Corruption and Foreign Direct Investment in the Philippines

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Abstract

This paper is intended to know the relationship between corruption (measured by the Corruption Perception Index) and foreign direct investment (FDI) in the Philippines. It presents the trends of corruption and foreign direct investment from 1995 to 2010. The study used Granger Causality to test for the direction of causality between the two variables.

Results revealed that corruption and FDI are non-stationary series but after first differencing, the series became stationary. The series are integrated of order I(1). The Johansen Cointegration test was used to identify the long-run relationship between the two variables. Vector Error Correction (VEC) was also used to determine the coefficients and significance of the long run and short run relationship between corruption and FDI. It was found out that the variables have a positive short run and long run relationship, i.e., lesser corruption will encourage more FDI. In such case, corruption serves as a “grabbing hand” for FDI to take place. Moreover, a unidirectional relationship from corruption to FDI has been established.

Keywords: Corruption, Foreign Direct Investment, Philippines, cointegration.
INTRODUCTION

The International Monetary Fund (2003) defined foreign direct investment (FDI) as an investment made to acquire lasting interest in enterprises operating outside the economy of the investor. It was identified as a key component of national development strategies of most countries including the Philippines. It makes a positive contribution to the host economy by supplying capital, technology and management resources (Akinlabi et al. 2011).

In the Philippines, foreign capital inflows had been rising at double-digit rates since 1980, except during 1986 to 1990, a time of great political and economic uncertainty following the period of martial law under President Ferdinand Marcos. Thereafter, the liberalization of existing regulations on FDI following the passage of the Foreign Investments act of 1991 and the easing of political tensions in the early 1990s, all contributed to improving the FDI climate in the country. In spite of these, the increasing FDI flow was not sustained. Observations from the World Bank data show that FDI had been erratic during the following decade.

Among other factors, corruption in the host country has been popularly identified to affect FDI inflows. According to Transparency International (2010), corruption is the abuse of power for private gain. It involves an intentional perversion of the truth or a deliberate manipulation of facts and situation at one’s disposal to gain illegitimate material and non-material advantages (Akinlabi et al. 2011).

Corruption has become an essential feature of the Philippine government and extends to the private sector. According to Balboa and Takenaka (2010), analysts attributed this to historical colonial legacies, aggravated by the continuing presence of patronage politics and weak institutions that lack enough protection against abuse. Figure 1 shows that corruption in the Philippines is one of the worst among the East Asian economies.

Corruption in the host country may deter or enhance FDI. The conventional view states that corruption has the potential to discourage FDI inflow. When investors believe corruption is high in the host country, they may be discouraged to invest because they see this as an impediment of doing business. Corruption means additional operation cost to the investors (King, 2003).

On the other hand, corruption can be thought of as an opportunity, where firms can exploit weaknesses in a nation’s institutional environment to gain advantages in competition. Bardhan (1997) stated that when a country suffers from rigid bureaucracy, bribes can speed up bureaucratic processes and decision making.
which is beneficial for both to the investor. In such case, foreign investors and multi-national companies are not always deterred by corruption. They could be apt at adjusting their activity to the local political environment and practices and can actively engage in corruption (Pinto and Zhu, 2008).

Figure 1 shows the Corruption Perception Index of some ASEAN and other economies of Asia. The surveys of Transparency International in 2000 and 2008 showed a deteriorating score for the Philippines, in contrast to other economies of Asia.

![Figure 1. Corruption Perceptions Index of ASEAN and other economies of Asia. Source: Transparency International](image)

### Rationale

With the expansion of international business activities, the study of corruption and its effects have received increased attention recently. Thus, the effect of corruption on foreign direct investment had captured the interest of numerous researchers.

The results of studies conducted on the relationship of corruption and FDI was not conclusive. Mathur and Singh (2011), Domonkos (2011), King (2003), and Johnson and Dahlstrom (2004) found that corruption indeed has a negative relationship with FDI. On the other hand, Claassen et al. (2011) found that African corruption encouraged Chinese investment in the said place. The direction of causality was not also conclusive. Akinlabi et al. (2011) and Akan and Arslan (2007) found that corruption Granger caused FDI in Nigeria and Turkey respectively. However, the work of Craigwell and Wright (2011) found mixed results. In their non-linear causality test, 11 countries showed a bi-directional causality, 22 countries indicated that FDI Granger cause corruption, 4 countries established causality from corruption to FDI while 5 countries showed no discernable results, out of the 42 countries being studied.

Unfortunately, to the best knowledge of the authors, there had been no studies conducted on the relationship of corruption and FDI in the Philippines. Aldaba (1994) studied the determinants of FDI in the country but this is silent about corruption as a factor. The study by de Dios and Ferrer (2000) was also limited to the context and framework of corruption in the Philippines and did not tackle the effect of this to FDI. Thus, this study was conducted.

Corruption is one of the controversial issues and problems in the Philippines, and foreign direct investment is said to be vital in economic growth and development. In this regard, it is important to know
if corruption significantly affects the country’s FDI. Moreover, the results of this study may help to justify the urgency to improve transparency and reduce corruption not only in the government but even in the private sector. This study also serves as basis and reference to future related studies.

Objectives of the Study

The general objective of the study is to determine the relationship between corruption and foreign direct investment in the Philippines from 1995-2010.

Specifically, it aimed to:
1. Present the trend of corruption and FDI in the Philippines;
2. Provide empirical evidence on the relationship between corruption and foreign direct investment; and
3. Determine the causal relationship (if there exist) between FDI and corruption.

METHODOLOGY

Theoretical Framework

There are two theories that can explain the relationship between corruption and foreign direct investment, the “grabbing hand” (Shleifer and Vishny, 1993) and the “helping hand” (Walder, 1995) theories of corruption. The “grabbing hand” theory of corruption, supported by Shleifer and Vishny (1993) and Aidt (2003), claimed that corruption in an economy is like a grabbing hand that increases the costs of carrying out economic activities in the market. It is uncontroversial to believe that corruption would increase the cost of foreign investment, just as it does to domestic investment, which will eventually reduce the profitability of doing business, hence, discourage FDI. This is supported by surveys of international business. For instance, Kaufman (1999) found out that costs of investment in a relatively corrupt host country can be as much as 20% higher, compared to their uncorrupt counterparts. Corruption in this case is a major obstacle to international business and would discourage FDI from taking place.

On the other hand, the “helping hand” theory of corruption, supported by economists such as Lui (1985), Beck and Marher (1986), and Saha (2001), claimed that instead of being an obstacle for business, corruption could be an efficient “lubrication” of rigid economic regulation and red tape. By bribing the host government, investors could get around the regulations or red tape and potentially obtain a large amount of benefit from the host government in terms of profitable contracts, privileged access to markets or subsidies that will act as an extra incentive for them to engage in business. As pointed out by Tanzi (1998), decisions to authorize FDI projects often provides multi-national enterprises with monopoly power in the host country, which would be extremely profitable for investors. This provides a great incentive for firms to bribe the host government, so that a corrupt host country is preferred over the less corrupt ones.

Conceptual Framework

Indeed, corruption and FDI may have a positive or negative relation and the direction of causality is shown in Figure 2. There are four possible directions of causality: a unidirectional relationship running from corruption to FDI as supported by the works of Akan and Arslan (2007), Akinlabi et.al. (2011), and
Claassen, et. al. (2011); or a one way relationship from FDI to corruption supported by the work of Craig and Wright (2011) in some countries of their study; or a bidirectional relationship between corruption and FDI as observed by Craigwell and Wright (2011) in 11 countries. Lastly, corruption and foreign direct investment may be independent of each other so that there is no link between corruption and foreign direct investment.

Data and Data Sources

This study utilized a secondary data of the period 1995-2010 from various sources. Corruption as measured by the Corruption Perception Index was taken from the website of Transparency International (www.transparency.org). The CPI ranges from 0 to 10 where a 10 indicates a perfectly clean or honest country while 0 indicates a country that is dominated with corruption. Meanwhile, the data for FDI inflows in US dollars were obtained from the World Bank database.

Statistical Method

The analysis is composed of two parts namely; the trend analysis and the time series analysis. Descriptive statistics was used to depict the trends of corruption and FDI during the period 1995-2010. Graphs were also generated to visualize the behavior of the variables over time. The time series analysis was intended to determine the relationship between corruption and FDI and the procedure are stated in detail below.

Time Series Analysis

To identify the nature of the phenomenon by the sequence of observations and predicting future values of longitudinal data are the main goals of time series analysis. These require the pattern of observed time series data that is identified and formally described. Once the pattern is established, this can be interpreted and integrated with other data, and can be used to predict future events or use it in some investigative phenomena (www.statsoft.com). Thus, to investigate the relationship between corruption and foreign direct investment, time series analysis was used.

1. Testing for Stationarity

Prior to estimating any relationship of variables in a time series analysis, it is essential to know whether the variables are stationary or not in order to avoid spurious results. It is convenient to estimate relationships through the regression method only if the series are stationary. Most of the time series data reflect trend, cycle and/or seasonality and these deterministic patterns must be eliminated to make the series stationary.
The unit root test is useful to verify whether the data are stationary or not. If data has a unit root then it is non-stationary and estimation based on non-stationary variables can produce high $R^2$ but insignificant estimates without economic meaning. The Augmented Dickey-Fuller (ADF) was used in the testing for the presence of unit root. The specification is:

$$Y_t = \beta_1 + \beta_2 + \delta Y_{t-1} + \alpha_i \sum Y_{t-1} + \varepsilon_t$$  

(1)

Where $\varepsilon_t$ is a pure white noise term error. The error term is assumed to be independent and identically distributed. Dickey and Fuller (1981) (as cited in Frances, 1998) proposed the ADF test in order to handle the AR in the variables. The Augmented Dickey Fuller Test seeks to distinguish between the following alternative models:

- $\Delta Y_t = \gamma Y_{t-1} + \varepsilon_t$ (Random Walk)
- $\Delta Y_t = \alpha_0 + \gamma Y_{t-1} + \varepsilon_t$ (Random Walk with a Drift)
- $\Delta Y_t = \alpha_0 + \gamma Y_{t-1} + \alpha_2 t + \varepsilon_t$ (Mixed Process)

The difference between the three models is the presence of deterministic elements $\alpha_0$ and $\alpha_2 t$. The first is random walk model, the next includes an intercept in a drift term, and the last contains both drift and linear trend. To test the sequence with a unit root, the parameter $\gamma$ is tested over the null hypothesis that $\gamma=0$.

2. Differencing

In case the test fails to reject the null hypothesis, the series contains a unit root and the series is non-stationary. If the series is non-stationary, then we proceed to differencing in order to arrive at stationary series. Differencing is used to detrend data and control autocorrelation by subtracting each datum in a series from its predecessor (www.stat.ucla.edu). The number of times that the differencing has been done is called the order of differencing. In the case where a time series needs to be differenced $d$ times, it is said that it is integrated of order $d$, abbreviated as $I(d)$ (Franses, 1998). If a linear combination between integrated series exists, then cointegration analysis must take place.

3. Cointegration Analysis

In the multivariate context, the existence of a stationary linear combination of non-stationary variables that are cointegrated of the same order is referred to as cointegration. The linear combination is called the cointegrating equation and may be interpreted as a long-run equilibrium relationship among the variables (EViews Ver. 5.0 User Manual). Thus, it can be used to investigate the long-run economic relations among the variables via the estimation of cointegrating vectors. If the stationary linear combination between non-stationary variables and random variables exist, the variables combined are cointegrated. This implies that the variables have a link and cannot move far away from each other (www.isc.temple.edu).

The cointegrating rank $r$ is the number of cointegrating relationships or equations in the system. If the cointegrating rank $r$ is zero ($r = 0$), then the variables are not cointegrated. On the contrary, if the cointegrating rank is of full rank ($r = n$), all of the variables are jointly stationary. Thus, the cointegrating rank must only lie within $0 < r < n$ for cointegration to hold (Enders, 1995). The method used for testing cointegration in this study is the Johansen Cointegration Test. Using EViews Version 5.0, the test
statistics $\lambda_{\text{trace}}$ and $\lambda_{\text{max}}$ were compared against the critical value to test the null hypothesis of $r = 0, r \leq 1, r \leq 2 \ldots$ or $r = 0, r = 1, r = 2 \ldots$. Under the null hypothesis of no cointegration $r = 0$ against the alternative hypothesis $r > 0$, the $\lambda_{\text{trace}}$ value must be greater than the $\lambda_{\text{critical}}$ to be able to reject the null hypothesis. Same concept is applied to $\lambda_{\text{max}}$. However, $\lambda_{\text{max}}$ has more specific alternative hypothesis under the null $r = r$ against the alternative $r = r + 1$. In trying to pin down the cointegrating rank $r$, $\lambda_{\text{max}}$ is preferred. If the null hypothesis is rejected, then it implies the presence of cointegration.

4. Vector Error Correction

To be able to analyze and determine the estimates of the cointegrating vectors, the Vector Error Correction Model was used. The vector error correction (VEC) model is a special case of VAR for variables that are stationary in their difference, i.e., I(1). The VEC also takes into account any cointegrating relationships among the variables. Following Enders (1995), the error correction representation is of the form:

$$\Delta x_t = n_0 + \sum_{i=1}^{p} n_i \Delta x_{t-i} + n_x t-p + \epsilon_t$$

(2)

where:
- $p$ = lag length
- $n = -(I - \sum_{i=1}^{p} A_i)$; $A_i$ is a matrix of coefficients of the error correction term
- $n_i = -(I - \sum_{j=1}^{i} A_j)$; $A_i$ is a matrix of coefficients of the short-run changes
- $n_0 = \text{an } (n \times 1) \text{ vector of the intercept terms with element } n_{0j} \text{ on } j\text{th and } k\text{th column}$

The long-run dynamics of the variables is the error correction term. Note that $n$ in Equation (2) is also equal to $\alpha \beta'$ where $\beta'$ is the matrix of cointegrating vector straightforwardly interpreted as long-run elasticites. Moreover, the error correction estimates can be interpreted as the short run dynamics of the variables.

6. Granger Causality Tests

Granger causality is a technique of determining whether one-time series is useful in forecasting another time series. The concept of Granger causality starts on variable $X$ (say corruption) is causal for another variable $Y$ (for example FDI), if the past values of $X$, in addition of the past values of $Y$ itself, is useful for predicting future $Y$. If the prediction of $Y$ is improved by including $X$ as a determinant, then corruption is said to Granger cause FDI, but not to imply that FDI is the effect of the result of corruption (www.biblioteket.ehl.lu.se).

RESULTS AND DISCUSSION

Trend of Corruption in the Philippines

Figure 3 presents the time series plot of corruption in the Philippines which follows a decreasing trend. During the time of President Fidel V. Ramos, the Philippines projected better scores in the Corruption Perceptions Index (CPI). This was in 1997 and 1998 where the CPI showed 3.05 and 3.3 scores, respectively. In 1999, the Philippines established the best score at 3.6, a year after Joseph Ejercito
Estrada has been elected as president. At this time, Estrada promised an anti-corruption platform to everyone and the start of his administration have the aftermath of the “honest” years of the Ramos administration. However, in 2000, the CPI score for the Philippines experienced a sharp decline due to anomalies hurdled by the Estrada administration. On October 2000, thousands of anti-Estrada protesters marched in the streets of Manila demanding for Estrada to step down.

![Figure 3. Corruption Perception Index (CPI) scores of the Philippines: 1995-2010. Source: Transparency International](image)

Later that year, in December 2000, Estrada’s impeachment trial opens and into exposure the massive questionable wealth and property of the president (www.globalintegrity.org). Later, in 2005 during the rule of Gloria Macapagal-Arroyo, corruption in the country was perceived to worsen. At that time, the CPI score is 2.5. This was attributed to many controversies faced by the administration. Starting off with summer of 2005 where Arroyo admitted to calling an election official during the 2004 presidential race. Dubbed as the “Hello Garci” scandal, it revealed a taped conversation between Arroyo and Election Commissioner Virgilio Garcillano that seemed to suggest that Arroyo used her power to influence the results of the election. On the same year, Arroyo survived an impeachment motion in July (www.factmonster.com). In 2008, still under the Arroyo administration, the Philippines experienced its worst record in the CPI at 2.3 and is perceived to be the worst among its East Asian neighbors. This score is highly attributed to the NBN/ZTE deal or the Philippine National Broadband Network controversy which erupted in the preceding year that became a big blow to the Arroyo administration after whistleblower Jun Lozada exposed the information about who received the kickbacks of the deal (www.wikipedia.com). A coalition of lawyers, big business groups and two social arms of Catholic Bishops’ Conference of the Philippines declared that corruption in the Arroyo administration is the worst since the Marcos administration. On 2010, the P-Noy administration was had just started and CPI score for the Philippines is at 2.4. It is believed that during this time the corruption of the former administration still lingers.

**Trend of Foreign Direct Investment in the Philippines**

The foreign direct investment series (Figure 4) follows a fluctuating trend. With the completion of the democratic process in the 1990s along with FDI liberalization, substantial improvements were felt as FDI inflows grew from 1990 to 1999. In 1996, amendments to the Foreign Investment Act of 1991 which permits 100% foreign ownership enhanced the investor-friendly framework of the Philippine government (www.nationsencyclopedia.com). Inspite of the 1997 Asian crisis, FDI inflow continued to increase. The distinctiveness of the Philippines compared with other most affected countries were manifested by its
continuing strong export performance and its relatively sound financial sector, factors which were slowly recognized by foreign investors (www.unctad.org).

In 2000, the Estrada administration passed the Retail Trade Liberalization which allowed investors to enter the retail business and allowed foreign companies to engage in rice and corn trade. This helped FDI inflows of the Philippines to reach US$2.24 billion. With another political turmoil in the early 2000s, FDI inflow sharply decreased from 2000-2004 (Aldaba, 2006). In spite of the scandals, the Arroyo administration can claim to have done better in FDI than the past administrations. During her regime, net FDI reached nearly US$3 billion in 2006 and 2007 with the amount of US$2.92 billion and US$2.916 billion, respectively. However, during the same administration, Philippines lost two major long-term investors namely; Intel and FedEx which relocated to Vietnam and China, respectively (www.inquirer.net). In 2008, FDI declined sharply due to the 2008 global financial crisis. In 2010, Philippines received the lowest flows of FDI compared to its peers in Asia. The reason behind this is the difficulty of the Philippines to compete with other countries in the region because they are much ahead in terms of infrastructure and ease of doing business (www.maniatimes.net).

![Figure 4. Foreign direct investment inflows of the Philippines, 1995-2010. Source: Word Development Indicators, The World Bank](image)

**Test for Stationarity**

Prior to estimating any relationship of variables in a time series analysis, it is essential to know whether the variables are stationary or not in order to avoid spurious results. Since FDI data are large and erratic relative to CPI, FDI was transformed into its natural logarithm values to come up with values that are more practical to analyze and to arrive with rational values of the parameters.

To test formally the stationarity of the series, the Augmented Dickey-Fuller (ADF) test was applied. Table 1 presents the result of the ADF. Results point out that corruption and foreign direct investment are not significant under mixed process, random walk with a drift and random walk which fails to reject the null hypothesis. Hence, both series are found to be non-stationary.
Differencing

Since the results of the ADF test fails to reject the null hypothesis and the series were found to be non-stationary, differencing was applied to arrive at stationary series. After first differencing, all of the variables were found to be stationary. Thus, the order of integration is identified. The variables were found to be stationary at first differencing, so that the variables had an order of integration equals to 1 or I(1).

Table 2 presents the results of the ADF test for the variables that were differenced. Results point out that the differenced values of corruption (CPI) are significant under random walk process and the differenced values of FDI are significant under random walk and random walk with drift. Thus, the series are now stationary.

Table 2. Augmented Dickey Fuller (ADF) test results at first differencing.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Random Walk</th>
<th>Random Walk w/ Drift</th>
<th>Mixed Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPI</td>
<td>-0.50770ns</td>
<td>-1.3860ns</td>
<td>-2.5784ns</td>
</tr>
<tr>
<td>FDI</td>
<td>0.062385ns</td>
<td>-1.6902ns</td>
<td>-1.7949ns</td>
</tr>
</tbody>
</table>

ns not significant at 10% level  *Significant at 10% level

Cointegration Test

As shown in Table 2, CPI and FDI contain a unit root, after the first differencing so that there is the possibility of cointegration. Cointegration is the process of getting the equilibrium or long-run relationships among non-stationary variables. This implies that the individual behavior of the variable may actually be linked to another so that they do not move independently of each other. (www.isc.temple.edu).

The Johansen Cointegration test or the Unrestricted Cointegration Rank tests for corruption (CPI) and foreign direct investment (FDI) in the Philippines is presented in Tables 3 and 4. The tables present the Trace ($\lambda_{trace}$) statistics and the Maximum Eigenvalue ($\lambda_{max}$) for corruption (CPI) and foreign direct investment (FDI). Also, corresponding critical values at 5% level of significance for the variables are presented.

The cointegration test results in Table 3 shows that corruption and FDI are cointegrated. It indicates that these two variables have a long-run relationship. For corruption (CPI) and FDI, $\lambda_{trace}$ statistics for the none
and at most 1 hypothesis is 16.72778 and 6.729831 respectively. These exceed the value of the critical value at 5% level of significance. Therefore, we reject the null hypothesis that there is no cointegration.

Table 3. Unrestricted cointegration rank test (Trace) results.

<table>
<thead>
<tr>
<th>Hypothesized No. of CE(s)</th>
<th>$\lambda_{trace}$</th>
<th>0.05 Critical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>None*</td>
<td>16.72778</td>
<td>15.49471</td>
</tr>
<tr>
<td>At most 1*</td>
<td>6.729831</td>
<td>3.841466</td>
</tr>
</tbody>
</table>

*denotes rejection of null hypothesis at 5% level

Table 4 presents the result of the Maximum Eigenvalue ($\lambda_{max}$). Results of the $\lambda_{max}$ statistics support the results of the aforementioned test. $\lambda_{max}$ statistics for the at most 1 hypothesis exhibits a greater value than the critical value at 5% level of significance, which also implies the presence of cointegration.

Table 4. Unrestricted cointegration rank test (Maximum Eigen value).

<table>
<thead>
<tr>
<th>Hypothesized No. of CE(s)</th>
<th>$\lambda_{max}$</th>
<th>0.05 Critical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>9.992947</td>
<td>14.26460</td>
</tr>
<tr>
<td>At most 1*</td>
<td>6.729831</td>
<td>3.841466</td>
</tr>
</tbody>
</table>

*denotes rejection of null hypothesis at 5% level

**Vector Error Correction Estimates**

To be able to support the result of the cointegration test, Vector Error Correction was used to determine the coefficients and test the significance of the long-run relationship between corruption (CPI) and FDI. Note that $\pi$ in Equation (2) is also equal to $\alpha\beta'$ where $\beta'$ is a matrix of cointegrating vector and be straightforwardly interpreted as long-run elasticities.

Table 5 shows the derived cointegrating vectors which are used in interpreting the long run relationship between the two variables. The cointegrating vectors were normalized with corruption. Based on common expectation, the sign of the relationship between corruption and FDI is negative. However, the results show a significant positive relationship between FDI and CPI. This positive relationship can be attributed to the nature of the Corruption Perception Index (CPI) where higher CPI indicates a less corrupt country and very corrupt when this is zero. Thus, the positive sign simply means that FDI is higher when corruption is less.

In particular, the results can be interpreted as a 1% increase in FDI in the long run will result to 0.69% increase in the Corruption Perception Index. Note that $t-1$ indicates the variable lagged at 1 time period or straightforwardly refers to the previous' (i.e. 1 year ago) value of the variable. Hence, it can be said that an increase in foreign direct investment also mean an “honest” environment in the Philippines and a decrease in FDI will mean more corruption in the country. This relationship supports the “grabbing hand” theory of corruption where foreign investors consider corruption as an impediment of doing business in the host country where corruption in the country is like a grabbing hand that increases the costs of carrying out economic activities. Corruption results to high transaction costs and serve as tax that would
decrease expected profitability of the investment (Johnson and Dahlstrom, 2004; Pinto and Zhu, 2008)). This explains why the Philippines suffers with less FDI inflows compared to its Asian counterparts (www.inquirer.net). This finding is similar to the studies of King (2003), Mathur and Singh (2011), and Akinlabi et al. (2011) where corruption has a negative effect to FDI inflows.

Table 5. Coefficients of the cointegrating vector ($\beta'$).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coint Eq1</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPI$_{t-1}$</td>
<td>1.000000</td>
</tr>
<tr>
<td>FDI$_{t-1}$</td>
<td>0.689860*</td>
</tr>
<tr>
<td></td>
<td>(0.29682)</td>
</tr>
<tr>
<td></td>
<td>[2.32419]</td>
</tr>
</tbody>
</table>

*significant at 5% level  
( ) denotes standard errors  
[ ] t-statistics

Table 6 shows the error correction estimates which predict the short run dynamics between CPI and FDI. It can be noticed that in the short run, the present values of foreign direct investment (FDI) is significantly explained by the previous year’s corruption (CPI). In particular, 89.74% of the variation in the current FDI is explained by the model that includes the previous year’s FDI and corruption (CPI).

Table 6. Error correction estimates.

<table>
<thead>
<tr>
<th></th>
<th>$\Delta$CPI</th>
<th>$\Delta$FDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta$CPI(-1)</td>
<td>-0.575448*</td>
<td>2.636632*</td>
</tr>
<tr>
<td></td>
<td>(0.28653)</td>
<td>(0.48626)</td>
</tr>
<tr>
<td>$\Delta$FDI(-1)</td>
<td>0.083388ns</td>
<td>-0.154236ns</td>
</tr>
<tr>
<td></td>
<td>(0.11156)</td>
<td>(0.18933)</td>
</tr>
<tr>
<td>C</td>
<td>-0.021098ns</td>
<td>-0.027812ns</td>
</tr>
<tr>
<td></td>
<td>(0.10467)</td>
<td>(0.17764)</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.479050</td>
<td>0.923105</td>
</tr>
<tr>
<td>Adj R-squared</td>
<td>0.305400</td>
<td>0.897474</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-3.372219</td>
<td>-10.24812</td>
</tr>
<tr>
<td>Akaike AIC</td>
<td>1.134187</td>
<td>2.192018</td>
</tr>
<tr>
<td>Schwarz Criteria</td>
<td>1.308018</td>
<td>2.365848</td>
</tr>
</tbody>
</table>

*Significant at 10% level  
( ) standard error  
ns-not significant at 10% level

Granger Causality Test

The results in Table 7 show that at 5% level of confidence the Granger causality test failed to reject the null hypothesis that foreign direct investment (FDI) does not Granger-cause corruption (CPI) while the null hypothesis that corruption (CPI) does not Granger-cause foreign direct investment (FDI) was rejected.
This means that past values CPI help to predict FDI in the Philippines. Such result established a unidirectional relationship from corruption to foreign direct investment.

Table 7. Granger Causality test result.

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Obs</th>
<th>F-Statistics</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI does not Granger Cause CPI</td>
<td>14</td>
<td>0.46840*ns</td>
<td>0.50789</td>
</tr>
<tr>
<td>CPI does not Granger Cause FDI</td>
<td>14</td>
<td>9.07460*</td>
<td>0.01181</td>
</tr>
</tbody>
</table>

ns - not significant at 5% level
*significant at 5% level

Impact Multiplier

In economics, a multiplier is a factor of proportionality that measures how an endogenous variable changes in response to a change in some exogenous variable (www.wikipedia.com). Given the results of Vector Error Correction estimates with the support of results from the Granger Causality test, the relationship of FDI in terms of CPI was derived. Through this equation the impact of corruption to FDI is determined as;

\[
FDI_t = 1.45 CPI_{t-1}
\] 

(3)

In the long-run, a 1 unit increase in CPI will result to 1.45 times increase in FDI, ceteris paribus or a unit improvement in the CPI of the Philippines in the previous year will increase FDI in the current year by 1.45 times.

Summary and Conclusion

This study dealt with the causal relationship between corruption (CPI) and foreign direct investment (FDI) in the Philippines. The study used annual observation of the said variables from 1995 to 2010. Standard time series procedures were conducted to examine the relationship of the CPI and FDI. The trends of the time series were analyzed and subjected to stationarity test using Shazam Version 9.0. It was found out that both the CPI and FDI are non-stationary and the study proceeded to differencing where both variables became stationary after the first differencing. Cointegration was then performed using EViews Version 5.0. Vector Error Correction (VEC) was also used to determine the coefficients and test the significance of the long-run and short-run relationships. The direction of causality between corruption and foreign direct investments was also tested using the Granger Causality test.

The findings of this study show that CPI (Corruption Perception Index) is declining over the years from 1995 to 2010 while FDI is behaving in a very erratic manner. With the CPI of zero for most corrupt country then the declining trend in CPI implies that corruption in the Philippines is getting worse over the years considered.

The results of Vector Error Correction and cointegration analysis show that corruption (CPI) has a significant short-run and long-run positive effect on FDI. In the short-run, the previous year's values of both CPI and FDI explain around 90% of the current FDI. While in the long-run, a unit increase or improvement in CPI will result to a 1.45 times increase of foreign direct investment in the Philippines. These are consistent to the results of the Granger Causality test where CPI Granger cause FDI and not vice versa, implying that historical values of CPI can forecast the values of FDI.
The above results suggest that corruption has negative effects to foreign direct investment in the Philippines. Lesser corruption will induce foreign direct investment both in the short-run and long-run. This study therefore supports the “grabbing hand” theory of corruption where this is viewed as an additional cost to local and foreign investors to invest in the country thus, driving them elsewhere towards less corrupt economies.

Recommendations

Based on the findings of the study, the following recommendations are formulated:

- The Philippines should promote the advocacy against corruption. Transparency should be practice at all levels of the government and those proven guilty should be punished by law. The moved of the Pinoy administration to eradicate corruption is imperative to a cleaner government that promotes foreign direct investment in the country.
- It is also recommended to improve the database in the Philippines. Availability of data in this study has been a problem. Improvement in our database system will be very helpful for researchers to come up with more detailed results.
- Lastly, it is also recommended that other models be used in exploring the relationship between corruption and foreign direct investment

REFERENCES


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