

## THE EFFECT OF ECONOMIC STRENGTH, GOVERNMENT DEBT, LEVEL OF DEMOCRACY, PUBLIC TRUST, AND LEVEL OF HAPPINESS ON CORRUPTION PERCEPTION

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### ABSTRACT

*This study aims to analyze the effect of economic strength, government debt, level of democracy, public trust in government, and level of happiness on corruption perception. Data consisting of 113 countries are used to determine the causal relationship between variables that have been collected. Robust Regression statistical test with Method of Moment (MM) estimation is used to analyze the relationship between variables. The test results show that economic strength, level of democracy, public trust, and level of happiness have a significant positive effect on corruption perception, while government debt has no significant effect on corruption perception. It can be concluded that the higher the economic strength, the level of democracy, the public trust, and the level of happiness, the higher the corruption perception in the country. High corruption perception indicates the cleanliness of the country from corruption.*

*Keyword:* Economic Power, Debt, Democracy Level, Public Trust in the Government, Happiness Level

### 1. INTRODUCTION

Corruption is a very dangerous crime. No region in the world is immune to this type of crime. According to the UN, corruption is a serious crime that can undermine social and economic development at every level of society. Every year, at least about 2.6 trillion US dollars are lost due to this crime. This figure is even equivalent to 5 percent of the world's Gross Domestic Product (GDP) (Tirto.id, 2017).

Based on the latest data from Transparency International (2019), countries with a high corruption perception index (CPI) tend to be in countries with strong economic power, such as Denmark, New Zealand, Finland, Singapore, and Sweden with corruption perception index (CPI) of more than 85 points. The high CPI score shows the cleanliness of a

country from corruption, a very dangerous universal crime.

Conversely, developing countries that tend to have weak economic power, such as countries in Sub-Saharan Africa: Somalia, South Sudan, Sudan, Congo, Libya, etc. have an average CPI score of below 20 points. The small CPI score indicates the increasingly high level of corruption in the country.

In addition, there has been a statement recently that the high level of government debt indicates that the country is increasingly corrupt. This statement is supported by a recent incident where the swelling of Malaysia's debt indicates the massive corruption in the country. According to Malaysian Finance Minister Lim Guang Eng, the total debt held by Malaysia in 2017 reached 80.3 percent of the

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country's GDP. The reason was that former Malaysian Prime Minister Najib Rajak was suspected of abusing his authority related to financing government projects and lying to the public regarding his country's financial condition (DetikFinance, 2018).

Furthermore, there is a statement that says that democracy is no longer against corruption, but democracy even breeds corruption. According to the Ministry of Home Affairs, in 2014 as many as 3,169 members of the House of Representative in Indonesia were involved in corruption cases (Tempo, 2015). Corruption brought by a democratic system is caused by the increasingly high cost of democracy due to demands for deposits from the supporting party (Investor Daily, 2019).

The declining level of public trust in the government has led to widespread corruption. According to research conducted by the OECD (2015), there is a strong relationship between the level of public trust in the government and corruption perception in 35 different countries, showing the value of 70.32 percent with scatter plots that form inverted linear lines. This shows that the lower the level of public trust in the government, the higher the corruption cases within the government.

From the various types of data and statements that have been explained, it can be concluded that economic strength, government debt, level of democracy, and public trust in the government have an effect on corruption perceptions in a country. In addition, there has been no study that examines specifically the causal relationship between the level of people's happiness and corruption perception in a country. Therefore, researcher is interested in conducting research that examines the influence of these variables empirically by applying the rules of statistical research.

## 2. LITERATURE REVIEW AND HYPOTHESIS

Corruption is defined as the misuse of public office for personal gain (Transparency International). Corruption is specifically

known as an attempt to use the ability to intervene, because of his position, to misuse decisions, information, influence, money, or wealth for personal benefits (Haryatmoko in Santoso, Meyriswati, and Alfian, 2014).

There is a multidimensional picture in illustrating the economy that causes corrupt behavior (Adaman, Çarkoglu and Senatalar in Lučić, Radišić and Dobromirov, 2016). Corruption can be a major obstacle in the process of economic development and modernizing a country. This behavior can damage economic development by weakening the economic institutions on which the state depends on (Klitgaard in Lučić, Radišić and Dobromirov, 2016).

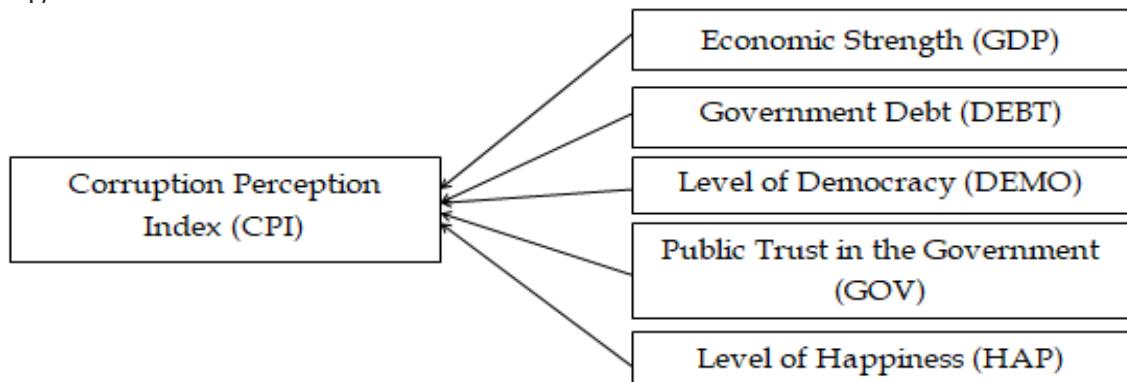
According to the research conducted by Blackburn, Bone, and Haque in Lučić, Radišić and Dobromirov (2016), there is a robust correlation between GDP and corruption, in which economic growth reduces the occurrence of corruption, or corruption also decreases economic growth (two-way relationship). This is similar to research conducted by Aidt, Dutta, and Sena in Lučić, Radišić and Dobromirov (2016) that corruption has a negative impact on economic growth only in countries that have high quality institutions, but has no effect on economic growth in countries that have low quality institutions. At the same time, high economic growth can reduce corruption. In addition, corruption causes a country's GDP to decline (Lambsdorff in Lučić, Radišić and Dobromirov, 2016).

### Framework

There are some studies that examine the relationship between government debt and corruption. Bayoumi, Goldstein, and Woglom in Liu, Moldogaziev, and Mikesell (2017) explain that corrupt officials really like the government's fiscal concerns regarding infrastructure leases and capital projects funded by debt. The statement implies that corruption in the government will foster the growth of public debt.

Officials who are fond of borrowing activities will target profitable areas to look for gaps in corruption within the

Figure 1. Research Model



government. According to Swaleheen in Liu, Moldogaziev, and Mikesell (2017), corruption within the government will create bribes for companies seeking rent.

There are many econometrics studies that examine the relationship between level of democracy and corruption in government which will create bribe for companies seeking rent. However, these studies have different results. Some have a statistically significant negative relationship, but others are not linear, and also not significant between them. It is believed that both tend to be influenced by variables that are difficult to observe and measure (Kolstad and Wiig, 2015). However, the results of the study conducted by Kolstad and Wiig (2015) are in line with the results of the studies that found a negative and significant relationship between democracy and corruption.

Trust is widely understood as a positive perception of individual and group actions. Trust is also based on actual experience which is largely a subjective phenomenon recorded through one's vision. Trust in the government itself represents the public trust in the government to do the right thing and which is considered fair. The legitimacy of a government must be built from the trust of its citizens (OECD, 2015).

Public trust in the government indicates the good management of the government in managing the country. This reflects the increasingly free from the problems, such as corruption. The high level of trust is believed to have a significant negative relationship with

corruption. Thus, the higher the level of public trust in the government, the less the chance of corruption. This statement was proven by the research conducted by OECD (2015), in which the correlation between the two variables was 70.32 percent, with a negative slope data value.

Some studies connected happiness and the political system adopted by the people of a country. It was found that corruption was a very important factor that influenced happiness (Frey and Stutzer in Li and An, 2019). Li and An (2019) examined specifically the relationship between the two variables. It was found that there was a correlation between the variable of happiness and the variable of corruption. However, statistically the use of the correlation method could not further examine the causal relationship between the two variables.

From the results of previous studies, the researcher can build a research model as shown in Figure 1. In this model, the researcher will examine the effect of all independent variables, such as economic strength, government debt, level of democracy, public trust in the government, and level of happiness simultaneously on the dependent variable of corruption perception. It is expected that there is at least one independent variable that has a statistically significant causal relationship with the dependent variable.

Based on the research model built, hypotheses are arranged to adjust to the research objectives as follows:

$H_0$ : There is no significant causal

relationship between all independent variables and the dependent variable.

$H_1$ : There is at least one independent variable that has a significant relationship with the dependent variable

### 3. METHODS

Various data are collected from 113 different countries spread across the world. The selection of countries is based on the availability of data that can meet the matrix of six variables used in this study.

The dependent variable used in this study is corruption perception. Corruption perception is proxied by Corruption Perception Index (CPI) data obtained from Transparency International. This corruption perception index has a range of values from 0 to 100. When the value is close to 100, the country is considered to be very clean from corruption. Conversely, if the value is close to 0, the country is considered to be very corrupt. This index is chosen because it offers a portrait of the relative level of corruption throughout the world and is the most well-known indicator of corruption internationally (Transparency International, 2019).

The independent variables used in this study are economic strength (GNP), government debt (debt), level of democracy (DEMO), public trust in the government (GOV) and level of happiness (HAP).

Information about the country's economic strength is taken from Gross Domestic Product (GNP) data obtained from the World Bank (2019). A measure of a country's economic strength is generally expressed as Gross Domestic Product (GDP) which measures the output value of

all goods and services produced within a country in a year (Khan Academy, 2019). The government debt data are taken from the value of the percentage of debt to GDP of each country obtained from the International Monetary Fund (IMF) World (2018).

The variable of democracy level is represented by democracy index data obtained from The Economist Intelligence Unit (EIU, 2019). This democracy index is chosen because in addition to having sufficiently complete data on various countries in the world, it is also measured based on a comprehensive democracy covering the process of election and pluralism, civil liberties, government functions, political participation, and political culture. This index has a range of scores from 0 to 10. If the score is close to 10, it is considered having a very good level of democracy (EIU, 2019).

Data on public trust in the government are taken from Confidence in National Government data obtained from the World Happiness Report (2019). In addition to the level of public trust data, the report also has data on the level of happiness in the world's countries. Similar to the democracy index, the happiness index also has a range of scores from 0 to 10. The closer it is to 10, the higher the level of happiness of a country.

All data used on these variables are the latest data. The data for the variables of government debt, democracy level, public trust in the government, and the level of happiness are taken from the data of 2018. However, the data for the variable of economic power are taken from the data of

Table 1. Univariate Normality Test

Variable	Pr(Skewness)	Pr(Kurtosis)	Adj $\chi^2$	Prob. $\chi^2$	Explanation
CPI	0.0046	0.0255	11.06	0.0040	Not Normal
GNP	0.0000	0.0000	.	0.0000	Not Normal
DEBT	0.0000	0.0000	51.76	0.0000	Not Normal
DEMO	0.2357	0.0043	8.49	0.0143	Not Normal
GOV	0.1063	0.0492	6.15	0.0463	Not Normal
HAP	0.8354	0.0064	6.91	0.0316	Not Normal

Source: Primary Data

2017 because the latest data have not been released.

The initial relationship between variables is examined using Pearson correlation analysis. This bivariate analysis pairs the dependent variable with the independent variable alternately. The aim is to check whether there is a significant relationship between the dependent variable and each independent variable.

For this reason, data normality assumption test is conducted. After testing the normality level of each variable, it is obtained a significance level of less than 5 percent (Table 1).

There are ways to change the distribution of data, that is, by transforming. However, the data transformed frequently do not eliminate or weaken the effect of outliers, which results in biased coefficient estimation results. In addition, the existence of outliers will not change the data distribution even though the transformation of the data has been done (Chen, 2002).

The abnormal distribution of data in this study is indicated by the presence of outliers. Of course, multiple regression analysis of OLS estimation can be influenced by outliers and cause regression coefficient values to be biased in its estimation (Soemartini in Nurdin, Raupong, and Islamiyati, 2014).

Therefore, this study requires a regression analysis that is resistant to outliers. Robust regression is a regression analysis that gives estimation results of coefficients that are resistant to outliers (Chen, 2002).

Robust regression consists of several methods, such as S (Scale) estimation, M (Maximum Likelihood type) estimation, and MM (Method of Moment) estimation which is a combination of S and M estimation techniques. In determining the appropriate regression technique, it is necessary to consider the values of breakdown point, efficiency, and the standard error produced. Breakdown point is the percentage of outliers that can be handled before the value affects the estimation of the model (Chen, 2012). The greater the percentage value of the breakdown point in an estimator, the more robust the estimator is. According to Hampel et al. (1986), in general the data only contain from 1 to 10 percent of gross errors. In its development, robust regression estimators (S and MM estimation) have breakdown points of up to 0.5 or 50 percent (Ryan, 1997).

Furthermore, efficiency is the ratio of mean square error (MSE) generated by the robust model and MSE of OLS estimation. Efficiency value which is close to 100 percent indicates that the error generated by robust regression contains outlier data approaching the error value of the usual regression model without outliers (Ryan, 1997).

After calculating, it is found that the robust regression efficiency of S estimation is 28.7 percent, M estimation is 95.0 percent, and MM estimation is 85.0 percent. M estimation has the greatest efficiency, but the technique does not have a breakdown point that can handle data outliers up to 50 percent, thus enabling outliers data to

Table 2. Selection of the Best Robust Regression Estimation

Variable	Standard Error Value			Best Model
	S Estimation	M Estimation	MM Estimation	
GNP	4.88e-13	2.00e-13	1.97e-13	MM
DEBT	21.4949	2.6323	2.9223	M
DEMO	2.5608	0.7632	0.6907	MM
GOV	10.6538	5.4233	5.3412	MM
HAP	3.3142	1.3864	1.1915	MM

Note: S (Scale estimated), M (Maximum Likelihood), MM (Method of Moment).

Source: Primary Data

influence the value of the estimator of the error value.

Evidently, based on the calculation of robust standard error, it is found that the robust regression with the MM estimator has the smallest standard error (SE) value in almost every variable (Table 2).

So, it can be said that the smaller the value of SE, the better the estimated coefficient obtained.

Considering all aspects such as data distribution abnormalities, indications of outliers that could damage the results of statistical analysis of research data, and the smallest standard error, the researcher decides to use the robust regression method with MM Estimation as the basis of statistical technique in this study.

The calculation of statistical analysis is done using the Strata / MP 15.0 software. The basis of data collection, processing and tidying is done using Microsoft Excel 2016.

#### 4. RESULT AND DISCUSSION

The results of the Pearson correlation calculation are shown in Table 3. The table shows that almost all independent variables have a strong relationship with the dependent variable. The variables of level of happiness (HAP) and level of democracy (DEMO) have a very strong and significant relationship with the variable of corruption perception ( $r = 71.38\%$ ,  $p < 0.0001$ ;  $r = 77.34\%$ ,  $p < 0.0001$ ). Similarly, the variable of economic power (GNP) has a fairly strong relationship with the variable of corruption perception ( $r = 25.16\%$ ,  $p < 0.01$ ). However, the independent variables of public trust in

the government (GOV) and government debt (DEBT) have a weak relationship with the dependent variable of corruption perception ( $r = 5.56\%$ ,  $p = 0.5586$ ,  $r = 12.96\%$ ,  $p = 0.1713$ ).

Pearson correlation must fulfill several assumptions such as the linear relationship between the two variables, the absence of outlier data, and normal distribution (Laerd Statistics, 2018). In this study, the variables of DEBT and GOV are two of the five other variables that are not normally distributed. In addition, there are indications that there are many outliers in the variables of DEBT and GOV causing the statistical correlation to become not significant.

The existence of a significant relationship in Pearson correlation testing is expected to be a significant influence between variables in the next regression analysis.

Then, treatment is given to outliers through robust analysis with the expectation that the variables that do not have a significant correlation will be statistically significant and can explain the causal relationship between the independent variables and the dependent variable.

The next step is to continue the analysis of the model that has been built. Before observing the results of estimation of statistical coefficients on the model that has been built, it is better to observe the R-squared value of the model. The R<sup>2</sup> value of the constructed model is 83.45 percent [robust R<sup>2</sup> (w) = 83.45%]. This value shows that 83.45 percent of the variation in the dependent variable can be

Table 3. Pearson Correlation (n=113)

VARIABLE	CPI	GNP	DEBT	DEMO	GOV	HAP
CPI	1					
GNP	0.2516**	1				
DEBT	0.1296	0.2945**	1			
DEMO	0.7734***	0.2128*	0.1259	1		
GOV	0.0556	-0.1014	-0.1935*	-0.1903*	1	
HAP	0.7138***	0.0266	0.6483*	0.6483***	-0.1414	1

Note. \*\*\*p < 0.001    \*\*p < 0.01    \*p < 0.05

Source: Primary Data

explained by all the independent variables in the constructed model. Thus, variations in the variables of economic strength, debt, level of democracy, public trust in the government, and level of happiness can explain 83.45 percent of the variation in the variable of perception of corruption, while 16.55 percent of the variation in the corruption perception variable is explained by the variations studied.

After recognizing the value of the variation of the dependent variable, the next step is to review the estimated value of the coefficient. Based on the estimation results of the model, the researcher finds that 4 out of 5 independent variables of the research, such as economic strength (GNP), democracy (DEMO), public trust in government (GOV), and level of happiness (HAP) have an influence on the perception of corruption (CPI). It is only the variable of government debt (DEBT) that does not significantly influence the perception of corruption (CPI). The results of statistical analysis of robust MM estimated regression can be seen in Table 4.

Based on the calculation, it can be found that economic strength, level of democracy, public trust in the government, and level of happiness have a significant positive effect on the variable of perception of corruption ( $b_1 = 5.05e-13$ ,  $p < 0.05$ ;  $b_3 = 6.2974$ ,  $p < 0.001$ ,  $b_4 = 15.0032$ ,  $p < 0.01$ , and  $b_5 = 5.5873$ ,  $p < 0.001$ ). Thus, based on the coefficient value, it can be interpreted that the higher the economic power, the level of democracy, the public trust in the government, and the level of happiness, the higher the value of the perception of corruption.

The coefficient value of the variable of government debt is not statistically significant with  $b_2 = 3.5818$  and the significance level of  $p = 0.223$ . This means that government debt and corruption perception do not have a statistically significant causal relationship.

## DISCUSSION

Based on the results of the study, there are several things that can be studied.

First, based on the calculation of model, it is obtained that the value of R-square is 83.45 percent. This figure shows that the majority of the diversity of the dependent variable can be explained by all the independent variables in the study. The variable of public trust in government (GOV) has no significant correlation with the variable of corruption perception (CPI) but has significant relationship with robust regression. This shows the strong influence of outliers in the GOV variable. Pearson correlation has the assumption that the data are free from outliers. Outlier data will affect the correlation coefficient and make it difficult to draw conclusions from the data (Laerd Statistics, 2018).

Second, based on the calculation of the robust regression coefficient, the economic strength has a significant and positive influence on corruption perception

This means that the higher the economic strength of a country, the cleaner the country will be from corruption. These results are in line with the results of the research conducted by Aidt, Dutta, and Sena in Lučić, Radišić and Dobromirov (2016), that there is a robust correlation between GDP and corruption. By showing

Table 4. Robust MM Estimated Regression of the Hypothesized Model

CPI	Coefficient	Robust Std. Error	z	P >  z	[95% Confidence Interval]
GNP ( $b_1$ )	5.05e-13	1.96e-13	2.58	0.010	1.21e-13
DEBT ( $b_2$ )	3.58177	2.9387	1.22	0.223	-2.1780
DEMO ( $b_3$ )	6.29743	0.6945	9.07	0.000	4.9361
GOV ( $b_4$ )	15.0032	5.3290	2.82	0.005	4.5586
HAP ( $b_5$ )	5.5872	1.1973	4.67	0.000	3.2406
Const. ( $b_0$ )	-33.8815	6.1992	-5.47	0.000	-46.0319
					-21.7312

Source: Primary Data

the higher economic strength, it will reduce the occurrence of corruption cases.

According to Klitgaard in Lučić, Radišić and Dobromirov (2016), corruption is the main obstacle in the economic development of a country. High corruption can also cause a decline in the economic strength (Lambsdorff in Lučić, Radišić and Dobromirov, 2016).

Third, there is a significant positive effect of the variable of democracy on the variable of corruption perception. The information is obtained from the estimated value of a positive robust regression coefficient and significance level below 0.001. These statistics prove that the higher the level of democracy of a country, the cleaner the country is from corrupt behavior.

Kolstad and Wiig (2015), believe that there are differences in research results related to the relationship between democracy and corruption, such as inverse (negative) relationship, not linear, and also insignificant. The results of this research are in line with the results of the studies that find a negative relationship between the level of democracy and the level of corruption in a country (positive when it comes to perceptions of corruption).

Kolstad and Wiig (2015), also found a significant negative relationship between the two variables. In fact, their research not only tests using different regression techniques, but also uses data that measure corruption that is not the same, namely the corruption perception index (Transparency) and the corruption control index (World Bank). From various combinations of analytical testing, the research conducted by Kolstad and Wiig's (2015) found a negative and significant relationship between democracy and corruption.

Through the findings of this study, a statement that says that democracy breeds corruption is denied. In fact, this research shows that democracy is one of the factors that reduce corruption in a country.

Fourth, Li and An (2019), in their study, examined the causal relationship between

the level of subjective happiness and three different indices of corruption. The results show that there is a positive relationship between happiness and perceptions of corruption. In line with this research, this study also finds that the happier the people in a country, the cleaner the country from corruption.

However, there are things that distinguish between this study and the research conducted by Li and An (2019). The measurement of the level of happiness used by Li and An (2019) is the variable of subjective well-being (SWB) while this study uses the happiness index of the United Nations (World Happiness Report, 2019). SWB measurement has weaknesses because it measures the level of happiness based on subjective perceptions of individuals. Unlike the SWB index, this happiness index is based on more complex and objective measurements of evaluating how happy citizens are and is an official indicator used in measuring Sustainable Development Goals (SDG's).

Fifth, public trust in the government has a significant positive influence on perceptions of corruption in a country. In line with the study reviewed by the OECD (2015), Government at Glance 2015, high public trust in the government has a strong correlation with the number of corruption cases that occur in government. Although this study is only limited to correlation, the OECD also displays scatter plot diagrams to illustrate the pattern of relationships between the two. Similar to this research, the pattern of points in the diagram forms a negative slope which means that the lower the public trust, the higher the corruption cases that occur in government.

Morris and Klesner (2010) in their research also conclude that there is a strong reciprocal relationship between public trust in the government in resolving corruption and the perception of public corruption in Mexico. The lack of public trust in the government in fighting against corruption has the potential to undermine the willingness of citizens to be active in finding solutions to the problems of

corruption in Mexico that can weaken the democratic process.

Finally, the results of this study show that government debt has no effect on the perception of corruption. This is in contrast with the GOV variable which is not significant in the correlation test but is significant in the robust regression test. The variable of DEBT is equally insignificant in both tests. This indicates that the relationship between the two variables is not linear. Research conducted by Liu and Moldogaziev (2017), shows that government debt has a significant and positive effect on corruption in the country. However, it is only for long-term debt, because short-term debt does not significantly affect corruption.

## 5. CONCLUSION

Based on the results of this study, it can be concluded that the higher the economic strength, the level of democracy, the public trust in the government, and the level of happiness of a country, the higher the perception of corruption. The increasing perception of public corruption indicates the cleanliness of a country from corruption.

The researcher realizes that the models developed in this study are incomplete. For this reason, further research is expected to complement these models with other important independent variables such as public knowledge about anti-corruption.

The samples of 113 countries collected are countries that have complete data on the six variables tested. The number of samples can be increased and potentially represent more populations through statistical analysis of samples. Therefore, it is possible to eliminate some research variables or replace them with other variables.

All data used on these variables are the latest data. The data used for the variables of government debt, level of democracy, public trust in the government, and level of happiness are taken from the data of 2018, while the data for the variable of economic strength are taken from the

data of 2017, because the latest data have not been released, so this can influence statistical test due to differences in the time dimensions of one variable with other variables.

Furthermore, it is possible to replace the corruption measure from the corruption perception index to another more complete corruption index. More complete in the sense of not only measuring state corruption from the perception of its people, but also from the number of corruption cases, anti-corruption knowledge, the success of state institutions in solving the problem of corruption, and so on.

Finally, it is possible to break the model down into several models based on geography (different continents) or type of country (developing and advanced). By doing so, it is expected to enrich the analysis and information obtained from the different phenomena of the community about corrupt behavior.

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