Corruption and its impact on foreign direct investment

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Abstract

Some studies show the negative impact of corruption on foreign direct investment (FDI) inflows. The high level of corruption can cause a direct reduction of FDI because of the bad reputation of the country abroad. Recent studies, however, also point to a possible reverse trend where countries with higher corruption are for some investors very attractive. This paper focuses on verification of the existence of relationship between the level of corruption and FDI and the impact of corruption on FDI in selected group of countries in period 1998–2015. The use of correlation analysis reveals a significant relationship between FDI and corruption. Regression analysis reveals the negative impact of corruption on FDI, particularly in countries with high levels of corruption. This analysis confirms the dependence of FDI on the level of corruption in the country especially in countries with a high level of corruption. Fighting corruption could be considered as a tool supporting investment inflows in these countries.

Keywords: Corruption, foreign direct investment (FDI), Corruption perception index (CPI), correlation analysis, regression analysis.

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1. Introduction

Corruption is a serious problem that is accompanied by a number of negative consequences, such as its interference with citizens’ trust in public institutions, an increase in investment risk for investors, the stagnation of economic growth and, not least, ineffective management of public resources.

In the host country, foreign direct investment (FDI) opens up new work opportunities, positively influences workforce productivity, introduces the latest findings and technological know-how and positively influences the balance of payments – thus also increasing the rate of economic growth.

A number of studies have proved that corruption has a negative influence on the inflow of FDI (Habib & Zurawicki, 2001; Lambsdorff, 2003; Wei, 2000). A high degree of corruption can cause a direct decrease in FDI on account of the country’s poor international reputation. When investors make decisions about which country to choose for locating their investment, they tend to take into account whether there is a favourable business environment as well as the degree of and form taken by corruption in the given country, among other things. On the other hand, however, certain studies have pointed to a possible opposite trend – when countries with a higher level of corruption are conversely attractive for certain investors, and they consciously steer investment towards these countries (Henisz, 2000; Huntington, 1968; Leff, 1989; Wheeler & Mody, 1992).

This paper focuses on verifying the existence of a relationship between corruption level and FDI and the impact of corruption on FDI in a selected group of countries for the period of 1998 to 2015.

2. FDI’s impact on host country economies

Concerning economic growth, FDI is a positive influence; thus, it also increases export performance and finances a current account deficit without debt, which results in improving external balance and currency stability. When FDI takes place, new work opportunities are created – and fiscal gains from FDI in the wake of privatisation are beneficial for the governments of transition economies. However, these positive effects are primarily related to the entry of a foreign investor, and they can be observed in the first few months or years after the investment has been made (Pinto & Zhu, 2013).

Viewed through a long-term perspective that takes indirect effects into consideration, FDI is nonetheless accompanied by a number of negative effects. FDI does not necessarily support economic growth and employment in cases when FDI largely crowds out existing investments, investors do not form ties with domestic companies, production tends to be focused on technologically less complicated phases of the production chain and transnational companies in the country implement unfriendly strategies.

The repatriation of profit to its country of origin and the possible resulting flow of FDI out of the country have a marked influence on the country’s external balance. Attracting investors to a host country includes additional costs in the form of tax incentives or direct grants from public budgets, and an irregular inflow of FDI can be seen in an unwelcome deviation of the currency exchange rate away from its equilibrium level.

2.1. Factors when locating FDI

The OLI-Model, presented by J. H. Dunning (1988), is one example that explains the prerequisites for attracting FDI. On the basis of this approach, FDI flows into a host country if it meets three necessary conditions: if it uses ownership advantages, location advantages and internalisation advantages.

An investor that decides to invest in a given country should be rich in net ownership advantages, for example, in the form of patents, trademarks and human capital, which give the investor competitive
advantage in the host country’s market. The advantage of location is the location of an international market such that it can absorb new production while, at the same time, not being saturated with imports. The advantage of production internalisation consists of how the investor is able to internally use advantages primarily resulting from the ownership of a specific asset (Azam & Ahmed, 2013).

There are many factors influencing FDI. However, in econometric analysis, it is not possible to specify precisely whether foreign direct investment is influenced by these factors or whether foreign direct investment itself influences the given factors (e.g., macroeconomic stability and economic growth). For example, the so-called Operations Risk Index, which includes 15 economic and business environment criteria, can be used as one option. The so-called country rating, which includes set characteristics, can also be used. The goal of the country rating is to evaluate the risk in a given country of economic entities’ inability to fulfill their obligations and is processed by rating agencies, for example, Moody’s, Fitch or the CRA. Another option is to conduct research directly at transnational companies, where investors themselves specify the relevance of factors for locating FDI. The general factors for locating FDI in the global economy can be defined using the findings from empirical studies (Lambsdorff, 2003).

- The most economically advanced countries tend to be the primary sources and recipients of FDI – most of this FDI is market- or resource-seeking or horizontal with a predominance of mergers and acquisitions.
- A large portion of FDI is aimed at countries of Southeast Asia, Latin America or transition economies, with a higher significance of the factors of seeking, vertical and greenfield FDI.
- It is possible to observe marked growth in the inflow of FDI starting at a specific level of GDP per capita – the flow of FDI into the least advanced countries is negligible.
- Price, workforce quality, infrastructure level and agglomeration effects can be considered significant factors.
- Political and institutional instability discourages investors from locating FDI.
- The attempt to circumvent barriers to free trade and lower transport costs does not appear to be a primary factor for locating FDI.

Another important factor in investor decision making is the degree of corruption in a given country (Wei & Wu, 2001). According to the World Bank, corruption is defined as the abuse of public power for private benefit.

The results of certain existing empirical studies – ones that use the statistical method of regression analysis and focus on the relationship between corruption and the overall flow of FDI into a host country – consistently support the existence of corruption’s predominantly negative effect on investment activity and FDI. One significant example is the analysis of the international investment of companies from the USA, which was conducted by Hines (1995) using the Conference Board’s database of manufacturers. This analysis concluded with the finding that the host country’s corruption level influences FDI negatively. The 2004 Global Corruption Report from Transparency International points to an effect causing a decrease in capital productivity and GDP by 4% when the level of corruption increases by one point on the 1 to 10 scale used by the Corruption Perceptions Index (CPI). Conversely, a decrease by one point should result in a 15% increase in FDI (Transparency International, 2004).

A study by Lee and David (2009) also points to international investors giving a worse evaluation to those countries that are given a negative CPI score. Nonetheless, there are also studies that take into consideration the expectations for the corruption level’s development. One example is that of the East Asian countries, which have developed essentially more quickly than other developing countries. A country in which the predicted corruption level is different than what otherwise similar circumstances would indicate shows a lesser negative impact on investment, and a higher percentage of investment is located there than in countries with a lower expectation of corruption.
Zhao, Kim and Du (2003) studied the panel data from 40 developed and developing countries and found that corruption significantly reduced FDI inflow across geographic regions and economic classifications.

Caetano and Caleiro (2005) studied FDI inflow to 97 countries and concluded that corruption significantly reduced FDI in countries with high corruption, but the impact is weak in countries with low corruption.

Naturally, there are also empirical studies supporting potential positive influence. Countries with a high corruption level are conversely attractive for certain investors. This primarily concerns countries that are rich in natural resources (Wah Htay, 2009).

Leff (1989) and Huntington (1968) confirm the corruption’s positive effect on an economy. They hold the opinion that corruption can help entrepreneurs avoid lengthy bureaucratic procedures, which negates the damaging effects of bureaucracy. Shleifer and Vishny (1993) modelled the process of negotiation between the public and private sectors, in which they essentially developed the theories of Leff (1989) on how ‘corruption makes it possible for private agents to purchase a way out of politically forced ineffectiveness’.

2.2. Corruption as a determinant of FDI

On its own, an increasing corruption level includes additional costs for investors, which can be seen over the long term as a drop in FDI or the departure of investors from the host country. This situation is primarily unfavourable for economies that are not very open or those that are transitional, because FDI comprises a fundamental part of their overall investment (Volejnikova, 2007).

As was mentioned, it has been possible to encounter the opposite trend in recent years, i.e., countries with a high corruption level are attractive for certain investors. Literature on FDI has always traditionally held that investors react to widespread corruption negatively and do not influence corruption levels in host countries. These investors have been considered to be a homogeneous group, which intentionally avoids the payment of bribes, crime and public bribery. This has resulted in the assumption that investors tend to avoid investing in countries with high corruption levels. However, recent findings from developing countries points to cases where corruption and FDI can be interdependent. It can be concluded from these findings that investors have different strategic goals and can also perceive corruption differently. In conjunction with local economic and political conditions, investors are able to strategically adapt their operation in a country as well as their methods of entering it, and they can be very well acquainted with the local norms.

The amount of bribes and licensing fees the host country’s government requires depends on the annuities provided to the investors. Entry into a market with a high corruption level can produce additional costs for investors. Nonetheless, it is worth it for certain investors to enter these markets if the final profits are greater than their costs. In extreme cases, a declining economy and political situation can – in countries rich in natural resources – cause the government to ‘consume’ more FDI via the sale of natural resources in order to acquire necessary international currency. It is thus possible to conclude that not only does corruption in host countries influence the inflow of FDI but FDI inflow can also influence the scope of corruption. Angola, Burma, Indonesia and Nigeria can be listed as examples of this. These countries are very similar in many ways. Here, high corruption levels are the rule, the countries are rich in natural resources, and they are home to weak institutions governed by dictatorships. However, they remain favourite destinations for many investors – both international and domestic. According to Transparency International, Burma is one of the countries with the highest corruption levels; despite this, it has a marked inflow of FDI primarily from Asian countries, which want to ensure access to natural resources in this way. The amount of FDI in Indonesia is growing steadily despite persisting high levels of corruption. The situation in these countries is proof that investors cannot be considered a homogeneous group with the same interests and goals. Their tolerance level for corruption and their ability to adapt to a corrupt environment can be flexible in...
cases where there is the promise of future profit in the host country; therefore, corruption recedes into the background in many cases (Wah Htay, 2009).

3. Methods and used variables

This paper aims to identify, whether there exist a relationship between the level of corruption and FDI or one way impact of corruption to the investor activity in a selected group of countries.

Analysed period is a time series of 1998–2015 because of the availability of data on FDI inflows into selected countries on the website of the World Bank.

The CPI has been published by Transparency International since 1995. It is an index that is based on corruption perceptions of respondents, which are domestic and foreign entrepreneurs, analysts and representatives of the professional public in the evaluated countries. The index is published annually. The surveys contain questions that aimed at public officials, bribery or kickbacks in public procurements. As a result, the CPI takes values in the interval from 0 to 100, where 0 is highly corrupt country and value of 100 indicates a country without corruption. The sample of examined countries is changed over time. For example, the index of 1995 included 41 countries, and in the survey in 2015, there were already 168 countries evaluated. Changing the number of evaluated countries is the reason why the order of ranking is not important for assessing the individual country but the actual value of the CPI is important for it.

For purposes of the analysis were selected 10 countries based on the values of the CPI. Five countries belong consistently among the best-rated countries and the value of the CPI in these countries ranges from 84 to 100 (low levels of corruption). Conversely, among the worst-rated countries belong other five selected countries, for which the CPI index ranges in the interval of 10–35 (highly corrupt).

The following countries are selected:

- Countries with a high value of CPI (low level of corruption): Denmark, Finland, New Zealand, Singapore and Sweden.
- Countries with a low value of CPI (high level of corruption): Honduras, Indonesia, Cameroon, Nigeria and Tanzania.

Verification of the relationship between E-government and corruption will be carried out by using a simple linear regression analysis and correlation coefficient. Correlations between defined variables will be verified by the value of the Spearman correlation coefficient (‘the correlation coefficient’). The calculation of the correlation coefficient will be conducted by using statistical software STATISTICA, version 1.10. The significance level established for the correlation analysis is 0.05.

The null hypothesis defines that the monitored variables are not in correlative relationship. Verification of this hypothesis is based on the subsequent comparison of the level of significance with a value (called p-value) which statistical software generates. Then we can also determine how tight the mutual correlation between the variables is. The correlation coefficient takes values between −1 and 1, inclusive. Values of the correlation coefficient close to value of −1, respectively 1, can describe a very strong mutual correlation relationship between the observed variables. It is also possible to distinguish the positive correlation relationship (or direct relationship) that occurs when the value of the correlation coefficient becomes positive. Or otherwise, we can specify a negative correlation relationship (or indirect relationship).
4. Analysis of corruption’s impact on foreign direct investment

4.1. The development of the CPI in select countries

In Figure 1, the development of CPI scores is graphically depicted for the years from 1998 to 2015. The graph includes the five countries that achieved the highest CPI scores in the years observed and can thus be considered as countries with low corruption levels.

![Figure 1. Development of CPI in selected countries with low level of corruption in period 1998–2015](image1)

Conversely, in Figure 2, the development of CPI scores is graphically depicted for the years 1998 to 2015 for the countries that achieved the lowest CPI scores for the given period and can thus be considered as countries with high corruption levels.

![Figure 2. Development of CPI in selected countries with a high level of corruption in period 1998–2015](image2)

When comparing the CPI scores measured for the years 1998 to 2015 in the selected countries, it can be seen that the Northern countries of Denmark and Finland share first place together with New Zealand; the countries of Sweden and Singapore follow. All these countries have been rotating among the top places in worldwide evaluation, and these countries’ level of corruption is perceived to be the lowest of all those evaluated. The average CPI score in these countries fluctuates between 91 and 94. On the other hand, the countries of Honduras, Indonesia, Cameroon, Nigeria and Tanzania are evaluated globally as being among the most poorly scoring countries (high corruption levels are the rule here) and the average CPI score fluctuates between 21 and 28.
It is clear that the Northern countries are faring the best among those selected when it comes to the perception of corruption. In these countries, there is widespread respect for legislation and the responsibility to annually submit a declaration of assets, which is available to the public. The high standard of living or the proportionate societal differences could also be influential. The Northern countries’ stable situation, contractual compliance, and voluntary payment of high taxes could also be contributing to their good results.

In countries with a low CPI score (a high level of perceived corruption), this can be affected by above-average bureaucracy, insufficient transparency, regional or national insecurity, or the frequent occurrence of conflict and a high dependence on revenues from oil. However, during the period observed, a slight increasing trend in the CPI can be seen, that is, an improvement in the perception of corruption in the countries with the highest corruption levels.

4.2. The development of FDI in the selected countries

In Figure 3, the development of FDI values is graphically depicted for the years 1998 to 2015. The graph includes the five countries that attained the highest CPI scores during the period monitored and can thus be considered countries with low corruption levels. In all the countries except Singapore, where FDI has showed a continuously increasing trend since 2008, the graph shows fluctuating FDI development.

Figure 3. FDI in selected countries with a low level of corruption in 1998–2015 (million USD)

In Figure 4, the development of FDI is graphically depicted for 1998 to 2015 for the countries that achieved the lowest CPI scores during the period monitored and can be considered countries with high corruption levels. The development of FDI is shown to be fluctuating with a slight trend for growth. The exception is again an Asian country, Indonesia, where strong growth was recorded for FDI.
In these graphs, it is possible to see distinct fluctuation in the flow of FDI into these countries. For countries with a low corruption level (Figure 3), the fluctuations are more frequent and more distinct than for the countries with high corruption levels (Figure 4), where the inflow of FDI more or less evolves steadily and results in gradual growth over time (the exception is Indonesia, where the FDI inflow has grown significantly in the past four years). In both groups of countries, negative FDI values can be observed for certain years. A negative value indicates either a loss or so-called disinvestment, which results in releasing money invested in tangible or financial assets – via the market into liquid form.

For this period, distinct growth in FDI was recorded for the Asian countries, i.e., Indonesia and Singapore. Despite the fact that Indonesia is in the group of countries with high corruption, it is a popular location for placing investment – primarily because the local market of over 250 million residents is under saturated, and there is also a cheap work force and mineral wealth. Conversely, investment in African countries is not very high. For example, this could be on account of poor infrastructure, a rigid labor market, a complicated judicial system that is unable to protect investors, or high corruption, above-average bureaucracy and insufficient transparency.

4.3. Correlation and regression analysis

The Spearman’s correlation coefficients for the variables are shown in Table 1. The values identified as statistically significant using Statistica are highlighted in bold.

Table 1. Tightness of the dependence of CPI and FDI in selected countries in 1998–2015

<table>
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<tr>
<th>Country</th>
<th>Correlation coefficient</th>
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<tbody>
<tr>
<td>Denmark</td>
<td>0.519</td>
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<tr>
<td>Finland</td>
<td>0.061</td>
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<tr>
<td>Honduras</td>
<td>0.655</td>
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<tr>
<td>Indonesia</td>
<td>0.950</td>
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<tr>
<td>Cameroon</td>
<td>0.480</td>
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<tr>
<td>Nigeria</td>
<td>0.852</td>
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<tr>
<td>New Zealand</td>
<td>0.141</td>
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<tr>
<td>Singapore</td>
<td>−0.625</td>
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<tr>
<td>Sweden</td>
<td>0.578</td>
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<tr>
<td>Tanzania</td>
<td>0.660</td>
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The correlation coefficient's values equal numbers are in the range of $<-0.625, 0.950>$. The highest numbers for the correlation coefficient were achieved by Indonesia, with a value of $\rho = 0.950$. Using the above description, it can be concluded that the correspondence of the corruption level with the flow of FDI into Indonesia is very high.

Nigeria, with very close mutual correlation ($\rho = 0.852$), follows Indonesia; here, it is also possible to state that corruption level and FDI inflow demonstrate a strong relationship. Indonesia and Nigeria are followed by four countries with strong correlation: Tanzania ($\rho = 0.660$), Honduras ($\rho = 0.655$), Sweden ($\rho = 0.578$), and Denmark ($\rho = 0.519$). Cameroon, with moderate correlation and a value of $\rho = 0.480$, follows next. Finland ($\rho = 0.061$) and New Zealand ($\rho = 0.141$) show only low correlation according to the correlation coefficient. Singapore, the only one demonstrating a negative correlation coefficient ($\rho = -0.625$), thus shows an indirect correlative relationship between the CPI score and FDI.

For the countries with a positive correlation coefficient, it can be said that an increasing CPI score, i.e., an improving evaluation of corruption, is linked to FDI growth. With the exception of Singapore, this conclusion holds for all of the countries analysed with relationships of varying closeness.

The following regression function was used to verify the relationship between the CPI and FDI. The function is based on the least squares method (Freedman, 2009):

$$y = \alpha + \beta \cdot x + \varepsilon$$  \hspace{1cm} (1)

The parameter $x$ denotes the independent variable, in this case FDI, and the parameter $y$ denotes the dependent variable, i.e., the level of corruption (CPI). The parameter $\alpha$ determines the distance of the intersection of the regression line with the $y$-axis (the value of the regression function for $x = 0$). The parameter $\beta$ is called the regression coefficient and shows the variation of the dependent variable value when the value of the independent variable changes. The symbol $\varepsilon$ is the residual variance, which is a graphical representation of the distance of the points from the regression line.

Table 2 lists the individual calculated values used for confirming or rejecting the dependence of FDI flow into the selected countries on the corruption level.

<table>
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<th>Table 2. Regression analysis results</th>
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<td><strong>Country</strong></td>
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For seven of the ten countries (highlighted in blue), the $p$-value is lower than the level of significance alpha; it is thus possible to reject the null hypothesis $H_0$, which disproves the influence of corruption on FDI. On the other hand, according to the coefficient of determination $R^2$, it is possible to explain a significant portion of overall variability in the dependent variable using the regression model for only two cases. It is thus possible to confirm the correlation between variables for Indonesia and Nigeria, for which the regression analysis has proved corruption’s influence on the flow of FDI into the country, i.e., on investors’ decision making and thus also on locating investment in the given country. Both of these countries are included in the group of countries with high corruption levels (a low CPI score).
4.4. Interpreting the correlation and regression analysis results

Correlation and regression analysis on the sample of select countries proved that a relationship does exist between the corruption level in the given country and the flow of FDI into that country and, at the same time, that corruption is a significant determinant for investor decision making and for locating investment in a country. Nonetheless, this relationship was not proved for certain countries. This effect can be caused by a number of reasons.

Investor decision making on investing into a given country is influenced by many factors. One example is the investor’s motive for investing in the chosen country – next, there is the country’s tax rates, the country’s geographical location, the workforce quality, the host country’s investment incentives, transportation infrastructure in the host country and, not least, the level and type of corruption that the investor could encounter in the host country. Another important factor in decision making is the investor’s personality, because human behaviour and decision making cannot be predicted for certain in advance. It is also important to take into account the fact that investment is long-term in nature, and there is a certain period of time between the contemplation of the investment and its implementation. Thus, investor decision making need not be influenced by minor fluctuation in the country’s corruption level evaluation. Rather, making the decision not to invest in a given country would be influenced by a long-term negative corruption level.

On the basis of correlation analysis, it can be said that a significant relationship between corruption level and the flow of FDI into a given country (correlation coefficient $|r| \geq 0.5$) could be seen for six of the ten countries. These countries are Denmark, Honduras, Indonesia, Nigeria, Sweden and Tanzania. In the end, Indonesia and Tanzania showed a very strong relationship between corruption and FDI as demonstrated by the correlation analysis; the significance of corruption’s influence on FDI inflow was subsequently confirmed in the regression analysis.

Graphs with the form of the regression function for Indonesia and Nigeria are depicted in Figure 5.

![Graphs of FDI vs. CPI for Indonesia and Nigeria](image-url)

**Figure 5.** (a) Regression function of Indonesia. (b) Regression function of Nigeria.

5. Conclusion

From a theoretical perspective, corruption is defined as a serious society-wide problem that is affiliated with a number of negative consequences. These can be manifested as an effect on citizens’ trust in public institutions, a disruption of economic principles or an increase in investment risk for...
investors. As such, corruption is one of the factors influencing the location of foreign direct investment.

A mutual correlation between CPI score and the amount of foreign direct investment was discovered for most of the countries analysed using the correlation analysis. Next, regression analysis proved the influence of corruption on the flow of foreign direct investment into the countries of Indonesia and Nigeria. On the basis of these analyses, however, it was not possible to determine whether corruption’s influence on the flow of foreign direct investment into a country was negative or positive.

Despite the fact that the results of both analyses proved both the mutual relationship of these two variables and the influence of one variable on the other, corruption is not the only determinant for locating foreign direct investment. Therefore, it is also helpful to consider other factors for location, which investors prioritise over a country’s corruption level or the given country’s political and economic situation.

Acknowledgement

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References


