Effects of Corruption on FDI Inflow in Asian Economies

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This study offers fresh insights on and investigates the effects of corruption on foreign direct investment (FDI) inflow from 1995 to 2009 in 16 Asian economies. The empirical result suggests that a 1 percent increase in corruption level triggers an approximately 9.1 percentage point decrease in FDI inflow. Thus, some of the arguments that corruption does not keep FDI out of corrupt countries are either flawed or invalid. The results of this study suggest that some of the countries characterized by a high level of corruption but have remarkable FDI inflows could even double their inward FDIs if they manage to reduce the present pervasive level of corruption.

Keywords: Corruption, FDI inflow, Panel data, REM, FGLS, Economic growth, Openness, Human capital

JEL Classification: C1, M16, O15, O17, O40, P10

I. Introduction

The ongoing process of world economy integration, which has been gaining momentum since the beginning of the 1990s, has led to a significant change in the attitudes of host countries with respect to inward foreign direct investment (FDI). FDI is no longer regarded with suspicion by developing countries. Controls and restrictions over the entry and operations of foreign firms are now being replaced by policies that aim to encourage FDI inflows. Modernization theorists argue that FDI provides host economies with capital, promotes technology transfer, and modernizes their management skills and corporate governance. These in turn raise labor productivity and accelerate economic growth (Blomstrom and

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Kokko 1996; Choi 1998; Markusen and Venables 1999). They also argue that FDI reduces income inequality *via* the Kuznets effect in which income inequality increases at first as per capita income grows but declines later once a certain level of development has been attained (Jin 2009). Along with this, an extensive network of bilateral and regional investment agreements, which seeks to promote and protect FDI from partner countries, has also emerged.

Until recently, various literature strongly agreed that multinational corporations (MNCs) invest in specific locations mainly because of the host countries' strong economic fundamentals, such as a large market size, stable macroeconomic environment, availability of skilled labor, and infrastructure, that influence the attractiveness of the country to FDI inflows (Dunning 1993; Globerman and Shapiro 1999; Shapiro and Globerman 2001). However, the host country's economic fundamentals may not be sufficient for inward FDI. Therefore, studying anew which factors determine FDI inflow has become necessary. In this regard, one of the most damaging risks that MNCs must consider when entering emerging market economies is the threat of corruption, which undermines economic reform and, ultimately, national economic stability. Moreover, corruption raises the costs of business operations, distorts the allocations of resources and prices of goods and services for consumers, and discourages FDIs (Zhao, Kim, and Du 2003). For instance, surveys of private firms in Latin America found that corruption negatively affects sales, investments, and employment growth, thereby reducing firm competitiveness without producing any positive effects (Gaviria 2002).

According to Myint (2000), corruption is defined as the use of public office for private gain, or the use of official position, rank, or status by an office bearer for his own personal benefit. From this definition, examples of corrupt behavior would include: (a) bribery, (b) extortion, (c) fraud, (d) embezzlement, (e) nepotism, (f) cronyism, (g) appropriation of public assets and property for private use, and (h) influence peddling. In this list of corrupt behaviors, activities such as fraud and embezzlement can be undertaken by a single official without the involvement of a second party. Other activities, such as bribery, extortion, and influence peddling, involve two parties, namely, the giver and taker in a corrupt deal. Political corruption by public officials can assume many forms, including bribery, embezzlement, extortion, nepotism, and graft in which public officials either directly steal public funds or illegitimately benefit from public funds. Freedom index is an indicator of the degree to which an economy is free of such forms of corruption. Similarly, the World

Bank focuses on the abuse of public power for private benefits in defining corruption (Tanzi 1998). Busse *et al.* (1996) define corruption as the use of power by government and quasi-government officials and agents to extract quasi rents from businesses for their own profit. Given this simple but broad definition, corruption is sometimes all-inclusive, taking into account bribes, bureaucratic and institutional inefficiency, and political instability (Habib and Zurawicki 2001).

Corruption exists throughout the world in developed and developing countries alike. In recent years, corruption has increasingly received attention because of (1) a series of high-level corruption cases in industrialized countries, (2) an increasing awareness of the costs of corruption throughout the world, and (3) political and economic changes which many countries are undergoing (Lawal 2007). Corrupt practices span from petty corruption, in which bribes are required before normal bureaucratic procedures are accomplished, to large-scale corruption, in which considerable sums of money are paid in return for preferential treatment or access. Corruption occurs in political, economic, and administrative spheres. Corruption is worse in countries where institutions such as the legislature and the judiciary are weak; neither rule of law nor adherence to formal rules are rigorously observed; political patronage is standard practice; the independence and professionalism of the public sector has been eroded; and civil society lacks the means to bring public pressure against corruption in the government (Lawal 2007). Once corruption becomes entrenched, its negative effects multiply. It induces cynicism because people begin to regard it as the norm. It undermines social values because people find it easier and more lucrative to engage in corruption than to seek legitimate employment. It erodes governmental legitimacy because it hampers the effective delivery of public goods and services. It limits economic growth because it reduces the amount of public resources, discourages private investments and savings, and impedes the efficient use of government revenues and development assistance funds.

Corruption is a serious economic, social, political, and moral blight, particularly in many emerging countries. It is a problem that affects companies, particularly in international commerce, finance, and technology transfer. It is becoming an international phenomenon in scope, substance, and consequences (Argandona 2007). Corruption, the abuse of public power for private gain, creates uncertainty regarding the costs of operation in the country. It acts as an irregular tax on business, increasing costs, and distorting incentives to invest (Shleifer and Vishny

1993; Mauro 1995; Wei 2000a). Accordingly, corruption is a frequent occurrence for international investors. A World Bank study (1999) reveals that more than 85 percent of polled multinational companies always or mostly encounter corruption while dealing with public sectors.

II. The Nexus of Corruption and FDI Inflow: Theory, Empirics, and Conflicting Views

The "grabbing hand" theory of corruption, supported by economists such as Shleifer and Vishny (1992, 1993), Bliss and Di Tella (1997), and Aidt (2003), claims that corruption in an economy is like a grabbing hand that increases the costs involved in conducting economic activities in the market. According to this theory, corruption raises the cost of doing business (irregular tax), distorts the allocation of resources, and decreases the output-generating capacity of investment (Zhao, Kim, and Du 2003). Moreover, it increases transaction costs and distorts incentives to invest (Shleifer and Vishny 1993; Mauro 1995; Wei 2000a). Thus, corruption is a double-edged sword and reduces both the volume and efficiency of investment (Sarkar and Hasan 2001). Many empirical studies support this idea as they find that corruption in the host country is negatively related to FDI (Wei 2000a, 2000b; Habib and Zurawicki 2001; Lambsdorff 2003). Moreover, Kaufmann and Wei (1999) finds that the costs of investment in a relatively corrupt host country can be as much as 20 percent higher compared with its uncorrupt counterpart.

The "helping hand" theory of corruption, supported by economists such as Lui (1985), Beck and Maher (1986), and Saha (2001), claims that rather than serve as an obstacle to business, corruption could be an efficient "lubrication" against rigid economic regulation and red tape. Similarly, Huntington (1968) and Leff (1989) argue that corruption can have a positive impact on investment by facilitating transactions in countries with excessive regulations. In line with this, Wheeler and Mody (1992) and Henisz (2000) reported a positive relationship between corruption and FDI. Furthermore, some countries with a high level of corruption, such as China, India, or Nigeria, receive a great deal of FDI. Corruption does not keep FDI out of very corrupt countries. This fact begs the question of exactly how corruption affects FDI.

The third view is that although countries like India, China, and Nigeria successfully attract FDI despite their high record of corruption, the freedom index does not conceal the reality that these countries could double

their FDI inflows if they had low corruption levels. Countries like China, India, and Nigeria continue to perform below their potential mainly because of deep-rooted corruption (Vittal 2001). For instance, China can double its FDI if it manages to reduce red tape and corruption, and if it has better rule of law and property protection. Likewise, if corruption in India declines like in Scandinavian countries, its GDP and FDI can increase by 1.5% and 12%, respectively (Vittal 2001). The fourth view is that the level of corruption in the host economy may affect FDI inflow or *vice versa* (Pinto and Zhu 2008).

Two broad presumptions can be made regarding the effects of corruption on the efficiency of investment. First, corruption distorts the sectoral allocation of investible resources by diverting resources from potentially productive sectors to unproductive sectors, thereby decreasing the overall output-generating capacity of the investment. A good example of this phenomenon in recent times is the acquisition of large volumes of loans through collusion with bank officials, which is practiced by many entrepreneurs in Southeast Asian countries. These resources, which are sometimes obtained by fraudulent means, are often invested in unproductive sectors or activities and contributed to the increase in non-performing loans and the eventual contraction of GDP during the recent Asian economic crisis (Casserley and Gibb 1999). Rose-Ackerman (1999) also notes that for business people in Eastern Europe and the Russian Federation, payoffs are often necessary to obtain credit. Thus, investments are made not on the basis of their rates of return, but on the capacity of the entrepreneur to pay bribes. Second, bribes, which are often a major part of any act of corruption, increase the cost of production which ultimately results in a higher output price increase, reduction in demand, and the eventual reduction in the incremental output capital ratio for the activity. Rose-Ackerman (1999) notes that a corrupt firm may bribe officials to win a contract, and once selected, it may pay again for the opportunity to charge an inflated price or to skimp on quality. Recovering the cost incurred in bribing officials by charging a higher output price is a very common practice in the business world, although this would only be possible in a non-competitive market segment. In addition, when firms and entrepreneurs are selected to undertake investment projects on the basis of their ability to establish crony contacts and pay bribes, the selection of the most efficient firm is not guaranteed; in fact, efficient and scrupulous entrepreneurs will almost always be rejected. Inefficiency and unfairness as the costs of corruption were discussed by Rose-Ackerman (1999). Ultimately, inefficiency manifests as an output price

increase and leads to a reduction of the incremental output capital ratio of the activity or sector. Consequently, an increase in corruption lowers the efficiency of investment (Mauro 1995).

The volume and productivity of investment increase when corruption is reduced. Resources spent on this area can be expected to yield rich dividends in the form of enhanced economic performance. Hope (2000) argues that rent-seeking activities tend to inflate the cost of doing business. Hope points out that kickbacks and illegal commissions which have to be paid to public officials are simply added to the final costs of contracts, equipment, and supplies, among others. The immediate consequences of such situations are that entrepreneurs and potential entrepreneurs withdraw from investing, and the affected economy loses the multiplier benefits that would have been accompanied those investments (Hope 2000). Thus, corruption reduces investment, which results in growth rate reduction. Such a reduction in investment is assumed to result from the higher costs and uncertainties that corruption creates (Mauro 1995). Corruption also reduces or distorts the fundamental role of government in such areas as enforcement of contracts and protection of property rights. By the same token, corruption distorts the market by making regulatory controls ineffective and acting as an arbitrary tax on FDI (Tanzi 1998). The unpredictability in the level of corruption adds to the arbitrariness and is particularly problematic for foreign investment (Wei 2000a). Under these circumstances, investors prefer not to invest and are likely to divert their money to a safer investment location. In the long run, the economy and its growth suffer (Habib and Zurawicki 2001). Corruption erodes economic freedom by introducing insecurity and uncertainty into economic relationships.

Corruption is a double-edged sword, reducing both the volume and efficiency of investment, and thus, economic growth (Sarkar and Hasan 2001). Pervasive corruption increases MNCs' operational costs and risks.

According to Quah (1982), the consequences of corruption can be minimized if a government has an effective anticorruption strategy and implements it impartially. Specifically, more effective anticorruption measures result in greater effects on society in terms of reducing the negative effects and the corruption level. Quah (1982) developed a matrix of anticorruption strategies that can be used to analyze the anticorruption efforts of several Asian countries, as shown in Table 1.

Table 1 shows four strategies for combating corruption that depend on the adequacy of anticorruption measures employed and the strength of political leaders' commitment. The effectiveness of anticorruption mea-

TABLE 1
MATRIX OF ANTICORRUPTION STRATEGIES

		Anticorruption measures	
		Adequate	Inadequate
Commitment of political leadership	Strong	Effective strategy	Ineffective strategy II
	Weak	Ineffective strategy I	"Hopeless" strategy

Source: Quah (1982, p. 175)

sures depends on two factors: (1) the adequacy of measures in terms of the comprehensiveness of their scopes and powers; and (2) the level of commitment of political leaders to the goal of minimizing corruption. Hence, anticorruption measures can be effective if they are properly designed to address the causes of corruption and are sincerely supported and upheld by political leaders. In short, the most elaborate and well-designed anticorruption measures are useless if they are not enforced by political leaders (Quah 1982, pp. 174-175).

Given the different corruption rates in Asian economies, Quah (1982) investigates the levels of corruption in these countries by applying the above matrix (Table 1). The researcher confirms that only Singapore and Hong Kong are the two least corrupt Asian city states that institutionalized both strong commitment of political leadership and adequate anticorruption measures, and ultimately managed to significantly minimize, if not eliminate, corruption. By contrast, countries like Bangladesh, India, Indonesia, Nepal, Pakistan, Philippines, and Vietnam have neither a strong commitment of political leaders nor adequate anticorruption measures; as a result, they fell in the fourth cell category of anticorruption strategies, as shown in Table 1. Likewise, the second and third cells of the matrix of anticorruption strategies in Table 1 represent two types of ineffective anticorruption strategies (strategies I and II). Ineffective strategy I occurs when anticorruption measures are adequate but the political leaders' commitment is weak, thus resulting in the non-enforcement of anticorruption measures. This lack of political will can be seen in the ineffective anticorruption strategies adopted in South Korea and Thailand. The third cell of ineffective strategy II is possible but unlikely in reality, as political leaders who are strongly committed to eradicating corruption are probably not satisfied with inadequate anticorruption measures and instead will promote adequate anticorruption measures (Quah 1982).

III. Other Important Factors Influencing FDI Inflow

In addition to our variable of interest, that is, the level of corruption, the following important factors also affect FDI inflow and are treated as control variables.

(i) *GDP growth* in a sustainable way in a given country is indicative of a vibrant economy. Hence, a government that has generated impressive economic growth in the past is likely to attract more foreign investors to its country. Past policies are most useful in predicting the future in countries with stable governments. For instance, according to Fan *et al.* (2007), foreign investors, being encouraged by past growth performance, flock to China in anticipation of improved institutions. Moreover, the market size hypothesis argues that inward FDI is a function of the size of the host country market, usually measured either by its GDP or population growth. As a large market size generates scale economies, a growing market improves the prospects of market potential and thereby attracts FDI flows (Bhattacharya *et al.* 1996; Chen and Khan 1997; Mbekeani 1997). We use the log and growth rate of GDP to capture the impact of this variable on FDI and expect this to have a positive impact on inward FDI. The positive impact of GDP growth on FDI inflow was previously justified by Wheeler and Mody (1992), and Zhang and Markusen (1999). Thus, a significant and positive relationship is expected between performance in GDP growth and FDI inflow.

Two main reasons explain why a firm would want to become a multinational one; the conventional views are clearly expressed by Shatz and Venables (2000). According to them, one reason is to better serve the local market, and the other is to obtain lower-cost inputs. The FDI that serves local markets is often called horizontal or market-seeking FDI since it normally involves building duplicate plants in a foreign location to supply the market there. The motive is to reduce the cost of supplying the market (such as tariffs or transport costs) or to become more competitive in other ways such as through proximity to the market and being able to respond to changing local circumstances and preferences. As such, horizontal FDI tends to replace exports if the costs of market access through exports (tariffs and transport costs) are higher than the net costs of setting up a local plant and doing business in a foreign environment. In addition, horizontal FDI are more likely to replace ex-

ports with a larger local market for two reasons. First, a larger market results in lower plant-specific, fixed-cost per unit of output. Second, larger markets tend to have more local firms and more intense competition, which lead to a lower price for the product. If the marginal cost of supply through exports is relatively high, it may tip the balance for the firm in favor of local production (Shatz and Venables 2000). The FDI in search of low-cost inputs is often called vertical or production cost-minimizing FDI since it involves slicing the vertical chain of production and relocating part of the chain in a low cost location. An example of vertical FDI is the assembly of electronic goods in Asia even though the manufacturing of sophisticated component parts and final sales might take place in the United States.

(ii) *Human capital* covers both education and health. The stock of educated labor is represented by the level of secondary school educational attainment. In line with this, the health dimension of human capital is represented by life expectancy in a given country. Good health guarantees a healthy workforce, which makes it necessary for economic growth as well as serve as an intrinsic measure of human development. States that fail to ensure adequate health for their citizens are less likely to grow. Accordingly, the differences in the levels of countries' human capitals lead to differences in their capacities to attract FDI. Thus, enhanced human capital increases incoming FDI by creating an attractive investment climate for foreign investors. Thus, both education and health (life expectancy) variables are assumed to positively affect FDI inflow.

(iii) *Income per capita*, which is captured by GDP/capita (PPP), measures the level of development of that country and also shows the purchasing power of the people of the host economy. Therefore, income per capita is expected to have a positive relationship with FDI inflow.

(iv) *Infrastructure*, particularly telecommunications infrastructure, significantly increases economic growth, as indicated in the cross-country studies conducted by Canning and Bennathan (2000). Likewise, Wheeler and Mody (1992) proved that good infrastructure is a necessary condition for foreign investors to operate successfully. Thus, infrastructure is expected to directly contribute to FDI inflow.

(v) *Domestic interest rate*. According to numerous studies, the impact

of cost of capital (*i.e.*, lending interest rates) on FDI inflows is ambiguous in nature and statistically insignificant. On one hand, higher lending rates may have a positive impact on FDI inflows, that is, a higher cost of capital indicates that more capital is brought in by foreign firms. On the other hand, the host country's cost of capital directly affects domestic consumption. Thus, lower interest rates indicate higher domestic consumption which then results in higher FDI inflows (Bende-Nabende *et al.* 2000). We do not hypothesize any particular relationship between domestic interest rate and FDI inflow.

(vi) *Openness*. The degree of openness of a host economy is assumed to be one of the necessary elements to attract FDI. For instance, Ang (2008) notes that a one-percentage point increase in trade openness generates an approximately 1.094 percentage point to 1.323 percentage point increase in FDI inflows in China. Likewise, tangible evidence proves that the ever-increasing openness in China's economy has attracted more than 70% of Taiwan's overseas investments to mainland China. By the end of August 2010, more than 38,351 companies have been allowed to invest in the mainland. Accordingly, the total amount of investments has reached USD 91.7 billion (Chen 2011).

IV. Main Objectives of the Study

As discussed in the previous section, many empirical studies support the idea that corruption in the host country may hinder FDI by weakening investors' confidence in the market systems and on political institutions. However, some scholars still argue that corruption can have a positive impact on investment by facilitating transactions in countries and report a positive relationship between corruption and FDI. For instance, countries with high levels of corruption, such as China and India, are also the recipients of a significant number of FDIs. This fact begs the question of exactly how corruption affects FDI.

Therefore, this study verifies the extent to which corruption affects FDI in Asian economies. In addition, most existing studies use a cross-sectional analysis rather than a panel data analysis to examine the effects of a complex phenomenon. However, cross-sectional data analysis cannot control the unobserved, country-specific effects that may vary across countries and may be correlated with corruption. Accordingly, this study em-

TABLE 2
COUNTRIES INCLUDED IN THE STUDY

Bangladesh, Cambodia, China, Hong Kong, India, Indonesia, Japan, Korea Republic, Malaysia, Nepal, Pakistan, Philippines, Singapore, Thailand, Vietnam, and Sri Lanka.

ploys a panel data estimation technique which is able to control individual unobserved heterogeneity.

Thus, this study creates greater awareness of and contributes fresh insights to the problem, and suggests concrete ideas and approaches on possible measures to solve it.

V. Data and Stylized Facts

This study conducted an intensive empirical analysis of 16 Asian economies from 1995 to 2009. The year 1995 is our starting point because we have this year's full annual data coverage on the freedom from corruption (FFC) index which is derived from the annual reports of the *Index of Economic Freedom* published by the Heritage Foundation in partnership with the *Wall Street Journal*. The FFC index is measured on a scale from 0 to 100, where 100 represents the highest level of freedom from corruption or the lowest level of corruption. Measuring corruption is a distinct challenge. Some disagreements surround the issue of what should be measured on the conceptual level (Lambsdorff 1999). Most studies used data on corruption which are based on perception and do not necessarily produce consistent results owing to differences in scales. However, the FFC index obtained from the Heritage Foundation was derived by using statistics from organizations like the World Bank, the International Monetary Fund, and the Economist Intelligence Unit. The list of countries included in this study is shown in Table 2. These countries are selected mainly because of the availability of data throughout the years.

Moreover, Table 3 summarizes the independent variables discussed in the preceding section and their expected relationships with economic FDI inflow.

TABLE 3
EXPECTED SIGNS AND DATA SOURCES OF INDEPENDENT VARIABLES

Variable	+/-	Data sources
FFC	+	Heritage Foundation
Economic growth	+	WDI database
Education	+	WDI database
Health	+	WDI database
GDP per capita (PPP)		WDI database
Infrastructure	+	WDI database
Interest rate	+	WDI database
Openness	+	WDI database

VI. The Level of Corruption and FDI Inflow in Asian Economies: Descriptive Statistics

Figure 1 shows that China is a major FDI destination economy in Asia, which receives an average FDI inflow of $60.6 billion annually. Meanwhile, Hong Kong, Singapore, and India followed China at a distance with an FDI inflow performance of $30.1 billion, $15.85 billion, and $11.1 billion, respectively. Major economies in Asia such as Japan and Korea Republic have managed to attract only $7.5 billion and $ 5.3 billion FDI inflow, respectively. At the opposite extreme, Nepal, Cambodia, and Bangladesh achieved the lowest FDI inflow in the region with $0.01 billion, $0.32 billion, and $0.53 billion, respectively. Ironically, countries such as Philippines and Pakistan, which have high level of trained human capital and significant natural resources, were not able to attract a significant amount of FDI. The reasons behind the impressive FDI inflow performance of the economies of China, Hong Kong, and Singapore while others achieved a modest or low level of FDI inflow will be thoroughly investigated in the empirical analysis of this study.

Figure 2 shows the extent of FFC in different countries by using an index measured on a scale from 0 to 100, where 100 represents the highest level of FFC/or the lowest level of corruption, and 0 represents the highest level of corruption. Singapore, Hong Kong, and Japan are the top three countries with enhanced and relatively better corruption-free economies. Singapore and Hong Kong, which achieved an FFC index of 90 and 80, respectively, are very good examples of economies with a low level of corruption but were also able to achieve a high level of FDI inflow. In line with this, some of the economies such as Japan, Malaysia, and Korea had a moderate level of corruption, and their FDI inflow was

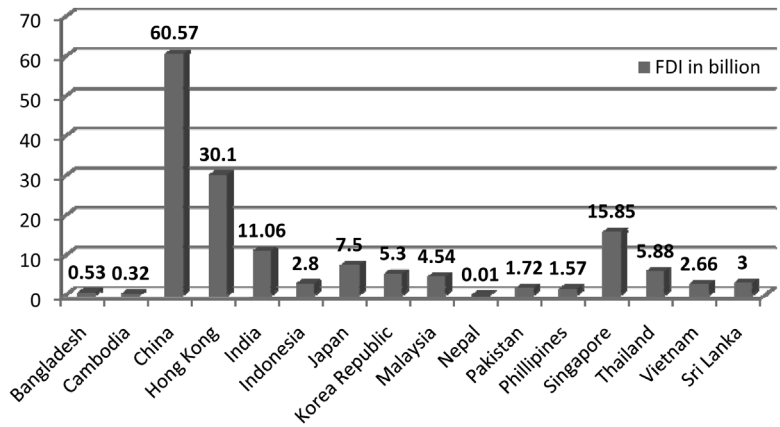

FIGURE 1
AVERAGE FDI INFLOW INTO ASIAN ECONOMIES (1995 TO 2009)

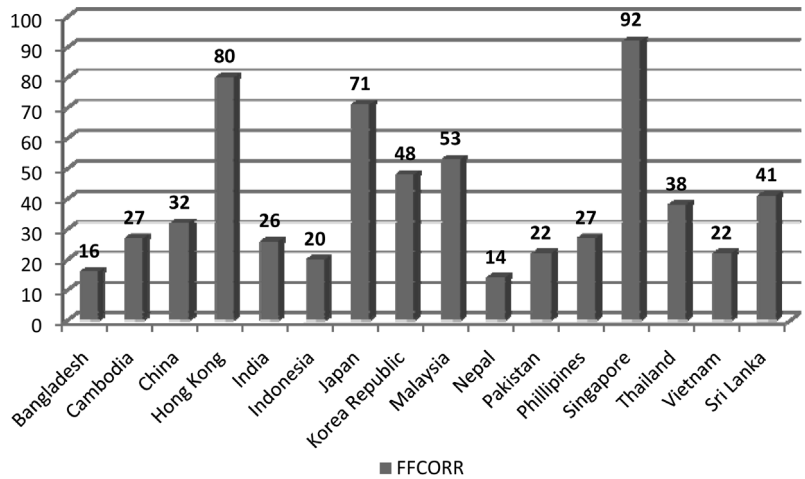

FIGURE 2
AVERAGE FFC INDEX IN ASIAN ECONOMIES (1995 TO 2009)

at a moderate level, as shown in Figure 1. Of course, some exceptions are present, such as China and India, which both have a high level of corruption but are among the top FDI recipients in Asia. However, the special cases did not change any of the assumptions that greater freedom from corruption in a country would result in an increased ability

to build confidence among foreign investors and become a major destination for FDI inflow. However, although China and India are performing very well in attracting remarkable FDI inflow into their respective economies, both countries are still performing well below their potential mainly because of the deep-rooted corruption associated with their economies. Vittal (2001) noted that if China manages to reduce red tape and corruption, and enhance better rule of law and property protection, the FDI inflow in its economy could potentially be doubled. Similarly, if the corruption levels in India decrease to the levels of the Scandinavian countries, the GDP growth rate would increase by 1.5% and FDI will grow by 12%. Figure 2 shows that countries with a high level of corruption, including Nepal, Bangladesh, Cambodia, Sri Lanka, and the Philippines, also experience a very low FDI inflow, as shown in Figure 1.

Generally, Figures 1 and 2 provide preliminary but factual observations which note the direct association between the level of corruption and FDI inflow in a given economy. The following section discusses the econometric analysis of the direct relationship between corruption and FDI inflow and whether the theoretical assumption matches the reality.

VII. The Correlation between FDI Inflow and the Independent Variables

The existing correlations between FDI inflow and the independent variables were examined prior to the regression analysis. In other words, the correlation coefficients of each variable determine the nature and strength of the relationship between each factor, including the level of corruption and FDI inflow. Accordingly, the correlation analysis helps in clarifying the relationship among the variables and often suggests directions for experimental research such as regression analysis. Table 4 demonstrates that more freedom from corruption in a given economy (having higher FFC index) would result in an increased ability to attract inward FDI.

Similarly, the correlation analysis reveals that the economic growth has been directly and significantly associated with FDI inflow in Asian economies, which implies that an impressive growth record in the past might have provided better confidence for foreign capital investment. The remarkable FDI inflow performance of China and India could perhaps be attributed to their growth record since the 1990s. The evidence also points to a positive and significant correlation between FDI inflow and

TABLE 4
PARTIAL CORRELATION OF FDI INFLOW WITH OTHER INDEPENDENT VARIABLES

Variable	Correlation	Significance
FFC	0.2045	0.052**
Economic growth	0.2610	0.000***
Education (secondary school enrollment ratio)	0.1964	0.000***
Health (life expectancy)	0.182	0.039**
GDP/capita (PPP)	0.150	0.023**
Infrastructure (telephone/100 people)	0.173	0.018**
Interest rate	0.102	0.018**
Openness	0.355	0.000***

human capital, which is captured in this study by the educated labor and health quality. The income per capita and physical infrastructures are also positively and significantly correlated with FDI inflow at 5% level of significance. Other important control variables that were found to be directly and significantly correlated with FDI inflow include openness and interest rates. FDI, which requires substantial flows of intermediate inputs and goods in and out of the host country, will increase with greater openness. Moreover, trade liberalization leads to a better business climate and expectations of better long-term economic growth prospects and increased market size. Likewise, the positive and significant degree of association between the domestic interest rate and FDI inflow demonstrates that if the cost of borrowing in the host economy is higher than the cost of borrowing at home, then the host country firms will have a cost advantage over the host country rivals and are in a better position to enter the host country market *via* FDI.

VIII. Research Methodology

Based on the preceding discussions on the theoretical link between corruption and FDI inflow and by taking other control variables into consideration, we can specify the level of FDI to be a function of the level of corruption and the measures of the control variables mentioned in Table 3. Therefore, given the panel structure of the data in this study, the model to investigate the effects of corruption on FDI inflow was constructed for a balanced panel data of 16 Asian economies from 1995 to 2009 as follows:

$$FDI_{it} = \beta_0 + \beta_1 FFC_{it} + \beta_j \Sigma Z_{it} + \alpha_i + \delta_t + \varepsilon_{it} \quad (1)$$

where index i refers to the unit of observation, t is the time period, FDI is the ratio of FDI to GDP (FDI/GDP), FFC refers to the freedom from corruption index of the host economy, Z denotes other control variables, α_i represents individual specific unobserved factors, δ_t refers to the unobserved, time-specific factors, and ε_{it} are individual and time-specific residuals (a random shock term which represents the possible shocks for the source host combination at time t).

MNCs normally make their investment decisions at time t based on information about past corruption and other control factors. Therefore, the level of FDI inflow into a host economy (i) at a time (t) can be reasonably assumed as a function of explanatory variables in the last period (*i.e.*, $t-1$). The one-year lag of the explanatory variables, including the corruption variable, is quite important in highlighting the variables that have a delayed effect on FDI performance and to address the issue of potential endogeneity problems (the reverse causations between FDI and the explanatory variables including corruption as discussed in the theoretical section). In other words, the use of lagged explanatory variables can deal with potential endogeneity problems provided that future values of FDI inflow have no influence whatsoever on the control set, *i.e.*, the future does not cause the present. Thus, the FDI inflow model finally takes the form of

$$FDI_{it} = \beta_0 + \beta_1 FFC_{it-1} + \beta_j Z_{it-1} + \alpha_i + \delta_{t-1} + \varepsilon_{it-1} \quad (2)$$

Panel data estimation techniques can allow us to control for individual unobserved heterogeneity, which is the main problem of non-experimental research. Furthermore, panel data provide more informative data, more variability, less collinearity among variables, more degrees of freedom, and greater efficiency (Gujarati 2003).

To choose the most appropriate panel data estimation methods, first, the Hausman (1978) specification test provides information on the appropriateness of the RE model *versus* the FE model. The test confirms the suitability of the RE model instead of the FE model by accepting the null hypothesis that individual specific unobserved effects are distributed independently of the variables of interest. Furthermore, the Lagrange multiplier test for random effects was performed, and the result led to the selection of the random effect model (REM against the pooled OLS model). Thus, the REM can be denoted as

$$FDI_{it} = \beta_0 + \beta_1 FFC_{it-1} + \beta_j Z_{it-1} + \delta_{t-1} + u_{it-1}, \text{ where } u_{it-1} = \alpha_i + \varepsilon_{it-1} \quad (3)$$

In line with this, a White's general test for heteroskedasticity was conducted and the result rejected the null hypothesis of homoskedasticity. Similarly, Wooldridge's tests for autocorrelation in panel data were conducted, and the null hypothesis that no first order autocorrelation exists was not rejected. This implies the existence of heteroskedasticity, but no serial correlation was detected. Furthermore, panel data unit root test was conducted by using the Levin-Lin-Chu test for FDI, which confirms that the data is stationary.

Wooldridge (2002) states that if heteroskedasticity is detected but serial correlation is not, then the usual heteroskedasticity-robust standard errors and test statistics can be used along with the appropriate estimation techniques, and in this case the REM. This study also used other appropriate panel data analysis methods such as feasible general least squares method (FGLS) and regression with panels corrected standard errors (PCSE) because heteroskedastic models are usually fitted with feasible generalized least squares (EGLS or FGLS). Similarly, PCSE allow for panel-level heteroskedasticity and contemporaneous correlation of observations between the panels. Accordingly, the main empirical results using the above mentioned panel estimation methods are shown in Table 5.

IX. Regression Results and Main Findings

The correlation analysis in the preceding section only confirms whether or not individual attributing factors are associated with FDI inflow without identifying the particular factors that significantly affect the FDI inflow. Thus, this task can be accomplished by using the appropriate model and estimation techniques such as REM, FGLS, and PCSE.

Accordingly, the empirical evidence from this study (Table 5) has been found to be consistent with the theory and the assumptions that were hypothesized at the outset. More specifically, the empirical evidence based on the three panel estimation methods reveal that our variable of interest, FFC, is statistically significant at 1% by using REM and PCSE estimation methods and also statistically significant at 5% by using the FGLS estimation method (Table 5). This finding implies that more freedom from corruption in a country results in an increased ability to build confidence among foreign investors and become a major destination for

TABLE 5

EFFECT OF CORRUPTION AND OTHER CONTROL VARIABLES ON FDI INFLOW (COEFFICIENT/CORRECTED STANDARD ERROR)

FDI inflow	REM	FGLS	PCSE
FFC	0.0906***	0.1142**	0.1441***
	(0.0315)	(0.0538)	(0.0392)
Economic growth	0.11305***	0.1532**	0.1651***
	(0.0255)	(0.0244)	(.0299)
Education	0.0245*	0.0101**	0.03840*
(secondary school enrollment ratio)	(0.0137)	(0.0041)	(0.0208)
Health (life expectancy)	0.0937***	0.1079**	0.1083***
	(0.0130)	(.0504)	(.0193)
GDP/capital (PPP)	0.0639**	0.0531***	0.0921***
	(0.0264)	(0.0138)	(0.0229)
Infrastructure	0.0403*	0.0358*	0.0549**
(telephone/100 people)	(0.0217)	(0.0190)	(0.0271)
Interest rate	0.0403	0.0295	0.0538**
	(0.0381)	(0.0239)	(0.0157)
Openness	0.0301***	0.0568***	0.0632***
	(0.0615)	(0.0204)	(0.0172)
Constant	-5.3739	-6.0345	-8.5694
	(3.6533)	(3.1438)	(4.8625)
Number of observations	240	240	240
Number of groups	16	16	16
Observation per group	15	15	15
Wald $chi^2(8)$	189.16	218.44	247.39
Prob > chi^2	0.0000	0.0000	0.0000

FDI inflow. For instance, the evidence from the REM implies that keeping other factors constant, a 1% increase in the FFC index in an economy may increase the FDI inflow by approximately 9.1 percentage points. This is equivalent to saying that if a country is able to decrease the level of corruption by 1%, the inward FDI into the economy may increase by 9.1 percentage points. The empirical results derived from using FGLS and PCSE estimation methods also verified that keeping other factors constant, a 1% improvement in the FFC index may increase the FDI inflow by 11.4 and 14.4 percentage points, respectively. Thus, some of the arguments that corruption does not keep FDI out of corrupt countries are

either flawed or invalid. In fact, countries characterized by a high level of corruption and a remarkable FDI inflow, such as China and India, could even double their inward FDI if the present pervasive level of corruption can be reduced. Therefore, this study strongly suggests that policymakers must give highest priority to curb corruption as one of the main preconditions in creating a conducive atmosphere for attracting inward FDI into their economies. The main implication of these findings is that curbing the current level of deep-rooted corruption in many Asian economies is crucially needed, and this can be achieved by enhancing good governance and ensuring better economic institutions, including strengthening the effectiveness and predictability of the judiciary, enforceable contracts, and the rule of law, eliminating the root causes of corruption and rent seeking, and developing an environment where fair and predictable rules form the basis for social and economic interactions.

The regression results obtained by using the three estimation methods also confirm that sustainable economic growth in a country is one of the main positive attributing factors that promote inward FDI. This finding implies that an impressive growth record in the past may provide better confidence to foreign capital investment because past policies are most useful in predicting the future in countries with stable governments. This phenomenon has been observed in many countries such as China and India. Additionally, the substantial and sustainable growth of an economy increases the market size in that country, which is one of the factors that attract multinational investments. Accordingly, the empirical evidence from the REM indicates that keeping other factors constant, a 1% improvement in the economic growth of the host economy may increase the FDI inflow by 11.3 percentage points.

In line with this, this study verified that the two components of human capital, namely, education, which is represented by secondary school enrollment ration, and health, which is represented by life expectancy, are both positive and significant determinants of FDI inflow, as shown in Table 5. One of the reasons for the relatively high movements of FDI into Asian economies is the quality of skilled and semi-skilled labor that is abundantly available in most of the countries. The strong statistical significance of education on FDI inflow was confirmed by using all three panel estimation techniques employed in this study. Likewise, the proposition that life expectancy affects FDI inflow was revealed by the FGLS and PCSE models. This finding verified that a healthy workforce is one of the necessary factors that attract multinational capital investment in host economies. In addition, this finding implies that coun-

tries that fail to ensure adequate education and health for their citizens, or countries that fail to enhance human capital, are less likely to attract significant FDI into their economies.

The income per capita variable, which captures the level of development of the host economy and the purchasing power of the people, is found to be statistically significant for influencing FDI inflow into a host economy. Infrastructure, which is one of the control variables, was found to directly and significantly influence inward FDI in Asian economies. This finding is in line with the findings of other researchers such as Wheeler and Mody (1992) and Canning and Bennathan (2000) who indicated that infrastructure, particularly telecommunications infrastructure, is a necessary condition for the successful operation of foreign investors. The degree of openness of the economy is another important variable that is a significant determinant of FDI inflow. Table 5 provides evidence that the use of REM, FGLS, and PCSE models found that a 1% increase in openness may increase the inward FDI by 3, 5.6, and 6.3 percentage points, respectively, keeping other factors in the model constant. This result can be attributed to the substantial flows of intermediate inputs and goods in and out of the host country, which are highly required by MNCs, when the economy is more open. Moreover, trade liberalization can also create a better business climate and expectations of better long-term economic growth prospects and increase in market size.

However, except in the use of the PCRE estimation method, the evidence from REM and FGLS found that the domestic interest rate did not influence the rate of FDI inflow in Asian economies (Table 5). This result is similar with other previous studies that documented ambiguous and statistically insignificant results of the impact of cost of capital (*i.e.,* lending interest rates) on FDI inflows. On one hand, this can be attributed to the increased capital brought in by foreign firms when the cost of capital in the host country is higher. On the other hand, higher domestic consumption and hence, higher FDI inflows results when interest rates were lower. Therefore, we did not hypothesize any particular relationship between the domestic interest rate and the FDI inflow at the outset.

X. Concluding Remarks

On one hand, various empirical studies supported the idea that cor-

ruption in the host country may hinder FDI inflow by increasing economic uncertainty, thereby weakening investor confidence in the market systems and political institutions. On the other hand, some scholars argue that corruption can have a positive impact on investment by facilitating transactions in countries and report a positive relationship between corruption and FDI. The empirical evidence in this study generally confirms that corruption remains a significant problem for inward FDI in Asian economies. This is equivalent to saying that if a country is able to decrease the level of corruption by 1%, the inward FDI may increase by about 9.1 percentage points. Thus, the argument of some scholars that corruption does not keep FDI out of those corrupt countries is either flawed or invalid. In fact, some countries such as China and India, which are characterized by high level of corruption and a remarkable FDI inflow at the same time, could even double their inward FDI if the present pervasive level of corruption can be reduced.

The level of corruption in Asian economies and its main causes vary for every country. The main contributing factors for corruption in any country include poorly conceived and managed policies, programs, and activities, failing institutions, poverty, income disparities and inadequate civil servant remuneration, lack of accountability, and lack of transparency. Ultimately, all sectors of society must share the responsibility of containing corruption because all are willing or unwilling participants. Each corrupt transaction requires a "buyer" and a "seller." The government is responsible for dealing with civil servants who engage in extortion and bribery, but businesses and individuals offer bribes to civil servants to obtain certain advantages. Thus, governments need to introduce appropriate legislation to reduce corruption and provide the necessary means to ensure that appropriate steps are taken to establish systems of integrity and rule of law. Singapore and Hong Kong demonstrate that combating corruption depends on the adequacy of anticorruption measures and the strength of political leaders' commitment. Moreover, Singapore and Hong Kong demonstrate that while corruption cannot be eradicated overnight, governments have an obligation to take appropriate measures and at least minimize the various forms of corruption through strengthening effective economic and political institutions and good governance infrastructure. A strong combination of political will from the top and public pressure from the base is needed to institute accountability and transparency in the government and to minimize corruption. Quah (1982) stated that both Singapore and Hong Kong (China) have institutionalized adequate anticorruption measures (Prevention of Corruption

Act and the Corrupt Practices Investigation Bureau in Singapore and the Prevention of Bribery Ordinance and the Independent Commission against Corruption in Hong Kong) and that both countries have political leaders who are determined to eliminate corruption in their countries. Hence, the minimization of corruption is possible with strong political will. Conversely, if such political will is lacking, the situation will not change, with political leaders and senior civil servants or military officers doing nothing more than paying lip service to implement anticorruption measures. In line with the introduction of appropriate legislation to reduce corruption, the key to preventing corruption is the education and involvement of the public in building integrity. In addition to enhancing a corruption-free economy, the following key institutional, policy, socio-economic factors also influence FDI inflow by creating an attractive investment climate for foreign investors: good track record of economic growth, investment in human capital (education) and health, the purchasing power of the people, physical infrastructure, and greater openness in the economy.

The findings have wide implications especially for Asian economies that have a high potential to attract enormous FDI because of their skilled and semi-skilled workforce as well as their geographical proximity to major FDI origin countries.

XI. Limitations of the Study and Avenues for Future Research

The present study has certain limitations which can provide opportunities for future research on the same theme. The use of difference-in-difference methods has become very widespread in panel regression since the research of Ashenfelter and Card (1985). The idea of this method is that in the case where the same units within a group are observed in each time period, the average gain in the second (control) group is subtracted from the average gain in the first (treatment) group. This process removes biases in second-period comparisons between the treatment and control group that could be the result of permanent differences between those groups, and also removes biases from comparisons over time in the treatment group that could be the result of trends.

Thus, in future research, a more detailed study with a greater sample size will be conducted, and a comparison will be made by using various appropriate panel estimation methods, including the difference-in-difference approach.

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