test how the vertical relation between assemblers and suppliers define assemblers' shareholding decision of suppliers equity. They show that the higher a supplier's dependence on an assembler (as a buyer of its intermediate products), the more equity share an assembler tries to capture. They view this decision as an assembler's strategy for better managerial control or enforcement of contracts with its suppliers, although the reverse causality from equity shares to the dependence is to be tested. The data also show that suppliers' dependence on assemblers (as the sales channels) and assemblers' dependence on suppliers (as the procurement channels) are highly correlated. In other words, they are mutually binding and mutually locked in. It support the "transaction cost" view of firms, where bilateral monopoly is the driving force for integration. Yet, we doubt whether their discussion simply applies to the vertical relation between multinational firms and local producers in developing countries, because seller (MNE)'s dependence

[8]Nann (2005), in his cross-country analysis using 146 countries, measures the efficiency of contract and relationship-specificity of investment across countries.

[9]For arm's-length relation, (contractual relation), we could assume some degree of hold-up risk. Hold-up and resulting inefficiency (under contractual relation) will change the cutoff utility level for firms to choose integration, but it will not change the preference between "full integration and joint ownership".

[10]In Legros and Newman (2004), they allow both ownership and profit shares as the choice variables for managers in complete contract setting. Here we restrictively assume that profit and ownership are proportionally related.

[11]For example, the amount of crossborder contracting out includes the transaction between a parent firm and its existing foreign affiliates, according to the definition of the data used. In addition, the explanatory variables chosen have high correlation (e.g. correlation between phisical capital intensity, human capital intensity, labor productivity, and foreign outsourcing). The cross sectional nature of the data will not solve out the endogeneity isuues of these correlated variables. As one of the evidence for reverse causality, Gorg, Hanley, and Strobl (2005) state the positive productivity gain accruing to exporting firms which engage in offshoring of intermediates.

on each affiliate is not necessarily tight as the foreign affiliate's dependence on the MNE.

Head and Reis (2003), using the firm-level data of 1991, test the predictions of Helpman, Melitz, and Yeaple (2003): the role of heterogeneity in firm-level productivity as the determinants for mode of cross-border activity.[12] They state that the relation between productivity and modes of foreign activities may change by the recipient countries of these activities. Then, they state that heterogeneity in firms' productivity interacts with heterogeneity in market size and factor prices of potential host countries.

Kiyota, et al. (2005) discusses the determinants over local backward linkage in the host economies. They argue local spillover effects brought from export-platform type FDI.[13] Kiyota et al. (2005) see the entry mode of the firm (greenfield, joint venture, takeover, and M&A) and use the information as one of the determinants for its own firms' local procurement behavior hereafter. Here, they regard the entry mode a given factor or a idiosyncractic factor, unrelated to the prior local business environment. Conversely, we discuss the reverse relation that, local procurement activity achieved under the status quo may selectively induce different corporate structure of the foreign affiliates.

3. Model

3.1. **Matching.** We have in mind a situation where a headquarter firm of MNE (with some existing products/services at North market) is now going to make use of manufacturing at overseas location. We assume that final products are sold at North market with a brand name of the MNE. Production at overseas location requires the following two steps: innovating (updating) a firm-specific blueprint (i.e. making a updated prototype to be reproduced), and implementing a blueprint to replicate.

We assume that a MNE can choose from one of the three possibilities. She can choose to set up a 100%-owned foreign affiliate, or she can set up a jointly-owned affiliate, or she can purchase products from a randomly matched local producer.[14] From a local producer's standpoint, he can choose to participate in a jointly-owned affiliate as the other stakeholder, or sell products to MNEs.

When choosing organizational forms, both a MNE and a local producer present their wishes for equity stakes, in order to make the expected utility from joint

[12]Tomiura (2005a) shares the same question by testing the theory of Antras and Helpman (2004).

[13]By summarizing the recent achievement on spillover issue, Blyde, Kugler, and Stein (2004) discuss as follows: 1) when multinational firms setup export platform, domestic firms in developing countries are by and large not regarded as competitors. Then foreign affiliates will have no incentive to restrict the spillover of technical information. It results in the diffusion of generic (i.e. not specific) technology across industries, for example, the knowhow of export, market access and distribution channels. (Aitken, Hanson, and Harrison (1997) provide the evidence for Mexican firms.) In addition, 2) when multinational firms involve in outsourcing (local procurement), they have an incentive to transfer technical knowledge to local upstream suppliers. Then this forms the backward linkage where specific technology is transferred to supporting industries. Overall, their evidence of inter-industry spillover for Venesuela coincides with preceding research. Some of the other recent evidence are Javorcik (2004) for Lithuania, Blalock (2001) for Indonesia.

[14]For each local industry, the heterogeneity (in technology) within local producers is not observable ex-ante. Therefore, we assume that a MNE and local firms are randomly matched

ownership better than (or at least equal to) other organizational choices. Therefore, joint production is chosen when both have acceptable stakes in common. When joint production is not chosen, a MNE, then chooses to set up a fully-owned affiliate, or to purchase from a local partner.[15]

When a 100%-owned affiliate is set up, (referred to as I: Integration, for short), a MNE is fully in charge of updating prototypes. When a jointly-owned affiliate is established, (referred to as J: Joint, for short), a MNE is still primarily in charge of innovating prototypes. But she is less successful in doing so compared to a fully-owned organization since her capital participation is limited, then a failure can be supplemented by a local producer. A local producer, in this case, incurs effort to imitate the MNE's know-how and update the principal's prototype. When they just make contracts, (referred to as O: Outsourcing), a local manager is in charge of innovating and showing a prototype to a MNE. The success depends on the compatibility in innovative capability between MNEs and local producers. We use the term 'absorptive capacity' hereafter. It is ex-ante unknown till they actually work together. Initially, they expect their matching compatibility of each industry-level, respectively.

At the stage of implementation, on the other hand, a 100%-owned affiliate incurs an adjustment cost to manage production workers and local business environment, whereas, an independent local producers or jointly-owned affiliate has familiarity on these. These benefits and losses of the organizational forms are specified in subsection 2.3.

3.2. **Consumers' Demand.** We consider the production in industry Y. In industry Y, the products are differentiated by firm-specific variety, i.e. brand, so the number of varieties are the same as the number of final goods providers in consumers' market at North. There are n varieties of goods for n final goods sellers in monopolistic competition setting.

A final good seller will directly provide their affiliates with firm-specific know-how to make affiliates' products fully tailored to her brand. In other words, in a jointly-owned firm, the local partner need to co-specialize in a principal's brand.

After the contract and investments are done, a MNE cannot choose another local producer.[16] An independent local agent can make use of its own know-how only, and it is less acknowledged than a principal's brand. So it leads to lower revenue. The purchase and marketing by a final producer, products are sold in the monopolistically competitive market of Y by labeling her brand name.

The production by the pair i of a MNE and a local producer is given by Cobb-Douglas production function (supply function) using capital and labor as inputs. Investment in machinery and equipment are referred to as capital: K, and number of workers or employees are referred to as labor investment: L.

$$y(i) = \left(\frac{K(i)}{\beta}\right)^{\beta} \left(\frac{L(i)}{1-\beta}\right)^{1-\beta} \tag{3.1}$$

[15]If the latter is the choice, a MNE can successfully find out a local producer as a supplier, since a supplier is assumed to be indifferent between being a supplier to one MNE or being an independent supplier to many other firms.

[16]We assume the difficulty of switching a partner. After contracts and investments are done, the MNE cannot afford to make contracts with another producer to hedge the risk.

The demand for products in industry Y is given by the following utility function (demand function), where $\frac{1}{1-\alpha}$ shows the elasticity of substitution among any two varieties. In monopolistic competition, each variety's market power is given by $\frac{1}{\alpha}$. A high value of α shows low market power for a firm and intense competition in a market, since varieties are highly substitutable.

$$D = \left(\int_0^n y(i)^\alpha di\right)^{\frac{1}{\alpha}} \tag{3.2}$$

Suppose a MNE i charges the price $p(i)$, each seller of a pair i faces the demand $y(i)$:

$$\begin{aligned} y(i) &= \frac{E}{\int_0^{n_I} p^I(j)^{-\frac{\alpha}{1-\alpha}} dj + \int_0^{n_J} p^J(j)^{-\frac{\alpha}{1-\alpha}} dj + \int_0^{n_O} p^O(j)^{-\frac{\alpha}{1-\alpha}} dj} p(i)^{-\frac{1}{1-\alpha}} \\ &= A p(i)^{-\frac{1}{1-\alpha}} \end{aligned} \tag{3.3}$$

where the percentage of successful products shipped out from each organizational form defines $p(j)$.

When a seller of each variety faces the demand $y(i)$ by charging $p(i)$, the sales revenue for each pair is given by the gross revenue function $R(i)$:

$$\begin{aligned} R(i) &= p(i)y(i) \\ &= A p(i)^{-\frac{\alpha}{1-\alpha}} \\ &= A^{1-\alpha} y(i)^\alpha \end{aligned} \tag{3.4}$$

Plugging the production function into the revenue function, the function is rewritten as the function of input factors: physical capital and labor.

$$R(i) = A^{1-\alpha} \left(\frac{K(i)}{\beta}\right)^{\alpha\beta} \left(\frac{L(i)}{1-\beta}\right)^{\alpha(1-\beta)} \tag{3.5}$$

3.3. **Timing of Events.** We assume a series of events as follows:

(1) A MNE (in industry k) looks for an agent in industry j in country c[17]
(2) Equity stakes are negotiated between a MNE and a local producers in industry j. Equity shares are ϕ for MNEs, $1-\phi$ for local producers. When both has acceptable range of ϕ in common, the joint-ownership is successful.
(3) If otherwise, a MNE chooses either to set up a 100%-owned affiliate or to arrange a contract with a local partner.
(4) Investment in production factors (K_P, K_A, L)
(5) [Production Stage 1] Innovation of a prototype used in forthcoming production
(6) [Production Stage 2] Implementation of a prototype for reproduction
(7) State of the world realizes (absorptive capacity θ realizes)[18]
(8) Payoffs are allocated according to their equity shares.

[17]The destination country j and the industry c is predetermined. The MNE's in dustry k can be any industry.

[18]θ refers to the technology, showing the percentage of flawless products shipped out to the market, compared to the benchmark success percentage of 100% by MNE's fully-owned affiliate.

The contract stage defines the ownership structure of the new production activity. A MNE and a local producer chosen from local producers in industry j negotiate based on their requirement over ϕ, equity share. They request ϕ, or $1-\phi$, which makes the expected utility from joint production better off than alternative corporate structure. The matching for joint production is successfully chosen when their requests have feasible range of ϕ in common. The matching is not successful when they do not have negotiable range of ϕ in common.[19]

At the time of the contract, both party can observe capital intensity for products in industry j, industry level markup (an indicator for market power of the final seller) in industry k, cost of capital (r_p, r_a), wage at local market (ω). The factor equally unknown for the both parties is the absorptive capacity of a local producer to a MNE. The exact degree of absorptive capacity is not known to either party until they actually work together. We assume that a MNE and a local producer only know the distribution of absorptive capacity and compare expected utility by the expected value of absorptive capacity.

After the ownership structure is defined (Integration, Joint, or Outsourcing), the affiliate chooses investment in K and L to maximize its profit. In addition to the monetary expenditure, the production processes first incurs elapsed time for innovating (updating). In addition, in each corporate structure, a principal has different degree for successful control of innovation. The corporate structure also makes distinctive difference in the elapsed time for implementing production. Therefore the utility of a MNE and a local producer is defined as follows:

$$Utility = Allocated\ Payoff \times \Pr(Success) \times (1 - Elapsed\ Time)$$

In the next subsection, we explain how the probability of success and the elapsed time differ by corporate structure, and how these are related to the equity share ϕ.

3.4. **The Role of Ownership.** We here discuss how initial choice of ownership structure facilitates production processes and payoff allocations among the two parties. We assume that equity shares (of a principal) ϕ are deterministic for the following four characteristics.

(1) Allocation of realized profit
(2) Probability of success in managerial control
(3) Residual claims on fixed assets
(4) Provision of principal-specific know-how (transferred through fixed assets)[20]

[19]If we allow a lump-sum transfer at the time of negotiating ϕ, a party (MNE) can successfully achieve her maximum available ϕ. Specifically, MNE can induce a local producer to participate in joint production by compensating an local producer's utility from his outside option, later defined as;

$\theta A \left[\alpha r_a^{-\beta}\omega^{-(1-\beta)}\right]^{\frac{\alpha}{1-\alpha}} (1 - \bar{p}\left[\alpha r_a^{-\beta}\omega^{-(1-\beta)}\right]^{-1})$

So the compensating transfer is linearly increasing with θ but independent of ϕ. As long as his marginal payoff from higher ϕ is greater than the constant marginal cost by transfer, the MNE will be willing to use the lum-sum transfer.

[20]In this model, we do not assume the provision of principal specific knowhow to the arm's length relation (i.e. the relation without capital participation). Then the manufacturing activity is performed by local producers' existing knowhow only.

3.4.1. *Allocation of Profit.*

	MNE	Local Producer
Integration	π^I	(n/a)
Joint ownership	$\phi_i \pi^J$	$(1-\phi_i)\pi^J$
Outsourcing	$f = (p_i - \overline{p})q_i^O$	$\pi^O - f = (\overline{p} - c)q_i^O$

Table 1. Allocation of Profit

Table 1 shows the allocation rule of profit. π and q denotes profit and quantity of products if all inputs are successfully used. In 100%-owned affiliates, MNEs take hold of the whole profit. When both have equity stakes, profits are allocated according to its ownership, specified at the time of contracts. In the table, p_i shows the price of final goods with principals' brand names in the North market (retail prices). $\overline{p}$ shows the prices of generic goods (wholesale prices) that local producers can sell to principals. Therefore, local producers' profit is based on the difference of wholesale price per unit and their marginal cost. MNEs profit is based on the difference of retail price and wholesale price per unit. To simplify, we assume that the ratio $(p_i - \overline{p}) : (\overline{p} - c)$ is fixed. It is defined by market environment that each agent cannot control.

3.4.2. *Percentage of Successfully Produced Products.*

	MNE	Local Producer	
Integration	1	(n/a)	Full managerial control
Joint ownership	ϕ_i	$(1-\phi_i)\theta_i$	Expected probability of success
Outsourcing	(n/a)	θ_i	θ_i =Absorptive Capacity

Table 2. Percentage of Successfully Produced Products

Table 2. shows the probability of success and failure for managers in designing a new production facilities to produce firm specific products. Without loss of generality, we regard a fully integrated affiliates' probability of success in 100%-owned affiliate as 1 to normalize. Compared to a 100%-owned entity, we assume that the probability for MNE-specific products to be precisely produced is lower due to the limited managerial control bounded by the ownership of the plant. In joint-ownership, we assume that success firstly depends on the MNE's control, and it has a probability of success of ϕ_i. But we also assume that, even when MNE's side is unsuccessful in precise update of design, an able local producer can be successful in imitating the principal's know-how and may precisely produce firm-specific products. The ability of an agent is captured by the degree of absorptive capacity θ_i. As the joint ownership or contractual relation continues, we assume expectation of absorptive capacity asymptotes to its true relation-specific value.[21]

[21]The Baysian style updataing process in long run transision is ,though, out of the scope of this paper.

3.4.3. *Residual Claims on Fixed Assets.*

	MNE	Local Producer	assumption: $r_p \leq r_a$
Integration	K_P	(n/a)	K_P is chosen by P
Joint ownership	K_P	$K_A = \frac{1-\phi_i}{\phi_i} K_P$	$K_P : K_A = \phi_i : 1 - \phi_i$
Outsourcing	(n/a)	K_A	K_A is chosen by A

Table 3. Residual Claims on Fixed Assets

Table 3. indicates the investor of capital and its amount. As ownership specifies the residual claims on fixed asset, we assume neither a MNE or a local producer try to invest the whole of capital investment. Suppose, at the event of liquidation, what investors can virtually claim is the firm's fixed assets (plants and equipment).[22] Specifically, MNEs can keep up to ϕ_i fraction of fixed assets as their legally acknowledged property rights, and similarly, local producers (local owners) can keep up to $1 - \phi_i$ fraction of fixed assets. Therefore, there is no incentive to provide more/less than designated fraction. (If one invests less, production activity is inefficient, and if one invests more, one cannot claim extra residual claim in case of liquidation.) As for the cost of capital, we assume that interest rates for MNEs' credibility r_p applies to fully or partially owned entities. Interest rates for local producers' credibility r_a applies for contractual relation. As a stylized fact, we assume $r_p \leq r_a$, implying that local producers (in less developed countries) are required a higher rate of return in exchange of higher risk by financial intermediaries.

3.4.4. *Elapsed Time to Innovate a Blueprint [Production Stage 1].* In addition to explicit cost and benefit about investment and payoff, we discuss the elapsed time (opportunity cost) spared for two production stages: innovation and implementation.[23] We regard the total available time as 1, and time loss at each stage is at most $\frac{1}{2}$.[24]

Stage 1	MNE	Local Producer	Notes on blueprint innovation
Integration	0	(n/a)	Using existing (stored) blueprint
Joint ownership	0 / $\frac{1-\phi_i}{2}$	(n/a) / $\frac{\phi_i}{2}$	If success, existing blueprint is used. If failure, both spare efforts.
Outsourcing	(n/a)	0	Using existing (stored) blue print

Table 4. Elapsed Time to Innovate a Blueprint [Production Stage 1]

Suppose that the provision of MNE-specific knowledge to innovate its blueprint is mainly transferred via MNE's physical capital (plant and equipment). It is because provision of production machinery, specialized tool and equipment, financing of these machinery and tools, are crucial for producing a updated prototype.

[22] We have in mind a situation where production activity ceased, inventories are sold, workers are fired, and payment to creditors are done. (For foreign affiliates, though, the finance by debt can be neglected. Debts are in limited use compared to equities as a way of finance in foreign affiliates.)

[23] Not only implementation (mass production), but also innovation is necessary at each cycle of production. It is because any existing blueprint is potentially be old-fashioned. We need incremental innovation to make products compatible to up-to-date quality for North consumers.

[24] This normalization does not affect the property of the results.

When MNEs or local producers innovate (update) a prototype fully using their firm-specific facilities, we assume that there is no additional elapsed time.[25] But, under joint-ownership, and joint provision of physical capital, we assume two steps. If MNEs successfully perform innovation, there is no additional elapsed time for MNEs and local producers. If not, then local producers incur effort to imitate and catch up with a MNE's blueprint, and MNEs also incur effort to fill out the know-how. The required level of effort is proportional to the fraction of asset that each missed to provide. Local producers learn the know-how embodied in MNEs fixed asset (ϕ_i of K), by handling specialized equipment and understanding mechanical knowledge. MNEs, with efforts, need to compensate the missed know-how ($1-\phi_i$ of K).

3.4.5. *Elapsed Time to Implement Production [Production Stage 2].*

Stage 2	MNE	Local Producer	
Integration	$\frac{S}{2}$	(n/a)	$s \in [0\ 1]$
Joint ownership	0	0	Fully compatible
Outsourcing	(n/a)	0	Fully compatible

Table 5. Elapsed Time to Implement Production

Lastly, we discuss the effort for reproducing a blue print. Effort is taken for the efficient procurement of local input materials, understanding local business environment and convention, or searching, hiring and training of workers. Without loss of generality, we regard that with the participation of local producers, firms are fully compatible with these location-specific factors. Whereas, 100%-foreign owned firm has a unfamiliarity to the environment. We assume the elapsed time takes the value between 0 (minimum) and $\frac{1}{2}$ (maximum).[26] Local labor force is basically immobile and know-how of employing workers and skill of these workers remain to be the local information. Therefore a new foreign entrant as a employer in local labor market constantly faces a certain degree of adjustment cost.

3.4.6. *Summary of Assumptions.* Given the maximized payoff (=revenue minus cost) in each corporate structure, the expected utility: payoff × probability of success × (1-elapsed time) of a MNE and a local producer are summarized in Table 6.

	MNE: $E[U_P]$	Local Producer: $E[U_A]$
Integration	$\pi^I(1-\frac{S}{2})$	(n/a)
Joint ownership	$\phi\pi^J[\phi+(1-\phi)\theta(1-\frac{1-\phi}{2})]$	$(1-\phi)\pi^J[\phi+(1-\phi)\theta(1-\frac{\phi}{2})]$
Outsourcing	θf where $f=(p_i-\bar{p})q_i$	$\theta(\pi^O-f)$

Table 6. Expected Utility of MNEs and Local Producers

If a principal sets up a fully-owned agent, it has probability of successful control= 1, and elapsed time by implementation= $\frac{S}{2}$. In a jointly-owned firm, successful innovation occurs with expected probability ϕ (without elapsed time) and makeup

[25]We assume that the technique of using (firm-specific) capital, are mobile across countries and shared non-rivally within a boundary of a firm.

[26]This normalization does not affect the property of the results.

innovation occurs with expected probability $(1-\phi)\theta$, with elapsed time for innovation.[27] In contractual relation, expected probability of successful control $= \theta$, (local producers' absorptive capacity to tailor products for MNEs.)

3.5. **Choice of Corporate Structure.** In the previous subsection, we discuss how shareholding (ownership) is influential on MNEs and local producers' utility implicitly and explicitly. We allow ownership to specify multiple characteristics of production. it is enforceably performed since violation to the required level of effort leads to suboptimal outcome (unsuccessful production or zero output). It is in line with the reality of supplier and seller relation where suppliers' equities are closed held, and they could mutually monitor with each other.

In this section, we further discuss that three corporate structures coexist in the same industry of the same country (i.e. same capital intensity, and the same expected level of absorptive capacity). These are explained by difference in characteristics of final products market, and difference in each MNE's familiarity in location-specific knowledge.

Once after an ownership structure is chosen and equity share ϕ is specified, managers decide profit maximizing choice of K and L, as we allow capital intensity and labor intensity differ by industry and they are known to managers. In joint-ownership, once the optimal total amount of K is defined, two parties jointly provide the required amount. We apply interest rate r_p to fully-owned and partially-owned firms and r_a to independent or contractual local agents. The optimal choice of K, L, payoff are summarized in Table 7.

The baseline computation is as follows. The choice of investment in K, L and profit sharing rule of ϕ can be solved backward. The foreign affiliate (or contractual local agents) , given ϕ, solves the profit maximization problem with respect to K. ($r = r_p$ for joint or fully owned foreign affiliates, $r = r_a$ for contractual local agents)

$$
\begin{aligned}
& Max_{K,L}\ R(i) - rK\ - wL \\
= \ & A^{1-\alpha}(\frac{K(i)}{\beta})^{\alpha\beta}(\frac{L(i)}{1-\beta})^{\alpha(1-\beta)} - rK - wL
\end{aligned} \tag{3.6}
$$

The first order condition with respect to K and L specifies the best response with each other

$$
K = [\frac{\alpha}{r}A^{1-\alpha}\beta^{1-\alpha\beta}(1-\beta)^{-\alpha(1-\beta)}\bar{L}^{\alpha(1-\beta)}]^{\frac{1}{1-\alpha\beta}} \tag{3.7}
$$

$$
L = [\frac{\alpha}{w}A^{1-\alpha}\beta^{-\alpha\beta}(1-\beta)^{1-\alpha(1-\beta)}\bar{K}^{\alpha\beta}]^{\frac{1}{1-\alpha(1-\beta)}} \tag{3.8}
$$

By combining the best responses of the both parties, we get the equilibrium investment in K and L.

$$
K = \frac{\alpha\beta}{r}A(\frac{r^{\beta}w^{1-\beta}}{\alpha})^{-\frac{\alpha}{1-\alpha}} \tag{3.9}
$$

$$
L = \frac{\alpha(1-\beta)}{r}A(\frac{r^{\beta}w^{1-\beta}}{\alpha})^{-\frac{\alpha}{1-\alpha}} \tag{3.10}
$$

[27] Since $(1-\phi)\theta(\frac{1+\phi}{2}) > 0$ and also $(1-\phi)\theta(1-\frac{\phi}{2}) > 0$, both parties are better off by trying makeup innovation cooperatively than shirking innovation (and not paying required effort).

The amount of production and the price set by the pair are respectively given when we plug in the value of K and L in the production function.

$$y(i) = (\frac{K(i)}{\beta})^{\beta}(\frac{L(i)}{1-\beta})^{1-\beta} = A(\frac{r^{\beta}w^{1-\beta}}{\alpha})^{-\frac{1}{1-\alpha}} \tag{3.11}$$

$$p = \frac{r^{\beta}w^{1-\beta}}{\alpha}, \text{ where } \frac{1}{\alpha} \text{ is the markup}$$

In sum, by plugging in the value of K and L, the ex ante expected profit for final sector and intermediate producer is respectively given by

$$\pi = (1-\alpha)A(\frac{r^{\beta}w^{1-\beta}}{\alpha})^{-\frac{\alpha}{1-\alpha}}$$

Therefore, profit when K and L are successfully used under three organizational form is:

$$\pi^I = \pi^J = \pi^O \left(\frac{r_p}{r_a}\right)^{\frac{\alpha\beta}{1-\alpha}} = A(1-\alpha)[\alpha r_p^{-\beta}\omega^{-(1-\beta)}]^{\frac{\alpha}{1-\alpha}}$$

Here we confirm that production capability of full integration and joint ownership is identical, because the employment of Capital and Labor is at its optimal level, and lower interest rate r_p applies. The payoff of outsourcing is relatively different by the difference in two parties' interest rates and the magnifying effects from capital intensity and level of product substitution. As long as $r_p \leq r_a$, we expect $\pi^I = \pi^J > \pi^O$.[28]

But the difference in

managerial or technological ability differentiates the ratio of successful qualified products to be shipped and leads to the difference in explicit (monetary) payoffs. (See table 2). Here, the expected utility, where we incorporate the implicit (time) loss into the expected (monetary) payoff is not considered.)

3.5.1. *Matching Conditions for Joint Production.* For joint production, a MNE offers ϕ, which satisfy 1) $E[U_P^J] > E[U_P^I]$ (Joint-production is preferable than full integration) and 2) $E[U_P^J] > E[U_P^O]$ (Joint-production is preferable than contracting-out). Local producer offers $1-\phi$, which satisfy 3) $E[U_A^J] > E[U_A^O]$ (Joint-production is better than to produce independently).
1) MNE: Joint production is preferred to full integration if and only if.

$$\phi[\phi + (1-\phi)\theta(\frac{1+\phi}{2})]A(1-\alpha)(\frac{r_p^{\beta}\omega^{(1-\beta)}}{\alpha})^{\frac{-\alpha}{1-\alpha}} > \frac{2-s}{2}A(1-\alpha)(\frac{r_p^{\beta}\omega^{(1-\beta)}}{\alpha})^{\frac{-\alpha}{1-\alpha}}$$

$$\text{or simplified to } \phi[\phi + (1-\phi)\theta(\frac{1+\phi}{2})] > \frac{2-s}{2}$$

(See Figure 1.)

Figure 1 shows the border lines between joint production form and full integration form. The downward sloping shape show that higher absorptive capacity enhances the relative utility of joint production, then it allows a MNE to lower the minimum requirement for equity shares. The position of the lines differ only

[28]Empirically, it is basically acknowledged that $\beta = 0.3$, $\alpha = 0.75$ or above (i.e. elasticity of substitution across variety is 4 or above).

by the level of time loss when a fully integrated firms perform local production procedure (implementation of prototypes.) With a longer time loss, the more likely joint ownership is chosen to save her time. It is shown as the downward shift of the threshold line.

2) MNE: Joint production is preferred to contractual relationship if.

$$\begin{aligned} \phi[\phi + (1-\phi)\theta(\frac{1+\phi}{2})]A(1-\alpha)(\frac{r_p^{\beta}\omega^{(1-\beta)}}{\alpha})^{\frac{-\alpha}{1-\alpha}} &> \theta f \\ \text{or simplified to } (1-\phi^2)\phi\theta + 2\phi^2 &> \frac{2\theta f}{\pi^J} \\ \text{where } A(\frac{r_a^{\beta}\omega^{(1-\beta)}}{\alpha})^{\frac{-\alpha}{1-\alpha}}[\bar{p}\frac{r_a^{\beta}\omega^{(1-\beta)}}{\alpha} - \alpha] &= f \;=\; (p_i^O - \bar{p})q_i \end{aligned}$$

As long as $r_p \leq r_a$, the sufficient condition is:

$$(1-\phi^2)\phi\theta + 2\phi^2 > \frac{2\theta}{1-\alpha}[\bar{p}\frac{r_a^{\beta}\omega^{(1-\beta)}}{\alpha} - \alpha]$$

(See Figure 2.)

Figure 2 indicates the border lines between joint production and outsourcing. The marginal gain in outsourcing with respect to absorptive capacity is constant regardless of equity share ϕ, whereas, the marginal gain in joint production is decreasing as MNEs' equity share increases. Therefore, higher value of absorptive capacity is required to maintain the advantage of joint production. The figure also shows that required rate of equity shares becomes less sensitive to the absorptive capacity. It is because the utility gain from having higher success probability of innovation at the initial trial (with higher value of equity shares) dominates the gain from having higher success probability in the second trial.

By combining the condition illustrated in Figure 1 and Figure 2. we state that MNEs offer joint production in overlapping range (upper left part in the figure.) It implies that joint production is more profitable than integration when her equity stake is higher, and that joint production is more profitable than outsourcing when absorptive capacity is not too high.

3) Local Producer: Joint production is preferred to contractual relationship if.

$$\begin{aligned} (1-\phi)[\phi + (1-\phi)\theta(\frac{2-\phi}{2})]A(1-\alpha)(\frac{r_p^{\beta}\omega^{(1-\beta)}}{\alpha})^{\frac{-\alpha}{1-\alpha}} &> \theta[A(1-\alpha)(\frac{r_a^{\beta}\omega^{(1-\beta)}}{\alpha})^{\frac{-\alpha}{1-\alpha}} - f] \\ \text{where } A(\frac{r_a^{\beta}\omega^{(1-\beta)}}{\alpha})^{\frac{-\alpha}{1-\alpha}}[\bar{p}\frac{r_a^{\beta}\omega^{(1-\beta)}}{\alpha} - \alpha] &= f \end{aligned}$$

As long as $r_p \leq r_a$, the sufficient condition is:

$$(1-\phi)[2\phi + (1-\phi)\theta(2-\phi)] > \frac{2\theta}{1-\alpha}(1 - \bar{p}\frac{r_a^{\beta}\omega^{(1-\beta)}}{\alpha})$$

(See Figure 3.)

Figure 3 states the boundary for a local producer to participate in joint production rather than contractual production. With an increasing absorptive capacity of a local producer, they proportionally gain from contractual production. Therefore, they require higher stakes to themselves (lower equity stakes of MNE) if they are

ever willing to participate in joint-production by kicking off the favorable return of outsourcing/or being independent.

Let us describe comparative statics on (local) cost of capital r_a,capital intensity β, product substitutability α. When their relative cost of capital increases, his contractual payoff relatively decreases. Then, local producers accommodate with lower equity shares. This is shown as the rotating-up of the threshold in Figure 3. When capital intensity of products is higher, the difference in interest rates affect profit more severely. It also gives him an incentive to accommodate (rotating-up of the threshold). With higher product substitution, (i.e. more intense competition), expected payoff by joint production decreases, which discourage an local producer from participating in the joint-production.

(See Figure 4.)

Combining the three thresholds, we discuss the sufficient conditions for joint-production to be chosen and resulting equity shares allocated. (In appendix, we also consider the case with lump-sum transfer from a MNE to a local producer.) We hereby propose four properties.

Proposition 1. *(Absorptive Capacity and Feasible Matching) The expected shareholding ratio conditional on joint production is decreasing in the expected absorptive capacity of local producers.*

This proposition is straightforward since both local producers' and MNEs' borderlines of acceptance is downward sloping. In Condition 3, for any given value of ϕ, with higher absorptive capacity, a local producer will have higher utility from his operation by contractual, or independent operation. His demand for equity share for joint production then increases to make him indifferent between two options.

In Condition 1, for any given value of ϕ, a MNE's utility from joint production is also increasing in local producer's absorptive capacity, whereas the utility from full-integration is constant. Then, this will make her accept lower equity shares for herself.

The matching possibility is defined by the range of feasible equity shares. For any given absorptive capacity level, if the absolute value of their marginal payoff at the threshold value of equity share is the same, feasible matching range is constant. Suppose agent has the higher marginal increase, the feasible matching range expands. If otherwise, feasible matching range decreases.[29]

Proposition 2. *(Capital Intensity and Feasible Matching) The feasible range of equity share for joint production is increasing in the degree of capital intensity.*

The increase of capital intensity relatively lowers the expected payoff of outsourcing for both parties, because, regardless of the high requirement of capital usage, producer has to end up with higher cost of capital r_a, where $r_p \leq r_a$. For both parties, joint-production is relatively preferred than out sourcing. It means, the thresholds shift in an direction to expand the possibility of joint-production for both party. In Condition 3, the slope rotates upward in Figure 3. In Condition 2, the slope rotates downward in Figure 2.). As a result, the feasible range for joint production expands. The upper bound for the equity share is increasing in the

[29]Computationally (for the limited case case of $r_a = r_p$), the matching possibility is expanding if $0 < \phi < \frac{1}{4}(3 - \sqrt{1+8\gamma})$, shrinking if $\frac{1}{4}(3 - \sqrt{1+8\gamma}) < \phi < 1$, where $\gamma = \frac{2}{1-\alpha}[1 - \bar{p}\frac{r^{\beta}\omega^{1-\beta}}{\alpha}]$.

degree of capital intensity. The lower bound for equity share specified by slope 2 is decreasing in the degree of capital intensity.

Therefore the possibility of joint production is increasing in the degree of capital intensity. Specifically there are two cases. For low values of absorptive capacity, where Condition 1 is binding , the possibility of joint production is increasing. [30] For high values of absorptive capacity, where Condition 2 is binding, the area for joint production also increases.

Proposition 3. *(Market Competition and Feasible Matching) The feasible range of equity share for joint production is decreasing in the degree of market competition. The expected shareholding ratio conditional on joint production is decreasing with more intense market competition at North market.*

The more intense the market competition in final goods (i.e. the higher values of α, or lower industry-level markup $\frac{1}{\alpha}$), the relative payoff by monopolistic competition (by selling products to North market) compared to the sales of generic goods decreases. Therefore, local agents are less willing to participate in joint-production. In Figure 3, it is shown by the rotate-down of the slope. Given other conditions equal the feasible range of matching decreases, and in addition, the expected equity share for a MNE also decreases.[31]

Proposition 4. *(MNE's Adjustment Cost and Feasible Matching) The feasible range of equity share for joint production is increasing in the degree of adjustment cost MNEs incur (in the form of elapsed time) for efficient employment of local workers. The expected shareholding ratio conditional on joint production is decreasing in the increase in such coordination costs.*

The increase in coordination costs lowers the payoff of full integration, and firms are more willing to find local partners to reduce such coordination costs. The slope 1 for Condition 1shifts downward, showing the lowered boundary of its equity stake, and larger range for feasible matching. Given other conditions equal, the higher coordination costs lowers the expected mean of shareholding ratio for principals.

4. Data

4.1. **Descriptive Statistics.** In this section, we introduce the data sets and the information we used. We use the data of foreign affiliates of Japanese firms from (*Basic) Survey on Overseas Business Activity* (fiscal year 1995 to 2002).[32] This survey is conducted by the Ministry of Economy, Trade and Industry of Japan targeting all the Japanese-owned foreign affiliates located in the rest of the world, where 62-63% of the total establishments in question respond to the survey every year.[33]

[30] Computationaly, (under $r_a = r_p$), the possibility for joint production is increasing if $s > 2[1 - \frac{\theta}{1-\alpha}(\bar{p}\frac{r^\beta \omega^{1-\beta}}{\alpha} - \alpha)]$

[31] Precisely speaking, the Condition 2 (MNE's choice between joint ownership and outsourcing) slightly moves, but we confirmed that the effects on the threshold is minor, reflecting both positive and negative effects from α.

[32] Basic, or extensive survey is conducted once in every three years. (1995, 1998, 2001, in fiscal year)

[33] The repondence rates for each year are, respectively, 63.4% in 2000, 62.9% in 2001, 62.1% in 2002. It is questionnaire-based survey, declared by each foreign affiliate and its parent firm, respectively. This survey does not include financial, insurance, and real estate industries (as known as FIRE sector).

We sort the establishments by the country in which they are located. Analyzing parent and affiliate relation of each host and home pair of countries, we primarily focus on firm-level and industry-level differences in each pair. In other words, focusing on bilateral pairs implicitly controls for unobserved attributes of each host country, such as labor market characteristics, country-wide regulatory environment, infrastructures, which could bias the results of cross-country analyses. Specifically, the establishments in one country are assumed to face the uniform country-level characteristics (country size, population, geography, and culture etc.) and macroeconomic conditions (price level, labor market, and capital market condition), and thus we can leave out country-level heterogeneity. To get the sufficient number of establishments per country, we use the information of largest seven economies in Asia. These are affiliates in China, Thailand, Singapore, Hong Kong, Taiwan, Malaysia, and Indonesia in order of the total number of establishments. We next construct the pooled sample of affiliates of South counties (China, Thailand, Malaysia, and Indonesia) and affiliates in NIES (Hong Kong, Singapore, and Taiwan) to check the generality of country-wise results.

The establishments of Japanese firms surveyed in the statistics are defined by the either of the following three characteristics as their corporate structure: 1) A foreign affiliate in which Japanese corporations have invested capital of 10% or more; 2) A foreign affiliate in which another foreign subsidiary (funded more than 50% by a Japanese corporations) has invested capital of more than 50% ; 3) A foreign affiliate in which a Japanese corporations and another foreign subsidiary (funded more than 50% by Japanese corporations) have invested capital of more than 50%.[34]

In addition to the ownership information, we obtain the affiliates' balance sheet, profit and loss, and data of international trade for their purchase and sales activity. We, then combine affiliate-level information with the data of their parent companies. The data are additionally taken from *Basic Survey of Business Structure and Activity* (fiscal year 1995 to 2002). This is the census-coverage data of companies by compulsory survey, though small sized enterprises are waived.[35]

Shareholding decisions regarding foreign firms can present better proximity to our theoretical demonstration„ compared to those for domestic affiliates. Firstly, under the current accounting rule, foreign affiliates' activities are out of the scope of consolidated tax report for headquarter firms, whereas domestic affiliates are within the scope. This separation makes shareholding decisions independent from adjustment to save tax burdens. Secondly, shareholding decisions for foreign affiliates have little to do with market-determined factors in stock markets because most of the foreign affiliates' equity are closed-held.[36] Equities are held only by stakeholders who actually engage in production activities. Therefore, we can argue

[34]We use the information of shareholding ratio that a parent firm owns directly and indirectly (through subsidiaries). In the case of a sub-subsidiary referred in (2) and (3), the ownership ratio is calculated as the % of ownership held by its direct parent (firm A) multiplied by the % of ownership over the parent firm (firm A) held by headquarters of the multinational firms' .

[35]Companies with smaller than 50 employees or less than 30 million yen of equities (book value) are waived from the survey. Therefore, not all the parent companies of foreign affiliates are successfully matched together.

[36]We sometimes observe what is called an announcement effect of FDI. By announcing an acquisition or a setup of foreign entities, multinational firms may obtain good reputation and it positively affect the firms' stock values. We are here abstract from a MNE's decision over equity ratio expecting this idiosyncratic effect.

shareholding decisions without severe restraints by accounting issues and by stock market determined issue.[37]

To make our analysis more fitted to our specification, we further assign the following condition for our sample. Specifically, we select the affiliates satisfying the following conditions:

(1) Parents and Affiliates are both manufacturing firms
(2) Products are exported to North (Japan, North America, or EU) market
(3) Affiliates are established between 1996 and 2002. Furthermore, only the initial observation of those firms are used.[38]
(4) Co-owner of entities, if any, are from the host country.[39]

The first and the second conditions are directly specified from our preceding discussion. The third condition is trying to eliminate the effects of political regulation which restricted participation of foreign funds. The effects of policies are also removed (or homogenized) by choosing export-platforms (where restrictions are more loose than manufacturers targeting local sales).[40] The forth condition eliminates the effects of local stock market or the effects brought by other third parties on shareholding decisions. The factors we specified in the model are more likely to be effective for closed held firms, since there is unlikely to be another influential stakeholder outside the firm. In addition, this condition allows us to eliminate the financial incentive of firms to take the benefit of its stock prices. (When financial incentive dominates, MNEs and local producers may just try to adjust their equity share to get higher cash flow from stock market. But this is out of the scope of this paper.)

Table 7 indicates the information of affiliates. The new entrants (i.e. foreign affiliates) into the seven Asian economies from 1996 to 2002 are composed of 8636 firms in total. 62 % of those firms (5336 firms) are manufacturers. Here, we classify manufacturers into exporters (to North) and local sellers. As existing research propose, there are wide differences between affiliates for export (known as vertical FDI) and affiliates for local sales (known as horizontal FDI).[41] In this paper, it is

[37]For publicly held domestic subsidiaries in home countries, in contrast, the equity share is more subject to their stock values or those of their parents.

[38]We include the affiliates acquired by equity participation, or takeover by Japanese firms, if their size exceeds 10% of the invested capital of the acquired firm. So, in this paper, we do not differentiate whether the capital participation is by greenfield or M&A. The theoretical literature has traditionally focused on greenfield investment assuming its equivalence (zero profit condition)to M&A in the long run. (See the survey by Ferrett (2004), section 4). Some of the recent research then come to pay attention to motives for corporate managerial control, or motives to access foreign marketing capability through M&A.(See Nocke and Yeaple [2004] and Head, and Reis [2005]). In our data, foreign-affiliates established through M&A comprize 12% of the whole entrants, and elimination of M&A affiliates does not influence the main result stated in this paper.

[39]Here, we omit firms with major equity participation from any other third country, (specifically, omit if the third countries' owners are ranked as the 2nd or the 3rd largest shareholders, per firm).We cannot confirm the exact equity share from the third countries, though.

[40]Selection of years (establishments after 1996) also works to control the bias by political regulations. Specifically, in 1995, the enforcement of local content requirement (including preferential status conditional on achieved local content) was prohibited in TRIMs agreement at WTO. (See Ito and Krueger ed. [2004])

[41]In vertical FDI, consumers' markets are in foreign countries. In this case, headquarters are likely to be the major investor of capital, providing firm-specific machinery, equipment and technology. For the latter case (horizontal FDI), consumers reside in the host country. Then, the

appropriate, empirically and theoretically, to focus on the exporting manufacturers, (specifically, exporters to the North markets such as Japan, North America, and the E.U.) When affiliates sell products to local markets of these low-income or middle-income countries, the final products sold at each country are expected to be highly heterogeneous across countries, as they are customized to local tastes and local level of income. Therefore, cross-country analyses will be biased. In addition, some of the assumptions in the model, such as the use of parent-specific technology, knowledge and capital goods, or monopolistically competitive consumers' markets, may fail to apply to manufacturers for local market access. We here define an entity as an exporter if its export of products to the North markets dominates other distribution channels. 1370 firms fit to this selection.[42] As for the corporate structure of these export platforms, 52% of entrants choose joint ownership (by Japanese firms and local firms). We also classify manufacturers into producers of machinery and non-machinery. Among export platforms, 49% of entrants are in machinery industries (general machinery, information and communication devices, electrical machinery, transportation equipment, and precision instruments). The machinery sector is distinct from the rest in terms of high complexity of their final products, and of high dependence on suppliers for intermediate parts and devices.

The next table (Table 8) shows the statistics of 1370 exporters by regions: South (China, and ASEAN) and NIES. Comparing the two regions, the South group shows active choice for joint ownership, and lower average equity share by Japanese firms. Local procurement ratio is slightly higher in South countries. Another different characteristics is the relation between an affiliate and its parent. Among the affiliates in NIES, 67% of the entities are doing the same business with their parents (i.e. they are in the same 3-digit level industrial classification). In addition, 61.5% of affiliates in NIES is machinery manufacturers, whereas, composition of industries are more diversified in the South.

Figure 5 illustrates the number of entrants for each year and their regions of entry. The South countries has increased its presence within Asian countries as the locations for export platforms. (58% of entrants chose South as their location in fiscal year 1996, and 75% did in fiscal year 2002.)

Table 8 shows the summary statistics (means and standard deviations) of the exporting manufacturers in the seven countries, respectively. Table 9 describes the definition of variables we used, and Table A.1 in the Appendix shows the correlation matrix of the variables used.

4.2. **Dependent Variables: Corporate Structure.** The dependent variables are equity shareholding ratio by Japanese firms, which is continuous from 0.1 to 1 (from 10% to 100%), and categorical variable showing the corporate structure. As the structure is defined at the startup of the entity based on the information (about location and industry) available at that time period, we focus on "how recently established firms chose their corporate structure at its initial year". If we include old foreign affiliate, it will bias the results primarily because of omitted variable bias

investment by headquarters for production will play a partial role, complementing the investment of local affiliates. In recent survey, Hanson, Mataloni, and Slaughter (2001) additionally classify the modes of FDI into three: distrubution-oriented FDI (for wholesale trading), in addition to the two types above.

[42]The classification of local inputs and imported inputs are up to the self-declaration of each foreign affiliate. So it does not necessarily track the fundamental origin of product.

(e.g. change in political regime, changes in industrial structure of host economies). If we include the observations of second or later years (of new establishments) we will have endogeneity problem. Although industry-level variables will not be affected in the short-run, firm-level managerial ability in foreign environment do change after the start of operation.

We first measure the capital participation of local firms for a new foreign-owned entity for the host economy. We indicate 0 as no local participation (i.e. 100% foreign-owned), and denote 1 if there are many capital participation by local firms, (i.e. Joint Ownership). In our data, 52% of entrants have local firms' equity participation.

Figure 6 shows the detailed distribution of Japanese/local firms' capital participation. We here observe clear discontinuity between 100% ownership and nearly 100% ownership (from 90% to less than 100%). Therefore, we argue that full ownership and joint ownership are the two distinct choices for firms even when local stakeholders will have a minor share. Hence, we use these zeros and ones for models with discrete dependent variables. (It is also consistent to our theoretical prediction). We apply Probit estimation and Heckman's two-step analyses .

As for the distribution of less than 100% ownership, Figure 6 describes smoothly distributed equity ownership from 50% to less than 100%. For entities with less than 50% equity participation, the distribution is gradually declining as equity shares go down. We set 50% as another categorical threshold, then denote 2 for more than 50% locally-owned entity (i.e. less than 50% ownership by Japanese firms) and 1 as local firms' capital participation upto 50%, and 0 for no local capital participation. This categorical indicator is used for Ordered Probit estimation.

4.3. **Independent Variables:** In our preceding discussion, we argue that industry-specific variables such as local industries' absorptive capacity, capital intensity, market competition in downstream market (final products' markets), and parent-specific variable like familiarity to local market's business environment are influential for the choice of corporate structure and equity ownership. We also discuss that these variables are known as common knowledge or, at least, their expected values are observable prior to the decision of corporate structure.

To follow the specification above, we use industry-level and firm-level information prior to a start of new operation by a Japanese-owned foreign affiliate. With this selection, we could also eliminate the endogeneity problem.

4.3.1. *Absorptive Capacity of a Local Industry.* We present local procurement ratio achieved in each industry and country as the proxy for absorptive capacity of the local industry in question.[43] It is because, firstly, high ratio of local procurement is the natural outcome arising from the presence (thickness) of local suppliers who satisfactory provide parts and devices for products to be exported to high-income countries, where flawless or uniform quality is expected.[44] Secondly, high ratio of local purchase reflects the effort by multinational firms trying to enhance the

[43]Kiyota et al. (2005) state that local procurement shows the local backward linkage of multinational firms, and its importance both for incoming foreign firms (as a network for stable business activities) and for host economies (as a channel of spillovers).

[44]We, however, remind that some industries with intense use of natural resources (coal, oil, iron, woods, etc.) have high local content by nature. So we control the difference by separating out these industries.

compatibility between required technology and locally available technology, as it is the way to hedge the risk of importing like unstable exchange rate, transportation costs, and unpredictable barriers to trade.

We compute the local procurement ratio for each 2-digit level industry to get sufficient number of observation for each category. For example, we apply local content ratio (i.e. sum of local inputs /sum of whole inputs) in industry i in year 1995 as a public information to be used for a firm who plans to enter into industry i of the host country in 1996.[45]

We also consider the indicator showing whether an affiliate is in machinery manufacturers (general machinery, industrial machinery, information and communication devices, transport equipment, precision instruments). These machinery industries are known to have high demand for supporting suppliers, because their products have high complexity, and they are not able to make all parts and devices by themselves.[46] We therefore assume machinery manufacturers have different response to local procurement ratio.

4.3.2. *Parent Firm's Adjustment Cost to New Business Environment.* We use three indicators to describe the level of adjustment cost she will pay if she starts a new FDI. First, we check whether a new entity will be the second (or later) affiliate for the parents or not. The indicator of 1, means that a parent has already have at least one another foreign affiliate in the same host country in year $t-1$; and 0 means that the parent has no experience of FDI in the country upon the entry. Second, we check, instead, whether a parent firm has a foreign affiliate in any other country except for the host country. We denote 1 if a parent has such entity in year $t-1$, and 0 if not. Lastly, we check whether a new entrant is in the same 3-digit level industry with its parent or not. Now, 1 indicates that both industries are the same, and 0 for different. Parent firms' existing know-how are more applicable to a new entity if she will be in the same industry, and it may lead to a lower adjustment cost at the event of exporting or importing, for example. In sum, these three 0 or 1 indices will be of help to explain parents' potential adjustability to the new business environment.

4.3.3. *Industry-Level Capital Intensity.* We regard that capital intensity is a time-invariant indicator for a short run (specifically from 1996 to 2002), but it varies across industries. To capture the industry-level information, we compute the capital intensity by 3-digit level classification using 187,003 Japanese (domestic) firms observed in 1995 to 2002.[47] Desirably, it is best to compute the capital intensity by 3-digit or 2-digit level for each host country respectively, but data this level of

[45]In contrast to Kiyota et al.(2005), we avoid using the information of 'local procurement for the firm per se,' since we will face severe endogeneity problem. Employing the statistics of 'peer' firms will be the due approach. (This paper is abstract from the detailed inspection on 'peer' effects per se on a single multinational firm, though.) For example, Alvarez and Gorg (2005) state the evidence that the presence of other multinationals has indeed a positive effect on a plant's survival via productivity improvement of these multinationals.

[46]In South countries, it is known that machinery manufacturers, at their downstream stage, have assembly plants (or screwdriver plants) using low-cost labor, where intermediate goods are brought from outside the plants.

[47]We use *Basic Survey of Business Structure and Activity*, taken from Ministry of Economy, Trade and Industry. With this data, we have at least 132 firms for each 3-digit level industrial classification. It is sufficient to get normalized result per industry. The firms used in the data are mediam to large-sized firms with 50 or more employees.

disaggregation is not available for the host economies we used. In addition, due to endogeneity problems and lack in per-industry observation, we also avoid using capital, or labor related information Japanese affiliate. So, instead, we apply industry-level capital intensity of Japan as the proxy of those for other countries.[48] We find that the capital intensity is on average 0.31, and we have few industry-level difference with this measure (i.e. standard deviation of 0.07).

4.3.4. *Market Competition in the Final Market.* In our observation of foreign affiliate operating as export platforms, an average of 54% of outputs are exported to Japan. (Specifically, 60% of the output in South affiliates are exported to Japan, and 37% in NIES affiliates.)[49] Because of this dominant share of Japan as the destination of their products, it is appropriate to apply the variables of market competition using domestic firms of Japan. Classifying the 187,003 Japanese domestic firms into 3-digit level, we compute the industry-level markup: aggregate sales divided by aggregate cost (=sales-profit).[50] Using this measure, we find that industries are highly competitive, with $\alpha = 0.96$, and markup=1.04, and that there is little across-industry variety (i.e. standard deviation of 0.01)

4.3.5. *Other Parent Firms' Characteristics.* To control the heterogeneity of parent firms, we use parent firms' history of operation (years) and parent firms' size (the number of employees). We also use the information whether a parent firm located in Japan is under affiliation of another firm (, which can be either a domestic or a foreign firm). We denote 1, if this situation applies, and denote 0 if a parent firm is an independent corporation.

We also include year dummies (1996-2002), industry dummies (2-digit level) for our estimation.

5. Estimation and Results

We first apply Probit estimation to explain the discrete choice of 100%-foreign ownership ($y_i = 0$: no local capital participation) or Joint-ownership ($y_i = 1$: local equity participation). As local equity participation could be chose from a wide range, we further classify the equity ownership: whether it is a majority-owned foreign affiliate ($y_i' = 1$: less than 50% local capital participation) or it is an affiliate with less than 50% foreign capital ($y_i' = 2$: 50% or higher local capital participation). We use these ordered data for Ordered Probit estimation.

Lastly, we apply Heckman's two-step analysis where firms first choose from two distinct corporate structures ($y_i = 0$: fully Japanese-owned, or $y_i = 1$: joint) and

[48]Here we assume that Japanese-owned affiliates' production function is more related to that of Japanese firms than that of purely local firms of less developed host countries.

[49]The export to other North countries are minor, 5% to North America and 2% to EU. (In South affiliates, 4% to North America and 2% to EU. In NIES affiliates, 6% to North America and 3% to EU). These percentages are the average of ratios calculated by firm-level, and not showing the absolute volume of inputs/output.

[50]It is a conventionally used measure for industry-level markup, e.g. Keller and Yeaple (2004). However it still is not the exact measure: markup=price/marginal cost, since we are conceptually using price/average cost, instead. Regardless of the popular use of CES, monopolistic competition type demand, the exact estimation of the markup is scarcely done. As one of few contributions, Lai and Zhu (2004) estimate the elasticity of substitution as 3.99 for traded commodities. It means alpha=0.749, and markup=1.334 and they also state Japanese market has notably inelastic substitution (i.e. lower alpha and higher markup) than the average. But we here apply more moderate estimates where average alpha=0.964.

then define the specific equity share through negotiation with local partners at the time of entry.

5.1. **Probit Analysis.** The latent variable y_i^* shows the parent firms' underlining (unobservable) utility, which defines the corporate structure (full-ownership or joint ownership) and empirical model y_i (indicator variable) is given by is written as follows.

$$\begin{aligned} y_i^* &= \beta_i' X + \epsilon_i \text{ where } \epsilon_i \tilde{} N(0, \sigma^2) \text{ and } y_i^* \tilde{} N(\beta_i' X, \sigma^2) \\ &\text{Our observation } \begin{cases} y_i = 0 \text{ if } y_i^* \geq 0 \\ y_i = 1 \text{ if } y_i^* < 0 \end{cases} \end{aligned} \tag{5.1}$$

The assumption of zero for the threshold is an innocent normalization. Now the probability that $y_i = 0$ is the probability that we have $y_i^* \geq 0$;

$$\begin{aligned} \Pr(y_i^* &\geq 0) = \Pr(\beta_i' X + \epsilon_i \geq 0) \\ &= \Pr(\frac{y_i^* - \beta_i' X}{\sigma} < \frac{-\beta_i' X}{\sigma}) \\ &= \Psi[\frac{\beta_i' X}{\sigma}] \end{aligned}$$

Conversely, the probability that $y_i = 1$ is $\Pr(y_i^* < 0) = 1 - \Psi[\frac{\beta_i' X}{\sigma}]$. Using these expressions, the likelihood function is given as follows:

$$\mathfrak{L} = \prod_{i=1}^{n} \left[\Psi[\frac{\beta_i' X}{\sigma}]\right]^{1-y_i} \left[1 - \Psi[\frac{\beta_i' X}{\sigma}]\right]^{y_i}$$

By taking the logarithm of the likelihood function, we obtain:

$$\log \mathfrak{L} = \sum_{i=1}^{n} \left[(1 - y_i) \times \log \Psi[\frac{\beta_i' X}{\sigma}] + y_i \times \log(1 - \Psi[\frac{-\beta_i' X}{\sigma}])\right]$$

The parameter values for the β vector and the ancillary parameter σ are chosen to maximize $\log \mathfrak{L}$. Maximum Likelihood Estimation produces consistent estimates of the parameters in Probit model, under the assumptions such as homoscedasticity and normality of the error terms.

5.2. **Results of Probit Estimation.** Table 10 shows the Probit regression for all the seven host economies of foreign affiliates, and for South countries' entrants. Our primary concern here is the relation between local content ratio (reflecting local backward linkage, or local absorptive capacity) and multinational firms' choice of corporate structure. We also check the effects of other parameters we have used in our discussion: capital intensity, product substitutability (measured using the inverse of industry-level markup), and parents' prior FDI experience.

The first table is the results of the entrants to all the seven host countries in Asia. The first two columns are the result of all export-platform manufacturers, the next are those of machinery sector, and the last two columns show those of non-machinery sector for comparison.

The regressors specified by the theory for the choice of corporate structure is absorptive capacity of local industries, and parent firms' adjustment cost. We

capture the former by local content ratio achieved by other entities in the prior year of entry of an affiliate in question, then we capture the latter effect by the index for parent firms prior FDI experience in the host country, and the matching of the parent and new affiliate industry. (The next columns in each category add the variables of capital intensity, and product substitutability. These variables are, in the theory, assumed to be indirectly influential, as they change the potential local partners' incentive to participate in the joint ownership.) The local procurement behavior does differ by countries, due to the effect of exchange rates, tariff rates, transportation cost, and relative wage difference, or local content requirement for export platforms, if any. Therefore, we control the measure by using the interaction with country dummies.

The coefficients in the local procurement have positive and significant signs, and the same for marginal effects shown in the next table (Table 10, continued). Other coefficients (with country dummies as a cross-term) indicate the difference between China and each country.[51] The effects are in upward direction for Indonesia, and downward direction for Malaysia, Hong Kong and Singapore. Overall, the results support the direction that higher local procurement ratio achieved by others will lure a new entrant to choose Joint-ownership, rather than full-integration.

In contrast, The parent firms' prior FDI experience in the same host country negatively affect the choice of Joint-ownership. This result is consistent with the theoretical prediction that, if a parent firm faces lower adjustment cost for FDI, she finds it more beneficial to choose a fully-integrated corporate structure.

We next compare the machinery sector and non-machinery sector. We find that machinery sector's choice for corporate structure is more elastic (sensitive) to the change of local content ratio when choosing joint-ownership, whereas, the response is weaker for non-machinery sector. It makes sense as machinery sectors are highly dependent on suppliers network or availability, and suppliers' ability to perform assembling operation.

Product substitutability and capital intensity do not present significant effect, showing that these variables are not strongly effective for the choice of corporate structure.

The second table shows the result of export platforms in the South countries (China, Thailand, Malaysia, and Indonesia). Here, we again have negative and significant sign for parents' prior experience in the host country. We then conclude that if firms are well informed about the location-specific knowledge, firms have a distinct preference for having a fully-owned enterprise for her incremental business activity at the host country.

For South country group, though, the firms' response to the local procurement activity by other firms is now slightly weak, though the sign is still positive, and it also represents the similar feature with the results of the whole firms.

[51] We also control local content ratio by distance between countries. (It is because high transportation costs negatively affect the dependence on import, then positively affect local content ratio). We, at this point, have not applied other country level characteristics for controls, because most of those are affected by industrial composition of each country. Acemoglu, Johnson and Mitton (2005) point out that high propensity for vertical integration is only seemingly correlated with features such as high contracting cost, or high financial development. It is because, in countries with such market conditions, domestic industrial composition is highly concentrated in industries of high propensity for vertical integration.

Table 10 (continued) reports the marginal effects of local content ratio and the new entrants' corporate structure. Overall, 1% increase in local procurement by other firms leads to 0.3% increase in probability for a new entrant to choose joint-ownership. In machinery sector, the probability is magnified to 0.4%. In contrast, non-machinery sector does not present the significant influence from local procurement ratio. For south countries, the probability declines to 0.2%. So we argue that affiliates in NIES, where 61% of firms are in machinery sector, have a sensitive attention on local absorptive capacity (or local procurement ration) when they choose their form.

Next, in Table 11, we run the same analysis using Ordered Probit estimation. Here we highlight the category where local producers are the major-owners of the firms. (These firms comprise 14% of the South affiliates, and 12 % of the whole affiliates in our data.) The results are actually not strikingly different from those of Probit. Overall, we have positive and significant effect of local procurement of each industry, and negative and insignificant effect of parent firms' prior operation at the same host country. These effects are both more distinct in machinery sector than non-machinery sector. Machinery sector in South country now present the positive and significant response to local procurement.

5.3. **Heckman's Two-Step Analysis.** In the preceding section, we applied Probit model assuming they first choose either Joint-ownership or 100% ownership (Full-integration). We further investigate, then, how they define their equity shares when they engage in joint-ownership. (Recall that in Ordered Probit, we still do not explain the determinants for equity shares (below 50%, or above). According to Heckman's two-step analysis, we consider a model with two latent variables y_i^* and d_i^* which linearly depend on observable dependent variables X_i and Z_i respectively.

$$\begin{aligned} d_i^* &= \gamma' Z_i + \upsilon_i \\ y_i^* &= \beta' X_i + \epsilon_i \text{ where } (\upsilon_i, \epsilon_i) \tilde{} N\left(0, \begin{bmatrix} 1 & \rho\sigma_\epsilon \\ \rho\sigma_\epsilon & \sigma_\epsilon^2 \end{bmatrix}\right) \end{aligned}$$

We observe an indicator $d_i, 0$ (Full integration) or 1 (Joint-ownership) for *discrete* choice of ownership structure. If $d_i = 1$, we then observe equity share of Japanese investors $y_i = y_i^*$.

$$\begin{cases} d_i = 1 \text{ if } d_i^* > 0 \\ d_i = 0 \text{ if } d_i^* \leq 0 \end{cases} \text{ and } \begin{cases} y_i = y_i^* \text{ if } d_i = 1 \\ n.a. \text{ if } d_i = 0 \end{cases}$$

Recall that the Tobit analysis in preceding section is a special case of this step with $Z_i = X_i$, $\gamma = \beta$, $\sigma_\upsilon = \sigma_\epsilon$ and $\rho = 1$. Creating a probit model for the propensity d_i, log-likelihood function can be written as follows:

$$\begin{aligned} \log \mathfrak{L} &= \sum_{d_i=0} \log P(d_i = 0) + \sum_{d_i=1} \log \left[P(d_i = 1) f(y_i^* | d_i = 1)\right] \\ &= \sum_{d_i=0} \log P(d_i = 0) + \sum_{d_i=1} \log \left[f(y_i^*) P(d_i = 1 | y_i^*)\right] \\ &= \Sigma \log \Psi\left(-\gamma' Z_i\right) + \Sigma \log \left[\frac{\psi[(y_i - \beta_i' X)/\sigma]}{\sigma}\right] + \Sigma \log \left[\Psi\left(\frac{\gamma' Z_i + \rho(y_i - \beta_i' X)/\sigma}{\sqrt{1-\rho^2}}\right)\right] \end{aligned}$$

The first step of Heckman's model is to compute the Mill's ratio $\hat{\lambda}_i = \frac{\psi(\hat{\gamma}' Z_i)}{\Psi(\hat{\gamma}' Z_i)}$from d_i for all observation.The second step is to build a regression model using only the uncensored record using $\hat{\lambda}_i$ and X_i.

$$y_i = \beta_i' X + \beta_\lambda \hat{\lambda}_i + u_i$$

By the OLS regression of the equation above, we yield consistent estimator of $\hat{\beta}_i$, $\hat{\beta}_\lambda$.

5.4. **Results of Heckman's Two-step Estimation.** We first conduct the Heckman analyses for each country, since the decision of equity share may reflect highly country-specific factors.[52]

In the model. we have discussed that, absorptive capacity, capital intensity in local production, and market competition in final consumer market matter additionally for the choice of exact equity share. (Recall that, for organizational choice, our focus is merely on parent firms' experience of FDI, and absorptive capacity)

Table 12 shows the results. The upper part is showing the regression of equity shares on local content, capital intensity, and market competition. The lower part is showing the regression of possibility for joint ownership on absorptive capacity. Among the seven countries, we would better omit Thailand and Hong Kong from our interpretation due to its weak specifications. Now the determinants consistently supported across countries are now limited. In terms of the signs of coefficients, we observe positive effects of local contents on joint ownership, negative effects of parents' experience on joint ownership, (these are similar to Probit), and negative effects of local procurement on parent firms' equity share, the last result support our theoretical prediction although signs are not significant.

As for capital intensity and degree of product substitution, the model suggest the positive effect of capital intensity and negative effect of product substitutability on equity share. However these are not consistently supported. We observe mixed effects across countries. It may be due to their little industry-level difference in the data we use.[53]

In all countries, the inverse mill's ratio has no significance. If it is significant, it means that we cannot ignore 100% owned-firms to discuss the relation between joint ownership and equity share. But in this case, we can confirm that "100% share" and "less than 100% share" are two distinct choice and the presence of fully integrated firms per se does not affect the choice of equity shares for joint-ownership.

Table 13 now shows the results of pooled sample. Insignificant inverse mills ratio, again, does not support the bias by the presence of fully-integrated affiliates. The new findings here is that now we observe statistically significant negative relation between local content ratio and equity share in overall results and in machinery sector. In the results for all the seven economies, we can present that 1% increase in other firms' local procurement activity leads to -0.21% decline in the contracted equity shares, (it becomes -0.25% for machinery sector.) In South countries affiliates, the estimation state -0.23% decline in equity shares, and -0.25% for machinery

[52]These are, for example, corporate law, accounting rules, taxes for central and local governments, which we cannot fully capture in detail as for now.

[53]In addition, the problem might arise from the fact that countries face wide difference in their factor endowment. Rauch and Casella (2003) state that the difference in factor endowment matters for the matching of right partners for joint ventures. But here, we are not considering this causality on matching quality.

sector. For non-machinery sector, instead, we find that the matching of parent industry and affiliate industry positively affect the joint ownership probability. For non-machinery sector, the relation with parent firms may matter more than the performance of local procurement. In other words, the factors that matter for local affiliates to acquire absorptive capacity is more through parent firms' firm-specific know-how, than through local procurement activity.

6. Conclusion

In this paper, we question why a foreign affiliate could either be a 100%-owned affiliate of a parent firm, or a jointly-owned affiliate, where parent and local investors participate as the owners. We also investigate, if an affiliate is jointly owned, what factors will drive owners to decide equity shares of their sides.

Though the attention about firm behavior in the literature is skewed toward the difference between "integration or outsourcing," we present the fact that the difference between "full-integration or joint-ownership" is also the issue. In our data, as many as 59% of the new entrants choose joint-ownership. When foreign and domestic stakeholders share profits, assets, and other intangible know-how as a single corporation, it may yield distinctively different productivity growth, local spillover effects compared to other corporate structures. Given these, this paper tries to gain insights for the forces driving multinational firms to decide their corporate structure.

Theoretically, we present the model where multinational firms (the main providers of capital) and potential local capital providers will face the common profit maximization problem as the co-owner of an affiliate. Unlike the comparison between integration and outsourcing, here we do not assume incomplete contracts, and risk of hold-up between a principal and an agent, since any local stakeholder, as an owner, will not have an incentive to cause inefficiency through shirking or underinvestment.

The issue in joint-ownership is that, both foreign side and local side are originally endowed with different set of knowledge. Specifically, multinational firms have advanced technology of R&D, and efficient product processing. In contrast, local sides have location-specific know-how or network over employment and procurement. Each will benefit from utilizing those within the firm boundary, although it incurs cost for one to adjust to the other. Therefore, we assume such joint-ownership successfully arises, if multinational firms' preference over other structures (i.e. full integration, or outsourcing) and local stakeholders' preference over the other structure (i.e. being franchisees or being independent) successfully match. The role of equity share here is that it defines the rights of residual claims for the capital investment (fixed asset), payoff allocation, and managerial controls.

We next test the pattern and determinants for "full-integration or joint-ownership" decision using establishment-level data. We select the affiliates with the following characteristics 1.) Export-platform type, which exports products to North market, 2.) Entrants between 1996 to 2002, using information at the year of entry, and 3.) Located in China, ASEAN, or NIES. Through this selection, we homogenize the affiliates' characteristics across countries, limit time-variant effects, and design the compatibility with our theoretical assumption.

We mainly state four features from our empirical analysis. First, joint-ownership is more likely to be chosen, when local procurement is more active at the industry where a new entity is programmed to enter. Secondly, at the event of joint-ownership, a higher local content ratio is associated with higher ratio of capital participation by local producers' side. Thirdly, when a multinational firm is experienced with an activity at the same country, then the firm will then likely to set up a fully-owned entity for the next. FDI experience at the third country, however does not have any significant influence, though. Then it implies that, location-specific know-how is the due bottleneck that would encourage joint-ownership instead of full-integration, and FDI experience in general would not be of much help in acquiring local information. Lastly, the comparison of machinery sector and non-machinery sector is noteworthy. We observe, in machinery sector, higher marginal effect of local procurement activity on the likelihood of joint-ownership than that of non-machinery sector. It implies that machinery-sector pays attention to local network, since acquiring thick suppliers' network is the key for their business.

In sum, a higher local absorptive capacity promotes joint-ownership especially in the sector with intensive use of intermediate inputs. But the positive effect may offset as foreign entrants acquire location-specific knowledge. Specifically, the local procurement may not effectively induce joint ownership for the second or after entry by a multinational firm.

These findings are consistent with the theoretical prediction, as long as we regard local backward linkage as the indicator of absorptive capacity of local producers, and as long as we regard parents' prior FDI experience as the acquisition of location-specific knowledge.

Given these findings, future empirical and theoretical investigation is targeted to the following issues. We first need to conduct further robustness check with new variables, additional countries, or additional estimation methods. Secondly, we are interested in the time-series transition of equity shares. if they ever change (including the shift of corporate structure), our objective is to check whether these movements are also motivated by the determinant we discussed, or not. As for the theory, the underlining assumptions and situations are still restrictive. For example, we assume completely cooperative actions between multinational firms and potential (ex-ante homogeneous) entrants. We also set aside the agency problem in outsourcing contracts, which will change the relative preference for integration. Lastly, we had better endogenize the location choice and corporate structure. Depending on the quality of contractual environment, which is different across country, the choice of corporate structure, as well as the choice of location do change. We need extensive theoretical and empirical consideration for this issue as our future research.

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6.1. **Appendix.**

6.2. **Matching condition with lump sum transfer.** Here, we consider the possibility that parent firm is willing to offer lump-sum transfer to induce a local producer to participate in the joint-ownership.

A MNE's plan is to compensate the amount what a local partner could achieve if she operates by herself. Therefore we define transfer as:

$$T = \theta A(\frac{r_a^{\beta}\omega^{(1-\beta)}}{\alpha})^{\frac{-\alpha}{1-\alpha}}[1 - \bar{p}\frac{r_a^{\beta}\omega^{(1-\beta)}}{\alpha}]$$

The amount of transfer is proportionally increasing with the expected absorptive capacity, but it is independent from any choice of equity shares. Once a local producer gets the transfer, now she will accept any equity share of $1 - \phi$ for her side, since the local producers' utility from joint production is larger than or equal to 0 for any value of ϕ.

$$(1-\phi)[\phi + (1-\phi)\theta(\frac{2-\phi}{2})]A(1-\alpha)(\frac{r_p^{\beta}\omega^{(1-\beta)}}{\alpha})^{\frac{-\alpha}{1-\alpha}} \geq 0 \text{ for } \forall\phi \in [0,1]$$

Therefore, the binding conditions now rest in MNE side. The Condition 1 (the choice of joint production or full integration) is now written as follows: (To simplify, we derive sufficient condition assuming $r_a \geq r_p$.

$$\phi[\phi + \theta(\frac{1-\phi^2}{2})](1-\alpha) - \theta[1 - \bar{p}\frac{r_a^{\beta}\omega^{(1-\beta)}}{\alpha}] > \frac{2-s}{2}(1-\alpha)$$

In Figure A.1, we show the new threshold line of this condition. We have a threshold shifting upward with a flatter space. So, it indicates, the lump-sum payment discourage a firm from choosing joint production compared to the full-integration, where no transfer is involved.

The Condition 2 (the choice of joint production or outsourcing contract) is now re-written as follows: (the sufficient condition assuming $r_a \geq r_p$

$$\begin{aligned}
\phi[\phi + \theta(\frac{1-\phi^2}{2})](1-\alpha) - \theta[1 - \bar{p}\frac{r_a^{\beta}\omega^{(1-\beta)}}{\alpha}] &> \theta[\bar{p}\frac{r_a^{\beta}\omega^{(1-\beta)}}{\alpha} - \alpha] \\
\phi[\phi + \theta(\frac{1-\phi^2}{2})](1-\alpha) - \theta(1-\alpha) &> 0 \\
\phi[\phi + \theta(\frac{1-\phi^2}{2})] - \theta &> 0
\end{aligned}$$

The threshold line showing this condition is also illustrated in Figure A.1, with upward sloping lines. The feasible range for joint production is now written in the upper left corner (low to middle absorptive capacity and high degree of MNE's equity share.) Now that MNEs could assign any equity shares, we could assume that MNE will choose maximum equity share It is almost close to 1, but leaves a fraction for a local producer, trying to induce her and her expertise on location-specific knowledge to save the MNE's adjustment cost to local market (denoted as s) in the model. So, assuming the strategy above, we can state, for large enough amount of adjustment cost, MNEs are choosing joint-ownership with high degree of equity share for his own. With small amount of adjustment cost, MNEs instead choose full-integration.

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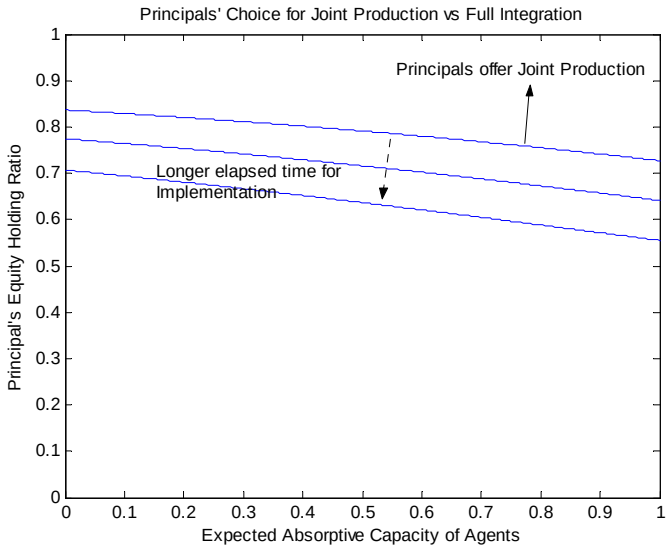

Figure 1. Principals: Joint Production v.s. Full

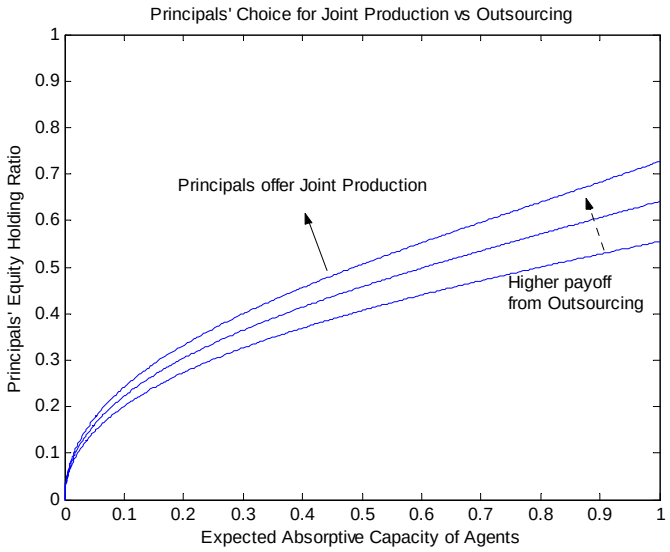

Figure 2. Principals: Joint ownership v.s. Outsourcing

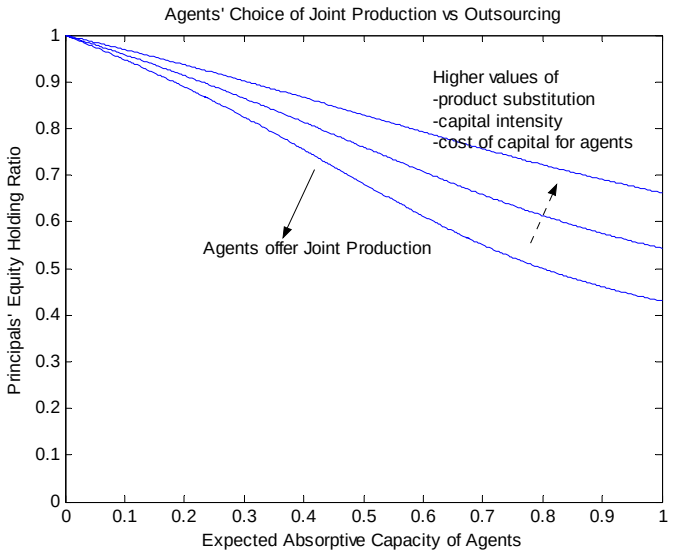

Figure 3. Agents: Joint Ownership v.s. Outsourcing

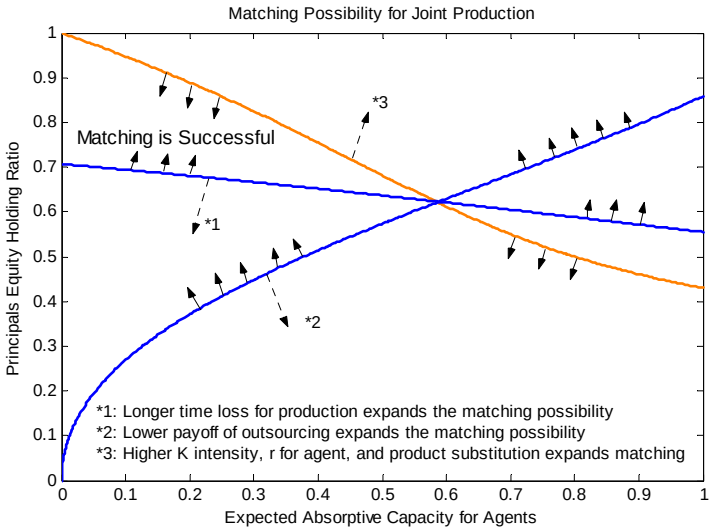

Figure 4. Matching Possibility for Joint Production

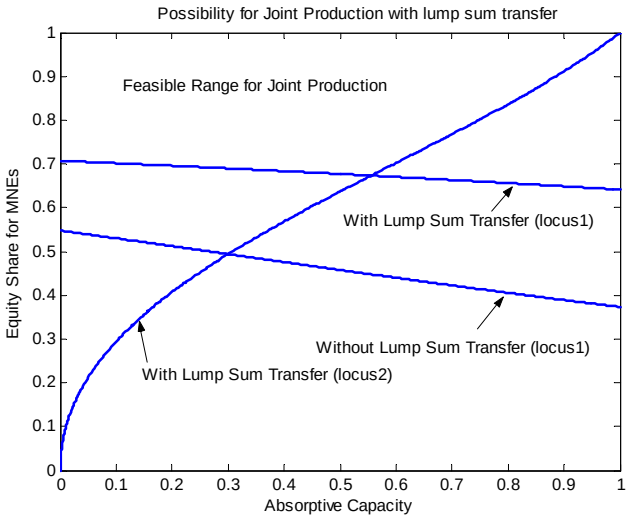

Figure A.1 Possibility for Joint Production with Transfer

Table 7. Japanese-owned Foreign Affiliates in China, ASEAN, NIES (Entrants from 1996-2002) : Statistics by Types of Operation

	Whole Entrants			Manufacturing			Exporter to North Market			Producers for Local Market		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Equity Shares by Japanese Firms	8636	0.735	0.282	5336	0.717	0.279	1370	0.816	0.243	1746	0.682	0.272
Corporate Stracture	8636	0.587	0.492	5336	0.641	0.480	1370	0.519	0.500	1746	0.704	0.457
Local Procurement of Other Affiliates	8484	0.375	0.245	5279	0.384	0.218	1370	0.379	0.214	1745	0.405	0.220
Capital Intensity	5311	0.285	0.090	4307	0.298	0.075	1096	0.314	0.071	1411	0.283	0.077
Parents' and Affiliates' Industry	8636	0.535	0.499	5336	0.558	0.497	1370	0.594	0.491	1746	0.607	0.489
Parent Firm's Corporate Structure	7025	0.269	0.444	4690	0.273	0.446	1173	0.290	0.454	1567	0.262	0.440
Parents' Preceding FDI in the Host Country	8625	0.109	0.311	5330	0.099	0.298	1368	0.091	0.288	1743	0.083	0.275
Parents' Preceding FDI Abroad (excl. Host)	8636	0.714	0.452	5336	0.649	0.477	1370	0.591	0.492	1746	0.613	0.487
Manufacturing of Machinery	8636	0.286	0.452	5336	0.463	0.499	1370	0.489	0.500	1746	0.502	0.500
Parent Firms' Years of Operation	7025	54.911	15.877	4690	54.459	15.714	1173	52.174	15.492	1567	54.280	15.456
Parent Firms' Number of Employees	7025	6394	12100	4690	6767	13033	1173	4898	9868	1567	5692	9862

*We difine "Entry of Japanese-owned Foreign Affiliates" as either "the start of operation of newly setup entities" or "10% or more equity participation by Japanese firms to existing entities"
*An affiliate's operation is classified as "Exporter to North Market" if its sales for "Export to Japan, North America, and EU" exceeds "Export to other countries + Local Sales".
*An affiliate's operation is classified as "Producer for Local Market" if its sales for "Domestic Market" exceeds "Export".

Table 8. Japanese-owned Foreign Affiliates as Export Platform for North (Japan, North America, and EU) Market: Statistics by Location

	China, ASEAN, and NIES			China, and ASEAN			NIES		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Equity Shares by Japanese Firms	1370	0.816	0.243	1004	0.791	0.246	366	0.886	0.219
Corporate Stracture	1370	0.519	0.500	1004	0.583	0.493	366	0.344	0.476
Local Procurement of Other Affiliates	1370	0.379	0.214	1004	0.395	0.211	366	0.335	0.217
Market Competition in the North Market	979	0.964	0.013	697	0.966	0.013	282	0.961	0.012
Capital Intensity	1096	0.314	0.071	804	0.316	0.075	292	0.309	0.061
Export to Japan/ Total Sales	1370	0.538	0.390	1004	0.600	0.378	366	0.368	0.370
Parents' and Affiliates' Industry	1370	0.594	0.491	1004	0.568	0.496	366	0.667	0.472
Parent Firm's Corporate Structure	1173	0.290	0.454	852	0.303	0.460	321	0.255	0.437
Parents' Preceding FDI in the Host Country	1368	0.091	0.288	1002	0.096	0.294	366	0.079	0.270
Parents' Preceding FDI Abroad (excl. Host)	1370	0.591	0.492	1004	0.597	0.491	366	0.577	0.495
Manufacturing of Machinery	1370	0.489	0.500	1004	0.443	0.497	366	0.615	0.487
Parent Firms' Years of Operation	1173	52.174	15.492	852	52.859	15.677	321	50.355	14.862
Parent Firms' Number of Employees	1173	4898	9868	852	5011	9910	321	4596	9764

Figure 5. Number of Entrants as Export Platforms (by Region and by Year)

Entry of Affiliates(by Year and by Location)

	1996	1997	1998	1999	2000	2001	2002
China	48	71	59	62	75	98	94
ASEAN (Thailand, Malaysia, and Indonesia)	42	55	62	67	79	89	103
NIES (Hong Kong, Singapore, and Taiwan)	65	65	42	46	46	38	64
Total of Seven Countries	155	191	163	175	200	225	261

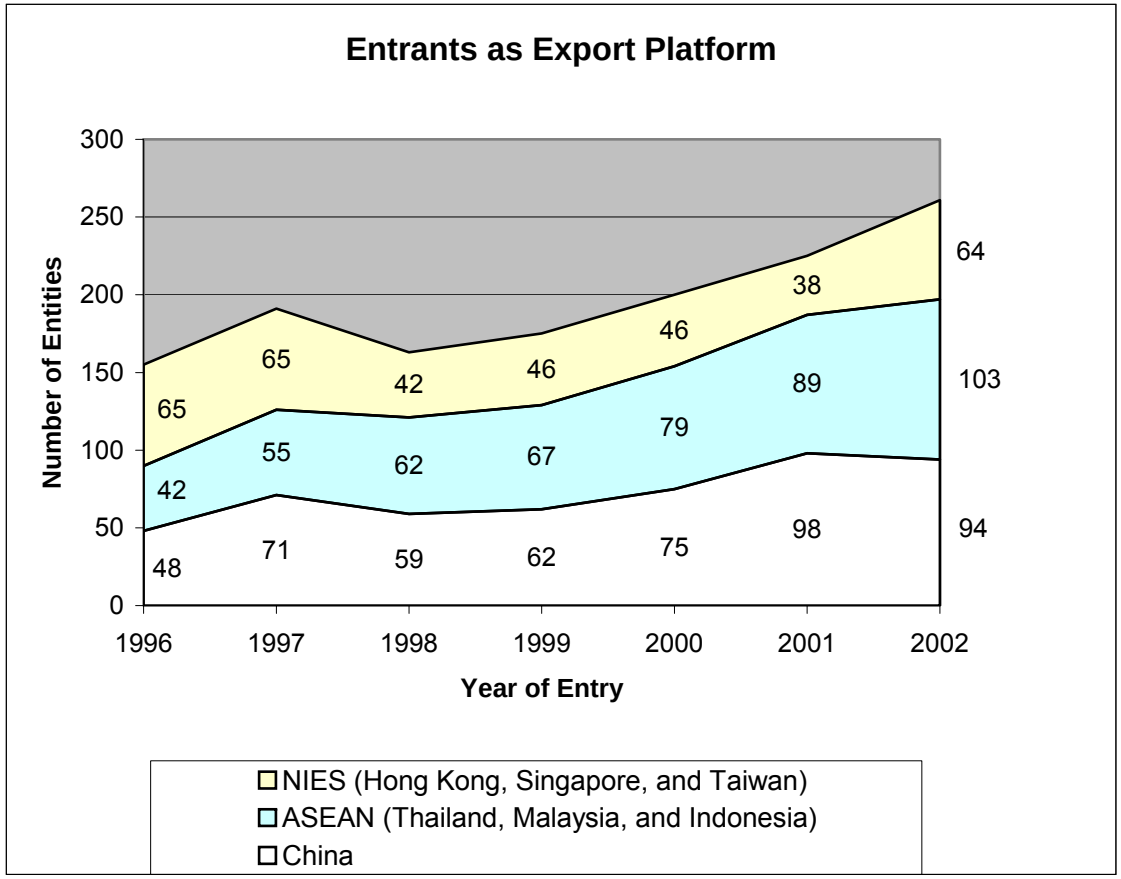

Table 8. Summary Statistics of Exporting Manufacturers (Entrants from 1996-2002) : By Country

	CHINA			THAILAND			MALAYSIA			INDONESIA		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Equity Shares by Japanese Firms	507	0.773	0.251	176	0.755	0.258	179	0.871	0.233	142	0.799	0.205
Corporate Stracture	507	0.596	0.491	176	0.659	0.475	179	0.358	0.481	142	0.725	0.448
Local Procurement of Other Affiliates	507	0.385	0.205	176	0.452	0.200	179	0.389	0.220	142	0.368	0.224
Market Competition in the North Market	345	0.966	0.014	118	0.966	0.012	127	0.962	0.012	107	0.969	0.014
Capital Intensity	417	0.333	0.076	127	0.298	0.074	138	0.312	0.052	122	0.282	0.074
Parents' and Affiliates' Industry	507	0.542	0.499	176	0.642	0.481	179	0.587	0.494	142	0.542	0.500
Parent Firm's Corporate Structure	406	0.264	0.441	147	0.327	0.471	157	0.344	0.477	142	0.345	0.477
Parents' Preceding FDI in the Host Country	507	0.093	0.290	175	0.040	0.197	179	0.089	0.286	141	0.184	0.389
Parents' Preceding FDI Abroad (excl. Host)	507	0.580	0.494	176	0.580	0.495	179	0.676	0.469	142	0.577	0.496
Manufacturing of Machinery	507	0.363	0.481	176	0.489	0.501	179	0.587	0.494	142	0.493	0.502
Distance from Tokyo		2098.1			4613.0			5329.1			5791.6	
Parent Firms' Years of Operation	406	51.754	14.897	147	52.776	16.842	157	52.841	14.513	142	56.127	17.462
Parent Firms' Number of Employees	406	4756.3	10154.7	147	4982.8	9605.1	157	4609.0	8782.7	142	6213.8	10669.5

	HONG KONG			SINGAPORE			TAIWAN		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Equity Shares by Japanese Firms	114	0.896	0.226	147	0.936	0.176	105	0.804	0.244
Corporate Stracture	114	0.263	0.442	147	0.238	0.427	105	0.581	0.496
Local Procurement of Other Affiliates	114	0.312	0.204	147	0.259	0.192	105	0.466	0.203
Market Competition in the North Market	91	0.963	0.011	114	0.960	0.012	77	0.959	0.014
Capital Intensity	97	0.319	0.066	114	0.298	0.055	81	0.311	0.060
Parents' and Affiliates' Industry	114	0.658	0.477	147	0.646	0.480	105	0.705	0.458
Parent Firm's Corporate Structure	99	0.232	0.424	132	0.295	0.458	90	0.222	0.418
Parents' Preceding FDI in the Host Country	114	0.123	0.330	147	0.075	0.264	105	0.038	0.192
Parents' Preceding FDI Abroad (excl. Host)	114	0.649	0.479	147	0.544	0.500	105	0.543	0.501
Manufacturing of Machinery	114	0.658	0.477	147	0.633	0.484	105	0.543	0.501
Distance from Tokyo		2891.2			5326.4			2103.0	
Parent Firms' Years of Operation	99	50.192	15.084	132	51.67	14.86	90	48.60	14.60
Parent Firms' Number of Employees	99	3031.3	6445.7	132	6734.6	11969.2	90	3180.3	8638.6

Table 9. Variables and Definitions

Variables	Definitions	Source
Dependent Variable		
Ownership (Equity Shareholding)	Principals' (i.e. Japanese Firms') equity share for a foreign affiliate. At the time of initial observation in the statistics	*(Basic) Survey on Overseas Business Activities* (1995-2002, Fiscal Years)
Corporate Structure	0=An entity is a 100% Japanese-owned Affiliate 1=An entity is a less than 100% Japanese-owned Affiliate [2=(for Ordered Probit) An entity is less than 50% Japanese-owned Affiliate (i.e. more than 50% locally-owned)]	*(Basic) Survey on Overseas Business Activities* (1995-2002, Fiscal Years)
Independent Variables		
Local Procurement of other affiliates in the same 2-digit industry, prior to the entry of the entity (denoted as θ)	Industry Level For each 2-digit industry, we compute; (total locally purchased materials_i)/(total material inputs_i) prior to the entry of the entity (year T-1). Use of local input indicates that local technology is adopted in producing final goods. A high dependence on local input implies that local technology can highly catch up with the technology level required in the North market.	*:(Basic) Survey on Overseas Business Activities* (1995-2002, Fiscal Years) *Basic (, or Intensive) survey is performed once in every three years (1995FY, 1998FY, 2001FY)
Capital Intensity of Products (denoted as β)	Computed by the firm-level data of value added, fixed assets (capital stock), calculated as real capital stock in industry i for Japanese firms. (1996-2002). The data is classified by 3-digit JSIC code. We apply these values to the capital intensity of exporting affiliates in China, Thailand, Malaysia, Indonesia, Hong Kong, Taiwan, and Singapore	*:Basic Survey of Business Structure and Activity* (1995-2002, Fiscal Years) :*NBER-CES Manufacturing Industry Database* by Bertelsman, Becker, and Gray (2001)
Product Substitutability (denoted as α)	Alpha=1/Markup. The markup is calculated as the average of Sales/(Sales Profit) over firms in the same 3-digit JSIC codes. High values of alpha (close to 1) suggests that markets are highly competitive (hence, products are more substitutable)	*Basic Survey of Business Structure and Activity* (1995-2002, Fiscal Years)
Parents' and Affiliates' Industry	1=A parent Japanese firm and its foreign affiliate is in the same 3-digit level classification of industry 0=A parent Japanese firm and its affiliate is in different industries	*(Basic) Survey on Overseas Business Activity* (1995-2002, Fiscal Years)
Parent Firms' Corporate Structure	1= The parent firm for the foreign affiliate is one of the subsidiary of another firm 0= The parent firm for the foreign affiliate has no other parent firms	*Basic Survey of Business Structure and Activity* (1995-2002, Fiscal Years)
FDI Experience of Parents (in year t-1) in the Host country	For each foreign affiliate, this variable is indicated as 1 if its primary Japanese investor was operating another foreign direct investment at the same host country in year t-1 (previous year). (i.e. the affiliate is the second (or later) affiliate in the host country for Home shareholders.	*(Basic) Survey on Overseas Business Activities* (1995-2002, Fiscal Years) *Basic Survey on Business Structure and Activity* (1995-2002, Fiscal Years)
FDI Experience of Parents (in year t-1) in other foreign countries	For each foreign affiliate, this variable is indicated as 1 if its primary Japanese investor was operating another foreign direct investment at the year t-1 (previous year). We assume that preceding experience in foreign direct investment will reduce the coordination (adjustment) cost to local business environment and convention.	*(Basic) Survey on Overseas Business Activities* (1996-2002, Fiscal Years) *Basic Survey of Business Structure and Activity* (1995-2002, Fiscal Years)
Manufacturer of Machinery	1= An affiliate is producing general machinery, electrical machinery, information and communication devices, transportation equipments, or precision instruments. 0= if otherwise	*(Basic) Survey on Overseas Business Activity* (1995-2002, Fiscal Years)
Parent Firms' Years of Operation	Year for the survey-Year of Establishment of Parent Japanese Firms	*(Basic) Survey on Overseas Business Activity* (1995-2002, Fiscal Years)
Parent Firms' Number of Employees	Number of total employees for parent firms	*(Basic) Survey on Overseas Business Activity* (1995-2002, Fiscal Years)

*Information of deflators, and exchange rates are used (GDP deflators, and exchange rates are taken from IFS (IMF), Price indices for Capital goods, Wage indices are taken from EIU (Economic Intelligence Unit)

*Geographical Distance between Tokyo and the most populated cities in Host countries are taken from CEPII

Figure 6. Distribution of Equity Share for Japanese Parent Firms

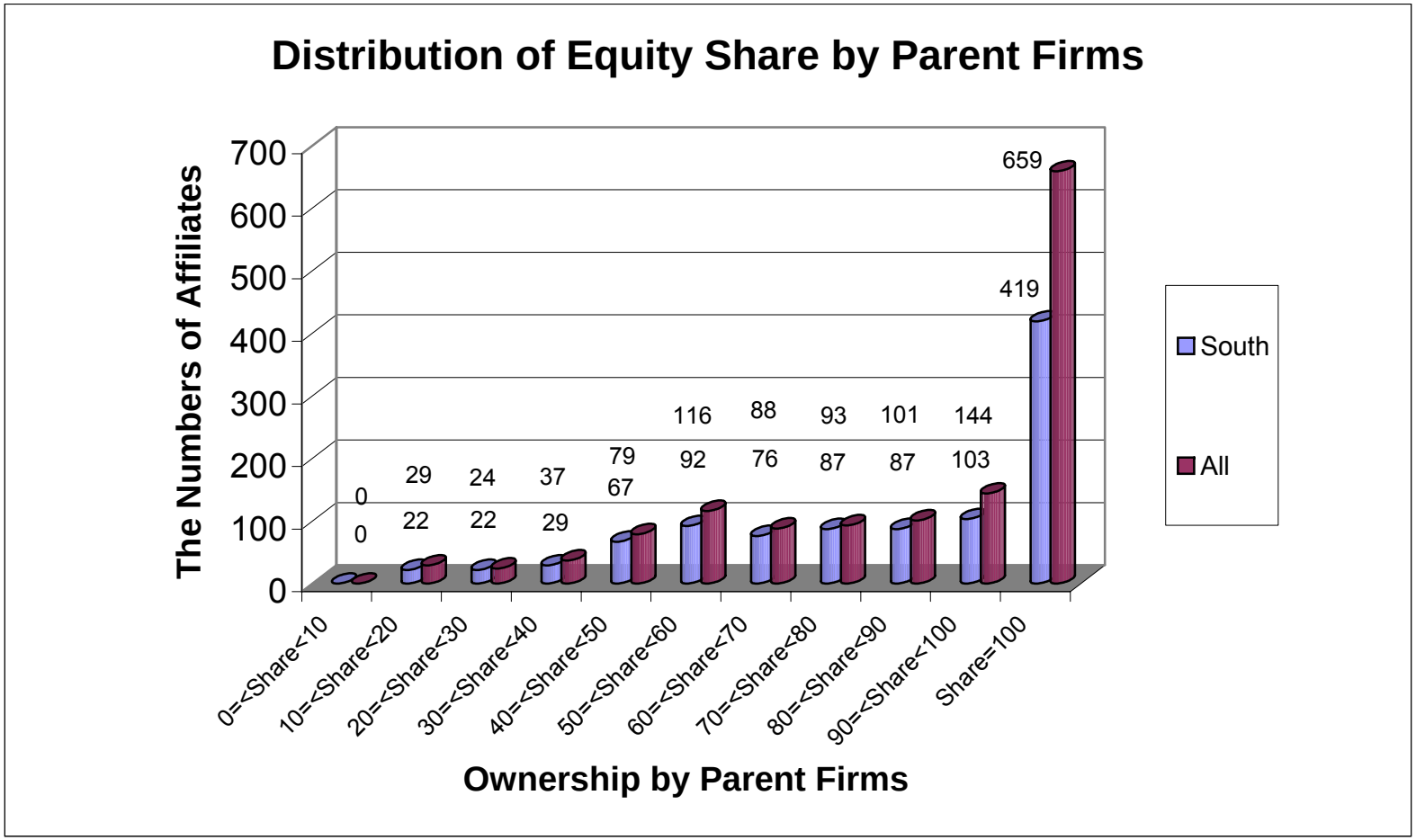

Table 10. Probit (Pooled Sample): Choice of Ownership

China+ASEAN+NIES

	(1)	(2)	(3)	(4)	(5)	(6)
Corporate Structure (1=Joint)	All		Machinery		Non-Machinery	
Local Content Ratio	0.785	1.332	1.523	1.767	0.517	1.377
(China as the benchmark)	(0.265)**	(0.376)**	(0.452)**	(0.552)**	(0.348)	(0.569)*
LC_Ratio*Thailand Dummy	0.284	-0.118	-0.372	-0.677	0.534	0.257
	(0.28)	(0.41)	(0.47)	(0.56)	(0.36)	(0.65)
LC_Ratio*Malaysia Dummy	-0.943	-1.534	-1.93	-2.193	-0.433	-0.907
	(0.301)**	(0.416)**	(0.483)**	(0.547)**	(0.40)	(0.72)
LC_Ratio*Indonesia Dummy	1.082	0.814	0.775	0.693	1.26	0.795
	(0.360)**	(0.47)	(0.67)	(0.74)	(0.432)**	(0.63)
LC_Ratio*Hong Kong Dummy	-1.719	-2.429	-2.412	-3.021	-1.423	-2.408
	(0.430)**	(0.547)**	(0.595)**	(0.697)**	(0.658)*	(0.934)**
LC_Ratio*Singapore Dummy	-1.821	-1.957	-2.348	-2.059	-1.585	-2.452
	(0.400)**	(0.523)**	(0.585)**	(0.674)**	(0.583)**	(0.897)**
LC_Ratio*Taiwan Dummy	-0.122	-0.511	-0.784	-1.128	0.067	-0.163
	(0.33)	(0.43)	(0.52)	(0.59)	(0.43)	(0.71)
Industry Matching	-0.071	-0.036	-0.081	-0.037	-0.045	0.093
	(0.09)	(0.11)	(0.12)	(0.14)	(0.13)	(0.20)
Prior FDI in the Host	-0.356	-0.414	-0.533	-0.59	-0.052	-0.039
	(0.134)**	(0.156)**	(0.169)**	(0.183)**	-0.242	-0.356
Parent Size	0.004	0.038	0.005	0.025	-0.01	0.074
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.06)
Product Substitutability		5.644		11.664		3.92
		(4.63)		(7.53)		(6.39)
Capital Intensity		-0.129		0.949		-1.163
		(0.98)		(1.60)		(1.39)
Constant	1.374	-10.919	0.397	-11.844	1.43	-9.601
	(0.71)	(4.639)*	(0.40)	(7.19)	(0.79)	0
Observations	1171	801	608	503	563	298
LR Chi2	190.99	147.69	96.18	79.96	64.33	48.56
Prob>Chi2	0	0	0	0	0	0.003

South Countries (China&ASEAN)

	(1)	(2)	(3)	(4)	(5)	(6)
Corporate Structure (1=Joint)	All		Machinery		Non-Machinery	
Local Content Ratio	0.413	0.689	0.933	1.05	0.211	0.826
(China as the benchmark)	(0.31)	(0.43)	(0.54)	(0.66)	(0.41)	(0.65)
LC_Ratio*Thailand Dummy	0.25	-0.167	-0.393	-0.685	0.483	0.123
	(0.28)	(0.41)	(0.47)	(0.57)	(0.36)	(0.65)
LC_Ratio*Malaysia Dummy	-1.066	-1.678	-2.105	-2.231	-0.534	-1.009
	(0.306)**	(0.424)**	(0.495)**	(0.561)**	(0.41)	(0.73)
LC_Ratio*Indonesia Dummy	1.029	0.718	0.531	0.512	1.284	0.892
	(0.358)**	(0.47)	(0.68)	(0.76)	(0.437)**	(0.64)
Industry Matching	-0.067	0	-0.02	0.056	-0.08	0.027
	(0.10)	(0.13)	(0.15)	(0.17)	(0.14)	(0.22)
Prior FDI in the Host	-0.503	-0.672	-0.776	-0.836	-0.057	-0.233
	(0.151)**	(0.180)**	(0.195)**	(0.211)**	(0.28)	(0.43)
Parent Size	0.019	0.073	0.038	0.082	-0.009	0.092
	(0.03)	(0.04)	(0.04)	(0.05)	(0.05)	(0.07)
Product Substitutability		-1.344		1.802		-0.222
		(5.43)		(9.14)		(7.37)
Capital Intensity		-1.989		-2.027		-1.388
		(1.23)		(2.12)		(1.67)
Constant	1.637	-3.081	-0.627	-1.96	1.707	-4.606
	(0.749)*	(5.41)	(0.51)	(8.83)	(0.832)*	0
Observations	850	563	400	331	450	232
LR Chi2	108.66	96.51	65.79	57.14	44.76	33.07
Prob>Chi2	0	0	0	0	0.001	0.06

Standard errors in parentheses

* significant at 5% level; ** significant at 1% level

* time dummies (7), industry dummies (12), are included

Table 10 (Continued) : Marginal Effect on Choice of Corporate Structure (By Probit)

China+ASEAN+NIES

	All	Machinery	Non-Machinery
Corporate Structure (1=Joint)			
Local Content Ratio	0.325	0.448	0.085
(China as the benchmark)	(0.078)**	(0.143)**	(0.10)
LC_Ratio*Thailand Dummy	0.117	-0.043	0.237
	(0.10)	(0.16)	(0.116)*
LC_Ratio*Malaysia Dummy	-0.43	-0.758	-0.141
	(0.099)**	(0.168)**	(0.12)
LC_Ratio*Indonesia Dummy	0.329	0.231	0.383
	(0.123)**	(0.24)	(0.137)**
LC_Ratio*Hong Kong Dummy	-0.862	-1.045	-0.487
	(0.156)**	(0.215)**	(0.226)*
LC_Ratio*Singapore Dummy	-0.802	-0.927	-0.613
	(0.147)**	(0.215)**	(0.195)**
LC_Ratio*Taiwan Dummy	-0.082	-0.191	0.029
	(0.11)	(0.18)	(0.14)
LR Chi2	116.88	63.48	37.69
Prob>Chi2	0	0	0
Observations	1370	670	700

South Countries (China&ASEAN)

	All	Machinery	Non-Machinery
Corporate Structure (1=Joint)			
Local Content Ratio	0.173	0.183	-0.002
(China as the benchmark)	(0.085)*	(0.17)	(0.10)
LC_Ratio*Thailand Dummy	0.124	-0.018	0.237
	(0.09)	(0.17)	(0.112)*
LC_Ratio*Malaysia Dummy	-0.414	-0.769	-0.125
	(0.097)**	(0.172)**	(0.12)
LC_Ratio*Indonesia Dummy	0.316	0.152	0.376
	(0.118)**	(0.24)	(0.131)**
LR Chi2	41.44	26.44	16.29
Prob>Chi2	0	0	0.002
Observations	1004	445	559

Table 11. Ordered Probit (Pooled Sample): Choice for Joint Ownership

China+ASEAN+NIES

	(1)	(2)	(3)	(4)	(5)	(6)
Corporate Structure	All		Machinery		Non-Machinery	
Local Content Ratio	0.706	1.2	1.548	1.678	0.326	1.153
(China as the benchmark)	(0.230)**	(0.310)**	(0.393)**	(0.472)**	(0.30)	(0.445)**
LC_Ratio*Thailand Dummy	0.474	0.12	-0.213	-0.362	0.758	0.473
	(0.238)*	(0.34)	(0.41)	(0.49)	(0.300)*	(0.51)
LC_Ratio*Malaysia Dummy	-0.74	-1.487	-1.767	-1.945	-0.167	-1.12
	(0.273)**	(0.377)**	(0.444)**	(0.496)**	(0.36)	(0.64)
LC_Ratio*Indonesia Dummy	0.207	-0.02	0.182	0.269	0.428	-0.065
	(0.27)	(0.36)	(0.58)	(0.64)	(0.32)	(0.46)
LC_Ratio*Hong Kong Dummy	-1.483	-2.233	-2.075	-2.688	-1.227	-2.097
	(0.400)**	(0.502)**	(0.545)**	(0.641)**	(0.614)*	(0.838)*
LC_Ratio*Singapore Dummy	-1.68	-1.651	-2.004	-1.547	-1.545	-2.247
	(0.376)**	(0.478)**	(0.543)**	(0.617)*	(0.552)**	(0.816)**
LC_Ratio*Taiwan Dummy	0.174	-0.126	-0.426	-0.605	0.35	0.002
	(0.29)	(0.37)	(0.47)	(0.52)	(0.37)	(0.55)
Industry Matching	-0.103	-0.042	-0.111	-0.04	-0.087	0.06
	(0.08)	(0.10)	(0.11)	(0.13)	(0.11)	(0.17)
Prior FDI in the Host	-0.371	-0.453	-0.535	-0.59	-0.148	-0.262
	(0.125)**	(0.146)**	(0.160)**	(0.173)**	(0.21)	(0.30)
Parent Size	-0.012	0.013	-0.002	0.018	-0.038	0.017
	-0.023	-0.028	-0.031	-0.035	-0.035	-0.05
Product Substitutability		4.001		11.587		1.464
		(3.97)		(6.93)		(5.25)
Capital Intensity		-0.036		0.163		-0.581
		(0.86)		(1.47)		(1.15)
Observations	1171	801	608	503	563	298
LR Chi2	187.95	138.8	93.4	73.95	67.86	50.31
Prob>Chi2	0	0	0	0	0	0.002

South (China&ASEAN)

	(1)	(2)	(3)	(4)	(5)	(6)
Corporate Structure	All		Machinery		Non-Machinery	
Local Content Ratio	0.42	0.76	1.309	1.316	0.001	0.769
(China as the benchmark)	(0.26)	(0.356)*	(0.466)**	(0.572)*	(0.34)	(0.50)
LC_Ratio*Thailand Dummy	0.471	0.068	-0.271	-0.438	0.769	0.398
	(0.240)*	(0.35)	(0.41)	(0.50)	(0.304)*	(0.52)
LC_Ratio*Malaysia Dummy	-0.869	-1.717	-2.066	-2.165	-0.209	-1.159
	(0.277)**	(0.386)**	(0.456)**	(0.514)**	(0.36)	(0.65)
LC_Ratio*Indonesia Dummy	0.208	-0.046	0.006	0.151	0.51	0.074
	(0.27)	(0.37)	(0.59)	(0.66)	(0.32)	(0.47)
Industry Matching	-0.139	-0.074	-0.084	-0.003	-0.186	-0.102
	(0.09)	(0.11)	(0.13)	(0.15)	(0.12)	(0.18)
Prior FDI in the Host	-0.51	-0.711	-0.781	-0.877	-0.194	-0.473
	(0.140)**	(0.169)**	(0.185)**	(0.201)**	(0.24)	(0.37)
Parent Size	-0.008	0.029	0.034	0.079	-0.063	-0.009
	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.06)
Product Substitutability		-1.122		2.629		-0.878
		(4.55)		(8.35)		(5.93)
Capital Intensity		-1.608		-2.544		-1.121
		(1.04)		(1.91)		(1.35)
Observations	850	563	400	331	450	232
LR Chi2	111.59	99.69	70.33	61.08	48.71	42.4
Prob>Chi2	0	0	0	0	0.0003	0.005

Standard errors in parentheses

* significant at 5% level; ** significant at 1% level

* time dummies (7), industry dummies (12), are included

Table 12. Heckman Two-Step (By Country)

	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
Equity Share	CHINA		THAILAND		MALAYSIA		INDONESIA		HONG KONG		SINGAPORE		TAIWAN	
Local Content Ratio	-0.051	-0.065	-0.709	-0.703	-0.115	-0.098	-0.039	-0.041	14.851	15.134	-0.29	-0.153	-0.383	-0.291
	(0.11)	(0.11)	(0.299)*	(0.296)*	(0.35)	(0.35)	(0.13)	(0.13)	(12.97)	(11.32)	(3.99)	(2.15)	(0.27)	(0.27)
Product Substitution	-2.562	-2.489	2.871	2.864	-2.361	-2.329	1.34	1.417	12.764	10.578	-8.174	-10.715	12.518	13.478
	(1.37)	(1.36)	(2.88)	(2.83)	(4.43)	(4.43)	(1.68)	(1.69)	(53.06)	(45.07)	(15.85)	(11.52)	(4.019)**	(4.348)**
Capital Intensity	-0.505	-0.539	0.064	0.073	-0.709	-0.698	0.9	0.915	-25.725	-26.578	1.934	-1.6	2.978	2.795
	(0.34)	(0.34)	(0.57)	(0.58)	(1.61)	(1.62)	(0.315)**	(0.317)**	(21.26)	(18.81)	(13.37)	(9.94)	(1.366)*	(1.402)*
Constant Term	2.975	3.122	-1.082	-1.115	2.888	2.845	-0.674	-0.742	-10.8	-8.749	11.027	12.909	-11.778	-12.615
	(1.345)*	(1.331)*	(2.79)	(2.74)	(4.38)	(4.39)	(1.61)	(1.61)	(51.48)	(43.79)	(15.61)	(11.25)	(3.966)**	(4.253)**
Corporate Structure (1= joint ownership, 0=100% Japanese-owned)														
Local Content Ratio	0.185	0.309	-0.746	-0.847	2.135	2.108	1.236	1.308	-1.223	-1.274	1.691	2.419	2.662	5.231
	(0.53)	(0.54)	(1.09)	(1.15)	(1.047)*	(1.065)*	(1.28)	(1.31)	(1.11)	(1.14)	(1.05)	(1.148)*	(1.81)	(2.85)
Size of Parent Firm	0.014	0.055	-0.122	-0.121	-0.059	-0.055	0.112	0.152	-0.11	-0.111	0.033	0.104	-0.18	-0.029
	(0.05)	(0.05)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.11)	(0.12)	(0.12)	(0.10)	(0.11)	(0.17)	(0.20)
Industry Matching		0.257		0.116		0.042		0.338		0.102		0.386		1.994
		(0.17)		(0.37)		(0.31)		(0.35)		(0.43)		(0.40)		(0.879)*
Prior FDI in the Host	-0.649	-0.663	-1.345	-1.32	-0.652	-0.653	-0.805	-0.854	-0.447	-0.464	0.507	0.461	3.158	5.241
	(0.244)**	(0.244)**	(0.72)	(0.73)	(0.59)	(0.59)	(0.383)*	(0.389)*	(0.55)	(0.56)	(0.57)	(0.59)	(1.345)*	(2.195)*
Prior FDI in the ROW		-0.228		0.039		-0.769		0.277		-0.038		-0.684		0.306
		(0.17)		(0.35)		(0.322)*		(0.35)		(0.38)		(0.334)*		(0.55)
mills:lambda	0.149	0.018	-0.203	-0.18	-0.011	0.007	0.035	0.046	-0.895	-0.763	-1.059	-0.728	0.049	0.146
	(0.14)	(0.11)	(0.21)	(0.21)	(0.18)	(0.18)	(0.11)	(0.10)	(1.64)	(1.28)	(2.07)	(0.63)	(0.20)	(0.15)
Observations	320	320	109	109	136	136	114	114	90	90	127	127	74	74
Wald Chi2	1692	1155.68	44.69	44.94	108.17	95.14	153.35	127.75	32.39	32.71	139.45	96.48	112.95	57.54
Prob>Chi2	0	0	0.1263	0.1458	0	0	0	0	0.2181	0.2465	0	0	0	0.0008

Standard errors in parentheses

* significant at 5% level; ** significant at 1% level

* time dummies (7), industry dummies (12), are included

Table 13. Heckman (Pooled Sample) Comparing Machinery and Non-Machinery

China+ASEAN+NIES

	(1)	(2)	(3)	(4)	(5)	(6)
Equity Share	All		Machinery		Non-Machinery	
Local Content Ratio	-0.222	-0.209	-0.252	-0.245	-0.181	-0.182
(China as the benchmark)	(0.07)	(0.074)**	(0.121)*	(0.123)*	(0.09)	(0.09)
LC_Ratio*Thailand Dummy	0.031	-0.026	0.05	0.017	-0.033	0.004
	(0.093)	(0.12)	(0.12)	(0.19)	(0.16)	(0.16)
LC_Ratio*Malaysia Dummy	0.106	0.258	0.064	0.223	0.356	0.24
	(0.146)	(0.101)*	(0.18)	(0.68)	(0.25)	(0.27)
LC_Ratio*Indonesia Dummy	0.377	0.186	0.353	0.195	0.259	0.325
	(0.142)	(0.081)**	(0.19)	(0.70)	(0.28)	(0.29)
LC_Ratio*Hong Kong Dummy	-0.329	-0.053	-0.318	-0.07	-0.249	-0.367
	(0.249)	(0.48)	(0.29)	(1.06)	(0.42)	(0.43)
LC_Ratio*Singapore Dummy	0.018	0.248	-0.147	0.05	0.402	0.189
	(0.206)	(0.41)	(0.23)	(0.85)	(0.47)	(0.51)
LC_Ratio*Taiwan Dummy	0.101	0.058	0.083	0.073	0.087	0.11
	(0.098)	(0.11)	(0.14)	(0.16)	(0.14)	(0.15)
Industry Matching	0.025	0.005	0.001	-0.006	0.022	0.073
	(0.031)	(0.05)	(0.03)	(0.05)	(0.10)	(0.11)
Product Substitution	-0.096	0.024	-1.008	-1.014	0.061	0.336
	(0.964)	(0.97)	(1.93)	(1.95)	(1.11)	(1.11)
Capital Intensity	-0.111	-0.102	0.932	0.937	-0.449	-0.326
	(0.217)	(0.22)	(0.22)	(0.414)*	(0.264)	(0.271)
Parent's' Size		0.005		-0.002		0.012
		(0.01)		(0.02)		(0.01)
Prior FDI in the Host		0.084		0.073		0.095
		(0.11)		(0.29)		(0.07)
Constant Term	0.657	0.82	1.404	1.621	0.745	0.016
	(0.975)	(1.05)	(1.86)	(2.02)	(1.26)	(1.30)
Corporate Structure	All		Machinery		Non-Machinery	
LC_Ratio*Thailand Dummy	0.361	0.361	0.258	0.258	0.515	0.515
	(0.304)	(0.31)	(0.43)	(0.43)	(0.45)	(0.45)
LC_Ratio*Malaysia Dummy	-0.886	-0.886	-1.144	-1.144	-0.691	-0.691
	(0.336)	(0.337)**	(0.436)**	(0.436)**	(0.54)	(0.54)
LC_Ratio*Indonesia Dummy	1.357	1.357	1.384	1.384	1.272	1.272
	(0.38)	(0.381)**	(0.661)*	(0.661)*	(0.477)**	(0.477)**
LC_Ratio*Hong Kong Dummy	-1.538	-1.539	-1.749	-1.749	-1.133	-1.133
	(0.498)	(0.498)**	(0.611)**	(0.611)**	-0.863	-0.863
LC_Ratio*Singapore Dummy	-1.301	-1.346	-1.346	-1.664	-1.664	
	(0.435)	(0.435)**	(0.560)*	(0.560)*	(0.760)*	(0.760)*
LC_Ratio*Taiwan Dummy	0.268	0.093	0.093	0.406	0.406	
	(0.327)	(0.33)	(0.47)	(0.47)	(0.47)	(0.47)
Industry Matching	0.183	0.183	0.066	0.066	0.419	0.419
	(0.097)	(0.10)	(0.10)	(0.13)	(0.13)	(0.156)**
Prior FDI in the Host	-0.376	-0.376	-0.511	-0.511	-0.057	-0.057
	(0.144)	(0.142)*	(0.145)**	(0.173)**	(0.173)**	(0.287)
Parent Size	0.022	0.023	0.031	0.031	0.015	0.015
	(0.028)	(0.03)	(0.03)	(0.04)	(0.04)	(0.05)
mills:lambda	0.157	-0.083	0.06	-0.13	0.012	0.162
	(0.158)	(0.18)	(0.40)	(0.14)	(0.81)	(0.39)
Observations	970	970	565	565	405	405
Wald Chi2	91.5	106.29	32.55	42.86	93.39	95.02
Prob>Chi2	0.0001	0	0.342	0.141	0	0

South (China&ASEAN)

	(1)	(2)	(3)	(4)	(5)	(6)
Equity Share	All		Machinery		Non-Machinery	
Local Content Ratio	-0.229	-0.208	-0.251	-0.255	-0.141	-0.153
(China as the benchmark)	(0.081)**	(0.101)*	(0.128)*	(0.35)	(0.10)	(0.10)
LC_Ratio*Thailand Dummy	-0.004	-0.001	-0.004	-0.099	-0.069	-0.033
	(0.07)	(0.12)	(0.11)	(0.46)	(0.13)	(0.11)
LC_Ratio*Malaysia Dummy	0.201	-0.177	0.03	-0.846	0.518	0.257
	(0.095)*	(0.59)	(0.16)	(2.55)	(0.31)	(0.32)
LC_Ratio*Indonesia Dummy	0.268	0.472	0.273	0.598	0.091	0.211
	(0.075)**	(0.37)	(0.15)	(1.08)	(0.25)	(0.23)
Industry Matching	0.033	0.079	0.02	0.086	-0.02	0.075
	(0.03)	(0.10)	(0.03)	(0.23)	(0.10)	(0.10)
Product Substitution	-0.729	-0.796	-2.588	-2.681	-0.559	-0.061
	(0.98)	(1.31)	(1.97)	(5.23)	(1.18)	(1.15)
Capital Intensity	-0.051	-0.027	0.546	0.5	-0.255	-0.038
	(0.23)	(0.30)	(0.43)	(1.09)	(0.28)	(0.28)
Parent's' Size		0.017		0.032		0.017
		(0.02)		(0.11)		(0.01)
Prior FDI in the Host		-0.08		-0.396		0.146
		(0.24)		(1.12)		(0.08)
Constant Term	1.13	0.784	2.921	2.036	1.335	0.266
	(1.02)	(1.52)	(1.90)	(5.63)	(1.31)	(1.36)
Corporate Structure	All		Machinery		Non-Machinery	
LC_Ratio*Thailand Dummy	0.032	0.033	-0.219	-0.255	0.248	0.248
	(0.314)	(0.314)	(0.446)	(0.346)	(0.46)	(0.46)
LC_Ratio*Malaysia Dummy	-1.326	-1.326	-1.716	-0.098	-1.011	-1.011
	(0.35)	(0.35)	(0.458)	(0.457)	(0.552)	(0.552)
LC_Ratio*Indonesia Dummy	1.065	1.065	0.809	-0.846	1.072	1.072
	(0.386)	(0.386)	(0.689)	(2.547)	(0.486)	(0.485)
Industry Matching	0.212	0.226	0.154	0.154	0.437	0.437
	(0.11)	(0.114)*	(0.16)	(0.16)	(0.173)*	(0.173)*
Prior FDI in the Host	-0.479	-0.587	-0.809	-0.809	-0.054	-0.054
	(0.162)**	(0.167)**	(0.203)**	(0.203)**	(0.33)	(0.33)
Parent Size	0.058	0.052	0.076	0.076	0.037	0.037
	(0.03)	(0.03)	(0.05)	(0.05)	(0.06)	(0.06)
mills:lambda	0.138	0.398	0.074	0.793	-0.251	0.037
	(0.12)	(0.60)	(0.09)	(2.06)	(0.38)	(0.39)
Observations	679	679	365	365	314	314
Wald Chi2	82.27	75.09	37.62	32.48	75.43	93.6
Prob>Chi2	0.0003	0.0057	0.1058	0.3937	0.0001	0

Standard errors in parentheses

* significant at 5% level; ** significant at 1% level

* time dummies (7), industry dummies (12), are included

Table A.1 Correlation Matrix

All Export Platforms

	Share	LC	Comp.	Capital	Match	Parent	Pre_H	PreFDI	Mech	Age	Size		ORG
(Obs.=801)													
EquityShare	1											Organization	1
Local Content	-0.152	1										Local Content	0.129
Competition	-0.021	-0.016	1									Competition	0.057
K intensity	-0.004	0.125	-0.066	1								K intensity	-0.043
Matching	-0.025	0.035	-0.105	0.082	1							Matching	0.012
Parent Corp.	0.004	-0.037	0.099	-0.084	-0.096	1						Parent Corp.	-0.017
Prior FDI (H)	0.128	-0.073	0.005	-0.041	-0.076	-0.010	1					Prior FDI (H)	-0.117
Prior FDI (ROW)	0.039	0.015	0.041	-0.063	-0.112	0.257	0.020	1				Prior FDI (ROW)	-0.051
Machinery	0.195	-0.193	0.091	-0.183	-0.076	-0.057	0.140	0.012	1			Machinery	-0.223
Parents' Age	-0.074	0.047	0.054	-0.065	-0.220	-0.042	-0.012	0.158	-0.128	1		Parents' Age	0.075
Parent's' Size	0.023	-0.047	0.107	-0.039	-0.312	-0.059	0.059	0.152	0.220	0.270	1	Parent's' Size	0.008

Export Platforms in China and ASEAN

	Share	LC	Comp.	Capital	Match	Parent	Pre_H	PreFDI	Mech	Age	Size		ORG
(Obs.=563)													
EquityShare	1											Organization	1
Local Content	-0.121	1										Local Content	0.081
Competition	-0.003	-0.005	1									Competition	0.029
K intensity	0.009	0.031	-0.112	1								K intensity	-0.070
Matching	-0.023	0.032	-0.082	0.067	1							Matching	0.017
Parent Corp.	0.059	-0.003	0.135	-0.088	-0.063	1						Parent Corp.	-0.070
Prior FDI (H)	0.179	-0.089	-0.014	-0.063	-0.071	-0.009	1					Prior FDI (H)	-0.179
Prior FDI (ROW)	0.053	0.038	0.041	-0.080	-0.147	0.283	0.028	1				Prior FDI (ROW)	-0.042
Machinery	0.188	-0.217	0.016	-0.244	-0.062	-0.046	0.184	0.008	1			Machinery	-0.199
Parents' Age	-0.086	0.082	0.062	-0.104	-0.257	-0.067	-0.030	0.149	-0.098	1		Parents' Age	0.075
Parent's' Size	0.008	-0.024	0.083	-0.036	-0.301	-0.104	0.056	0.149	0.256	0.270	1	Parent's' Size	0.025

Export Platforms in NIES

	Share	LC	Comp.	Capital	Match	Parent	Pre_H	PreFDI	Mech	Age	Size		ORG
(Obs.=283)													
EquityShare	1											Organization	1
Local Content	-0.190	1										Local Content	0.189
Competition	0.023	-0.082	1									Competition	-0.001
K intensity	-0.018	0.347	0.047	1								K intensity	0.001
Matching	-0.086	0.067	-0.117	0.145	1							Matching	0.086
Parent Corp.	-0.092	-0.128	-0.041	-0.088	-0.161	1						Parent Corp.	0.053
Prior FDI (H)	0.027	-0.057	0.018	0.021	-0.063	-0.038	1					Prior FDI (H)	-0.008
Prior FDI (ROW)	0.014	-0.033	0.037	-0.018	-0.020	0.191	-0.007	1				Prior FDI (ROW)	-0.089
Machinery	0.155	-0.122	0.397	0.014	-0.169	-0.053	0.044	0.028	1			Machinery	-0.207
Parents' Age	0.000	-0.050	-0.018	0.043	-0.090	0.004	0.020	0.180	-0.179	1		Parents' Age	0.014
Parent's' Size	0.076	-0.103	0.161	-0.052	-0.339	0.049	0.063	0.159	0.143	0.267	1	Parent's' Size	-0.056