Intra-Industry Comparison of US FDI and Japanese FDI: Determinants of FDI in Manufacturing Industries of ASEAN-4

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ABSTRACT

This paper investigates the determinants of foreign direct investment (FDI) from the United States of America and Japan to manufacturing industries within the ASEAN-4 (Indonesia, Malaysia, Philippines, and Thailand) countries. More specifically, this paper is a comparison analysis of US foreign direct investment and Japanese foreign direct investment into the manufacturing industries, as a whole, within the ASEAN-4 (Indonesia, Malaysia, Philippines, and Thailand). First, this analysis includes a review of recent literature and selected surveys on relative subjects regarding foreign direct investment and host countries. This review ultimately proposes that host economy market sizes, labor costs (income per worker/real GDP per employment), taxation, and preferential access to local markets are some of the key determinants for Japanese capital inflows into host countries. A quantitative analysis was conducted using US data; chosen determinants for US foreign direct investment flows were gross domestic product (GDP), economic growth (growth of GDP), openness (exports/imports), change in consumer price index (CPI-change), political risk (world ranking of no violence), infrastructure (percentage of roads paved), and number of primary school enrollments. Then this paper conducts a comparison between the quantitatively established determinants of US FDI and the descriptive analysis of Japanese FDI. This comparison between US FDI and Japanese FDI is an important addition to the existing literature because it shows the differences between two of the largest economies and how host economies and their policies makers can possibly foster and encourage foreign direct investment, which would then possibly develop long term growth.

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Chapter 1

Introduction

ASEAN countries have had an exponential increase in foreign direct investment during our lifetime. Although FDI generally flows from one wealthy country to another, countries that have certain competitive advantages attract foreign investors as well. The problem lies within how and what does the foreign investor examine and find more important when allocating their capital. To make the most profitable decision, foreign investors will examine specific characteristics of a country in order to do so. Also, governments and policy makers generally wish to draw multinational corporations (MNC’s) to their country, mostly to increase investments. Policy makers wish to understand how MNC’s determine where they locate themselves, in order to offer and foster attractive country characteristics that appeal to multinationals.

The United States of America (US) is one of the most influential countries on Earth; due to this factor, an analysis to hone in on and possibly find the determinants of the US’s FDI within manufacturing industries of the ASEAN-4 (Indonesia, Malaysia, Philippines, and Thailand) countries is necessary to determine what specifically the US foreign investor and MNC’s contemplate when allocating capital. The objective of this paper is to hopefully determine and differentiate the statistically significant and insignificant characteristics and other factors that the ASEAN-4 countries hold, that possibly vary from each other due to local competitive advantages or other features that we shall examine.

The scope of this paper is to quantitatively examine the flows of foreign direct investment from the US to the ASEAN-4 countries. In a different aspect, this analysis will use descriptive methods from already published sources of Ramstetter (2009), Kishi (2003), Banga (2001), and Bora (1994) to differentiate the Japanese investor mindset to that of the US investor mindset and what they hold dear while allocating capital outside of their country.
Chapter 2

Review of Literature

Referring to Alfaro-Charlton (2007), Tuan-Ng (2007), and Nnadozie-Osili (2004), they state many factors of FDI flows from one country to another. Some are the actual products and others are bi-products. Thanks to a colossus amount of studies and literature, researchers have included popular factors such as production costs, market sizes, agglomeration effects, financial incentives, economic reforms, institutional reforms, and investment environments (Political/Financial/Public). Other factors have been used besides the variables listed above, but again, these are the more popular terms that are incorporated into economic models as determinants of FDI, such as worker mobility.

Foreign direct investment flows are the capital allocations from one location to another; with these capital flows, a reaction is created and develops effects that will either have positive and/or negative outcomes. Spillovers and bi-products of these outcomes, due to the original reaction, will sometimes be generated as well. Common observations by many studies have concluded that FDI inflows cause growth within the given country, in which it may be transferred through economic changes in human capital, human capital skills, employment, export trade, and import trade. FDI flows can also have transfers through institutional changes, market integration, innovations of technology transfer, and spatial agglomerations. In regards to developing countries, FDI is a major contribution to that of technology advancement due to spillovers; it is a mechanism/catalyst for technological growth within a developing country.

FDI, in regards to external effects and spillovers, can create an environment of competition and innovation by upgrading technology and enhancing knowledge. Due to the manipulative use of FDI, in regards to growth and development, a country would foster and encourage FDI in order to achieve long term goals.

Due to the Japanese bubble burst well over 10 years ago, revamp and revision to that of the managerial outlook of the business minds have been changed, besides the general Japanese. This slothful managerial outlook of Japanese companies and financial establishments are commonly caused by low capital effectiveness. Possible changes to adjust this sluggish quality
in the Japanese business mindset are to have financial systems grasp the idea of corporate regulation; more specifically, having the individual investor being that of the governance factor.

According to Kishi (2003), Banga (2001), and Bora (1994), differences between Japanese and U.S. FDI are quite different. Although they are both wealthy countries, the productivity varies substantially. The Japanese FDI has a more positive productivity growth than that of the U.S. FDI; maybe this could be due to that of the specific industries that are chosen between U.S. and Japan (Banga, 2001). Other reasons of this varying difference of productivity growth from FDI could be that of trade policies, cultural differences, and/or research differences (Kishi, 2003).

In Ramstetter (2009), it is stated that there are 10 sets of determinants for Japanese FDI into East Asia, in which two happen to mainly be related to revenue creation and the other eight are more relevant to cost configuration. It is stated that multinational corporations (MNC’s) can breed competition and wish to search out for new markets and grow current ones. That is why market size, income, and preferential access to local markets are stated by Ramstetter (2009) to be determinants of general FDI inflows and more specifically, Japanese FDI. MNC’s are renowned for their marketing and export networks, which is why export market size and access is crucial. If these two factors were absent, it would negate some of the main reasons as to why an MNC would be placed within a host country. Labor costs have been considered heavy determinants of FDI flows to host countries; more specifically, labor costs per worker and real GDP per employment are essential. An MNC wishes to reap the rewards of a market in which they have a comparative in an area and this is why the determinants that are stated above are crucial in determining a multinational’s placement in certain regions of the World.
Chapter 3

United States FDI Model Methodology

\[ FDI \text{ Flows} = B(0) + B(1)GDP + B(2)\text{Economic- Growth (Growth Rate)} + B(3)\text{Openness} + B(4)\text{Infrastructure-Quality} + B(5)\text{CPI-Change} + B(6)\text{Political-Risk} + B(7)\text{Enrollments} + e \]

\[ \text{GDP or GDP per capita} = \text{Market Size} \]

\[ \text{Economic Growth} = \text{GDP Growth} \]

\[ \text{Openness} = \text{Openness to International Trade (the ratio of the sum of exports to imports)} \]

\[ \text{CPI-Change} = \text{Inflation (Change in CPI)} \]

\[ \text{Political Stability/Risk} = \text{Rank (Violence)} \]

\[ \text{Enrollments} = \text{Primary school enrollments} \]

\[ \text{Infrastructure-Quality} = \text{Percentage of Paved Roads} \]

Referring to Nnadozie-Osili (2004) and their model used, which is shown above, was the specific model chosen to analyze the determinants of the ASEAN-4 countries and the flows of FDI to their countries; the range of data is from 1995Q1 to 2007Q4. The dependent variable, FDI Flows, gauges the FDI flows from the United States to the ASEAN-4 countries and illustrates the capital inflows. The independent variable, GDP, measures the market size of the host country, while the Growth Rate shows the growth of the local economy. The Openness variable points out the access of the host country to that of the World market, which is shown by the ratio of exports to imports. The change in consumer price index (CPI-Change) is incorporated into this model to illustrate inflation within the host country and Political Risk/Stability (Poli_Risk) was important to include due to the fact that stability and confidence in a government’s ability to instill control and discipline in one’s own society is essential to economic growth. More specifically, Political Risk/Stability is a ranking system of countries that have relative no violence compared to other countries of the World; 1 being a country with an abundance of violence and 100 being a country with no violence. The Primary School
*Enrollments* variable is used as an indicator for education expenditure and investment, implying that the greater the number of enrollments, supposedly indicating the greater the investment towards education and development of human capital within the host country. There are many variables that can be used to gauge infrastructure and in Nnadozie-Osili (2004), the number of telephone lines variable is used to gauge infrastructure quality. In this analysis, *Percentage of Roads Paved* within the host country was used.

**United States FDI Model Results**

**Indonesia**

Within the Indonesian regression, multicollinearity was not present, but after running a heteroskedasticity White’s Test and a Breusch-Godfrey Serial Correlation LM Test, it was determined that autocorrelation and heteroskedasticity was. In order to correct for the heteroskedasticity and autocorrelation present within the Indonesian regression, a Newey-West HAC Standard Errors & Covariance correction method was ran, which then corrected the standard errors and p-values that were skewed. According to the Newey-West Covariance regression results, inflation and political stability are strongly statistically significant and infrastructure (percentage of roads being paved) is mildly statistically significant. Market size, economic growth, openness, and number of primary school enrollments are all statistically insignificant to that of the flow of US FDI into Indonesia. Also, according to the R-squared output, it seems that the selected variables within this regression only explain approximately 42.26% of the US FDI flows into Indonesia, which shows that possibly other variables should have been selected or current statistically insignificant variables should be dropped in future studies.

**Malaysia**

After the Malaysian regression was conducted, it showed independently unique qualities compared to the other three regressions that were ran. After determining multicollinearity was not present, a heteroskedasticity White’s Test and a Breusch-Godfrey Serial Correlation LM Test on the Malaysian regression was conducted and it was determined that heteroskedasticity was not present, but autocorrelation was. When the autocorrelation was corrected, in order to properly display the already skewed p-values and standard errors, Malaysia’s openness was
strongly statistically significant, while infrastructure and market size were mildly statistically significant. However, according to the Malaysian regression, economic growth, inflation, political stability, and number of primary school enrollments were not statistically significant regarding the inflow of US FDI into its borders.

Philippines

When the Philippines regression was conducted, it was obvious that multicollinearity was not present, but according to the Durbin-Watson statistic, autocorrelation was most likely within the model. After testing for autocorrelation and heteroskedasticity, it was concluded that heteroskedasticity was most definitely present, but autocorrelation was present at the 10% significance level, so I could reject the null hypothesis that autocorrelation was not present within the regression at the 10% significance level. According to the Philippines regression output, there are no statistically significant independent variables that relate to that of the effect of US FDI into the Philippines. This means that the selected independent variables do not account for the effect of US FDI and suggests that other variables that were not selected in this analysis could be significant to FDI flows into the Philippines. If further studies were to be conducted, dropping a few of the greatly statistically insignificant variables and/or choosing different variables would be recommended.

Thailand

The Thailand regression showed the second least amount of statistically significant independent variables in this analysis. Multicollinearity was not within the model, but autocorrelation and heteroskedasticity were present. After correcting for heteroskedasticity and autocorrelation, only two determinants were statistically significant; openness was strongly statistically significant and infrastructure was weakly statistically significant to that of the capital inflow from the US into Thailand. Market size, economic growth, inflation, number of primary school enrollments, and political stability were not statistically significant to that of the explanation of US FDI flowing into Thailand.
Chapter 4

Japanese FDI Determinants vs. US FDI Determinants

Referring to Ramstetter (2009), market size, income, preferential access to local markets, taxation, labor costs per worker, and real GDP per employment were some of the essential determinants for Japanese FDI. In general, Market size, according to literature review, was the most emphasized determinant for capital inflows to host countries, while labor costs were second for Japanese investors. Japanese FDI outflows, historically, have had a more positive productivity of growth compared to that of US FDI (Banga, 2001). Because of the Japanese bubble that burst more than ten years ago, revision and restoration to that of the business minds of the Japanese business outlook were changed. The slothful managerial mindset of Japanese companies and financial establishments were commonly caused by low capital efficiency.

Results from previous research by Ramstetter (2009), Kishi (2003), Banga (2001), and Bora (1994) have concluded that market size, labor costs (income per worker/real GDP per employment), taxation, and preferential access to local markets are some of the key determinants for Japanese FDI outflows into host countries. In an alternative scenario in Ramstetter (2009), host economies for Japanese FDI highlighted production for the local market and export markets as possible key determinants. The less popular host countries for Japanese FDI in East Asia included Indonesia and Malaysia; Malaysia showed less attractiveness due to its taxation costs, foreign capital restrictions and existence, and macroeconomic fluctuations, such as exchange rate fluctuations and economic volatility (Ramstetter, 2009). Regarding Indonesian studies, international trade costs and macroeconomic instability were the least favored determinants, but as usual, market size, export markets, and openness were emphasized by the Japanese investor. Within Philippines analyses, macroeconomic instability was the general overall factor to deter Japanese FDI, however, market size and labor costs were some of the key determinants to encourage capital inflow into the Philippines. Surprisingly, infrastructure was not highlighted as a key determinant to attracting FDI, regarding the Philippines. However, political stability was mentioned as an important factor among some of the literature and there were a few accounts from Japanese businessmen working in Asia whom have expressed their favoritism towards
Singapore’s style of governance (authoritarianism) compared to countries with a relative more open democracy system.

According to the United States FDI model results, very few determinants related to that of the determinants for Japanese FDI into the ASEAN-4 countries. In the Indonesian regression output, inflation, political stability, and infrastructure were the key determinants. Adversely, international trade costs and macroeconomic stability were key determinants for Japanese FDI within Indonesia. Common ground among the US investor and Japanese investor is stability, politically and macro-economically. Malaysia shared more common attractive characteristics for Japanese investment and US investment compared to the rest of the ASEAN-4 countries.

Regarding the literature reviewed for Japanese FDI into the ASEAN-4 countries and the US FDI model results, openness and market size were the most significant determinants that captured both the eye of the US and Japan. However, infrastructure was more significant for the US capital inflow into Malaysia compared to Japanese FDI.

Interestingly, within the Philippines, there were absolutely no commonalities of determinants between the US investor and that of the Japanese investor. More so, Future studies should examine why, specifically, the US FDI model within this analysis resulted in absolutely no statistically significant determinants for US FDI flows, yet FDI continued to flow into the Philippines. However, Thailand was unexpectedly the second least country to share common attractive FDI characteristics for the US and Japanese investors. This is said because Japan and the United States are big players within the automotive industry and Thailand is renowned for their low cost manufacturing of automotive parts, motorcycles, and small trucks within S.E. Asia. The only key determinant for attracting FDI into Thailand from the US and Japan was openness to World markets; curiously, neither political stability nor market size had a key role in determining capital inflows.
Chapter 5

Conclusions and the Future Research Agenda

This paper has analyzed the determinants of the ASEAN-4 (Indonesia, Malaysia, Philippines, and Thailand) countries inflows of foreign direct investment (FDI) for all manufacturing industries from Japan and the United States. First, a brief overview of current literature was covered on both angles involving Japan and the US and the determinants of their FDI outflows into the ASEAN-4 countries. The literature review illustrated that there are ten general determinants that papers discuss; a few of the determinants mentioned were preferential access to local markets, market size, political stability, export markets of host countries, taxation, macroeconomic stability, and international trade costs (ex. Protectionism).

Then a regression analysis was conducted with the US FDI flows into the ASEAN-4 countries, in which market size, economic growth, inflation, openness, political stability, number of primary school enrollments, and infrastructure were tested to be statistically significant or statistically insignificant. The Indonesian regression output showed that inflation, political stability, and infrastructure were key determinants for US FDI, while the Philippines showed no statistically significant variables that were tested. Within the Malaysian regression output, it showed the most statistically significant determinants out of all the ASEAN-4 countries that were analyzed; openness, infrastructure, and market size were the only significant variables regarding US capital outflows into Malaysia. Thailand held only two statistically significant variables that explained their capital inflows from the United States; the two significant determinants were openness to world markets and infrastructure (roads that are paved).

After the results of the United States FDI model were examined, using previously published literature that showed recent studies regarding Japanese FDI into the ASEAN-4 countries, this paper was able to differentiate the possible attractive characteristics that the Japanese and US investor would examine when injecting capital into the countries discussed. This paper then compared the results from the US FDI model and the conclusions from the Japanese FDI literature, regarding the determinants of FDI into the ASEAN-4 countries, and found that there were very few similarities between the US investor and the Japanese investor. There were no shared determinants of US or Japanese FDI into the Philippines and overall, the
Philippines were not on the highest list for the average Japanese investor to insert capital into. Malaysia and Thailand shared one common determinant for US and Japanese FDI, which was openness. However, Malaysia stood out as having the most statistically significant determinants regarding US FDI, which were openness, infrastructure, and market size. According to this analysis, descriptive and quantitatively, Malaysia’s market size was an attractive determinant for both US and Japanese FDI.

Obviously, cultural differences lie between that of the Japanese and US investor mindset, more importantly, that of the cultural norms. To that of the average US individual, challenging authority and ‘the system’ is the norm; while the average Japanese individual challenging authority can be seen as disrespectful and mistrust in one’s system and therefore, mistrust in one’s way of life. These simple yet obvious cultural norms between the US and Japanese individual/investor are profound on the investing habits and more importantly, on the flows of foreign direct investment to particular countries and industries. And when including the determinants that were examined in the US FDI model and from the published literature, it can be clearly concluded that the US and the Japanese investor holds different key determinants in mind when investing capital into the ASEAN-4 countries.

Regarding future research agendas, different variables involving the ASEAN-4 countries should be implemented. According to the US FDI model’s outputs, there were many statistically insignificant determinants within each regression output involving Indonesia, Malaysia, Philippines, and Thailand. Also, evidence showed that for each regression output for each country examined that less than 50% of the US FDI outflows into the ASEAN-4 countries were explained by the selected variables in the US FDI model. Also, rather than using a descriptive analysis of Japanese FDI determinants, conducting a quantitative analysis on both US and Japanese FDI determinants would be recommended. In future agendas, it could be also recommended to exclude the years 1995 to 1998, in order to avoid possible data problems due to the 1997 SE Asian Financial Crisis.
References:


- Banga (2001), “Do Productivity Spillovers from Japanese and U.S. FDI Differ?”, *Institute of Economic Growth, University Enclave (Delhi, India).*


13
References (Continued)


Data Sources

United States FDI Flows

Beareu of Economic Analysis (International Economic Accounts)

- http://www.bea.gov/scb/account_articles/international/iidguide.htm#page3

Philippines

National Statistics Coordination Board


- National Statistics Office

Thailand

National Statistics Office of Thailand


Bank of Thailand

- http://www.bot.or.th/ENGLISH/STATISTICS/Pages/index1.aspx

- National Economic and Social Development Board
- Bureau of Trade and Economic Indices
- Customs Department
- UNESCO Institute of Statistics

Data Sources (Continued)

Indonesia

Badan Pusat Statistik (BPS-Statistics Indonesia)

- [http://www.bps.go.id/](http://www.bps.go.id/)

Organization for Economic Cooperation and Development (OECD)


- National Bureau of Statistics
- Ministry of National Education

Malaysia

Department of Statistics Malaysia


- CEIC Generate