DETERMINANTS OF JAPANESE DIRECT INVESTMENT IN SELECTED BIMP-EAGA COUNTRIES

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ABSTRACT

This paper uses panel data analysis to identify how Japanese multinational corporations (MNCs) allocate their investments in the selected BIMP-EAGA countries (i.e. Malaysia, Indonesia and the Philippines). The paper hypothesizes that the following six elements would influence the inflow of Japanese Direct Investments (JDI) into the area: country's market size, growth rate of market size, per capita income, trade deficit, inflation rates and political condition. The main findings from the panel data analysis are that there is a significant relationship between Japanese direct investments and political condition in the recipient countries. The inflows of Japanese investment tend to decrease as the political risk increases. It means that Japanese MNCs tend to allocate more investments into the countries with better political condition.

Keywords: Foreign Direct Investment, ASEAN, Japan, Multinational Corporation

INTRODUCTION

Japanese multinational corporations (MNCs) have developed their production networks around the world, including member countries of BIMP-EAGA **(Brunei Darussalam - Indonesia - Malaysia - Philippines East ASEAN Growth Area),** through their direct investment. On the one hand, Japanese MNC's selection of investment locations and their choices normally depend on their assessment of the host countries' competitive advantage. On the other hand, there has been increasing awareness that Foreign Direct Investments (FDI) could bring the necessary ingredients for economic development to the recipient countries.

Japanese investments have played an important role in industrial development in the East Asian countries, especially after the Plaza Agreement (1985) when leaders of advanced countries decided to revalue the Japanese Yen against US dollar (Phongpaichit, 1990). Since then, there has been rapid increase in Japanese investment in the region and Japan became one of its top investors. This phenomenon was the so-called, 'second wave' of

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Japanese investment in Southeast Asia (Furuoka, 1995).

Despite the significant contributions of foreign investments to regional economic development, there remains a lack of systematic research on the topic. This paper chooses Japanese investments in three countries in the BIMP-EAGA (i.e. Malaysia, Indonesia and the Philippines) as a case study to analyse how foreign investors choose their investment destinations. Due to a lack of sufficient systematic economic data, this study excludes Brunei Darussalam from the analysis.

This study will use the panel data analysis to examine the pattern of Japanese investment inflow in the region. The main research question is, 'What are the main factors which influence Japanese MNCs' decision-making process in the choice of their investment destinations?'

This paper consists of five parts. Following this introduction, the second part briefly reviews the previous researches on the determinants of foreign direct investment. The third part discusses the research methodology which is used to analyze the Japanese investment allocation model. The fourth part describes the research findings from the data analysis. Concluding remarks are given in the final part of this paper.

LITERATURE REVIEW

There is a fairly large number of researches which have been devoted to the analysis of the determinants of FDI (Goldberg and Klein, 1998; Nakayama and Oyama, 1998; Furuoka, 2002; Bende-Nabende, 2002; Akinkugbe, 2003). Although there is no consensus among researchers as to a consistent set of factors, the following six are usually viewed as determining the FDI inflow: (1) market size, (2) growth rate of market size, (3) per capita income, (4) trade deficit and, (5) inflation rate.

The market size of the host country, as indicated by its Gross Domestic Product (GDP), and its growth rate could be considered as important determinants of the FDI inflow. Appleyard and Field (2001) point out that MNCs invest abroad in response to large and rapidly growing markets for their products. Mbekeani (1997) concludes that the market size of a host country and its growth rate have been among the most important determinants of FDI inflows into the Asia-Pacific and Latin American countries.

The per capita GDP could also influence the inflow of Japanese investment. As the per capita GDP increases in the recipient country, local consumers would experience a higher standard of living. Thus, some Japanese companies would invest to set up their production base to cater to the needs of middle- or upper-class consumers. Root and Ahmed (1979) discovered that foreign companies tended to invest more money into recipient countries with higher per capita GDP.

Trade deficit has also been viewed as a potential determinant of FDI inflow. Chakrabarti (2001) asserts that trade deficit has often been referred to as being an important determinant

of foreign investment. However, no consensus has been reached among researchers regarding the relationship between the two variables. Some researchers claim that there is a significant positive relationship between trade deficit and FDI inflow (Tsai, 1994) while others argue that there is a significant but negative relationship between the two variables (Lucas, 1993).

Furthermore, there are other factors which may affect negatively the inflow of foreign investment. Examples are political and economic risks in the recipient countries. If the countries suffer from high inflation rate or high unemployment rate, the MNCs will be reluctant to invest in these countries. This is because high inflation rate or unemployment rate can be interpreted as a sign of instability of macroeconomic foundations in the recipient countries. If the governments in the countries are authoritarian regimes and restrict citizens' political rights, the MNCs will not be keen to invest in these countries. This is mainly because the countries with authoritarian regimes can be considered as business-unfriendly countries which suffer from high corruption rates and excessive bureaucratic red tapes. Akinkugbe (2003) incorporates inflation rate and political risks into the foreign investment allocation model. Akinkugbe finds a negative but not a significant relationship between these risks in the recipient countries and inflow of foreign investments.

Urata and Kawai (2000) examine how Japanese small and medium enterprise (SMEs) decides on the location for their investment. According to them, there are two main factors (i.e. supply-side and demand-side) which can influence their decision-making process on selecting the location for their investment. On the one hand, the supply side-factors include low-wage labour and good infrastructure. On the other hand, the demand-side factor includes the size of the local market.

RESEARCH METHODOLOGY

This paper uses panel data analysis to identify the determinants of Japanese Direct Investment (JDI) in three countries in the BIMP-EAGA (i.e. Malaysia, Indonesia and the Philippines) between 1989 and 2002. It is hypothesised that the inflow of JDI into these countries is determined by the following six factors: (1) gross domestic product, (2) growth rate of gross domestic product, (3) per capita gross domestic product, (4) current account deficits, (5) political risk and (6) inflation rates. The function of JDI can be expressed as:

$$\text{JDI} = \text{f}\ (GDP_{it},\ UR_{it,}\ PCGDP_{it},\ GRGDP_{it},\ CA_{it},\ PR_{it},\ CPI_{it}) \qquad (1)$$

JDI_{it} : amount of JDI in the country i in the year t
GDP_{it} : GDP in the country i in the year t
UR_{it} : unemployment rate in the country i in the year t
$PCGDP_{it}$: per capita GDP in the country i in the year t
$GRGDP_{it}$: growth rate of GDP in the country i in the year t
CA_{it} : current account deficit in the country i in the year t
PR_{it} : political risks in the country i in the year t
CPI_{it} : consumer price index (CPI) in the country i in the year t

This research includes both GDP and the growth rate of GDP, partially because other researchers also include both the elements. More importantly, the GDP captures the size of the local market while growth rate of GDP captures the economic size of the recipient countries. For example, Indonesia can have a bigger market with moderate economic growth rate (moderate economic condition) while Malaysia can have a moderate-size local market with higher economic growth rate (better economic condition).

Annual time-series data for the gross domestic product (GDP_{it}), unemployment rates (UR_i), growth rate of GDP ($GRGDP_{it}$), per capita GDP ($PCGDP_{it}$), current account deficit (CA_{it}) and consumer price index and consumer price index (CPI_{it}) are collected from the Asian Development Bank (2005). Although the annualised inflation rate could have been a better measurement to capture the inflationary condition of recipient countries, this paper uses the consumer price index as the proxy to measure the price level of recipient countries.

With regard to Japanese investment (JDI_{it}), the data source is the Ministry of Finance, Japan. The annual time-series data for Japanese investment in these countries are collected from the Ministry of Finance, Japan (2005).

Akinkugbe (2003) uses the "Freedom in the World Country Ratings" of Freedom House to measure the political risk (PR_{it}) of a recipient country. This study also adopts the ratings of Freedom House. Here, political rights are measured on a one-to-seven scale, with one representing the highest degree of freedom and seven the lowest. The annual time-series data for political risks are collected from Freedom House (2005).

In this study, three different econometric methods are used: (1) pooled ordinary least square (OLS), (2) fixed effects and random effect model, and (3) the feasible Generalised Least Square (FGLS). Fixed-effects approach is better suited for the cases where there exist unobservable country-effects and unobservable time-effects. If the unobserved individual heterogeneity is uncorrelated with the variable, the random-effects model is a better choice (Greene, 2003).

Kmenta (1986) argued that ordinary least square (OLS) method is unsuitable to estimate the panel data because this estimation is based on the classical regression assumption of homoschedasticity and cross-sectional correlation. GLS can effectively treat these problems. However, GLS is based on the assumption that the variance component is known. This is unlikely in the many an econometric model. Thus, the disturbance variance should be estimated in the first stage and only then an FGLS be used in the second stage (Greene, 2003).

In order to incorporate unobserved group-specific effect (Green, 2003), the fixed effects model could take the form:

$$y_{it} = \alpha_i + x'_{it}\beta + \varepsilon_{it}, \qquad (2)$$

where y_{it} is regressand, α_i is recipient-effects, x_{it} is $1 \times K$ regressor vector, β is $1 \times K$ slope

vector and ε_{it} is the error term. The random effect-model could be written as:

$$y_{it} = \alpha + u_i + x'_{it}\beta + \varepsilon_{it}, \qquad (3)$$

where u_i is group specific random element. According to Kmenta (1986), the FGLS estimation could be based on equation (2). The generalised least square slope parameters could be expressed as:

$$\hat{\beta} = (x'\Omega^{-1}x)^{-1}x'\Omega^{-1}y \qquad (4)$$

Ω is the disturbance covariance matrix. This paper uses two FGLS models to estimate for the heteroskedastic panel. The first model is appropriate when the residuals are cross-sectional heteroskedastic and contemporaneously uncorrelated. Also, the second model is appropriate when the residuals are both cross-sectional heteroskedastic and contemporaneously correlated.

EMPIRICAL FINDINGS

The findings of the fixed-effects model are reported in Table 1 and Table 2. Without taking into account the fixed effect, the coefficient of determination (R^2) is 0.675. Incorporating for country-effects causes R^2 to increase to 0.683. Conditioning on both country- and time-effects leads to a further improvement of R^2 to 0.873.

To compare the pooled OLS model and one-way fixed effects model with the two-way fixed effects model, the null hypothesis that time-effects equal zero could not be rejected. This result seems to indicate that pooled OLS analysis is better than the one-way fixed effect model and two-way fixed effect model. The inflow of Japanese investment in the five ASEAN countries is not influenced by country- and time-effects.

Comparing the one-way fixed effects model with the one-way random effects model, the Lagrange Multiplier Test and Hausman test also indicates that pooled OLS is a better choice for the analysis. Furthermore, comparing the two-way fixed effects model with the two-way random effects model, the Lagrange Multiplier Test and Hausman test indicate that the pooled OLS is a better choice for the analysis. These findings indicate that pooled OLS is the best model to examine the determinant of Japanese investment in ASEAN countries.

As the pooled OLS model shows, three independent variables (CA_{it}, $PCGDP_{it}$ and PR_{it}) have a significant relationship with inflows of Japanese investment in the ASEAN countries. This seems to show that the inflows of Japanese investment tend to decrease as the political risk and capital account deficits increase. It also shows that Japanese companies tend to allocate their investment in countries with better political condition, higher per capita income and lower capital deficit.

Table 1. Pooled OLS, One-Way Fixed Effect and One-Way Random Effects

	Pooled OLS	**One-Way Fixed Effects**	**One-Way Random Effects**
GDP	0.337 (1.718)	-0.086 (-0.152)	0.259 (0.868)
UR	11.648 (0.241)	52.621 (0.721)	18.682 (0.346)
CPI	-10.832 (-0.850)	-9.784 (-0.742)	-10.415 (-0.796)
CA	-0.458 (-2.734)**	-0.045 (-2.478)*	-0.045 (-2.580)**
PCGDP	-0.458 (-2.083)*	-0.044 (-0.287)	-0.106 (-1.014)
GRGDP	-12.351 (-0.487)	-18.138 (-0.635)	-12.740 (-0.481)
PR	257.710 (4.080)**	195.457 (1.776)	248.358 (3.349)**
R^2	0.657	0.683	0.675
Lagrange Multiplier Test (One-way) (Random-effects/Fixed-effects vs. Classical Regression Model)			1.57
Hausman Specification Test (One-Way) (Fixed-effects vs. Random-effects)			0.72
F Test for Model Specification (One-Way Fixed Effects vs. Pooled OLS)			0.359

Notes: JDI is the dependent variable. Numbers in parentheses in pooled and fixed effect model are t-statistics. Number in parentheses is in random effects derived from coefficient divided by standard errors. * Indicates significance at the 0.05 level. ** Indicates significance at the 0.01 level

Table 2. Two-Way Fixed Effect and Two-Way Random Effects

	Two-Way Fixed Effects	Two-Way Random Effects
GDP	-0.131	-0.045
	(-0.198)	(-0.117)
UR	-25.747	22.765
	(-0.278)	(0.373)
CPI	-6.860	-5.397
	(-0.541)	(-0.452)
CA	-0.089	-0.507
	(-2.112)*	(-1.892)
PCGDP	-0.556	-0.227
	(-2.433)*	(-1.791)
GRGDP	1.332	11.105
	(0.034)	(0.348)
PR	212.048	228.778
	(1.779)	(2.915)
R^2	0.873	0.675
Lagrange Multiplier Test (Two-Way) (Random-effects/Fixed-effects vs. Classical Regression Model)		1.85
Hausman Specification Test (Two-Way) (Two-way Fixed-effects vs. Random-effects)		7.03
F Test for Model Specification (Two-Way Fixed Effects vs. Pooled OLS)		1.863
F Test for Model Specification (Two-Way Fixed Effects vs. One-Way Fixed Effects)		2.211

Notes: JDI is the dependent variable. Numbers in parentheses in pooled and fixed effect model are t-statistics. Number in parentheses in random effects is derived from coefficient divided by standard errors. * Indicates significance at the 0.05 level**.** ** Indicates significance at the 0.01 level.

Table 3. FGLS Models

	Heteroskedastic error structure with no cross-sectional correlation	Heteroskedastic error structure with cross-sectional correlation
GDP	0.337 (1.647)	0.267 (1.337)
UR	11.710 (0.239)	-56.820 (-1.621)
CPI	-10.783 (-0.918)	-12.662 (-1.333)
CA	-0.457 (-3.621)**	-0.307 (-3.675)**
PCGDP	-0.138 (-2.202)*	-0.237 (-4.600)**
GRGDP	-12.238 (0.478)	-0.423 (-0.040)
PR	257.714 (4.139)**	174.456 (4.120)**

Notes: JDI is the dependent variable. Number in parentheses is derived from coefficient divided by standard errors. * Indicates significance at the 0.05 level**.** ** Indicates significance at the 0.01 level

Table 2 shows the findings from two FGLS models. One model specified heteroskedastic error structure with no cross-sectional correlations while the other model specified heteroskedastic error structure with cross-sectional correlations. The FGLS models indicate similar results. Two variables, namely, political risks (PR_{it}) and current account deficit's two independent variables (CA_{it}) have statistically significant relationships with inflows of JDI in ASEAN countries. This fact seems to confirm the empirical finding from the pooled regression analysis. The FGLS model also indicates that another variable ($PCGDP_{it}$) has statistically significant relationships with inflows of JDI in ASEAN countries. This means that the inflows of Japanese investment in the region tend to expand as the country's per capita GDP increases.

The findings from the FGLS model indicate that Japanese companies tend to allocate more investment into countries with appropriate market size. However, the pooled OLS model shows that there is no significant relationship between inflows of Japanese investment and size of market in the recipient countries. Furthermore, both pooled OLS model and the FGLS model indicate that political condition, per capita income and current account deficit in the recipient countries have statistically significant relationships with inflows of Japanese investments.

The findings indicate that Japanese investments in the region tend to decrease as the country's political risks and current account deficits increase. Also, the main findings from the panel data analysis suggest that Japanese MNCs tend to pay due attention to the political

condition or current account deficit in the host country. If the governments in the recipient countries try to restrict the citizens' political rights and have a large amount of current account deficits, Japanese investors are reluctant to allocate their investment in these countries.

CONCLUSION

Many developing countries try to attract foreign investments for their economic development. Japanese investors have played an important role in its industrial development by establishing the production network in the region. This paper made an attempt to analyse what factors have been contributing to the Japanese managers' decision to select a country as their companies' production base in BIMP-EAGA.

Three different panel data methods have been used to examine the determinants of Japanese investment in the region. The pooled OLS model shows that political conditions, per capita income and current account deficit in the recipient country influence significantly the inflow of Japanese investment in the region. The FGLS model indicates a similar result with a minor difference. The empirical research undertaken in this paper suggests that there exists a significant relationship between the inflow of JDI in the region and the political condition of the recipient country.

The findings of this study encourage a closer look at other elements which might influence Japanese investors' decision to locate their factories in the region. Many socio-economic and political aspects of recipient countries (e.g., political stability, government policies, and labour costs) might influence the Japanese investors' decision to allocate their investment. More important, future research should include the volatility of exchange rate which may influence the decision-making process of Japanese companies. Future researches can incorporate these complex factors into the foreign direct investment allocation model. Finally, the scope of research could be expanded into other ASEAN countries. It will be interesting and useful for other researchers to conduct a study which includes all ten member countries of ASEAN.

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