第 2 章

東アジアにおける日系多国籍企業の立地選択：県レベルの分析

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要約：（300 字程度）

本論文では、日系多国籍企業による、東アジアにおける立地選択を分析する。分析は県レベルで行われ、入れ子型ロジットモデルが用いられる。分析の結果、以下のことが明らかとなった。まず、立地国を決める際に、WTO に加盟しているか否かが決定的に重要な要素となる。次に、ASEAN 先行国（タイ、マレーシア、フィリピン、インドネシア）は、立地先として中国と代替関係にある。これらの結果、中国が WTO に加盟したのち、日本の多国籍企業の多くは、ASEAN 先行国ではなく、中国に立地するようになった。最後に、CLMV 諸国は立地先として中国と代替関係にない。したがって、中国が WTO 加盟した後も、ベトナムを中心に、依然として日本からの投資を集めている。

キーワード：立地選択、多国籍企業、入れ子型ロジットモデル

Location Choice of Japanese Multinational Enterprises in East Asia: Evidence from Province-level Analysis

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Abstract: This paper investigated the location choice of Japanese multinational enterprises in East Asian countries at the province-level by estimating the nested-logit model. The study findings can be summarized as follows. A crucial element for attracting Japanese foreign direct investment (FDI) is WTO membership. Therefore, after China joined the WTO, Japanese FDI shifted intensively to China and away from the ASEAN forerunner recipients because the former is substitutable for the latter in terms of investment destination. The argument for this substitutability is based on the result that the best tree structure of the nested-logit model used in this study indicates that the ASEAN recipients and China share the same upper-level tree. However, since the CLMV countries are in a different group from China as an investment destination, these countries, particularly Vietnam, still attract a lot of Japanese FDI even after China's joining the WTO.

***Keywords*:** Location Choice, Multinational Firms, Nested-logit Model

***JEL Classification*:** F15; F23

1. Introduction

Since China's emergence as an economic power, other developing countries have come to feel threatened by the concentration of multinational enterprises (MNEs) in that country. China has attracted a vast amount of foreign direct investment (FDI). Since 1979 the country has attracted foreign firms as part of its export promotion policy. The increase in inward FDI has been outstanding since 1990, the impetus expanding particularly rapidly after Xiao-Ping Deng's "Southern Tour Speech" in 1992. Furthermore, the rate of increase seems to have been steadily greater since the country joined the WTO. As a result, in 2008, according to FDISTAT (UNCTAD), China's inward FDI stock was ranked first among developing countries (tenth in the world). Because of the large inward FDI into China, policy makers in developing countries, particularly ASEAN countries, worry about the decrease of inward FDI into their countries as they are increasingly replacing by China as an FDI destination. In short, China is now perceived as the potential absorber of the world's FDI to developing countries.

There are a large number of academic studies that have investigated the kinds of countries that MNEs locate in.[1] This is the well-known location-choice analysis. In this literature there are two topics. The first, to which this paper belongs, examines various location factors such as the agglomeration of firms belonging to the same firm-group (e.g., Belderbos and Carree, 2002) or investments climate-related elements (free trade zones in the US: Head, et al., 1999; special economic zones and the opening of coastal cities in China: Belderbos and Carree, 2002; Objective 1 structural funds and cohesion funds in Europe: Basile, et al., 2008). The second topic explores the substitution of location by examining inclusive values in the nested-logit model: Basile, Castellani, and Zanfei [2009]; Disdier and Mayer [2004]; Mayer, et al. [2010]. For instance, Disdier and Mayer [2004] investigated whether French multinational firms consider Western Europe and Eastern Europe as two distinct groups of potential host countries by examining the coefficient for the inclusive value in nested-logit estimation. They confirmed the differentiation between Eastern and Western Europe in the country location decision and furthermore showed that this relevance decreases.

The purpose of this paper is to investigate the location choice of Japanese MNEs in East Asian developing countries at the subnational-level. The countries examined are China, Cambodia, Laos, Myanmar, Vietnam, the Philippines, Thailand, Malaysia, and Indonesia. The analysis is at the province level though it is not exactly the province in some countries. There seem to be relevant differences not only across countries but also across provinces within a country, particularly in the countries examined

[1] The recent references are as follows: Head, Ries, and Swenson [1999] for Japanese MNEs in the US; Belderbos and Carree [2002] for Japanese MNEs in China; Head and Mayer [2004] for Japanese MNEs in Europe; Disdier and Mayer [2004] for French MNEs in Europe; Castellani and Zanfei [2004] for large MNEs in the world; Mayer, Mejean, and Nefussi [2010] for French MNEs in the world; Crozet, Mayer, and Mucchielli [2004] for MNEs in France; and Basile, Castellani, and Zanfei [2008] for MNEs in Europe.

here which have widely different levels of economic development. For example, the target provinces of China's open-door policy have been concentrated in the coastal regions, and thus there may be qualitative differences in policy treatment between coastal and non-coastal regions. In order to cope with such subnational-level differences, the province has been chosen as the analytical unit for modeling in this study.

Two kinds of analyses will be conducted in this study. First, by examining MNE location choice using the nested-logit model, which as pointed out above is the second of the two topics in the location-choice literature, the study will look for the appropriate nested structure of Japanese MNE location choice in East Asian countries, i.e., their substitution patterns among those countries. For example, it will investigate empirically whether Japanese MNEs consider China and ASEAN countries as two distinct groups of potential host countries by examining the inclusive value parameters in the nested-logit estimation. This analysis is expected to offer some insights into the above-mentioned policy makers' concerns of whether or not China is a substitute or complement to ASEAN countries for foreign investors. Second, the paper sheds some light on the role of firm characteristics in determining location choice. More specifically, it examines how firms are different across groups in the nested structure. For example, it will clarify how investors going into China are different from those going into ASEAN countries. This analysis will depict in more detailed the pattern of MNE location in East Asian developing countries.

This paper makes two notable contributions to the literature. First, the analysis of the nesting structure clearly belongs to the above-mentioned second topic of the literature. Contrary to the existing studies on the topic, the sample host countries in this paper consist of developing countries with widely different economic development. For example, in Disdier and Mayer [2004], the poorest host country studied was Bulgaria which with a GDP per capita of US$3,513 in 2005 would be a middle income country between the richest and second richest host countries in this paper, Malaysia (US$5,329) and Thailand (US$2,797). The poorest countries in this study are Cambodia and Laos with per capita incomes of less than US$500. Thus, for investors from Japan, which has an income of US$35,603 per capita, FDI in such host countries would be motivated mainly by their cheap labor (World Development Indicator). In other words, in contrast to the existing studies, this paper seeks to investigate the nesting structure of cheap labor-seeking FDI rather than that of market-seeking FDI. In this sense, the empirical results of this study will add to the literature new insights on the nesting structure of FDI.

The second contribution lies in the analysis of firm characteristics in cross-country location choice. This study investigates the role of firm characteristics in location choice across countries. Specifically, it clarifies whether or not the listed companies, which are mostly large and productive firms, are more likely to invest in ASEAN than in China, compared with unlisted companies. In this sense, the present study is related to Mayer et al. [2010], which investigates the location choice of French firms from 1992 to 2002

and finds that the more productive firms are more likely to locate their plants abroad than within France. This is consistent with the theoretical proposition of Helpman et al. [2004] that investing abroad requires firms to incur more expensive fixed entry costs, therefore only productive firms can invest abroad. Unlike Mayer et al. [2010], however, this study examines the role of firm characteristics in the location choice among groups of countries, rather than that between home and abroad, although this study's proxy for firms productivity is not the sophisticated measure. Since fixed entry costs clearly differ not only between home and abroad but also across countries, there will be some differences in the role of firm characteristics in location choice across countries. An examination of this sort will be the first in the context of cheap labor-seeking FDI.

The rest of this paper is organized as follows. Section 2 presents the empirical model to examine firm location choice. Section 3 takes a brief look at the distribution of MNEs in CLMV countries. The estimation results are reported in Section 4. The study's conclusions are set forth in Section 5.

2. Empirical Framework

This section presents the nested-logit model used here to examine Japanese MNE location choice among East Asian developing countries during the period 1996-2006. It will then introduce the location variables.

2.1. Nested-logit Model

In order to examine the location characteristics that matter in MNE subnational-level (i.e. province-level) location choice in East Asian developing countries, this study employs the nested-logit model. For firm n faced with J choices (province), suppose that a random profit indicator for province j is:

$$\pi_{nj} = V(\boldsymbol{x}_j, \boldsymbol{s}_n) + \epsilon(\boldsymbol{x}_j, \boldsymbol{s}_n),$$

where V is the nonstochastic representative profit of the population, and ε varies randomly in the firm's attributes with the jth choice set that is characterized by observable vector $\boldsymbol{x}_j$. $\boldsymbol{s}_n$ is a vector of measured attributes of the nth firm. A set of J choices is denoted by G.

The probability P_{ni} that a firm drawn randomly from the population with attributes $\boldsymbol{s}_n$ and facing alternative set $\boldsymbol{B} \equiv \{\boldsymbol{x}_1, \boldsymbol{x}_2, \ldots, \boldsymbol{x}_J\}$ will choose $\boldsymbol{x}_i$ is

$$\begin{aligned} P_{ni} &\equiv P(\boldsymbol{x}_i | \boldsymbol{s}_n, \boldsymbol{B}) \\ &= P(\pi_{ni} > \pi_{nj}, \forall j \neq i) \\ &= P\left(\epsilon(\boldsymbol{x}_j, \boldsymbol{s}_n) < \epsilon(\boldsymbol{x}_i, \boldsymbol{s}_n) + V(\boldsymbol{x}_i, \boldsymbol{s}_n) - V(\boldsymbol{x}_j, \boldsymbol{s}_n), \forall j \neq i\right). \end{aligned}$$

McFadden [1973] has shown that if and only if the J disturbances are independent and identically distributed with type I extreme value distribution, then

$$P_{ni} = \frac{e^{V(x_i, s_n)}}{\sum_{j \in C} e^{V(x_j, s_n)}}.$$

This is called the conditional logit model.

It is well-known that in the conditional logit model (or the multinomial logit model), the odds ratio, P_{ni}/P_{nj}, does not depend on the other choices. This property is called "independence from irrelevant alternatives (IIA)" and can be demonstrated as:

$$\frac{P_{ni}}{P_{nj}} = \frac{e^{V(x_i, s_n)}}{e^{V(x_j, s_n)}} = e^{V_i - V_j},$$

where $V_i \equiv V(\boldsymbol{x}_i, \boldsymbol{s}_n)$. The IIA comes from the assumption that the disturbances are independent and homoscedastic, which may be too restrictive.

The model to relax the IIA assumption is the nested-logit model, which might be called the generalized extreme value (GEV) model. Here we consider a two-level nested-logit model. Let set G be partitioned into some subsets. For GEV, the marginal distribution of each ε follows a univariate extreme value function, but all ε with each subset are correlated with each other. The nonstochastic representative profit is decomposed into two parts (a part that is constant for all alternatives within a subset and a part that is not constant within subsets):

$$V_{gm} = \lambda_g V_g + \lambda_m V_{m|g}, \quad m \in M_g, g \in G.$$

n is dropped for brevity. M_g is a set that consists of the choices within subset g. V_g is the mean of V_{gm} over all alternatives in subset M_g. $V_{m|g}$ is the deviation of V_{gm} from V_g. λ_g and λ_m are scale parameters.

Similarly, the probability is also decomposed as:

$$P_{gm} = P_g \cdot P_{m|g}.$$

While P_g represents the marginal probability of choosing an alternative in g, $P_{m|g}$ indicates the conditional probability of choosing alternative m given that an alternative in the subset g is chosen. As a result, the probability can be derived as:

$$P_{gm} = \frac{\exp\left(\lambda_g V_g + \frac{\lambda_g}{\lambda_m} I_g\right)}{\sum_{g' \in G} \exp\left(\lambda_{g'} V_{g'} + \frac{\lambda_{g'}}{\lambda_{m'}} I_{g'}\right)} \cdot \frac{\exp(\lambda_m V_{m|g})}{\sum_{m' \in M_g} \exp(\lambda_{m'} V_{m'|g})},$$

where

$$I_g \equiv \ln \sum_{m' \in M_g} \exp(\lambda_{m'} V_{m'|g}).$$

I_g is called the inclusive value for gth subset and allows the model to incorporate some degree of heteroscedasticity. Only within each subset does the IIA restriction continue to hold.

There are three noteworthy points. First, the sufficient condition for global consistency with the random utility model (RUM) is that the inclusive value parameter (IV parameter or dissimilarity

parameter), which is defined as λ_g/λ_m, lie between 0 and 1.[2] The second is the similarity within a subset. We can show that:

$$\mathrm{corr}(V_{m_1|g}, V_{m_2|g}) = 1 - \left(\frac{\lambda_g}{\lambda_m}\right)^2.$$

This relationship implies that, the closer to unity the IV parameter, the lower the correlation in expected profits between choices within a subset. In other words, the IV parameter closer to zero indicates that firms regard alternatives within a subset are more similar than alternatives between different subsets. Third, it is well-known that the restriction λ_g/λ_m =1 recovers the above-introduced conditional logit model. Last, for estimation, λ_g is normalized to one.

2.2. Location Elements

The profit function (V) is specified as follows. Whatever model assumed, such as the new economic geography model, the profit function includes demand size, primary production factor prices, the prices of intermediate goods, transaction costs with other provinces, and fixed entry costs as location factors ($\boldsymbol{x}_j$).[3] While this study simply uses the Gross Domestic Regional Product (GRDP) per capita in each province as a proxy for production factor prices, the market size is captured by introducing GRDP. Other things being equal, lower wages lead to lower production costs, cheaper product prices, and a larger supply of products. As a result, since firms in provinces with lower wages obtain higher total profit, they are more likely to choose to locate in provinces with lower wages. Also, firms in provinces with larger markets can supply their products to a larger number of consumers at low transport costs and thus obtain higher profit. As usual, data on the price index for intermediate goods are unavailable. This paper uses the variable reflecting the magnitude of agglomeration as a proxy. Since from the theoretical point of view the price index for intermediate goods is low in the provinces with such large agglomeration, this proxy seems to be plausible. This paper specifically introduces the number of Japanese affiliates because Japanese MNEs procure a significant share of inputs from other Japanese MNEs. These three variables are constructed at the sub-national level.

The proxy variables for trade costs and fixed entry costs are as follows. Three kinds of variables are used as a proxy for trade costs: WTO, Distance from Japan, and FTA. WTO is a dummy-variable-taking unit if a province belongs to a WTO member country and zero otherwise. Also, the FTA dummy variable takes unity if the country to which a province belongs has concluded a free-trade agreement with Japan and zero otherwise. While joining the WTO reduces the host country's general tariff rates to the world, the conclusion of an FTA with Japan reduces the tariff rates between Japan and the host country mutually. These kinds of trade liberalization should attract more Japanese

[2] For simplicity, this paper assumes the common IV parameters among nests.
[3] See Head et al. [1999] or Head and Mayer [2004] for more details.

firms. On the other hand, a variable of distance from Japan is constructed on a sub-national basis. This variable is expected to capture the trade costs of intermediate goods from Japan to host province and those of finished goods from host province to Japan. A BIT dummy variable is introduced here as a proxy for fixed entry costs, which takes unity if the host country concludes on bilateral investment treaty with Japan and zero otherwise. A treaty conclusion improves the investment environment in the host country, resulting in an increase of Japanese FDI into that country. This variable for fixed entry costs is constructed at the country level.

However, it is clear that variables used here are also related with other economic variables. First, geographical distance from Japan is also partly associated with information costs between MNEs' headquarters and their overseas plant. That is, the shorter the geographical distance between them the lower the fixed entry costs because there is more knowledge and less uncertainty about the host economy and more frequent information exchange between home and overseas plants. Second, the conclusion of an FTA reduces not only trade costs but also fixed entry costs in the partner country because it usually includes the request for investment climate improvement. Third, GRDP per capita and agglomeration variables may be related with the magnitude of fixed entry costs. This is because GRDP per capita also serves as a proxy for the development level of infrastructure. Also, the uncertainty of the market and that of the operations environment are lower in provinces where a larger number of Japanese firms already exist because new investors may be able to get those kinds of information from the existing firms.

3. Data Issues

This section reports the sources for the data in this study, then presents an overview of Japanese MNEs in East Asian countries. The basis of analysis is province level, and the list of provinces in each country is provided in Appendix 1. This is because there seem to be relevant differences not only across countries but also across provinces within a nation. For example, the target provinces of China's open-door policy are concentrated in the coastal regions, thus there may be qualitative differences in policy treatment between coastal and non-coastal regions. Therefore, it seems necessary to construct a nested-logit model using a subnational-level tree structure. Thus the choice here to use provinces as the analytical unit of the model, although it was not possible to obtain data on some variables that have been included in the previous studies.

The data sources for this study are as follows. The province-level data on population and GRDP per capita were obtained from the Statistical Yearbook (Central Statistical Organization) for Myanmar; the National Institute of Statistics (Unofficial estimates of GRDP) for Cambodia; the National Statistical Center, Ministry of Planning and Investment for Laos; the Socio-economic Statistical Data of

63 Provinces and Cities for Vietnam; the Statistical Yearbook of Indonesia for Indonesia; the Yearbook of Statistics Malaysia for Malaysia; the Statistical Yearbook of Indonesia for Indonesia; the Philippine Statistical Yearbook for the Philippines; the China Statistical Yearbook for China. Unfortunately, data for GRDP per capita in Myanmar is available only at the country-level. Information on BITs and FTAs is obtainable from the Investment Instruments Online on the UNCTAD website[4], and the Regional Trade Agreements Information System on the WTO website[5], respectively. The geographical distance from Japan is calculated using the latitudes and longitudes from Tokyo to each East Asian region.

The data on Japanese MNEs in East Asian developing countries were obtained from Toyo Keizai's "Overseas Japanese Companies Data," which has been widely used by many researchers, such as Head and Ries [2002]. The data focus on the survey of 6,000 listed and non-listed enterprises that collect data on their overseas affiliates regarding: location (i.e. address), investment year, investment type (new establishment, capital investment, and acquisition), amount of capital, total number of employees, number of employees from Japan, earnings, business content, purpose of investment, and funding relationship. The sample affiliates included in this database are those in which a Japanese firm has invested capital of 10% or more.

Table 1 shows the entry of new Japanese MNEs into each country during the period of 1996-2006. There are three noteworthy points. First, Japanese firms have dramatically increased new investment in China since its joining the WTO in 2001. Also the magnitude of FDI into China compared to ASEAN has reversed. Thus, we can say that China's joining the WTO was the important turning point in Japanese FDI in East Asia. Second, among ASEAN countries, Thailand is the country attracting a large number of Japanese MNEs. In most years Thailand has attracted almost half of the Japanese investments going into ASEAN.

Table 1. Number of Japanese Affiliate Entries

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
China	219	92	58	48	40	125	309	321	386	241	95
ASEAN	322	187	74	63	57	88	90	68	64	63	39
Cambodia					1						
Indonesia	79	49	15	8	6	16	19	10	4	3	3
Laos											1
Malaysia	43	23	11	10	10	7	5	6	8	4	3
Myanmar	1	1	2		1		1				
Philippines	46	19	13	11	11	15	10	5	5	4	1
Thailand	113	71	19	26	24	43	47	31	32	27	14
Vietnam	40	24	14	8	4	7	8	16	15	25	17

Source: Overseas Japanese Companies Data (Toyo Keizai Inc.)

[4] http://www.unctadxi.org/templates/docsearch____779.aspx
[5] http://rtais.wto.org/UI/PublicMaintainRTAHome.aspx

Third, among ASEAN late comers, i.e. the CLMV countries, Japanese MNEs have invested the most in Vietnam, and in recent years it has become the second largest recipient of Japanese FDI among all the ASEAN countries.

Using the address information of each affiliate, it is possible to see the distribution of Japanese MNEs in East Asia at the sub-national rather than country level. The list of sub-national regions (i.e. provinces) is provided in Appendix 1. The top 25 provinces in terms of the entry of Japanese affiliates during 1996-2006 are reported in Table 2. Again, three points are noteworthy. First, seven provinces among the top ten are Chinese provinces. In particular, the top three provinces are all in China and had an overwhelming number of Japanese firms enter. Second, provinces in some ASEAN countries are among the top 25 provinces. The highest ranking province in those countries is West Java for Indonesia, Bangkok for Thailand, Region IV-A for the Philippines, Selangor for Malaysia, and Ha Noi for Vietnam. Third, as can be seen from the second point, there are no provinces in Cambodia, Laos, or Myanmar that are ranked among the top 25.

Table 2. Top 25 Provinces in Terms of Japanese Affiliate Entries, 1996-2006

Rank	Region	Country	Numbers
1	Jiangsu	China	519
2	Guangdong	China	356
3	Shanghai	China	344
4	Zhejiang	China	158
5	West Java	Indonesia	133
6	Liaoning	China	128
7	Shandong	China	123
8	Bangkok	Thailand	117
9	Region IV-A	Philippines	96
10	Tienjin	China	76
11	Rayong	Thailand	66
12	Chonburi	Thailand	61
13	Phra Nakhon Si Ayutthaya	Thailand	59
14	Selangor	Malaysia	54
15	Jakarta Special Capital Region	Indonesia	49
16	Samut Prakan	Thailand	48
17	Ha Noi	Vietnam	46
18	Fujian	China	40
19	Hebei	China	40
20	Ho Chi Minh	Vietnam	37
21	Beijing	China	30
22	Hai Phong	Vietnam	26
23	Pathum Thani	Thailand	26
24	Chachoengsao	Thailand	24
25	Federal Territory of Kuala Lumpur	Malaysia	23

Source: Overseas Japanese Companies Data (Toyo Keizai Inc.)

Table3. Basic Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
GRDP	360,254	21.941	1.795	17.067	25.954
GRDP per capita	360,254	6.967	0.997	4.621	9.909
Agglomeration	360,254	-1.240	8.207	-20.723	6.441
Distance from Japan	360,254	8.239	0.360	7.649	8.664
WTO	360,254	0.662	0.473	0	1
BIT	360,254	0.288	0.453	0	1
FTA	360,254	0.027	0.163	0	1

4. Empirical Results

This section presents the estimation results of the nested-logit model. The first step is to search for a "good" nesting structure among the provinces in East Asian countries. Then some firm characteristics will be included in the model. The basic statistics of the model are provided in Table 3.

4.1 Tree Structure

Before estimating the nested-logit models, a conditional logit model will be done as a reference. The results are reported in column (I) of Table 4. The findings are as follows. Japanese MNEs invest in the provinces with the larger number of Japanese firms and those in WTO member countries or BIT partners. The coefficient for Distance from Japan is estimated to be significantly negative, indicating that MNEs are likely to invest in the provinces with the closer distance to the home country because they can save communication and trade costs between their plants and headquarters. The results in terms of GRDP per capita indicate that the provinces with the larger GRDP per capita tend to attract a larger number of MNEs. This implies the dominant effect of infrastructure development over that of wages. The unexpected results are those in GRDP and FTA, where coefficients are negatively significant. The most that can be said, therefore, in the case of cheap labor-seeking FDI is that market size does not matter very much.

Next is to seek a good tree structure for Japanese investors among East Asian developing countries by estimating the nested-logit model for the sample.[6] To do that, according to the stages of economic development, a set of the sample provinces first needs to be partitioned into the following four subgroups. The first and second subgroups are the late comers (Cambodia, Laos, Myanmar, and Vietnam) and the ASEAN forerunners countries (Thailand, the Philippines, Malaysia, and Indonesia), respectively. In this paper they are collectively called "CLMV" and "ASEAN4", respectively. The other two subgroups consist of provinces in China, and this set of provinces are partitioned into two subsets, coastal provinces (Coast China)[7] and non-coastal provinces (Internal China), because, as mentioned

[6] For simplicity, this paper assumes the common IV parameters among nests.
[7] The coastal regions include Fujian, Guandong, Guangxi, Hainan, Hebei, Jiangsu, Liaoning, Shandong, Shanghai,

above, the target provinces of the open-door policy have been concentrated in the coastal regions and thus there may be qualitative differences in policy treatment between coastal and non-coastal regions.

Table 4. Exploring the Nesting Structure: Nested-logit Model

	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)
Variables							
GRDP	-0.106***	-0.520***	0.001	-0.120***	0.016	-0.097***	-0.093***
	[0.028]	[0.167]	[0.015]	[0.031]	[0.017]	[0.027]	[0.034]
GRDP per capita	0.123***	0.928***	0.123***	0.117***	0.140***	0.128***	0.136***
	[0.035]	[0.188]	[0.017]	[0.038]	[0.020]	[0.033]	[0.042]
Agglomeration	0.777***	4.568***	0.362***	0.832***	0.416***	0.743***	0.861***
	[0.018]	[0.545]	[0.021]	[0.033]	[0.018]	[0.024]	[0.028]
Distance from Japan	-0.639***	-1.711**	-0.478***	-0.663***	-0.559***	-0.632***	-0.702***
	[0.138]	[0.758]	[0.073]	[0.149]	[0.082]	[0.131]	[0.165]
WTO	0.855***	0.588***	1.095***	0.822***	0.807***	0.865***	0.926***
	[0.078]	[0.149]	[0.058]	[0.081]	[0.046]	[0.074]	[0.094]
BIT	1.288***	4.821***	1.210***	1.346***	0.786***	1.220***	1.556***
	[0.129]	[0.951]	[0.079]	[0.139]	[0.079]	[0.126]	[0.168]
FTA	-0.427*	2.830***	-0.155	-0.466*	0.099	-0.341	-0.598**
	[0.231]	[0.419]	[0.135]	[0.244]	[0.131]	[0.220]	[0.279]
Dissimilarity parameters		6.030***	0.480	1.091	0.556	0.939	1.197
		[0.719]	[0.025]	[0.044]	[0.019]	[0.028]	[0.048]
LR test for IIA		170.35***	179.60***	4.53**	276.60***	4.34**	20.00***
Number of observations	360,254	360,254	360,254	360,254	360,254	360,254	360,254
Number of cases		3,053	3,053	3,053	3,053	3,053	3,053
Pseudo R2	0.2645						
Log likelihood	-10712	-10627	-10622	-10710	-10574	-10710	-10702

Notes: ***, ** and * indicate, respectively, 1%, 5% and 10% levels of statistical significance. Standard errors are in parentheses. "LR test for IIA" indicates the test statistics on the null hypothesis that the dissimilarity parameter is unity. The groups in the upper-level are (II): (ASEAN4 & CLMV) vs. (Coast China & Internal China), (III): ASEAN4 vs. CLMV vs. (Coast China & Internal China), (IV): ASEAN4 vs. CLMV vs. Coast China vs. Internal China, (V): CLMV vs. (ASEAN4 & Coast China & Internal China), (VI): CLMV vs. (ASEAN4 & Coast China) vs. Internal China, (VII): (CLMV & Internal China) vs. (ASEAN4 & Coast China).

The next step is to assume several types of upper-level decision by further grouping these four subgroups. The upper-level decision in column (II) is to locate either (ASEAN4 & CLMV) or (Coast China & Internal China). Similarly, the decision in (III) is either (ASEAN4), (CLMV), or (Coast China & Internal China); that in (IV) is either (ASEAN4), (CLMV), (Coast China), or (Internal China); that in (V) is either (CLMV), (ASEAN4 & Coast China & Internal China); that in (VI) is either (CLMV), (ASEAN4 & Coast China), or Internal China; that in (VII) is either (CLMV & Internal China) or (ASEAN4 & Coast China). Under these kinds of two-level tree structures, the two-level nested-logit model is estimated for the sample. The results in explanatory variables are almost unchanged from

Tianjin, and Zhejiang.

those in column (I). In some patterns, GRDP and FTA have insignificant coefficients.

It is well known that "there is no well-defined testing procedure for discriminating among tree structures (Greene, 2002, p727)". This study sheds light on the (log) likelihood and dissimilarity parameters which to some extent can be used for the evaluation of the nesting structure. From the likelihood viewpoint, the tree structure in (V) is the best one, though its difference among all patterns may be trivial. On the other hand, as mentioned in the previous section, the dissimilarity parameter must lie between 0 and 1 for global consistency with the RUM. The three models, i.e. (III), (V), and (VI), have dissimilarity parameters in this range. Furthermore, from the "LR test for IIA", which reports the Chi-squared statistics for testing whether or not the dissimilarity parameter is different from unity, it can be seen that their magnitudes in those three models are statistically different from unity. Thus, we can say that the use of conditional logit-model is not appropriate. In short, based on the criteria of both likelihood and dissimilarity parameters, the way of grouping in column (V) appears to be the best.

The results in the tree structure of (V) are as follows. First, among explanatory variables, major differences are observed in GRDP and FTA, for which coefficients are insignificantly estimated. That is, in the case of cheap labor-seeking FDI, the market size of the host economy does not matter very much. It is also safe to say that, compared with BITs, the conclusion of FTAs with Japan does not very much increase FDI from Japan. Second, the tree structure implies that Japanese MNEs consider only CLMV countries as host countries different from China and the ASEAN forerunners. In other words, for Japanese investors, the ASEAN forerunner countries and China are substitutable. These results indicate that one of the crucial elements for attracting Japanese FDI is WTO membership. Therefore, after China joined the WTO, Japanese FDI went intensively to China rather than ASEAN because the former is substitutable for the latter in terms of investment destination. However, since CLMV countries are seen as a different group from China as an investment destination, those countries, particularly Vietnam, still attract a lot of Japanese FDI even after China's joining the WTO.

4.2 Firm Characteristics

Using the best tree structure found in the previous subsection, i.e. (V), this section explores the role of firm characteristics in the upper-level decision. The first step is to include a dummy variable of Listed Company, which takes unity if the MNEs are listed on the Japanese stock market and zero otherwise. In the dataset of FDI, parent company information is not enough. In particular, the data necessary for constructing any productivity measures such as labor productivity or total factor productivity are not available. Thus, instead, the information used here is whether or not a parent is listed on the stock market. In general, listed companies are larger in size and are more productive than unlisted companies. Thus, this limited classification seems to be plausible to differentiate company

performance to some extent.

Table 5. Role of Firm Characteristics: Nested-logit Model

	(I)	(II)
Variables at the Bottom-level		
GRDP	0.017	-0.037*
	[0.017]	[0.022]
GRDP per capita	0.143***	0.184***
	[0.022]	[0.029]
Agglomeration	0.425***	0.426***
	[0.031]	[0.040]
Distance from Japan	-0.574***	-0.579***
	[0.093]	[0.121]
WTO	0.825***	0.848***
	[0.067]	[0.089]
BIT	0.800***	0.960***
	[0.089]	[0.125]
FTA	0.101	0.071
	[0.134]	[0.250]
Variables at the Upper-level (Base: China & ASEAN4)		
CLMV		
Listed Company	0.073	-0.194
	[0.196]	[0.259]
Dissimilarity parameters	0.568	0.534
	[0.038]	[0.048]
LR test for IIA	74.56***	52.53***
Number of observations	360,254	209,450
Number of cases	3,053	1,775
Log likelihood	-10574	-6075

Notes: ***, ** and * indicate, respectively, 1%, 5% and 10% levels of statistical significance. Standard errors are in parentheses. "LR test for IIA" indicates the test statistics on the null hypothesis that the dissimilarity parameter is unity. In this table, the groups in the upper-level are (ASEAN4 vs. CLMV vs. Coast China & Internal China).

The results are reported in column (I) in Table 5. In the upper-level decision, China & ASEAN4 are treated as a base province. There are three noteworthy points. First, the dissimilarity parameter is again estimated to be in a reasonable range, indicating that this model is inconsistent globally with the RUM. Second, the previous explanatory variables have qualitatively the same results as before. Third, the new variables, i.e. Listed Company, have an insignificant coefficient. This result indicates that listed companies have no tendency to be more likely to set up their plants in CLMV than in China or the ASEAN forerunners. In other words, if the classification of listed and unlisted companies used here captures well firm productivity, it does not affect firm decisions in the upper-level. It also indicates that

the fixed costs for investing in CLMV countries are not very different from those for investing in China or the ASEAN forerunner countries.

A robustness check will now be conducted to check the above result. However, to avoid the inclusion of the more complex types of FDI, the sample investors here will be restricted only to firms that have never invested in East Asian developing countries. An example of a complex type is Vertical FDI (VFDI), which is an investment of intra-firm production process-wise vertical division of labor among more than two countries including the home country.[8] If firms perceive China and ASEAN countries as different groups, firms that already have one affiliate in an ASEAN country may tend to locate more affiliates in other ASEAN countries in order to conduct the complex type of VFDI because the complex VFDI is a more feasible FDI type among neighboring countries. However, the primary purpose of this paper is to analyze the simple type of VFDI, which is cheap labor-seeking intra-firm production process-wise vertical division of labor only between the home and host countries. Thus, in order to avoid some kind of biases in the estimators sourcing from the inclusion of investors conducting the complex types of FDI, the sample firms here are restricted to only the first investor in East Asian developing countries. The results are reported in column (II) of Table 5. Except for GRDP, all variables including a dissimilarity parameter have qualitatively same results as in column (I).

5. Concluding Remarks

Due to the large inward flow of FDI into China, policy makers in other developing countries, particularly the ASEAN countries, have worried about the decrease of inward FDI into their countries. In order to gain some insight on this concern of policy makers, this paper investigated the location choice of Japanese MNEs in East Asian developing countries at the province-level. The findings can be summarized as follows. One of the crucial elements for attracting Japanese FDI is WTO membership. Therefore, after China joined the WTO, Japanese FDI went intensively into China rather than into the ASEAN forerunners as previously, because the former is substitutable for the latter in terms of investment destination. This argument is based on the result that China and the ASEAN forerunners share the same upper-level tree in the nested-logit model. However, since the CLMV countries are seen as in a different group from China as an investment destination, those countries, particularly Vietnam, still attract a lot of Japanese FDI even after China's joining the WTO.

In sum, it is evident that unless the ASEAN forerunners maintain the better investment climate than China, Japanese MNEs are likely to invest in China instead of them. On the other hand, the CLMV

[8] Recently third-country effects have attracted much more attention in FDI theories which are being reconstructed within a three-country framework, not the traditional two-country setting. See, for example, Baltagi et al. (2007), Ekholm et al. (2007), Grossman et al. (2006), Yeaple (2003), and Hayakawa and Matsuura (2010).

countries could keep attracting Japanese FDI to some extent. This difference seems to be based on how location advantages differ across countries/provinces rather than how firms segment their target markets. In other words, unlike market-seeking FDI, cheap labor-seeking FDI does not come from the market segmentation where MNEs supply their products domestically to each country. CLMV countries are still immature in terms of economic development. Thus the potential production stages that MNEs relocate from home to these countries are totally different from those relocated to China or the ASEAN forerunners in terms of technology-level and capital-labor ratio. However, since the location advantages are similar between China and the ASEAN forerunners, they are in the fierce competition in attracting FDI.

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Appendix 1. List of Locations

Cambodia (24 Provinces)

Banteay Meanchey, Battambang, Kampong Cham, Kampong Chhnang, Kampong Speu, Kampong Thom, Kampot, Kandal, Koh Kong, Kratie, Pailin, Sihanoukville, Mondul Kiri, Oddar Meanchey, Phnom Penh, Pursat, Preah Vihear, Prey Veng, Ratanak Kiri, Siemreap, Stung Treng, Svay Rieng, Takeo, Kep

Laos (17 Provinces)

Vientiane Capital, Phongsaly, Loungnamtha, Oudomxay, Bokeo, Louangphabang, Houaphanh, Xaiyabouly, Xiengkhoung, Vientiane, Bolikhamxay, Khammouan, Savannakhet, Salavanh, Xekong, Champasak, Attapeu

Myanmar (14 Provinces)

Ayeyarwady, Bago, Chin, Kachin, Kayah, Kayin, Magway, Mandalay, Mon, Rakhine, Sagaing, Shan, Tanintharyi, Yangon

Vietnam (64 Provinces)

Ha Noi, Ha Giang, Cao Bang, Bac Kan, Tuyen Quang, Lao Cai, Dien Bien, Lai Chau, Son La, Yen Bai, Hoa Binh, Thai Nguyen, Lang Son, Quang Ninh, Bac Giang, Phu Tho, Vinh Phuc, Bac Ninh, Ha Tay, Hai Duong, Hai Phong, Hung Yen, Thai Binh , Ha Nam, Nam Dinh, Ninh Binh, Thanh Hoa, Nghe An, Ha Tinh, Quang Binh, Quang Tri, Thua Thien-Hue, Da Nang, Quang Nam, Quang Ngai, Binh Dinh, Phu Yen, Khanh Hoa, Ninh Thuan, Binh Thuan, Kon Tum, Gia Lai, Dak Lak, Dak Nong, Lam Dong, Binh Phuoc, Tay Ninh, Binh Duong, Dong Nai, Ba Ria-Vung Tau, Ho Chi Minh, Long An, Tien Giang, Ben Tre, Tra Vinh, Vinh Long, Dong Thap, An Giang, Kien Giang, Can Tho, Hau Giang, Soc Trang, Bac Lieu, Ca Mau

Thailand (76 Provinces)

Amnat Charoen, Ang Thong, Bangkok, Buri Ram, Chachoengsao, Chai Nat, Chaiyaphum, Chanthaburi, Chiang Mai, Chiang Rai, Chonburi, Chumphon, Kalasin, Kamphaeng Phet, Kanchanaburi, Khon Kaen, Krabi, Lampang, Lamphun, Loei, Lopburi, Mae Hong Son, Maha Sarakham, Mukdahan, Nakhon Nayok, Nakhon Pathom, Nakhon Phanom, Nakhon Ratchasima, Nakhon Sawan, Nakhon Si Thammarat, Nan, Narathiwat, Nong Bua Lamphu, Nong Khai, Nonthaburi, Pathum Thani, Pattani, Phang Nga, Phatthalung, Phayao, Phetchabun, Phetchaburi, Phichit, Phitsanulok, Phra Nakhon Si Ayutthaya, Phrae,

Phuket, Prachinburi, Prachuap Khiri Khan, Ranong, Ratchaburi, Rayong, Roi Et, Sa Kaeo, Sakon Nakhon, Samut Prakan, Samut Sakhon, Samut Songkhram, Saraburi, Satun, Si Sa Ket, Sing Buri, Songkhla, Sukhothai, Suphan Buri, Surat Thani, Surin, Tak, Trang, Trat, Ubon Ratchathani, Udon Thani, Uthai Thani, Uttaradit, Yala, Yasothon

Malaysia (16 Provinces)

Federal Territory of Kuala Lumpur, Federal Territory of Labuan, Federal Territory of Putrajaya, Johor, Kedah, Kelantan, Malacca, Negeri Sembilan, Pahang, Perak, Perlis, Penang, Sabah, Sarawak, Selangor, Terengganu

Indonesia (33 Provinces)

Aceh, Bali, Bangka-Belitung, Banten, Bengkulu, Central Java, Central Kalimantan, Central Sulawesi, East Java, East Kalimantan, East Nusa Tenggara, Gorontalo, Jakarta Special Capital Region, Jambi, Lampung, Maluku (Moluccas), North Maluku (N.Moluccas), North Sulawesi, North Sumatra, Papua, Riau, Riau Islands, South East Sulawesi, South Kalimantan, South Sulawesi, South Sumatra, West Java, West Kalimantan, West Nusa Tenggara, West Papua, West Sulawesi, West Sumatra, Yogyakarta Special Region

Philippines (17 Provinces)

ARMM, CAR, NCR, Region I, Region II, Region III, Region IV-A, Region IV-B, Region IX, Region V, Region VI, Region VII, Region VIII, Region X, Region XI, Region XII, Region XIII

China (30 Provinces)

Beijing, Tienjin, Shanghai, Hebei, Shanxi, Neimenggu, Liaoning, Jilin, Heilongjiang, Jiangsu, Zhejiang, Anhui, Fujian, Jiangxi, Shandong, Henan, Hupei, Hunan, Guangdong, Guangxi, Hainan, Sichuan, Guizhou, Yunnan, Xizeing, Shanxi, Qansu, Qinghai, Ninghsia, Xinjiang