D. Alba, Joseph; Park, Donghyun; Wang, Peiming

Working Paper

Determinants of Different Modes of FDI: Firm-Level Evidence from Japanese FDI into the United States

ADB Economics Working Paper Series, No. 197

Provided in Cooperation with:
Asian Development Bank (ADB), Manila

Suggested Citation: D. Alba, Joseph; Park, Donghyun; Wang, Peiming (2010) : Determinants of Different Modes of FDI: Firm-Level Evidence from Japanese FDI into the United States, ADB Economics Working Paper Series, No. 197, http://hdl.handle.net/11540/1961

This Version is available at:
http://hdl.handle.net/10419/109373

ADB

ADB Economics
Working Paper Series

Determinants of Different Modes of Japanese Foreign Direct Investment in the United States

Joseph D. Alba, Donghyun Park, and Peiming Wang

No. 197 | March 2010

Asian Development Bank

ADB Economics Working Paper Series No. 197

Determinants of Different Modes of Japanese Foreign Direct Investment in the United States

Joseph D. Alba, Donghyun Park, and Peiming Wang
March 2010

Joseph D. Alba is Associate Professor of Economics, Nanyang Technological University; Donghyun Park is Principal Economist, Asian Development Bank; and Peiming Wang is Associate Professor of Finance, Auckland University of Technology.

Asian Development Bank

Asian Development Bank
6 ADB Avenue, Mandaluyong City
1550 Metro Manila, Philippines
www.adb.org/economics

March 2010
ISSN 1655-5252
Publication Stock No. WPS101751

The ADB Economics Working Paper Series is a forum for stimulating discussion and eliciting feedback on ongoing and recently completed research and policy studies undertaken by the Asian Development Bank (ADB) staff, consultants, or resource persons. The series deals with key economic and development problems, particularly those facing the Asia and Pacific region; as well as conceptual, analytical, or methodological issues relating to project/program economic analysis, and statistical data and measurement. The series aims to enhance the knowledge on Asia's development and policy challenges; strengthen analytical rigor and quality of ADB's country partnership strategies, and its subregional and country operations; and improve the quality and availability of statistical data and development indicators for monitoring development effectiveness.

The ADB Economics Working Paper Series is a quick-disseminating, informal publication whose titles could subsequently be revised for publication as articles in professional journals or chapters in books. The series is maintained by the Economics and Research Department.

Contents

Abstract

There are four major modes through which firms undertake foreign direct investment (FDI): merger and acquisition (M&A), joint venture, new plant, and others. The four modes of FDI are distinct from each other, and each has its own unique advantages and disadvantages. While a large and growing empirical literature examines the determinants of FDI, very few studies examine the determinants of the different modes. The central objective of this paper is to empirically analyze the extent to which the determinants of FDI such as firm size influence the choice of one mode of FDI over another. Our analysis follows a stylized two-stage investment process. First, we look at the probability of whether a Japanese firm is willing to undertake FDI in the United States. Second, which is the innovation of this paper and its main original contribution to the FDI literature, we analyze which of the four modes of FDI will be chosen by firms that are willing to undertake FDI.

I. Introduction

There is a large and growing literature that seeks to explain why firms undertake foreign direct investment (FDI). Traditional theories of FDI emphasized industrial organization motives related to the ownership of firm-specific assets that enable firms to remain competitive in foreign countries.[1] Such assets include advanced technology, superior management skills, and marketing capacity. Traditional theories do a good job of explaining the pattern of FDI in particular industries but they cannot account for a key stylized fact of FDI, namely that FDI sometimes occurs in waves. For example, a wave of Japanese FDI into the United States (US) started in the mid-1980s and ended in the early 1980s.

To address the failure of industrial organization theories to explain FDI, Froot and Stein (1991) put forth relative wealth as a key determinant of FDI. They assume imperfect capital markets with asymmetric information. Under such assumptions, internal funds, which are denominated in the currency of the home country, are less costly than external funds. The upshot is that that a depreciation of the US dollar increases the wealth of foreign firms relative to US firms, enabling them to bid more aggressively for US assets, thus increasing FDI into the US. Froot and Stein's relative wealth hypothesis dovetails with the stylized facts of US dollar movements and FDI inflows in the 1980s and early 1990s. However, after 1991, Japanese FDI into the US fell sharply despite the depreciation of the US dollar.

In order to explain this apparent paradox, Klein, Peek, and Rosengren (2002) put forth the relative access to credit hypothesis. The basic underlying idea is that the sharp drop in Japanese FDI in the 1990s was driven by the Japanese firms' reduced access to credit. This proposition is predicated on two factors—the Japanese banking crisis of the 1990s and the Japanese main bank system. The weakening of the main banks' balance sheets as a result of the banking crisis may have reduced the availability of credit to their client firms, thus diminishing their capacity to invest in the US.[2] Klein, Peek, and Rosengren use Moody's credit rating for banks as an indicator of their financial health. The results of their logit regressions show that a lower Moody's rating for a main bank reduces the probability of its client firm undertaking FDI into the US. In a separate regression using firm-level data aggregated by main banks, they find that Moody's bank rating downgrades had a negative effect on Japanese FDI into the US.

---

1 Caves (1971) and Graham and Krugman (1995) review theories of FDI based on industrial organization motives.

2 Gibson (1995) examines the effect of bank health on domestic investment in Japan.

A large and growing literature, including the above studies, investigates the determinants of total FDI. However, relatively few studies delve into why firms prefer one mode of FDI over another. The studies in this more limited literature typically focus on the distinction between mergers and acquisitions (M&A) FDI versus non-M&A FDI, and include Oster (1990), Froot and Stein (1991), Klein and Rosengren (1994), Blonigen (2005), and Faccio and Masulis (2005). One recent study by Ho, Wang, and Alba (2009), divide FDI into M&A FDI versus non-M&A FDI, and find that some factors influencing M&A FDI do not influence non-M&A FDI and vice versa. More specifically, they find that while the financial health of main banks affects both types of FDI, relative wealth affects only M&A FDI, while profitability and firm size affect only non-M&A FDI. Their finding highlights the usefulness of distinguishing M&A FDI from non-M&A FDI and of jointly considering the two different types of FDI in empirical analysis of FDI.

The distinction between M&A FDI and non-M&A FDI is certainly an important one. For example, the relative wealth hypothesis is more relevant for M&A FDI than for non-M&A FDI since it implicitly assumes that FDI will involve a firm purchasing another firm's assets. However, non-M&A FDI is far from homogeneous and can take one of several forms. More specifically, there are three major modes through which firms undertake non-M&A FDI—joint venture (JV), new plant (NP), and others (O). Other FDI includes plant expansion, increase in equity stake, and acquisition of real estate. The three modes of non-M&A FDI are distinct from each other, and each has its own unique advantages and disadvantages. For example, NP FDI may be the only feasible mode of FDI into an industry in a country without any existing facilities in the same industry. To cite another example, some host-country governments explicitly encourage foreign investors to enter into joint ventures with strategic partners in host countries. As such, it is problematic to lump together the different modes of non-M&A FDI into one single mode. Instead, a richer and more comprehensive empirical analysis of FDI calls for dividing FDI into M&A FDI and the three modes of non-M&A FDI, as we do in this paper.

It is conceptually useful and plausible to view FDI as a two-stage investment process. First, the firm has to decide whether or not to invest in a foreign country. Second, firms that are willing to invest abroad have to decide upon the mode of FDI entering the foreign country. Our empirical analysis follows this two-stage process. The first part of our analysis looks into the probability of a Japanese firm undertaking FDI into the US. Some Japanese firms may be willing to invest in the US whereas others may not. A wide range of FDI determinants will influence the willingness of Japanese firms to invest in the US. The second part of our analysis is limited to Japanese firms that are willing to undertake FDI and empirically delves into the issue of why they might prefer one mode of FDI over another. More specifically, an FDI determinant may have a bigger effect on the probability of undertaking one mode of FDI over another.

The central objective of our paper is to empirically examine the extent to which FDI determinants such as the financial health of main banks, firm's relative wealth, firm size,

firm profitability, and industry-specific characteristics influence (i) the willingness of a Japanese firm to undertake FDI in the US; and (ii) among Japanese firms that are willing to invest in the US, the probability of their undertaking each mode of FDI. The second part of the analysis is the innovation of this paper and our main original contribution to the empirical literature on FDI. While the existing literature contains a large number of studies on the determinants of FDI, it contains relatively few studies on the determinants of different modes of FDI. Those few studies are largely limited to comparative analyses of M&A FDI versus non-M&A FDI. In contrast, our study explicitly accounts for the heterogeneous nature of non-M&A FDI and divide it into three different modes of FDI. In terms of methodology, for the first part of our two-part empirical analysis, we use a hurdle regression model that combines a logit model to predict zeros and a zero-truncated Poisson model to predict nonzero counts; for the second part, we use a fitted multinominal logit model.

II. Firm-Level Japanese Data

We examine the determinants of FDI by Japanese firms into the US and the modes of their FDI using Klein, Peek, and Rosegren's (2002) model as our basic empirical framework to control for relative access to credit, relative wealth, firm profitability, and firm size. To build our data set, we follow Klein, Peek, and Rosengren in setting the sample period to be from 1988 to 1994. However, we use a more representative sample of Japanese firms that includes all Japanese firms listed in the first section of the *Japan Company Handbook* (Toyo Keizai, Inc., various years), henceforth JCH, and associated with one of the 11 Japanese banks as their main bank from 1988 to 1994. Following Klein, Peek, and Rosengren, we identify the 11 main banks as the Industrial Bank of Japan, Dai-Ichi Kangyo Bank, Sakura Bank, Mitsubishi Bank, Fuji Bank, Sumitomo Bank, Sanwa Bank, Tokai Bank, Asahi Bank, Long-Term Credit Bank, and Daiwa Bank. One of the 11 banks is the firm's main bank if it is the first bank among reference banks listed in the JCH
for the firm. Between 1988 and 1994, 819 firms in the JCH were associated with the 11 main banks.

In investigating the effect of reduced access to credit on Japanese firms' FDI, Klein, Peek, and Rosengren limit their analysis to the 11 main banks. They justify looking only at a Japanese firm's main bank rather than all of the firm's reference banks by pointing to the special relationship between the firms and their main banks in Japan. The main bank has the largest share of the firm's bank loans and is typically a principal shareholder of the firm. The equity holdings of the main bank allow its senior executives to serve on the firm's board. This gives the main bank access to the firm's private information and reduces the main bank's monitoring costs. The lower monitoring costs allow the main bank to offer better credit terms to its client firm. Therefore, we can expect the financial

health of the main banks to have a disproportionate impact on their client firms' access to credit.

Firm-level data on FDI into the US are from the United States International Trade Administration (ITA) publication, *Foreign Direct Investment in the United States: Transactions* (ITA, various years). The ITA publication includes the name and nationality of the foreign investor, the mode of investment, and the value of investment. The mode of investment includes M&A, JV, NP, plant expansion, equity increase, and real estate. Because of missing observations on the values of FDI projects in the ITA publication, we use observations on the number of FDI projects in examining firm-level Japanese FDI in the US. From 1988 to 1994, we have 627 nonzero observations from a total of 1,070 Japanese FDI projects in the US. This represents 94% of FDI in the US by Japanese firms associated with the 11 banks. In addition, we have 5,298 FDI entries with zeros representing Japanese firms without US FDI. Since we include all firms listed in the JCH associated with one of the 11 banks, 88% of our FDI entries are zeros. Of the 1,070 Japanese FDI projects, 274 (25.6%) are M&A, 126 (11.8%) are NP, 169 (15.8%) are JV, and 501 (46.8%) are O types of FDI. As FDI can be viewed as a two-stage investment process, we should first assess how the probability of undertaking any FDI and the rate of total FDI are affected by FDI determinants because firms with zero FDI entry may behave differently from firms with nonzero FDI entries in terms of the FDI decision making. Hence we use the hurdle-at-zero Poisson model to evaluate the impact of FDI determinants on the probability of undertaking any FDI and the rate of total FDI, and to account for excess zeros in our data.

The data sources for the main determinants of FDI, which are explained in the next section, are as follows. The data on the credit ratings of the 11 Japanese main banks are from Moody's long-term deposit ratings. Data on firm characteristics such as size and profitability are from the Pacific-Basin Capital Markets Databases. The US dollar-yen exchange rates and the US unemployment rates are from the *International Financial Statistics* of the International Monetary Fund. The S&P 500 index is from Global Financial Data. The ratio of job offers to applications in Japan is from the Monthly Report of Employment Security Business by the Employment Security Bureau, Japanese Ministry of Labor.

III. Determinants of FDI

The determinants of FDI affect the estimated probability of undertaking FDI $\pi_i = \Pr(y_i > 0 \mid x_{1i})$ in the US. Such determinants include the previous year's credit rating of the firm's main bank, firm size, firm profitability, and relative wealth. The credit rating of a firm's main bank measures the bank's financial health. If the financial health of a firm's main bank influences πi, then this probability should be affected by relative credit rating.

The bank's rating is based on Moody's long-term deposit ratings, which are, from best to worst, aaa, aa1, aa2, aa3, a1, a2.[3] Except for the best rating of aaa, each Moody's rating is assigned a dummy variable of either 0 or 1. The coefficient of the rating dummy variable indicates the impact of the rating relative to the best rating of aaa. A negative coefficient means that the probability of a firm undertaking FDI falls when its main bank has a lower credit rating.

The effect of firm size on πi incorporates the traditional theories of FDI, which explain FDI through firm characteristics such as firm size. To enter the US markets, Japanese firms must incur high fixed costs of gathering information on US markets. Due to the high fixed costs, Japanese firms intending to invest in the US are usually large and dominant in Japan. These firms dominate Japanese markets with their economies of scale, marketing skills, and technological advantages. In addition, large firms have an advantage in FDI because they can internalize licensing or exporting costs. Licensing costs include costs of poor maintenance of quality while exporting costs include costs associated with trade restrictions. Producing in the US allows large Japanese firms to avoid licensing or exporting costs.[4] Firm size is measured as the logarithm of the inflation-adjusted value of the firm's assets (lfs), and positively related to πi. Firm profitability (rp) is related to firm size (lfs) and may also affect πi. The potential advantages of firm size include lower costs, higher sales and higher profits. Profitability is measured as the ratio of the firm's profit to assets ratio (rp), and positively related to πi.

According to the relative wealth hypothesis, relative wealth (rw) is another potential determinant of π_i. Relative wealth (lrw) is calculated by the log of the following term—the product of the stock price index of a firm and the nominal US dollar-yen exchange rate divided by the S&P 500 index. This variable captures the effects of both exchange rate movements and relative stock price movements on π_i. Froot and Stein (1991) base their explanation of the impact of exchange rates and stock prices on FDI on asymmetric information about payoffs of assets. Under asymmetric information, internal finance is cheaper than external finance and this induces foreign firms to raise funds in their own countries to bid for US assets. Therefore, the Japanese firm's wealth increases relative to that of US firms when the US dollar depreciates. A Japanese firm's relative wealth also increases when its stock price increases relative to US stock prices. Higher relative wealth, whether from exchange rate movements or stock price movements or both, allow foreign firms to bid more aggressively for US assets and is thus positively related to π_i.

To control for differences across industries, we include industry-specific dummy variables (ic2, ic3…ic9) as regressors of π_i. Some industries may be more conducive for FDI than others due to a wide range of factors. The industry dummy variables are based on the one-digit standard industrial classification (SIC) code. Except for SIC 1 (ic1), an industry

[3] Klein, Peek, and Rosengren (2002, Table 2) summarize Moody's long-term deposit ratings for the 11 banks from 1986 to 1994. Moody's ratings are unavailable for three of the 11 banks for 1986, 1987, and 1988.

[4] The importance of firm size in FDI is explained in Caves (1971) and in Horst (1972). Both authors note that firm size is important in both horizontal FDI and vertical FDI.

dummy variable is assigned to each one-digit SIC code. The industry dummy variable takes on a value of 1 if the firm belongs to the assigned one-digit SIC code and a value of 0 otherwise. The coefficient of the industry dummy variable indicates if the firm's industry is significantly different from the SIC 1 industry.

We now discuss the determinants of the mean (λ_i) of the Poisson distribution for firms that decide to engage in FDI because the rate of total FDI is strictly increasing function in λ_i. For Japanese firms that invest in the US, λ_i is influenced by change in the credit rating of the firm's main bank. Industry-specific factors could also affect λ_i. A change in the main bank's credit rating represents a change in the financial health of a firm's main bank. It is measured using two dummy variables, i.e., a single downgrade (dr1) and multiple downgrades (dr2). The dummy variable for a single downgrade has a value of 1 if the rating of a firm's main bank is downgraded by one level in a given year and a value of 0 otherwise. The dummy variable for multiple downgrades has a value of 1 if the rating of a firm's main bank is downgraded by two or more levels in a given year and a value of 0 otherwise. Since credit rating represents the financial health of the firm's main bank, downgrades in the rating of the firm's main bank are negatively related to λ_i.

In addition to the financial health of main banks, for firms intending to invest, λ_i is related to the changes in the firm's relative wealth, size, and profitability. As explained earlier, an increase in relative wealth due to US dollar depreciation or superior performance of their stock prices would enable Japanese firms to bid higher prices for US assets under asymmetric information. Therefore, we expect increase in relative wealth to be positively related to λ_i.

We also include change in firm size as a determinant of λ_i. This is because changes in firm size could affect the firm's rate of total FDI, especially for sizable changes. Many Japanese firms experienced large changes in their size in the 1980s and 1990s. For Japanese firms with at least one FDI in our sample, the change in firm size ranges from 50% to –30%. For our whole sample of 819 Japanese firms, the change in firm size ranges from more than 100% to –60%. Such large changes could be due to the widespread practice by large Japanese firms in the 1980s and 1990s of *zai'tech*, which refers to generating profits by investing a large proportion of firm's funds in stocks, bonds, other financial assets, and real estate. As a result of *zai'tech*, Japanese firms experienced large increases in their asset values during the stock market and real estate bubble of the 1980s. Those asset values collapsed along with the collapse of stock and real estate prices in the early 1990s.[5] Large and drastic reduction in firm size, in turn, may have adversely affected firms' firm-specific advantages which, in turn, would have impaired their capacity to undertake FDI. Therefore, we expect a positive relationship between increase in firm size and firm's rate of FDI. In addition, we expect a positive relationship between increase in profits and rate of FDI since the dilution of firm-specific advantages would erode profits.

[5] Noguchi (1993) and Gao (2001) discuss the origins and implications of the use of *zai'tech* by Japanese firms.

IV. Model Specification and Empirical Results

As noted earlier, our empirical analysis is based on a stylized two-stage investment process in which a Japanese firm (i) first decides whether or not to invest in the US and (ii) decides upon the mode of FDI into the US, i.e., M&A, JV, NP, O, once it has decided to invest. In the next two subsections, we briefly outline the specification of the model used in the empirical analysis as well as report and discuss the main results for each stage of the investment process.

A. Probability of a Japanese Firm Undertaking FDI in the US and the Rate of Total FDI

We estimate the probability of a Japanese firm investing in the US by using the hurdle regression model, which combines a logit model to predict zeros and a zero-truncated Poisson model to predict nonzero counts (see Mullahy 1986, Cameron and Trivedi 1986). More precisely, the probability of zero FDI is given by equation (1) and the probability of nonzero FDI is given by equation (2) as follows:

$$\Pr(y_i = 0 \mid x_{1i}) = 1 - \Pr(y_i > 0 \mid x_{1i}) \equiv 1 - \pi_i, \pi_i \equiv \log it(x_{1i}\beta_1) = \frac{\exp(x_{1i}\beta_1)}{1+\exp(x_{1i}\beta_1)} \tag{1}$$

$$\Pr(y_i \mid x_{2i}) = \pi_i \frac{Po(y_i \mid x_{2i})}{1-\exp(-\lambda_i)} \qquad \text{for } y_i > 0 \tag{2}$$

where y_i is the number of total FDI of firm i, $Po(y_i \mid x_{2i})$ is a Poisson distribution function with mean of $\lambda_i = \exp(x'_{2i}\beta_2)$, x_{1i} is the vector of the determinants of $\pi_i = \Pr(y_i > 0 \mid x_{1i})$, and x_{2i} is vector of the determinants of the mean of the Poisson distribution. β_1 and β_2 are vectors of parameters corresponding to x_{1i} and x_{2i}, respectively. These vectors of determinants are defined in Section III.

The unconditional average rate of total FDI, or the average rate of total FDI for any firm regardless of whether or not it undertakes FDI, is given by:

$$E(y_i \mid x_{1i}, x_{2i}) = \frac{\pi_i \lambda_i}{1-\exp(-\lambda_i)} \tag{3}$$

Note that the rate of total FDI is a strictly increasing function in λ_i, which means an increase in λ_i results in an increase in the rate of total FDI.

Table 1 reports the results of estimating the probability of a Japanese firm's undertaking at least one FDI in the US. The results lend strong support to the relative access to credit hypothesis. Except for aa2, the coefficients of Moody's credit ratings for the main banks are all negative and highly significant. This suggests that Japanese firms are less likely

to invest in the US when their main bank has a lower credit rating. Due to the special relationship between Japanese firms and their main banks, the latter's credit rating has a significant negative impact on the former's access to credit. The results of Table 1 also support the relative wealth hypothesis. An increase in relative wealth due to US dollar depreciation or the superior performance of the Japanese firm's stock price or a combination of both has a significant positive effect on the probability of a Japanese firm's investing in the US. The coefficients of firm size and profitability are positive and they are also significant, lending support to the traditional theories of FDI. Finally, some industry dummy variables are positive while others are negative, and some are significant while others are not.

Table 1: Logistic Regression for Probability of Japanese Firms Undertaking FDI in the US

Determinants in π	Coefficient β1	t-stat	P -value
aa1	-0.435	-3.160	0.002
aa2	-0.404	-1.580	0.113
aa3	-0.677	-4.410	0.000
a1	-0.535	-2.730	0.006
a2	-0.630	-2.120	0.034
lrw	0.432	2.930	0.003
Rp	6.267	2.610	0.009
lfs	0.942	23.240	0.000
ic2	-1.359	-5.490	0.000
ic3	0.130	1.170	0.243
ic4	-0.090	-0.560	0.577
ic5	-3.300	-5.340	0.000
ic6	-1.152	-2.540	0.011
ic7	-0.194	-0.830	0.404
ic8	-3.559	-5.840	0.000
ic9	-1.179	-1.980	0.047
constant	-10.679	-10.430	0.000

Note: Number of observations = 5298; log likelihood = -1510.01; likelihood ratio test statistic is 832.87, which has a χ^2-distribution with 16 degrees of freedom. dr1 and dr2 refer to single and multiple downgrades of the firm's main bank.
dlrw, drp, and dlfs refer to a one-standard deviation change in the firm's relative wealth, profit, and firm size, respectively.
ic stands for industry code.

Table 2 reports the results of estimating the rate of FDI projects for Japanese firms that pursue FDI in the US. The estimated rate of FDI is thus conditional on the firm's investing in the US. The most noticeable result is that the financial health of main banks continues to have a negative and significant effect on the rate of FDI of their client firms. More specifically, both single and multiple downgrading in the credit ratings of main banks adversely affect their client firms' rate of FDI at the 5% level of significance. Therefore, the evidence in Table 2 echoes the empirical support for the relative access to credit hypothesis found in Table 1. The results of Table 2 also provides some support for the relative wealth hypothesis since they indicate that an increase in relative wealth has a positive effect on the rate of FDI projects at a 10% level of significance. The signs of the

coefficients of firm size and profitability are still positive but both lose their significance. As before, the industry dummy variables vary in terms of both signs and significance.

Table 2: Parameter Estimates, t-statistics, and P-values of the Zero-truncated Poisson Regression for the Conditional Rate of FDI for Japanese Firms Undertaking FDI in the US

FDI Determinants	Coefficient β2	t-stat	P-value
dr1	-0.243	-2.110	**0.035**
dr2	-0.861	-3.010	**0.030**
dlrw	0.237	1.790	**0.073**
drp	3.501	0.890	0.372
dlfs	0.584	1.330	0.183
ic2	-0.649	-2.010	0.045
ic3	-0.585	-5.120	0.000
ic4	0.215	1.840	0.066
ic5	0.142	0.270	0.791
ic6	-14.462	-0.020	0.983
ic7	0.276	1.580	0.114
ic8	-14.422	-0.020	0.988
ic9	-0.319	-0.480	0.631
constant	0.355	4.260	0.000

Notes: Number of observations = 627; log likelihood = -769.46; likelihood ratio test statistic is 175.35, which has a χ^2-distribution with 13 degrees of freedom. dr1 and dr2 refer to single and multiple downgrades of the firm's main bank.
dlrw, drp, and dlfs refer to a one-standard deviation change in the firm's relative wealth, profit, and firm size, respectively.
ic stands for industry code.

B. Effects of FDI Determinant on Choice of FDI Mode

In this subsection, we report and discuss our results for the second stage of the two-stage investment process, i.e., once a Japanese firm has decided to invest in the US, how does a change in an FDI determinant such as relative wealth affect the probability of engaging in one of the four modes of FDI? To address this issue, we assume that conditional on the total number of FDI undertaken by a firm, the numbers of FDI for the four different FDI modes follow a multinomial distribution with the probability mass function given by

$$\Pr((z_{1i}, z_{2i}, z_{3i}, z_{4i}) \mid y_i > 0, x_{3i}) = \frac{y_i!}{z_{1i}!\, z_{2i}!\, z_{3i}!\, z_{4i}!} p_{1i}^{z_{1i}} p_{2i}^{z_{2i}} p_{3i}^{z_{3i}} p_{4i}^{z_{4i}} \tag{4}$$

where $y_i = z_{1i} + z_{2i} + z_{3i} + z_{4i}$, z_{1i}, z_{2i}, z_{3i}, z_{4i} are, respectively, the numbers of MA, NP, JV, and O types of FDI by firm i. The probabilities of undertaking MA, NP, JV, and O are, respectively, p_{1i}, p_{2i}, p_{3i}, and p_{4i} and associated with FDI determinants through a logit function as follows:

$$p_{ji} = \frac{\exp(x_{3i}\beta_{j|4})}{1 + \sum_{m=1}^{3} \exp(x_{3i}\beta_{m|4})}, (j = 1,2,3), \text{ and } p_{4i} = 1 - \sum_{m=1}^{3} p_{ji} \tag{5}$$

where x_{3i} is a vector of determinants, $\beta_{j|4}$ (j=1,2,3) are vectors of the logit coefficients for MA, NP, and JV FDI modes, respectively. This means that if a firm engages in FDI, it can choose only one mode of FDI where "Other FDI" serves as a reference point so that $\beta_{4|4}$ is a zero-vector. Note that for any Japanese firm, the rate of FDI for each of the four FDI modes is determined by:

$$E(z_{ji}) = E(E(z_{ji} \mid y_i)) = E(y_i p_{ji}) = E(y_i) p_{ji} = \frac{\pi_i \lambda_i}{1 - \exp(-\lambda_i)} p_{ji} \quad (6)$$

Equation (6) shows that the FDI rate of an FDI mode is related to not only the probability of choosing that mode of FDI but also the rate of total FDI. It also shows that the FDI rate of an FDI mode is proportional to both the probability of undertaking FDI and the probability of choosing that FDI mode, and is strictly increasing in λ_i .

We examine the choice of FDI modes at the firm level by running a multinomial logistic regression defined by equations (4) and (5) on the Japanese FDI projects and dr1, dr2, dlrw, drp, and dlfs including industry-specific dummy variables. The industry-specific variables account for the possible heterogeneous effects of different industry level FDI (Wang 2009). We use the estimates of the logit coefficients of the FDI determinants to calculate the odds ratios for all possible comparisons of two FDI modes. The change in the odds ratios for two modes of FDI measures the effect of the change in an FDI determinant on the probabilities of undertaking two different modes of FDI. The pair-wise comparisons between different modes of FDI allow us to answer an interesting question: How does a change in a FDI determinant affect the odds of a firm choosing one mode of FDI over another mode of FDI? For example, how does a single downgrade in the main bank's credit rating affect the attractiveness of M&A FDI relative to joint venture FDI? Or, how does an increase in firm size affect the choice between new plant FDI and M&A FDI?

Table 3 shows the results of the odds ratios that compare the pairs of FDI modes. The first column of Table 3 indicates pairs of two FDI modes where the second FDI mode is chosen as the reference point. The first three rows of Table 3 show the estimates of the coefficients of the multinomial logistic regression defined by equations (4) and (5) and described above. These coefficient estimates are also the pair-wise comparisons or odds ratios of M&A/O, NP/O, and JV/O. Using these coefficient estimates, the pair-wise comparisons or odds ratios of the other types of FDI are calculated, i.e., M&A/NP, M&A/JV, and JV/NP where the "other FDI" is held constant.

For each of the four FDI determinants, Table 3 reports the logit coefficients, the change in odds ratios resulting from a change in an FDI determinant and the p-values for the six pair-wise comparisons. For the FDI determinant of dr1, its logit coefficient is $\beta_{1,J|N} = 0.637$ for the choice of JV FDI over NP FDI, and the change in odds ratio as the result of a single downgrade in the Moody's rating of the main bank given other FDI determinants constant is exp(0.637) =1.891. This means that firms with a single

Table 3: Odds Ratios for Comparisons among Pairs of FDI Modes

		FDI Determinants ($x_{k,3}$)				
		dr1	**dr2**	**dlrw**	**drp**	**dlfs**
Comparison	δ	1	1	Std=.350	Std=.011	Std=.097
M&A|O	β k,M|O	-0.214	-0.266	-0.274	25.486	2.418
	Exp (β k,M|O ×δ)	0.913	0.942	0.909	1.324	1.265
	P-value	0.285	0.472	0.271	**0.003**	**0.004**
NP|O	β k,N|O	-0.462	-0.287	-0.060	12.101	0.005
	Exp(β k,N|O ×δ)	0.630	0.750	0.979	1.142	1.001
	P-value	**0.090**	0.524	0.848	0.247	0.996
JV|O	β k,J|O	0.175	-0.554	0.066	17.410	0.981
	Exp(β k,J|O ×δ)	1.191	0.575	1.024	1.211	1.100
	P-value	0.419	0.241	0.816	**0.056**	0.327
M&A|NP	βk,M|N	0.248	0.021	-0.215	13.385	2.412
	Exp(β k,M|N ×δ)	1.281	1.022	0.928	1.159	1.265
	P-value	0.402	0.967	0.526	0.239	**0.046**
M&A|JV	β k,M|J	-0.389	0.288	-0.341	8.076	1.436
	Exp(β k,M|J ×δ)	0.678	1.334	0.888	1.093	1.150
	P-value	0.114	0.588	0.275	0.397	0.179
JV|NP	βk,J|N	0.637	-0.267	0.126	5.308	0.976
	Exp(β k,J|N ×δ)	1.890	0.766	1.045	1.060	1.100
	P-value	**0.040**	0.653	0.732	0.658	0.463

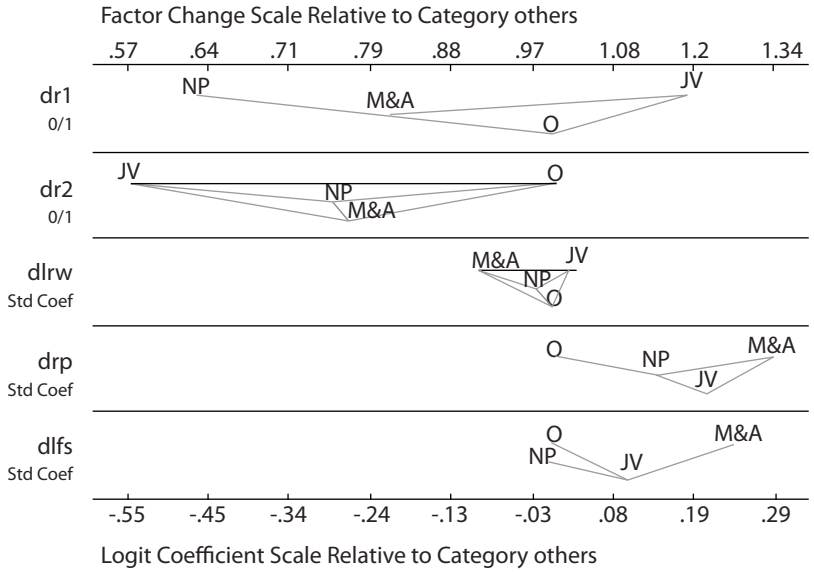
M&A = merger and acquisition, NP = new plant, JV = joint venture, and O = other FDI.

Note: dr1 and dr2 refer to single and multiple downgrades of the firm's main bank. dlrw, drp, and dlfs refer to a one-standard deviation change in the firm's relative wealth, profit, and firm size, respectively. The combinations of M&A/O, NP/O, and JV/O are estimated using a multinomial logistic regression. These results are then used to calculate the pair-wise comparisons of M&A/NP, M&A/JV, and JV/NP holding O constant. The parameter estimates of the other six pair-wise comparisons mirror those of the corresponding pairs with the same P-values. For instance, β1,NP|M&A = – β1,M&A|NP = –0.248, and the P-value is also 0.402.

downgrade in the Moody's rating of their main banks are 1.891 times more likely to choose joint venture FDI mode over new plant FDI mode at a significance level of 5% with a p-value is 0.040. Similarly, for the FDI determinant of dlfs, its logit coefficient is $\beta_{4,M|N} = 2.412$ for the choice of M&A FDI over NP FDI, and the change in odds ratio resulting from a one standard deviation increase in firm size is exp(2.412×0.097) =1.265. Hence, firms with a standard deviation increase in firm size given other FDI determinants constant are 1.265 times more likely to choose M&A FDI mode over NP FDI mode, and this effect is significant at 5% as the p-value is 0.046. Both dr2 and dlrw have little impact on the choice of different FDI modes, as the p-values for all the six comparisons are larger than 10%.

To visualize the pair-wise comparisons, we plot odds ratios between pairs of FDI modes from Table 3 in Figure 1. The left-hand side of Figure 1 shows changes in FDI determinants. The horizontal axis at the bottom of Figure 1 shows the logit coefficient scale relative to other FDI mode while the horizontal axis at the top of Figure 1 shows the factor change scale relative to the O FDI mode. Interpreting the odds ratios to make pair-wise comparisons requires taking into account three factors: the relative location of two FDI modes, the distance between the two modes, and the significance of the difference between two modes. A mode on the right of Figure 1 is more likely to be chosen relative to the one on its left as the result of a change in an FDI determinant given that the other determinants are held constant. For example, in response to a single downgrade in the credit rating of a firm's main bank, a firm is more likely to choose JV FDI over each of the other three FDI modes. The distance between two FDI modes measured by the logit coefficient scale is the difference between the logit coefficients of two FDI modes, which compares an FDI mode on the right relative to the one on its left. This indicates the impact of a change in an FDI determinant on the odds ratio of the two modes. For example, for the FDI determinant of dr1, the distance on the logit coefficient scale between JV FDI and NP FDI is $\beta_{1,J|N} = \beta_{1,J|O} - \beta_{1,N|O} = 0.175 – (-0.462) = 0.637$, which is much larger than the distance between JV FDI and any of the other three FDI modes. Hence, in response to a single rating downgrade, Japanese firms' preference for joint venture FDI over NP FDI is much stronger than their preference for JV FDI over O FDI. A connecting line between two modes indicates that the differential impact of an FDI determinant is insignificant at the 10% level while the absence of a connecting line indicates significance at the 10% level. For example, Figure 1 shows a line connecting joint venture FDI and M&A FDI but no line connects JV FDI with NP FDI with a single rating downgrade (dr1). Therefore, the differential impact of a single rating downgrade on JV FDI and M&A FDI is insignificant whereas the differential impact on JV FDI and NP FDI is significant.

Figure 1: Plot of Odds Ratios between Pairs of FDI Modes



M&A = mergers and acquisitions, NP = new plant, JV = joint venture, O = other FDI.

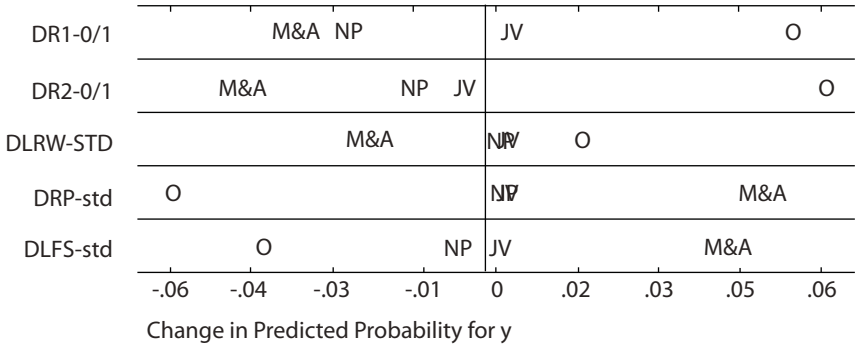
Note: dr1 refers to one downgrade of the main bank's credit rating; dr2 refers to multiple downgrades of the main bank's credit rating; dlrw refers to a one standard deviation increase in relative wealth; drp refers to a one standard deviation increase in profitability; dlfs refers to a one standard deviation increase in firm size.

The cases of significant differential impact between pairs of FDI modes are generally sensible and consistent with economic intuition. For example, in response to a single downgrade in the main bank's credit rating, firms are more likely to engage in JV FDI than NP FDI since the former typically requires a smaller amount of funds than the latter. Similar factors may also explain why NP FDI is less likely than some types of other FDI, such as plant expansion and increase in equity stakes. In response to an increase in profitability, firms are more likely engage in M&A FDI than other FDI. Higher profits will increase the amount of internal funds available for FDI and, at the same time, may encourage firms to pursue rapid growth. Relative to other FDI modes, M&A FDI offers the acquiring firm a faster way to enter foreign markets and achieve growth. Higher profits may also make a Japanese firm a more attractive joint venture partner for US firms, which helps to explain the significant difference between JV FDI and O FDI. Similarly, in response to an increase in firm size, M&A FDI is significantly more likely than NP FDI or O FDI. Fast-growing Japanese firms may prefer M&A FDI over other modes of FDI as a way of quickly expanding into the US market. M&A, whether at home or abroad, often enables firms to grow faster than is possible through organic growth.

We also examine the effect of changes in FDI determinants on the probability of choosing a particular FDI mode defined by equation (5) for a firm with the average values of the FDI determinants; and we present the results in Figure 2. The left-hand side of Figure 2 shows changes in FDI determinants such as downgrade in the main bank's credit rating or a standard deviation increase in firm size or profitability. The plots in Figure 2 show the

change in the probability of undertaking a particular mode of FDI for a typical Japanese firm with the average values of the FDI determinants resulting from a change in an FDI determinant. For example, a single downgrade in the Moody's rating of the main bank has a negative effect on both M&A FDI and NP FDI for the typical Japanese firm. More precisely, the probability of undertaking M&A FDI and NP FDI decreases by 0.033 and 0.028, respectively, in response to a single downgrade. A standard deviation increase in the profitability has a large positive impact on the probability of undertaking M&A FDI, increasing it by 0.055. More generally, the FDI determinants seem to have a bigger effect on M&A FDI and other FDI than for the other two modes of FDI. The quantitative impact of a change in FDI determinant is quite small for JV FDI and NP FDI except for the impact of a single rating downgrade on NP FDI. Interestingly, the change in FDI determinants usually has a large and opposite effect on M&A FDI and O FDI. This implies a degree of substitutability between the two modes of FDI. For example, higher profits seem to encourage firms to pursue M&A FDI but discourage them from O FDI.

Figure 2: Relationship between Changes in FDI Determinants and Changes in Probabilities of Undertaking FDI Modes



M&A = mergers and acquisitions, NP = new plant, JV = joint venture, O = other FDI.

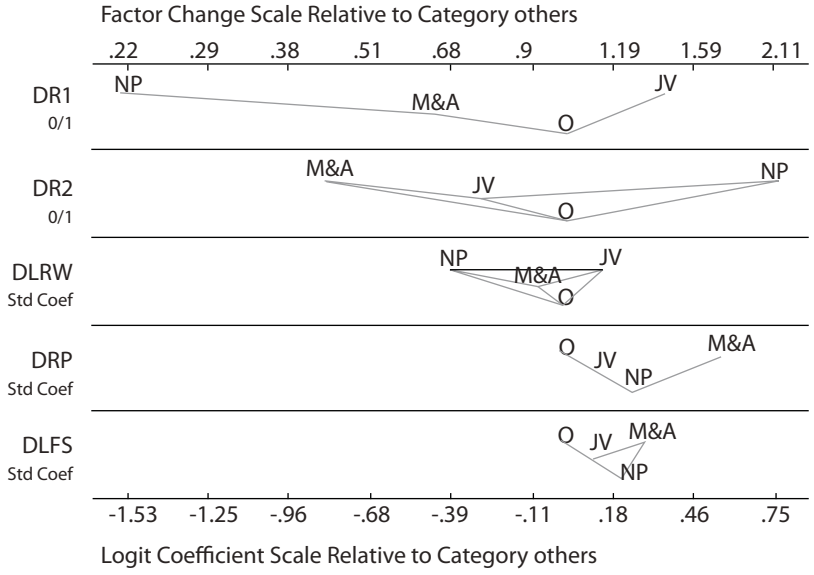
Note: DR1-0/1 refers to one downgrade of the main bank's credit rating; DR2-0/1 refers to multiple downgrades of the main bank's credit rating; DLRW-std refers to one standard deviation increase in relative wealth; DRP-std refers to one standard deviation increase in profitability; DLFS-std refers to one standard deviation increase in firm size.

We could interpret the results of the zero-truncated Poisson regression (Table 2), the multinomial logistic regression (Table 3), and the changes in the probabilities of undertaking FDI modes (Figure 2) as follows. The FDI determinant of a single downgrade, dr1, is significant in both the rate of FDI, λ_i, (Table 2) and the probability of choosing a particular FDI over another mode (Table 3). Table 2 shows that dr1 is negative, which means that a single downgrade could lower the value of λ_i. Figure 2 shows that for determinant dr1, the changes in probabilities of undertaking FDI modes are negative for M&A and NP FDI, but positive for JV and O FDI. This means that for dr1, the drop in the value of the probability of a firm choosing either NP or M&A mode is larger than JV or O FDI. Furthermore, from equation (6), we can infer that the changes in probabilities translate to rates of FDI for different modes. Hence, for dr1, the drop is larger for the rate of either M&A FDI or NP FDI than JV FDI or O FDI. For both profitability (drp) and

firm size (dlfs), they are significant determinants only in probabilities (Table 3) but not in rate of FDI (Table 2). Hence, an increase in either profitability or firm size may result in a higher increase in the rate of M&A FDI projects because of a larger increase in the probability of choosing M&A FDI over the other three modes (Figure 2). Finally, since both multiple downgrade (dr2) and an increase in firm's relative wealth (dlrw) are significant only in λ_i in Table 2, dr2 may lead to a lower rate of undertaking each of the four FDI modes but dlrw may lead to a higher rate of undertaking each of the four FDI modes.

To check for the robustness of our empirical results, we divide our sample of firms according to their degree of dependence on bank loans for financing. Firms may differ with respect to how they finance their investments including FDI. For some firms, typically larger well-established firms, issuing bonds are the major source of funds while for other firms, bank loans may be more important. To capture such differences, our first subsample consists of firms that rank in the top 30% in terms of the bonds-to-liabilities ratio while our second subsample consists of firms that rank in the bottom 70%. As Figures 3, 4, 5 and 6 show, the results for the two subsamples are quite similar to those for the whole sample, for both (i) the effect of a change in FDI determinant on the probability of each FDI mode and (ii) the effect of a change in FDI determinant on choosing between two FDI modes. This provides some confidence about the robustness of our results.

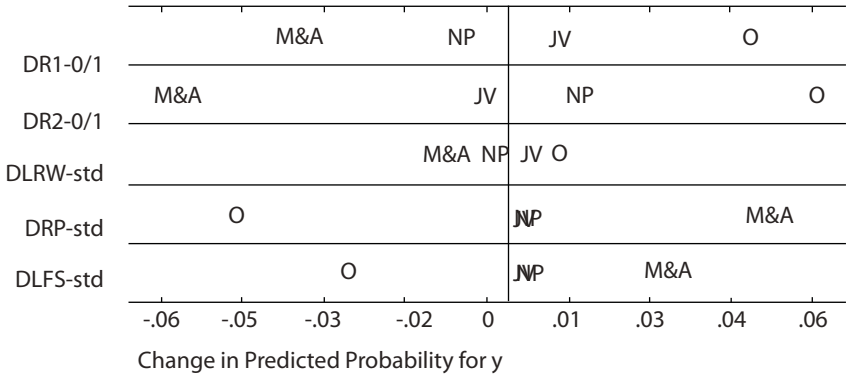
Figure 3: Plot of Odds Ratios between Pairs of FDI Modes, Subsample of Firms in the Top 30% of Bonds-to-Liabilities Ratios



M&A = mergers and acquisitions, NP = new plant, JV = joint venture, O = other FDI.

Note: dr1 refers to one downgrade of the main bank's credit rating; dr2 refers to multiple downgrades of the main bank's credit rating; dlrw refers to a one standard deviation increase in relative wealth; drp refers to a one standard deviation increase in profitability; dlfs refers to a one standard deviation increase in firm size.

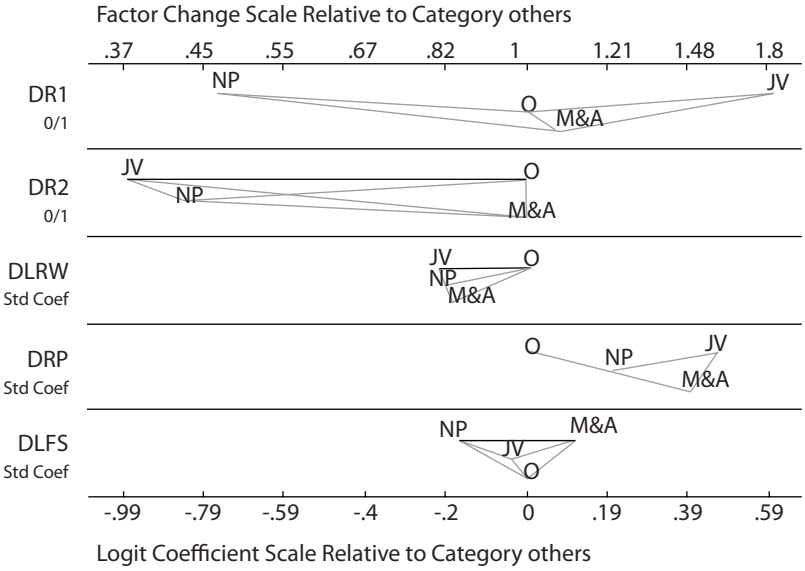
Figure 4: Relationship between Changes in FDI Determinants and Changes in Probabilities of Undertaking FDI Modes, Subsample of Firms in the Top 30% of Bonds-to-Liabilities Ratios



M&A = mergers and acquisitions, NP = new plant, JV = joint venture, O = other FDI.

Note: DR1-0/1 refers to one downgrade of the main bank's credit rating; DR2-0/1 refers to multiple downgrades of the main bank's credit rating; DLRW-std refers to one standard deviation increase in relative wealth; DRP-std refers to one standard deviation increase in profitability; DLFS-std refers to one standard deviation increase in firm size.

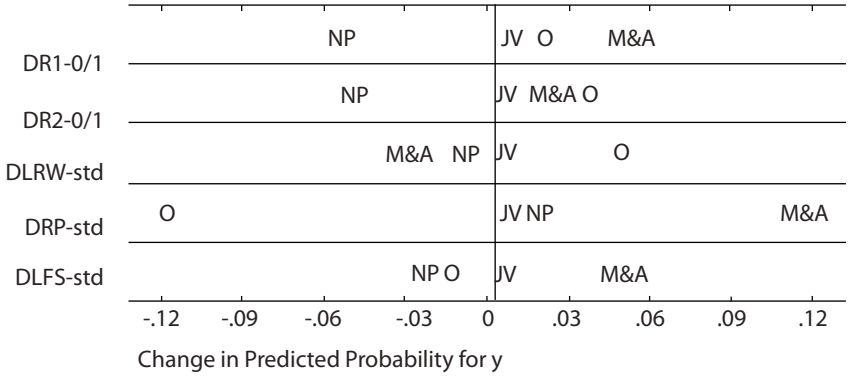
Figure 5: Plot of Odds Ratios between Pairs of FDI Modes, Subsample of Firms in the Bottom 70% of Bonds-to-Liabilities Ratios



M&A = mergers and acquisitions, NP = new plant, JV = joint venture, O = other FDI.

Note: dr1 refers to one downgrade of the main bank's credit rating; dr2 refers to multiple downgrades of the main bank's credit rating; dlrw refers to a one standard deviation increase in relative wealth; drp refers to a one standard deviation increase in profitability; dlfs refers to a one standard deviation increase in firm size.

Figure 6: Relationship between FDI Determinants and Changes in Probabilities of FDI Modes, Subsample of Firms in the Bottom 70% of Bonds-to-Liabilities Ratios



M&A = mergers and acquisitions, NP = new plant, JV = joint venture, O = other FDI.

Note: DR1-0/1 refers to one downgrade of the main bank's credit rating; DR2-0/1 refers to multiple downgrades of the main bank's credit rating; DLRW-std refers to one standard deviation increase in relative wealth; DRP-std refers to one standard deviation increase in profitability; DLFS-std refers to one standard deviation increase in firm size.

V. Concluding Observations

Foreign direct investment is far from monolithic but encompasses many different types of investment activities. There are four major modes of FDI—mergers and acquisitions, joint venture, new plant, and other FDI—and each has its own unique characteristics, advantages, and disadvantages. For example, in contrast to the three other modes of FDI, M&A FDI gives the acquiring firm ready access to the market share, technology, brand name, and other-firm specific assets of the other firm. As a result, the acquiring firm immediately gains a competitive advantage in the foreign market. M&A FDI is thus one of the fastest ways for the investing firm to enter a foreign market. In contrast, if the mode of FDI is to build new production facilities, the investor cannot begin its operations in the foreign market until those facilities are completed, which may require a substantial period of time. On the other hand, new plant FDI may be the only mode of entry into a market without existing production facilities in the acquiring firm's industry. Although ideal for firms sharing tacit but distinct firm-specific assets, a joint venture requires a continuous negotiation of shared resources that may compromise efficiency in the use of assets. Other FDI, which includes acquisition of real estate, increase in equity stakes, and plant expansion, may be ideal for gradually expanding investment in a foreign market.

In light of the intrinsic heterogeneity of FDI, we can expect the different determinants of FDI such as relative access to credit, relative wealth, and firm characteristics to have differential effects on the different FDI modes. For example, with respect to relative wealth, Klein and Rosengren (1994) show that a rise in relative stock prices could have a greater impact on M&A FDI than other types of FDI. Oster (1990) explains the attractiveness of M&A relative to non-M&A FDI by reasoning that firms prefer M&A when stock prices of target firms are depressed making M&A more attractive than establishing a new plant or entering into a joint venture. In addition, Chatterjee (1990) hypothesizes

that large firms with high stock prices can exchange their stocks with the acquired firm's stock. This provides an additional method of financing M&A FDI apart from cash. However, Blonigen (2005) fails to find conclusive evidence that the effect of relative wealth is larger on M&A than non-M&A FDI. The effect of relative wealth on M&A FDI may be inconclusive because acquiring firms do not always choose to pay for the acquired firms using stocks. Faccio and Masulis (2005) reason that the higher price of acquiring firms' stocks may not necessarily result in more M&A FDI because stock payments have advantages and disadvantages.

Most studies delving into the determinants of the different modes of FDI are limited to comparative analyses of M&A FDI versus non-M&A FDI. While the distinction between the two modes of FDI is an important one, a richer and more comprehensive analysis calls for investigating the determinants of all four major modes of FDI rather than just M&A FDI and non-M&A FDI. The primary innovation of this paper and our original contribution to the large and growing empirical literature on FDI is that we explicitly divide FDI into the four major modes of FDI and look at the effect of FDI determinants on each mode. To do so, we apply the basic empirical framework set out in Klein, Peek, and Rosengren (2002) to firm-level data to explore Japanese M&A FDI, joint venture FDI, new plants FDI, and other FDI into the US. Our empirical analysis is based on a stylized two-stage investment process in which firms decide whether or not to pursue FDI in the first stage and decide upon the mode of FDI in the second stage.

Our empirical results for both stages are generally plausible and consistent with economic intuition. In the first stage, our results indicate that the financial health of their main banks and their own relative wealth has a significant positive impact on the probability of Japanese firms investing in the US. Our results also imply that for Japanese firms investing in the US, the same two FDI determinants have a significant positive impact on the rate of FDI projects. More importantly, most of our main findings can still be interpreted sensibly in the second stage of the analysis, which marks the innovation of this paper. For example, we find that when its main bank suffers a single downgrade in its credit rating, a firm is more likely to pursue joint venture than new plants FDI. A possible reason is that the former typically requires a smaller amount of funds than the latter. We also find that in response to a single rating downgrade, firms are less likely to engage in new plant FDI than some types of other FDI, such as plant expansion and increase in equity stakes. Again, a possible interpretation is that the former may require more funds than the latter.

Perhaps the most concrete and specific contribution of our study to future researchers of the determinants of FDI is that it highlights the fact that the effect of FDI determinants on FDI may not be uniform across all modes of FDI. If the data are available, future researchers should consider investigating not only the determinants of FDI as a whole but also the determinants of different modes of FDI. While we seek to address a shortcoming in the empirical literature on FDI by decomposing FDI into its major modes and delving into the determinants of each mode, our study is only a first step in a promising new research program. For one, our analysis is limited to the study of Japanese firms

investing in the US. Extending the geographical scope of the analysis to home countries other than Japan and host countries other than the US would be interesting and meaningful. In particular, examining the determinants of FDI modes in emerging markets would be worthwhile since the FDI dynamics in those countries are quite different from the dynamics in industrialized countries. Including more variables such as political risk and government regulation on inward FDI is another interesting option. Those variables are likely to be especially relevant for emerging markets. Yet another avenue for future research is to experiment with alternative empirical models.

References

Blonigen, B. 2005. "A Review of the Empirical Literature on FDI Determinants." *Atlantic Economic Journal* 33:383–403.

Cameron, A. C., and P. K. Trivedi. 1986. "Econometric Models Based on Count Data: Comparisons and Applications of Some Estimators and Tests." *Journal of Applied Econometrics* 1:29–53.

Caves, R. 1971. "International Corporations: The Industrial Economics of Foreign Investment." *Economica* 38:1–27.

Chatterjee, S. 1990. "Excess Resources, Utilization Costs and Mode of Entry." *Academy of Management Journal* 33:780–800.

Faccio, M., and R. Masulis. 2005. "The Choice of Payment Method in European Mergers and Acquisitions." *Journal of Finance* 60:1345–88.

Froot, K., and J. Stein. 1991. "Exchange Rates and Foreign Direct Investment: An Imperfect Capital Markets Approach." *Quarterly Journal of Economics* 106:1191–217.

Gao, B. 2001. *Japan's Economic Dilemma: The Institutional Origins of Prosperity and Stagnation.* New York: Cambridge University Press.

Gibson, M. 1995. "Can Bank Health Affect Investment? Evidence from Japan." *Journal of Business* 68:281–308.

Graham, E., and P. Krugman 1995. *Foreign Direct Investment in the United States.* Institute for International Economics, Washington, DC.

Ho, W., P. Wang, and J. Alba. 2009. "Merger and Acquisition FDI, Relative Wealth and Relative Access to Bank Credit: Evidence from a Bivariate Zero-inflated Count Model." *International Review of Economics and Finance* 18:26–30.

Horst, T. 1972. "Firm and Industry Determinants of the Decision to Invest Abroad: An Empirical Study." *Review of Economics and Statistics* 54:258–66.

Klein, M., and E. Rosengren. 1994. "The Real Exchange Rate and Foreign Direct Investment in the United States: Relative Wealth vs. Relative Wage Effects." *Journal of International Economics* 36:373–89.

Klein, M., J. Peek, and E. Rosengren. 2002. "Troubled Banks, Impaired Foreign Direct Investment: The Role of Relative Access to Credit." *American Economic Review* 92:664–82.

Mullahy, J. 1986. "Specification and Testing of Some Modified Count Data Models." *Journal of Econometrics* 33:341–65.

Noguchi, Y. 1993. "The 'Bubble' Economy and Its Aftermath." In Y. Kano, Y. Noguchi, S. Saito, and H. Shimada, eds., *The Japanese Economy in the 1990s: Problems and Prognoses.* Tokyo: Foreign Press Center.

Oster, S. 1990. *Modern Competitive Analysis.* New York: Oxford University Press.

Toyo Keizai, Inc., various years. *Japan Company Handbook*. Tokyo.

Wang, M. 2009. "Manufacturing FDI and Economic Growth: Evidence from Asian Economies." *Applied Economics* 41:991–1002.

About the Paper
Joseph D. Alba, Donghyun Park, and Peiming Wang use firm-level evidence from Japanese foreign direct investment (FDI) into the United States to investigate the determinants of different modes of FDI. More specifically, the empirical analysis examines the extent to which the determinants of FDI such as firm size influence the choice of one mode of FDI over another. The four major modes of FDI are merger & acquisition, joint venture, new plant and other modes.

About the Asian Development Bank
ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries substantially reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two-thirds of the world's poor: 1.8 billion people who live on less than $2 a day, with 903 million struggling on less than $1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

Asian Development Bank
6 ADB Avenue, Mandaluyong City
1550 Metro Manila, Philippines
www.adb.org/economics
ISSN: 1655-5252
Publication Stock No.

Printed in the Philippines