DETERMINANTS OF FOREIGN DIRECT INVESTMENT IN AEC COUNTRIES

Sauwaluck Koojaroenprasit*

Abstract: This paper explores the determinants of FDI inflows for six countries (Indonesia, Malaysia, the Philippines, Singapore, Vietnam and Thailand) selected from ASEAN Economic Community (AEC)[1]. A random effects model is employed on the panel data set consisting of annual time series data for the period 1997 - 2012 to inform analytical and policy debates. Consistent with the prediction of the market size hypothesis, real GDP per capita is found to have a significant positive impact on FDI inflows. From a policy point of view, the results suggest that increase in research and development promotes FDI. On the other hand, higher corporate tax rate and higher labor cost discourage FDI inflows. Interestingly, the results seems to suggest that greater liberalization of the trade sector seems to discourage inflows of FDI.

JEL Classification: C33; F21; O16; O53

Keywords: Foreign Direct Investment, AEC, Panel Data

INTRODUCTION

Foreign Direct Investment (FDI) has grown rapidly in the last two decades. Both developed and developing countries used FDI as a vehicle for economic development. Since the mid-1980s, the world economy has experienced a rapid increase of FDI even faster than world output. Lower trade barriers, progressive liberalization of foreign investment regimes, advance technology and access to new markets have helped to promote globalization. The destinations of FDI have changed with the increasing share going to developing countries. From 1970 to 2011, the share of FDI to developing countries has increased by 62 percent (UNCTAD, 2013). ASEAN benefited from the vast inflows of FDI. This region remains a large receiver of FDI because of the growing regional market, natural resources and as a base for export oriented production. However, FDI inflows are distributing unevenly among ASEAN countries. FDI inflows mainly focus ASEAN6 countries, i.e., Singapore, Vietnam, Thailand, Indonesia, Philippines and Malaysia. The purpose of this paper is to provide an overview of FDI inflows in this region and to analyze the determinants of FDI inflows in this region.

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FDI INFLOWS IN ASEAN6 COUNTRIES

Figure 1 shows that FDI inflows to ASEAN6 countries increased rapidly since 1990. The Asian crisis in 1997-1998 led to a temporary decline in FDI inflows before they started to increase again in 2004. The global financial crisis led to a new fall in FDI inflows in 2008 and 2009. Southeast Asia accounts for 8 percent of total world inflows of FDI. Foreign investment flows unevenly into individual countries in the ASEAN6. According to the OECD, each member country of ASEAN6 appears to specialize in attracting FDI in specific sectors, depending on each country's comparative advantage and natural endowments relative to regional neighbors. Vietnam mainly attracts investments in export-oriented manufacturing industries, real estate and service sectors. Indonesia and Thailand continued to attract high levels of greenfield investments in 2012, particularly in the automotive and metals industries. Indonesia became a star attraction, due to its large and growing population (OECD, 2013). Singapore is the largest receiver of FDI in Southeast Asia; 77 percent of FDI in 2001 have gone to Singapore. Apart from a decline in 2002, FDI inflows have generally been strong in 1999 to 2012. They reached a peak in 2007 at US$ 46,972 million, before the global financial crisis of 2008-2009. In 2008, FDI inflows declined sharply to US$ 12,200 million before rapidly rebounding to reach US$ 56,651 million in 2012. Singapore is still the most attractive destination for FDI in the region. Singapore ranked first in the Asia Pacific Investment Climate Index for 2014. Singapore's strengths lie in an open trade regime, stable political and legal environment, competitive tax rate, a transparent regulatory environment. Thailand and Malaysia have received relatively large shares whereas FDI inflows to Philippines have been relatively small. Malaysia's FDI inflows increased dramatically in 1996 with US$ 7,297 million but it dropped to US$ 2,714 million in 1998 due to the 1997 financial crisis. Malaysia's FDI inflows continued to contract in 2009 as a result of the global financial crisis. But the inflows recovered rapidly in 2010. After Vietnam liberalized the economy in 1986, there has been a substantial inflows of FDI. During its transition to the market oriented economy, Vietnam has managed to attract a large inward FDI. The amount of FDI inflows peaked in 1996 with US$ 2,395 million and dropped sharply due to the Asian economic crisis until 2000. The FDI inflows started to pick up again in 2001 after Vietnam recovered from the Asian economic crisis. From 2001 to 2008, there was a dramatic increase in FDI inflows to Vietnam. FDI inflows increased from US$ 1,300 million in 2001 to US$ 9,579 million in 2008. Although Vietnam faced a number of problems in 2008 which was compounded in 2009 by the global financial crisis, FDI inflows still at the high level. A major contribution to this success was the attraction of large-scale industrial FDI projects.

REVIEW OF LITERATURE

There are very few empirical studies of the determinants of FDI in ASEAN.

Hoang (2012) analyzes the determinants of FDI inflows to ASEAN countries over the period 1991 to 2009. The results indicate that trade openness, market size, quality

infrastructure, labor productivity and human capital are the main factors that have a positive impact on FDI inflows. Moreover, real interest rates, exchange rate policy, political risk and institutional quality also affect FDI inflows. The low wage rate does not attract FDI because foreign investors are interested in labor productivity.

Ismail (2009) analyzes the determinants of FDI in ASEAN countries for the period from 1995 to 2003. The results revealed that the market size for host and source country, the distance, common in language and border, the extended market relative to distance attract more foreign investment. Other macroeconomic factors such as lower inflation rate, the slightly higher in exchange rate and good management budget are the key factors that attract more FDI. Social factors such as telecommunication and infrastructure and non-economic factors such as transparency and trade policy also encourage more FDI.

Hsieh and Hong (2005) investigates the determinants of FDI in four Southeast Asian transition economies (Cambodia, Vietnam, Laos and Myanmar). A dynamic panel data model with fixed effect is used to analyze the locational determinants of FDI inflows in these four countries for the period 1990 to 2001. The results suggest the main determinants are the agglomeration effects, GDP per capita and trade openness, while the Asian financial crisis has deterred FDI inflows. The results suggest that the government should explore the agglomeration or self-supporting economies, enlarge GDP per capita and adopt open-door policies to attract FDI.
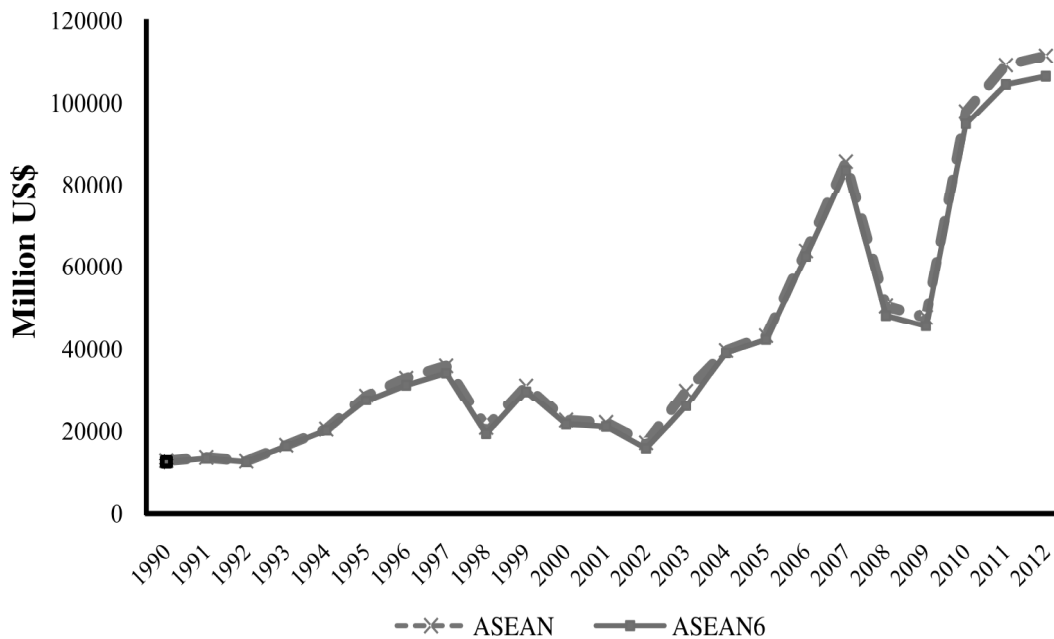
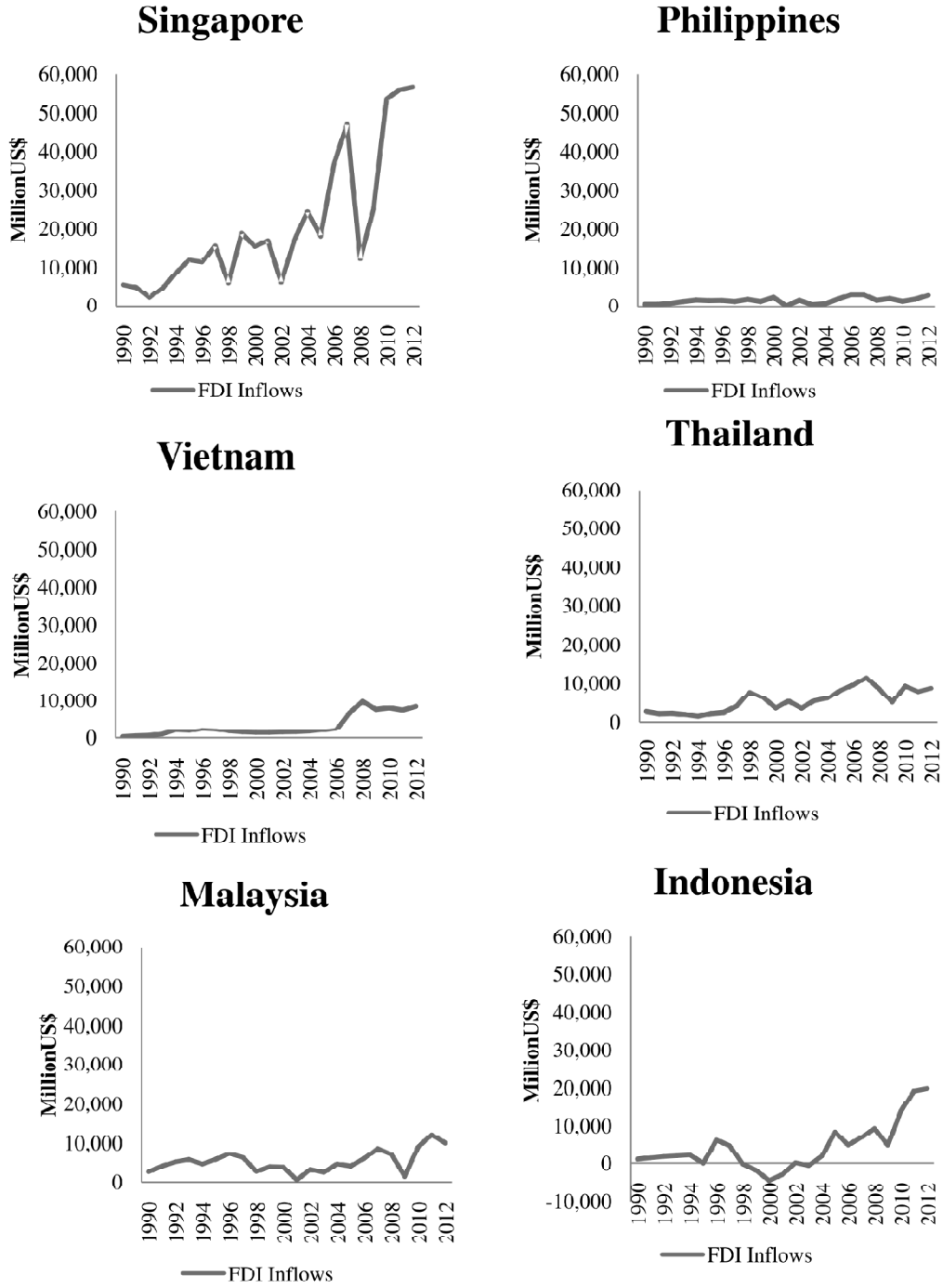**Figure 1: FDI Inflows in ASEAN (AEC 2015) and ASEAN6**

Figure 2: Individual FDI Inflows in ASEAN6

Singapore

Philippines

Vietnam

Thailand

Malaysia

Indonesia

VARIABLES AND METHODOLOGY

Based on theoretical models and previous studies, the empirical model is specified as follows:

$$FDI_{it} = a + b_1 S_{it} + b_2 w_{it} + b_3 O_{it} + b_4 inf_{it} + b_5 e_{it} + b_6 t_{it} + b_7 infra_{it} + b_8 D_t + b_9 RD_{it} + u_{it} \quad (1)$$

where FDI_{it} is inflows of FDI for country i at time t; S_{it} is the GDP per capita for country i at time t and is the measure for market size; w_{it} is the real wage for country i at time t and is the measure of labor cost; O_{it} is the trade openness for country i at time t and is computed as a ratio of export of goods and services plus import of goods and services divided by GDP; inf_{it} is the inflation rate for country i at time t and is the measure of economic stability of the country; e_{it} is the exchange rate for country i at time t (exchange rate of currency of the host country against the U.S. dollar); t_{it} is the corporate tax rate for country i at time t; $infra_{it}$ is total number of telephone lines user (per 100 people) for country i at time t and is used as a proxy for the infrastructure facility; RD_{it} is the high-technology exports research and development for country i at time t and is used as a proxy for research and development; D_t is the year dummy variable, account for Asian financial crisis in 1997-1998 and global financial crisis in 2007-2008. The year dummy variable takes the value of one if country i is in the year of 1997, 1998, 2007 and 2008 and zero for other years and u_{it} is the error term over the time t.

The panel data estimation is employed in this study. The use of panel data techniques allows us to determine the temporal evolution of groups of countries rather than analyzing the temporal behavior of each country. This technique takes into account the individual heterogeneity, allows a larger number of data observations to increase the degrees of freedom and improves the efficiency of the estimates.

Technically, the panel data may exist group effects, time effects or both. These effects can be Fixed Effects or Random Effects. The Hausman test is performed to find whether the Fixed Effects model or the Random Effects model is appropriate. This study employs the Random Effects model because the year dummy is included in the model and our sample does not consist of a homogeneous group of countries.

RESULTS

The estimates through panel data analysis include the Random Effects model and Pooled OLS model for the selected study period. Empirical results are presented in table 1. From table 1, the empirical results from the Random Effects model and Pooled OLS are similar. The empirical results obtained from the Random Effects model shows that regression model with dependent variable FDI fits well with independent determinant variables as value of R^2 overall is 0.8319. High value of R^2 also indicates that the explanatory variables included in the model can explain most of the variation in the dependent variable. The coefficient of market size (S) and corporate tax rate (t) are statistically significant at high level of 1 % whereas research and development (RD) and real wage (w) are significant at 5 % level which shows that these determinants

are potential determinants of FDI inflows. Inflation (inf), exchange rate (e), infrastructure (infr) and financial crisis (D) are not significant which indicate that these determinants might not be important determinant in this case.

The market size of the host country has a positive effect statistically significant for FDI inflows to ASEAN6 economies. Thus, the size of the domestic market is an important factor in attracting FDI inflows to ASEAN6 countries. The coefficient of the real wage is negative statistically significant. This means that an increase in real wage deter FDI inflows to this region.

An important factor in choosing investment destinations for MNCs is the more liberal policies. However, not as expected, the coefficient of the trade openness is negative and significant at 10 % level. Theoretically, trade openness could affect FDI inflows positively or negatively. The impact of openness on FDI depends on the types of investment. When investments are export-oriented, i.e., goods are produced in the host country but sold abroad, trade openness has a positive impact on FDI. In contrast, MNCs engaged in market-seeking, i.e., goods are produced in the host country and sold in the domestic market, trade openness can have a negative impact on FDI.

The coefficient of inflation is negative, as expected, but not statistically significant. As expected, the coefficients of exchange rate and infrastructure development are positive but not statistically significant. A good measure of infrastructure development should take into account both the availability and reliability of infrastructure. This study employs only the infrastructure availability since data on the reliability of telecommunication are not available.

The coefficient of the corporate tax rate is negative statistically significant. This shows that FDI inflows react negatively to an increase in corporate tax rate. As expected, the coefficient of research and development is positive and statistically significant. Thus research and development plays an important role in attracting FDI into this region. The coefficient on year dummy is found to be statistically insignificant, implying that the financial crisis has no impact on FDI inflows into this region. All hypotheses results are presented in table 2.

CONCLUSION

The results indicate that the market size and research and development are the factors that are expected to enhance the attractiveness of FDI inflows while the real wage and corporate tax rate are expected to deter the FDI inflows. However, inflation rate, exchange rate, infrastructure development and financial crisis seem to have no statistically significant impact on FDI inflows.

The challenge for the AEC countries are how to sustain their performance and trend in FDI inflows and how to form their policy to attract more FDI in the future. Based on empirical findings, it is suggested that the strategic orientation of AEC countries in attracting FDI is to promote research and development. AEC countries

Table 1
Determinants of FDI Inflows: Panel Data Estimation Results based on Random Effects (RE)
and Pooled Ordinary Least Square Model (Pooled OLS)

Variables	RE			Pooled OLS		
	Coeff.	*t-statistics*	*p- value*	*Coeff.*	*t-statistics*	*p- value*
inf	-38.412	-1.44	0.150	-38.412	-0.44	0.659
S	1.221	6.98	0.000	1.221	7.03	0.000
O	-38.764	-1.74	0.081	-38.764	-1.82	0.072
t	-496.180	-3.92	0.000	-496.180	-2.07	0.042
e	0.135	0.65	0.516	0.135	0.92	0.362
infr	248.889	1.05	0.293	248.889	1.58	0.117
RD	0.137	2.18	0.029	0.137	1.87	0.064
w	-0.363	-2.13	0.033	-0.363	-2.89	0.005
D	843.197	0.45	0.654	843.197	0.66	0.511
R^2 overall			0.8319	R^2		0.8319
R^2 within			0.6633	Adj R^2		0.8143
R^2 between			0.9811			

Note: A constant term is included but not reported

Table 2
Hypothesis Results

Hypothesis No.	Hypothesis Statement	Result
1	Larger market size of the host country attracts more FDI.	Accepted
2	Higher labor cost in the host country deters FDI.	Accepted
3	More liberal policies of the host country attracts more FDI.	Rejected
4	Stable economic condition of the host country attracts more FDI.	Rejected
5	A higher exchange rate attracts more FDI.	Rejected
6	Lower corporate tax rate in the host country attracts more FDI.	Accepted
7	An adequate infrastructure facilities of the host country attracts more FDI.	Rejected
8	The more research and development in the host country attracts more FDI.	Accepted
9	Financial crisis deters FDI to the host country.	Rejected

will have promising prospects for FDI inflows as their low real wage and large market size. In addition, lower corporate tax rate is an effective policy instrument to foster FDI inflows.

Acknowledgment

Note

1.   The ASEAN Economic Community (AEC) is the goal of regional economic integration by 2015. AEC is a uniting of ten ASEAN countries, which are Thailand, Myanmar, Laos, Vietnam, Malaysia, Singapore, Indonesia, Philippines, Cambodia and Brunei.

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