

# CORRUPTION AND INVESTMENT: EVIDENCE FROM SOUTHEAST ASIA

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## ABSTRACT

*This paper employs market potential, market size, macroeconomic, corruption, democracy, labor, and human capital variables to investigate the relationship between foreign direct investment and corruption in Southeast Asia. The efficient grease hypothesis argues that corruption can increase investment as it acts as grease money that enables firms to avoid bureaucratic red tape, thus improving economic efficiency. Consequently, fighting corruption would be counterproductive. However, this may not be the case. Empirical results show that worsening of corruption in host economies leads to a reduced inflow of foreign direct investment. A one-point increase in corruption level is associated with approximately 26.5 percent reduction in investment. Therefore, corruption is considered as a grabbing hand rather than a helping hand for investment, sanding instead of greasing the wheels of commerce, and reducing rather than increasing economic efficiency.*

*Keywords: corruption, foreign direct investment, panel data, fixed effects*

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*This paper employs market potential, market size, macroeconomic, corruption, democracy, labor, and human capital variables to investigate the relationship between foreign direct investment and corruption in Southeast Asia. The efficient grease hypothesis argues that corruption can increase investment as it acts as grease money that enables firms to avoid bureaucratic red tape, thus improving economic efficiency. Consequently, fighting corruption would be counterproductive. However, this may not be the case. Empirical results show that worsening of corruption in host economies leads to a reduced inflow of foreign direct investment. A one-point increase in corruption level is associated with approximately 26.5 percent reduction in investment. Therefore, corruption is considered as a grabbing hand rather than a helping hand for investment, sanding instead of greasing the wheels of commerce, and reducing rather than increasing economic efficiency.*

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## INTRODUCTION

Global capital flows are acknowledged to positively affecting the development of a nation, channeling through technology transfer, investment, labor productivity, and the financial sector (Goldin and Reinert, 2005; Obstfeld, 1998). One of the most celebrated global capital flows is in the kind of foreign direct investment (FDI), which is “the acquisition of more than 10 percent shares on the part of a firm in a foreign-based enterprise and implies lasting interest in or effective managerial control over an enterprise in another country” (World Bank, 2010). According to World Investment Report 2010, the current FDI recovery is taking place in the wake of a severe decline in FDI flows worldwide in 2009. After a 16 percent decline in 2008, global FDI inflows fell a further 37 percent to \$1.114 trillion in 2009. The recovery of FDI inflows in 2010 is expected to be stronger in developing countries than in developed ones due to developing countries’ growth and reform, as well as their increased openness to FDI and international production. Consequently, developing and transition economies now account for just about half of global FDI inflows. Moreover, FDI is expected to increase to over \$1.2 trillion in 2010, rise further to \$1.3-1.5 trillion in 2011, and boost to \$1.6-2.0 trillion in 2012.

Meanwhile, corruption has been a hot topic among economists and in-

ternational development institutions. The World Bank (1997) has identified corruption as among the greatest obstacles to economic and social development since it undermines development by distorting the rule of law and weakening the institutional foundation on which economic growth depends. Corruption is perceived as detrimental to investment, and consequently, economic development. It slows down development progress and undermines good governance in most of developing countries. For those reasons, donor countries and development institutions have established guidelines for reducing corruption<sup>15</sup>. Regardless of these sustained commitments and increased efforts to contain corruption, today’s evidence shows that the intensity of corruption is far from having subsided and maybe even worse in some developing countries.

This paper will investigate the empirical relationship between FDI inflows and corruption among founding countries of the Association of Southeast Asian Nations (ASEAN): Indonesia, Malaysia, the Philippines, Singapore, and Thailand. The data are quite varied and consist of market potential, market size, economic, democracy, corruption and labor variables. The corruption variable shows Singapore to be the least corrupt, Malaysia to be moderately corrupt, and the Philippines, Indonesia, and Thailand to be relatively corrupt<sup>16</sup>. Nonetheless, those two last countries are grow-

ing substantially and keep attracting FDI. Furthermore, Indonesia has been a fairly democratic country over the last decade, yet remains fairly corrupt. However, a low level of democracy does not hold Singapore back from being ranked as one of the least corrupt countries, cleaner than the U.S. and many European countries<sup>17</sup>. Singapore is actually the third cleanest country, trailing behind Denmark and New Zealand only (Transparency International, 2010).

## THEORETICAL BACKGROUND

There are many definitions of corruption; I will use the simple and straightforward definition by the World Bank, which defines corruption as:

The abuse of public office for private gain. Public office is abused for private gain when an official accepts, solicits, or extorts a bribe. It is also abused when private agents actively offer bribes to circumvent public policies and processes for competitive advantage and profit. Public office can also be abused for personal benefit even if no bribery occurs, through patronage and nepotism, the theft of state assets, or the diversion, of state revenues (World Bank, 1997: 7-8).

Corruption, with respect to FDI and international trade, usually takes the form of bribery that is “a transaction that provides the parties involved with undue payment (interpreted widely to include any property having financial and non-financial value) or other

benefit or advantage” (United Nations Conference on Trade and Development, 2001: 12)<sup>18</sup>. Checkpoint officers might take bribes to let otherwise taxable goods go without paying any taxes. Foreign investment office officials could ask for speed money to expedite the paperwork. Procurement officers might ask for kickbacks for buying goods from certain suppliers. The bribe does not have to be in the form of cash money; it might be in the form of gifts, shopping trips abroad, or entertainment treats.

Corruption is usually modeled as a principal-agent model, supply demand model, or gravity model. The principal-agent model involves the classic principal-agent problem, in which the principal, who may be a top-rank or middle-rank government officer, deals with the agent, who may be the multinational company interested in some government-provided good or in avoiding higher taxes (Aidt, 2003; Dutta and Mishra, 2004). Shleifer and Vishny (1993) provide a nice example of this type of corruption. They also distinguish between corruption with theft, which is a bribe to checkpoint officer in exchange for goods entering the country without paying tax and corruption without theft that is additional bribe besides regular price for getting a certain service or good; checkpoint official keeps the bribe but passes the price to the government.

The supply demand model is best illustrated by Rose-Ackerman (1978,

<sup>15</sup>For example, the World Bank’s Helping Countries Combat Corruption: The Role of the World Bank, September 2007 and Organisation for Economic Cooperation and Development’s Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, November 1997. For a specific country, Foreign Corrupt Practices Act of 1977 prohibits U.S. firms from offering or making payment to foreign officials to secure any improper advantage in order to obtain or retain business.

<sup>16</sup>Corruption rank follows

<sup>17</sup>For survey literature on the impact of democracy on corruption, see Rock (2007). He finds that recent theoretical developments and case evidence support an inverted U relationship between corruption and democracy. The turning point in corruption occurs rather early in the life of new democracies and at rather low per capita incomes.

<sup>18</sup>Bribery also includes “a payment or advantage that is in consideration of (non) performance of that which is already due by virtue of the recipient’s terms of service, or other commitments and obligations. It also includes payments in consideration for the receipt of information, services or other advantages that the payer would not otherwise be entitled to receive” (UNCTAD, 2001: 12).

1999). She argues that demand for corruption comes from local government officials, whereas supply of corruption comes from multinational companies interested in gaining access in host country. Corruption, in the form of a bribe, equates supply and demand, and thus clears the market. She shows an example of a government that frequently provides goods for free or sells them below market prices. The dual prices usually exist, a low state price and a higher free market price. Firms then bribe corrupt officials for access to below-market-price supplies.

The gravity model is similar to Tinbergen's gravity model for modeling international trade. It is based on the ideas that opposite forces explain the intensity of trade between two countries. Income and size constitute attraction forces, while distance and trade barriers act as resistance ones. The gravity model has enjoyed empirical success in its ability to explain the relationship between international trade and the quality of institutions. Anderson (1979), Bergstrand (1989), and Anderson and van Wincoop (2003) present micro foundations for the gravity model. The monopolistic competition model, as well as the Heckscher-Ohlin market structures model, is utilized to derive the gravity equation.

As this paper is aimed at investigating the relationship between FDI and corruption, one might simply conclude that corruption must have a negative impact on FDI. Corruption deters FDI as it acts like a tax on FDI by increasing cost of doing business (Wei, 2000; Svensson and Fisman, 2000; Tanzi and Davoodi, 1997). In fact, Wei (2000) and Svensson and

Fisman (2000) conclude that corruption, measured in terms of bribery, is more harmful for firms than taxing. Moreover, because foreign firms have to pay bribes in order to get permits to import or invest, corruption raises the costs of investment. Such extra costs decrease the expected profitability of investment. Consequently, corruption is commonly viewed as a tax on profits of investment (Shleifer and Vishny, 1993). Corruption also reduces the private marginal product of capital, thus decreasing private investment and then lowering economic growth (Mauro, 1995; Keefer and Knack, 1996).

Further, specifically for U.S. firms, there is Foreign Corrupt Practices Act of 1977 that prohibits U.S. firms from bribing foreign officers in international business transactions. As a result, when the level of corruption in host country is high, U.S. firms will be reluctant to invest in that country. But, are those prior conclusions always applied? As a matter of fact, corruption may help increase FDI under the efficient grease hypothesis. The efficient grease hypothesis argues that corruption could increase investment as it acts as grease money that enables firms to avoid bureaucratic red tape. Bribes may be beneficial in countries with very long waiting-times at the border or with a low quality of checkpoint service. Lui (1985), in support of view that corruption could be beneficial, shows that if bribery is allowed, speed money permits clients to avoid bureaucratic delays. Thus, if clients have different opportunity costs of time, bribes can minimize waiting costs. In this queuing model, corruption could actually increase efficiency

as different bribes by different firms may reflect their different opportunity costs with respect to bureaucratic delay, so buying less red tape might be advantageous.

Another argument, which supports the helping hand hypothesis, is that corruption allows supply and demand to work efficiently, since under competitive bidding for government contracts, the most efficient firm can offer the highest bribe. Thus, the contract goes to the lowest-cost firm (Beck and Maher, 1986; Lien, 1986). Corruption could also be considered a useful substitute for a weak rule of law if the value of behaving corruptly—the value of additional productive transactions occurred—exceeds the costs of engaging in corruption. This is most likely when the legal options for doing business are quite limited (Leff, 1964). Bardhan (1997) also argues that if rigid regulation and an inefficient bureaucracy prevail, bribes may increase bureaucratic efficiency by expediting the process of decision-making. Also, bribes might be needed to gain access to publicly funded projects. Similarly, Glass and Wu (2002) claim that in the long run, there are complicated general equilibrium effects at work, and corruption is not necessarily bad for FDI.

### Empirical Findings

Regarding empirical results, the classic paper investigating the rela-

tionship between corruption and investment is that of Mauro (1995). He utilizes a corruption index provided by Business International (BI) and runs a sample of 67 countries using Ordinary Least Squares (OLS) and Two Stage Least Squares (2SLS) methods. The strength of this paper is that it controls for endogeneity by using an index of ethno linguistic fractionalization as an instrument and nine indicators of institutional efficiency<sup>19</sup>. He demonstrates that high levels of corruption are associated with lower levels of investment as a share of Gross Domestic Product (GDP). For instance, if Bangladesh (score of 4.7) were to improve the integrity and efficiency of its bureaucracy to the level of that of Uruguay (score of 6.8), its investment rate would increase by almost five percentage points and its yearly GDP growth would rise by over half a percentage point<sup>20</sup>. Nevertheless, Wedeman (1996) argues that while the correlation between corruption and the ratio of investment to GDP might be strong for countries with little corruption, it loses power for countries with higher levels of corruption. Certain kinds of corruption might have more significance for investment decisions than the overall level of corruption.

Wei (2000), using a broader data set on foreign investment from 12 sources to 45 host countries in 1989 and 1990, and utilizing OLS, quasi fixed

<sup>19</sup> Ethno linguistic fractionalization measures the probability that two persons drawn at random from a country's population will not belong to the same ethno linguistic group. The nine institutional efficiency measures are political change (institutional), political stability (social), probability of opposition group takeover, stability of labor, relationship with neighboring countries, terrorism, legal system judiciary, bureaucracy and red tape, and corruption.

<sup>20</sup> He uses the Business International (BI) index that ranges from 0 (most corrupt) to 10 (least corrupt). Transparency International (TI) uses the same criteria, in which the lowest score (0) suggests high level of corruption prevails, whereas the highest score (10) implies the cleanest. Likewise, the International Country Risk Guide (ICRG) ranges its corruption index from 0 (most corrupt) to 6 (least corrupt).

effects, and tobit estimation, finds that corruption in a host country has a negative effect on inward FDI from all source of countries in a way that is statistically significant and quantitatively large. Corruption acts like a tax on FDI by increasing cost of doing business. An increase in the corruption level from relatively clean Singapore to relatively corrupt Mexico is equivalent to raising the tax rate by fifty percentage points. The author puts strong emphasis on the comparison between the effect of corruption on FDI and the tax effects. He also experiments with three different corruption indices from Business International, International Country Risk Group, and Transparency International. Nevertheless, Wei's FDI sample set is dominated by rich countries a.k.a. OECD countries, so if OECD countries were ruled out from the host country sample, the result might be different.

Ades and di Tella (1997) argue that an aggressive industrial policy may be to a certain extent stimulated by the corrupt gains from such policy. In this case, the direct positive effect of the policy can be weakened by its role in increasing corruption, and therefore, discouraging investment. They present a hold-up model of investment where active industrial policy promotes both corruption and investment. Their 2SLS with time dummies, sparing the 1989-1992 period, shows that in the presence of corruption, the positive impact of industrial policy towards investment is undermined. The vigor of this pa-

per is in the way it decomposes the total effect of industrial policy into a positive-direct effect, and a negative-corruption-induced effect. In the presence of corruption, the total effect of industrial policy on investment ranges between 84 percent and 56 percent of the direct impact. However, there seems to be a simultaneity bias when they try to explain the determinants of corruption. Also, the data set is relatively limited.

Alternatively, there is also supporting empirical evidence that corruption can be greasing the wheels of commerce rather than sanding them, reducing red tape, and thus, increasing efficiency. This is usually based on the second best case, where corruption is taken as exogenous and independent of the incentive for officials to take bribes, and the quality of institutions is poor. Egger and Winner (2005), using data set of 73 developed and less developed countries and the time period 1995-1999, find a clear positive relationship between corruption and FDI. There is a positive short run as well as a positive long run impact of corruption on FDI<sup>27</sup>. The contribution of the change in perceived corruption in the long run may account for up to 40 percent of the observed overall FDI growth between 1995 and 1999. Further, the change in corruption is not only able to explain part of the growth of FDI but also the change of its worldwide distribution. Nevertheless, they do not take into account irregular data caused by the global crisis in 1997 that

hit Asian countries particularly hard.

Wheeler and Mody (1992) and Hines (1995) have also investigated the association between corruption and FDI. Using the fixed effects method, Wheeler and Mody (1992) fail to find a significant correlation between the size of FDI and the 42 host countries' risks factor in the period 1982-1988, a composite measure termed "RISK", which includes perceptions of corruption as one of the variables<sup>22</sup>. It is stated that "the domestic socio-political considerations, as summarized by the principal component RISK, appear to have a very small effect" (Wheeler and Mody, 1992: 67). However, it is argued that other variables may not be overwhelmingly correlated with government corruption, may not be precisely measured, or may not be as important for FDI (Wei, 2000). Consequently, the noise-to-signal ratio for RISK might be too high to show up significantly in the estimation (ibid).

Similarly, using fixed effects estimation and total inward FDI instead of bilateral FDI, Hines (1995) does not find a negative correlation between total inward FDI and the corruption level in host countries. The Foreign Corrupt Practices Act of 1977 actually weakens the competitive position of the American firms without significantly decreasing the importance of bribery to foreign business transactions.

Nonetheless, he admits that the equation fits poorly<sup>23</sup>. Akcay (2001) uses cross sectional data from 52 developing countries with two different indices of corruption to estimate the effects of the level of corruption on FDI inflows. He utilizes OLS with region dummies. The results fail to identify any significant effects of corruption on FDI. The most significant determinants of FDI are found to be market size, corporate tax rates, labor costs, and openness of the economy. Moreover, Henisz (2000) examines the effect of corruption on market entry using U.S. firm-level data, and employs the two-stage probit estimation technique on 3,389 overseas manufacturing operations by 461 firms in 112 countries. The results show little effect of corruption but some estimates point out that corruption increases the probability of investing in a foreign country.

### Empirical Model and Data

My research differs from previous ones as I model FDI inflows as a function of a large number of variables considered to be determinant of FDI in host country. I include market potential, market size, macroeconomic, corruption, democracy, labor, and human capital variables. In addition, I also include time dummies for the Asian crisis and global recession. The complete model in linear form is as follows:

<sup>27</sup>Estimation makes use of the fixed effects and Hausman-Taylor model, which separates the short and additional long run impact of corruption on FDI, hence accounting for the potential endogeneity of the long run impact. They also use information from three different corruption data sources to account for robustness.

<sup>22</sup>The other variables are political change (institutional), attitude of major opposition group, probability of opposition group takeover, stability of labor, likelihood of terrorism, desire for foreign investment, attitude toward the private sector, cultural interaction, expatriate environment, bureaucracy and red tape, quality of legal system (judiciary), and distribution of wealth.

<sup>23</sup> Wei (2000) also claims that Hines' total inward FDI data from International Finance Statistics may also be too noisy.

$$\log \text{FDI}_{i,t} = \beta_1 + \beta_2 \log \text{GDP Per Capita}_{i,t-1} + \beta_3 \text{GDP Growth Rate}_{i,t-1} + \beta_4 \text{Openness}_{i,t-1} + \beta_5 \text{Inflation}_{i,t-1} + \beta_6 \text{Domestic Investment}_{i,t-1} + \beta_7 \text{Corruption}_{i,t-1} + \beta_8 \text{Political Rights}_{i,t-1} + \beta_9 \text{Civil Liberties}_{i,t-1} + \beta_{10} \text{Labor Force Participation Rate}_{i,t-1} + \beta_{11} \text{Labor Productivity}_{i,t-1} + \beta_{12} \text{Labor Cost}_{i,t-1} + \beta_{13} \text{Life Expectancy}_{i,t-1} + \beta_{14} \text{Fertility Rate}_{i,t-1} + \beta_{15} \text{Malaysia} + \beta_{16} \text{Philippines} + \beta_{17} \text{Singapore} + \beta_{18} \text{Thailand} + \beta_{19} \text{Asian Crisis} + \beta_{20} \text{Global Recession} + u_{i,t}$$

where  $i$  is the country subscript,  $t$  is the time subscript,  $\beta_s$  are parameters to be estimated, and  $u_{i,t}$  denotes the disturbance term. All explanatory variables (except dummies) are lagged one year to avoid simultaneity with the dependent variable and to take into consideration that investment abroad takes time (Hayashi, 2000: 139; Wooldridge, 2002: 51).

I choose founding countries of ASEAN to represent FDI inflows in Southeast Asia because those five countries have been gaining a large share of the FDI coming into the region<sup>24</sup>. I use the newest data set, ranging from 1996 to 2009 for the reason that although the Corruption Perceptions Index (CPI) from Transparency International (TI) started from 1995, the start of the year should be 1996 or after because the 1995 index is out of date<sup>25</sup>. I

will assign two time dummies: the period of the Asian crisis in 1997-1998 and the period of the global recession in 2008-2009<sup>26</sup>. For country dummy, Indonesia will serve as the reference country.

I use CPI from TI as it is the only corruption index that can be obtained for free, others require some fees. Nevertheless, the index is relatively reliable and powerful as it makes use of thirteen different sources (Transparency International, 2010)<sup>27</sup>. CPI ranges from 0 (most corrupt) to 10 (least corrupt). To avoid confusion, the index is rescaled, so 0 means very clean and 10 represents highly corrupt. The sign of this parameter could be positive or negative depending upon the helping hand or grabbing hand hypothesis of corruption. The summary of data sources is presented as follows:

**Table 1. Summary of Data Sources**

Data Series	Unit	Source*	Note
FDI	Millions US\$, 2000 US\$	UNCTAD 2010	
GDP Per Capita	US\$, 2000 US\$	WDI 2010	
GDP Growth Rate	Percentage point	WDI 2010	
Openness	N/A	PWT 6.3	
Inflation	Percentage point	WDI 2010	
Domestic Investment	Percentage point	PWT 6.3	
Corruption	N/A	TI	rescaled (0=very clean, 10=highly corrupt)
Political Rights	N/A	Freedom House	1=most free, 7=least free
Civil Liberties	N/A	Freedom House	1=most free, 7=least free
Labor Force Participation Rate	Percentage point	ILO	
Labor Productivity	US\$, 2005 US\$	PWT 6.3	real GDP chain per worker
Labor Cost	N/A	ILO	real manufacturing wage index
Life Expectancy	Years	WDI 2010	
Fertility Rate	Births per woman	WDI 2010	
Consumer Price Index	N/A	FRB St. Louis	

\*UNCTAD = United Nations Conference on Trade and Development; WDI = World Development Indicators; PWT = Penn World Table; TI = Transparency International; ILO = International Labor Organization; FRB = Federal Reserve Bank; N/A = Not Available

For other explanatory variables, I incorporate several exogenous variables believed to be primary determinants of FDI. For example, Multi National Corporations (MNCs) are driven by the market potential and market size of host countries. Thus, I follow related literature and utilize country size in terms of GDP per capita and growth rate of GDP as a proxy of host country's market potential and market size (Markusen and Markus, 2002; Wei, 1997; Caves, 1996). Caves (1996) also argues that MNCs locate their productions depending upon the size of the national market. Moreover, "market characteristics such as size, growth in size and income level are most relevant for investment that seeks to access the host market" (Loree and Guisinger, 1995: 295). I expect those variables to having positive effects on FDI inflows.

One should also consider the degree of global economic integration and economic stability, which can be represented by the degree of open-

ness and the level of inflation, respectively. The degree of global economic integration is considered a traditional determinant of FDI inflows and is considered to have a positive effect on FDI inflows (Al-Sadiq, 2009; Addison and Heshmati, 2003; Akcay, 2001). Greene and Villanueva (1991) and Al-Sadiq (2009) look at how various macroeconomic factors have affected private investment activity. Among the factors examined is macroeconomic stability as represented by low inflation rates. Thus, inflation is anticipated to have a depressing effect on FDI inflows.

The effect of domestic investment on FDI can be explained through exchange rate movement, which is "centered on the positive effects of an exchange rate depreciation of the host country on FDI inflows, because it lowers the cost of production and investment in the host countries, [therefore] raising the profitability of foreign direct investment" (Razin, 2003: 418). A subset of democracy variables

<sup>24</sup>For instance, Indonesia, Malaysia, the Philippines, Singapore, and Thailand altogether accounted for 84 percent of FDI inflows in Southeast Asia in 2009 (UNCTAD, 2010).

<sup>25</sup>TI recommends that conclusions regarding time trends should be based on the comparison between the 1996 score and the historical data. Comparisons with the 1995 ranking may be less precise. For complete reasons, please see [http://www.icgg.org/corruption/cpi\\_olderindices\\_1995.html](http://www.icgg.org/corruption/cpi_olderindices_1995.html)

<sup>26</sup>Asian crisis time frame follows Pesenti and Tille (2000), Corsetti, Pesenti, and Roubini (1999a, 1999b), and Mishkin (1999). Moreover, according to National Bureau of Economic Research, global economic recession started in December 1997 and ended in June 2009.

<sup>27</sup>Also, Wei (2000) finds that the Transparency International (TI) index and the Business International (BI) index, which is used by Mauro (1995), are highly correlated with a coefficient equal to 0.89. Therefore, the estimation results using one of these corruption indices can be easily extended to either the BI or TI index.



from Freedom House will also serve as controls for FDI inflows (Akçay, 2006; Harms and Ursprung, 2001). Harms and Ursprung (2001: 4) claim “indices of political rights and civil liberties have a significant influence on FDI”.

According to Economic Freedom of the World: 2010 Annual Report, political rights ratings are based on an evaluation of electoral process, political pluralism and participation, and functioning of government. Civil liberties ratings depend on an evaluation of freedom of expression and belief, associational and organizational rights, rule of law, and personal autonomy and individual rights. The numerical rating is from 1 to 7 for both political rights and civil liberties, with 1 representing the most free and 7 is the least free. It is expected that there will be negative association between political rights or civil liberties, and FDI inflows, i.e. the least free (the higher score) in terms of political rights or civil liberties; results in less FDI inflows.

I also take into account labor variables: labor force participation rate, labor cost, and labor productivity as FDI in developing countries, such as in Southeast Asia usually takes advantage of abundant and cheaper labor.

Feenstra and Taylor (2008) argue that abundant and cheaper labor is one of the driving forces behind vertical FDI. Wheeler and Mody (1992: 64) claim that “We would expect multinationals to be differentially attracted to sites with lower labor cost....” Meanwhile, “Labor productivity is expected to directly affect the ability of the host country to attract FDI” (Mathur and Singh, 2007: 10). The signs of these parameters are expected to be positive for labor force participation rate and labor productivity, but negative for labor cost.

Finally, to account for human capital, I use life expectancy and fertility rate variables. Talpos and Enache (2010: 483-484), “...tested the statistical significance as determinant of FDI inflows for several measures of human capital, like the ones ... (life expectancy at birth, breakdown by sexes, or fertility rate)....” Those measures of human capital are considered to have positive signs<sup>28</sup>.

## Results and Analysis

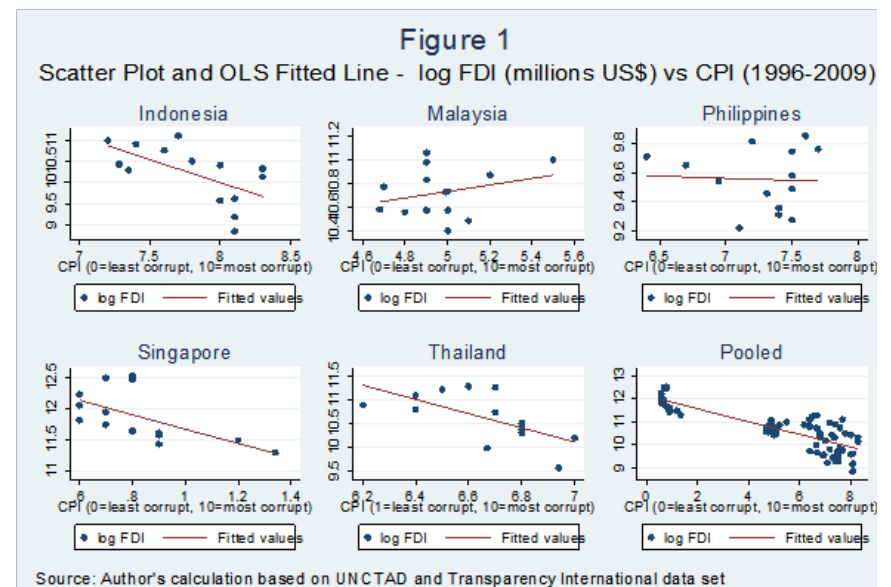
I begin the analysis by presenting the descriptive statistics on the data to get a snapshot of each variable. The summary is as follows:

Table 1. Summary of Data Sources

Variable	Mean	Std. Dev.	Minimum	Maximum
FDI (millions US\$, 2000 US\$)	59,303	60,245	6,949	275,792
GDP Per Capita (US\$, 2000 US\$)	6,666	9,389	776	31,118
GDP Growth Rate (percentage point)	4.16	4.37	-13.13	13.30
Openness	174.07	114.44	46.63	456.56
Inflation (percentage point)	5.12	7.49	-0.85	58.39
Domestic Investment (percentage point)	24.75	10.17	12.81	52.63
Corruption - rescaled	5.51	2.56	0.6	8.3
Political Rights	3.74	1.45	2.00	7.00
Civil Liberties	3.80	0.77	3.00	5.00
Labor Force Participation Rate (percentage point)	69.96	4.54	64.13	78.86
Labor Productivity (US\$, 2005 US\$)	27,168	22,931	8,447	83,694
Labor Cost	101.86	9.89	79.70	129.10
Life Expectancy (years)	72	4	65	81
Fertility Rate (births per woman)	2.38	0.74	1.26	3.85

\*UNCTAD = United Nations Conference on Trade and Development; WDI = World Development Indicators; PWT = Penn World Table; TI = Transparency International; ILO = International Labor Organization; FRB = Federal Reserve Bank; N/A = Not Available

Then, I examine the simple relationship between FDI and corruption by fitting liner regression of log FDI to CPI alone. Figure 1 presents such relationship.



<sup>28</sup>Initially, I wanted to also include secondary school enrollment as a measure of quality of human capital. However WDI 2010 and UNESCO data on Singapore are not available elsewhere. Similarly, Barro-Lee Educational Attainment Data Set is too little to have meaningful regression. Fortunately, some effects of educational attainment can be captured by labor productivity variable (Hanushek and Kimko, 2000; Hanushek and Kim, 1995; Mankiw, Romer, and Weil, 1992; Romer, 1990).

A preliminary investigation of OLS fitted line shows that the association between log FDI and corruption is indeed a negative one, except for Malaysia. Pooled regression also shows negative association between them, showing that high corruption is negatively correlated with low FDI in Southeast Asia economies. Obviously, the data generating process may also be influenced by many other factors, which will be controlled for in a following segment. Nonetheless, the negative relationship between FDI and corruption in Southeast Asia economies other than Malaysia is good enough to convince us that the impacts of corruption for different economies can be dissimilar.

Regarding panel data regression, the first thing to do is to determine whether fixed effects or random effects are appropriate. Actually, the decision to use which model is appropriate is not very tough. Baltagi (2008) argues that the fixed effects model is an appropriate specification if we are focusing on a specific set of N countries. Inference in this case is conditional upon the particular N countries that are observed. On the other hand, the random effects model is appropriate if we are drawing N individuals randomly from a large population as in the case of household panel studies. In this case, N is usually large and a fixed effects model will consume large degrees of freedom.

Similarly, Harris and Sollis (2003: 92) claim that the fixed effects model is more appropriate when focusing on a specific set of N firms (or N countries or households) that are not randomly selected from some large population. The random effects model is more appropriate if the panel data consist of N individuals drawn randomly from a large population, for instance household panel studies, such that the individual constant terms are randomly distributed across cross sectional units.

Based on the those references, we can be relatively sure that the fixed effects model is more appropriate since our model focuses on a specific set of countries and not randomly drawn from a large population. However, we will apply the usual procedure in the panel data study. The Hausman specification test is employed to evaluate fixed effects versus random effects under the null hypothesis ( $Q_i$  and  $X_{it}$  are not correlated) that both fixed effects and random effects are consistent but random effects are more efficient. The alternative hypothesis ( $Q_i$  and  $X_{it}$  are correlated) is that fixed effects estimation is consistent but random effects is not.<sup>29</sup>

The test statistic developed by Hausman has an asymptotic  $\chi^2$  distribution. If the null hypothesis is rejected, then we should use the fixed effects model. It turns out that the Hausman test statistic is 15.85 (probability  $\chi^2 = 0.0032$ ), so we reject null

hypothesis and conclude that the fixed effects model is appropriate.<sup>30</sup>

By now, we know that the fixed effects model is an appropriate model. The fixed effects model allows the intercept to differ across individuals (here the five countries). Differences across countries can thus be captured in differences in the intercept. Dummies are used to model these unique sources of variation. Additionally, time dummies for the Asian crisis and global recession are also employed. However, before we run fixed effects

model, we have to make sure that there is no autocorrelation or heteroskedasticity in our model. We utilize the Wooldridge test for autocorrelation in panel data with the null hypothesis of no first order autocorrelation and the alternative hypothesis of the opposite. The null hypothesis is not rejected at a 5 percent level, so we conclude there is no autocorrelation. Moreover, we may use the "robust" command in Stata to easily correct for heteroskedasticity. The complete regression results for the fixed effects model are shown in Table 3.

**Table 3. Fixed Effects Results**

Variable	Coefficient	Standard Error
Intercept	22.211	19.391
Lagged log GDP Per Capita	6.016	1.229***
Lagged GDP Growth Rate	-0.036	0.008***
Lagged Openness	-0.005	0.004
Lagged Domestic Investment	-0.035	0.011***
Lagged Inflation	-0.005	0.007
Lagged Corruption	-0.265	0.155*
Lagged Political Rights	-0.122	0.064*
Lagged Civil Liberties	-0.320	0.050
Lagged Labor Force Participation Rate	-0.010	0.050
Lagged Labor Cost	-0.023	0.007***
Lagged Labor Productivity	0.001^	0.001^***
Lagged Life Expectancy	-0.640	0.228***
Lagged Fertility Rate	-1.014	1.118
Country Dummy#		
Malaysia	-4.839	1.908**
Philippines	0.747	1.473
Singapore	-13.882	2.395***
Thailand	-4.824	1.165***
Time Dummy##		
Asian crisis (1998-1999)	0.106	0.162
Global recession (2008-2009)	-0.208	0.139
R-squared adjusted	0.98	
Number of observation	805	

\*\*\*significant at 1% level; \*\*significant at 5% level; \*significant at 10% level  
^ rounded to 1/1000, actual value 0.0000475; ^^ rounded to 1/1000, actual value 0.0000216  
# Indonesia is the reference country; ## 1996, 1999-2007 is the reference period

<sup>29</sup>To put it in another way, the null hypothesis is that the two estimation methods are both consistent, and thus, they should produce a "similar coefficient". The alternative hypothesis is as aforementioned and when this is true, there would be differences between the two sets of coefficients. A large and significant Hausman statistic means a large and significant difference and when this is so, we reject the null that the two methods are appropriate in favor of the alternative hypothesis that fixed effects model estimation is appropriate.

<sup>30</sup>Additionally, I also test using Breusch-Pagan Lagrange Multiplier for random effect. The null hypothesis is  $\text{Var}(Q_i) = 0$  or the random effects are not needed. The alternative hypothesis is the opposite. The value of test statistic is 2.26 (probability  $\chi^2 = 0.1325$ ). So we do not reject the null hypothesis, and thus, support the fixed effects method.



The main interest of our empirical result is the sign and the coefficient of  $\gamma$  or the marginal effect of corruption on FDI inflows, whereas the effects of other explanatory variables are of a secondary interest. The coefficient of corruption is indeed negative and is significant at 10 percent level. A one-point increase in corruption level is associated with approximately 26.5 percent reduction in FDI inflows, *ceteris paribus*. This result demonstrates strong support for the existence of the expected negative association between corruption and FDI inflows. This, therefore, confirms the findings of Mauro (1995), Wei (2000), Ades and di Tella (1997), Campos, Lien, and Pradhan (1999), Smarzynska and Wei (2000), Habib and Zurawicki (2002), and Al-Sadiq (2009), among others, in which they find a negative relation between FDI inflows and corruption in the host country.

For control variables, the coefficient of log GDP per capita is of expected sign and highly significant at 1 percent level. The coefficient of inflation is as expected although it is not significant at standard levels. GDP growth rate, openness, and domestic investment coefficients all have wrong signs. Thus, they are not consistent with economic theory. Nonetheless, the openness coefficient is not significant at standard levels.

Democracy variables in the form of political and civil liberties are of expected sign, although the latter barely significant. As a matter of fact, these particular results suggest that the host country's quality of democracy is as important as the level of corruption in attracting

FDI inflows. For example, a one-point increase in political rights (becoming less free) leads to about 12.2 percent decrease in FDI inflows, *ceteris paribus*. Certainly, MNCs will think twice if the host country's government does not function as it should be since there is no protection of their investments or profit cannot be repatriated or, even worse, foreign companies are nationalized.<sup>37</sup>

Furthermore, for the labor variable, only labor force participation rate has wrong sign, nevertheless it is not significant at standard level. Labor cost and labor productivity both are of expected signs and significant at standard levels. For instance, one point increase in real manufacturing wage index is associated with approximately 2.3 percent decrease in FDI inflows, *ceteris paribus*. Hence, the results support Feenstra and Taylor (2008), Wheeler and Mody (1992), and Mathur and Singh (2007) who argue that cheaper labor (lower labor cost) and labor productivity are salient factors in attracting FDI inflows.

The quality of human capital as represented by fertility rate and life expectancy seem to have wrong signs, although the former is not significant at standard levels. However, some effects of educational attainment can be captured by labor productivity variable based on endogenous growth theory (Romer, 1990) and tested by Hanushek and Kimko (2000), Hanushek and Kim (1995), and Mankiw, Romer, and Weil (1992). And we already knew that labor productivity is of expected sign and significant at 5 percent level.

Looking over country dummies, Indonesia, which is represented by intercept, and the Philippines are not significant at standard levels. The rest are significant at 5 percent and 1 percent levels, showing that Malaysia, Singapore, and Thailand have their own features that could be due to unique characteristics of the country, such as the level of natural resources, the quality of infrastructure or the quality of institutions. Their coefficients tell by how much the FDI in those countries differ from Indonesia. On the other hand, both time dummies for the Asian crisis and global recession are not significant. This, perhaps, could be attributed to the time frame chosen. Although standard literature usually assigns 1997-1998 as a time period of the Asian crisis, the recovery was not completely solid until the 2000s. Likewise, for the global recession dummy, based on World Investment Report 2010, the year after 2009 was still considered a slump in FDI inflows, although recovery was already on the way.

Overall, the hypothesis that corruption is deleterious for FDI inflows is still legitimate, not necessarily invalid, in spite of some odd coefficients and lack of statistical significances of some explanatory variables. I believe they are caused by other variables at work, but we have failed to take into account in our model, as well as some noise in the data collected.

## Conclusion

This paper employs market potential, market size, macroeconomic, corruption, democracy, labor, and human capital

variables to investigate the association between foreign direct investment and corruption in Southeast Asia. Empirical results show that worsening of corruption in host economies leads to a reduced inflow of foreign direct investment. A one-point increase in corruption level is associated with approximately 26.5 percent reduction in investment. Corruption is indeed detrimental to foreign direct investment inflows in Southeast Asia as it raises the costs of investment and the costs of doing business. Therefore, corruption is considered as a grabbing hand rather than a helping hand for investment, sanding instead of greasing the wheels of commerce, and reducing rather than increasing economic efficiency.

However, the estimates have to be interpreted with caution. The model does not control for all variables considered to be the primary determinants of FDI inflows because of data availability. It is believed that there is also some noise in the data. The time period chosen is also restricted, for the reason that the data on corruption provided by Transparency International is limited.

Further research could investigate the conclusion by utilizing the gravity model and consider that there are other variables the model fails to control for. Also, one could lengthen the time period by using the corruption index from Business International or International Country Risk Guide. The effect of corruption at industry level on FDI is also worth-investigating as foreign firms may have different extent of sensitivity for corruption at industry level.

<sup>37</sup>In May 2006, Evo Morales, the newly-elected president of Bolivia, nationalized the gas industry, so all natural gas resources were controlled by the state-owned energy company. Therefore, foreign investors lost their majority ownership claims to gas field, refineries, pipelines that they had built. They also lost a significant portion of profits from natural gas sales (Feenstra and Taylor, 2008).

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