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RESEARCH ARTICLE

Panel Data Analysis on the Socio-Economic Determinants of Corruption in the D-8 Countries

Fatih Karasaç [1], **Halil Kete** [2]

Abstract

The phenomenon of corruption is a problem which has high negative externalities at the economic, sociological, and global levels. Throughout history, corruption has expressed itself differently but has been present in nearly every society. It continues to affect many developed and developing societies today. The widespread public externality caused by corruption has been studied in various scientific fields, such as economics, finance, sociology, and psychology. The majority of the literature reveals that corruption negatively affects economic growth and development. Measuring corruption, a socio-economic problem that is illegal, is difficult because there are challenges in identifying its determinants. The aim of this study is to conduct an empirical analysis of corruption with selected determinants. In the present study, the following the determinants of corruption were used: economic freedom, GDP, human development index, tax burden, and inflation. Data was obtained from the period between 2003 and 2021 from the D-8 countries (which consist of Indonesia, Bangladesh, Iran, Egypt, Malaysia, Pakistan, Nigeria, and Turkey), before panel data analysis was conducted. In the analysis, corruption was used as the dependent variable, while general government expenditure, economic freedom, GDP, human development index, total tax revenue as a percentage of GDP, and inflation were used as explanatory variables. The results of the analysis revealed that economic freedom, human development index, and the governments total tax revenue as a percentage of GDP positively affect the corruption perception index. The rate of inflation, GDP, and government spending did not have a significant relationship with corruption.

Keywords: Corruption • Determinants of corruption • D-8 countries • Panel data analysis

1 **Correspondence to:** Fatih Karasaç (Assist. Prof), Department of Public Finance, Faculty of Economics and Administrative Sciences, Kırklareli University, Kırklareli, Turkiye. Email: fatihkarasac@klu.edu.tr ORCID: 0000-0002-2966-0155
2 Halil Kete (Assist. Prof), Department of Public Finance, Faculty of Economics and Administrative Sciences, Kırklareli University, Kırklareli, Turkiye. Email: halil.kete@klu.edu.tr ORCID: 0000-0002-0823-7884

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Countries are classified into different categories in terms of economic development. However, there are common problems that countries face during the economic development process. For example, inflation is not a significant macroeconomic problem for many developed countries, but it is a serious problem for developing economies. One common problem for all economies is corruption. This problem, which is related to human behavior, is among the economic and social problems faced by almost every country.

In his study "Eight Questions about Corruption" (Svensson, 2005), Svensson provides interesting information in the introduction. When interviewing the CEO of a Thai manufacturing company to investigate corruption in the field of international trade, the CEO made the surprising statement, "I hope to be reborn as a customs officer." If a well-paid CEO desires a low-paying government position, it is clear that corruption has become a major social problem. In Zaire (now the Democratic Republic of Congo), it is estimated that the country's former president, Mobutu Sese Seko, embezzled a treasury of $5 billion, which is equivalent to the country's entire foreign debt, by the time he was overthrown in 1997. Similar events have been seen in Indonesia, the Philippines, and Angola in recent times (Svensson, 2005, p. 19). Stephen Kinzer approached the 1999 Marmara Earthquake in Turkey from a different perspective in an article he wrote for *The New York Times*, stating that corruption was a hidden partner in the disaster. If constriction companies had not paid bribes to be able to use substandard materials before the earthquake, and if they had built houses according to standards, the destructive effects of the earthquake could have been less severe (Kinzer, 1999).

Corruption is one of the most destructive problems in the world. It has significant costs in terms of economic growth. Fighting corruption is not an easy task. Unless there are deep-seated reforms, policies to combat corruption will often be unsuccessful (Tanzi, 1998). Corruption is a economic, social, and political problem seen across the globe. In countries where corruption is widespread, the functionality of democratic institutions decreases, economic development is hindered, and political instability arises. In these countries, foreign direct investment decreases, and local small businesses may choose to retreat due to increased start-up costs that resulted from corruption. "The United Nations Convention against Corruption" initiative of the UN is the only universal binding legislature against corruption in the world (UNODC, 2022).

As its core, corruption is a public evil. When public evils are present over a certain period of time, they affect all sectors of society, directly or indirectly. As a public evil, corruption spreads negative externalities to broad sections of society. Fighting corruption becomes possible not only by the efforts of individual people, but also through the efforts of society as a whole. The globalization process has made corruption

a global problem rather than a problem of a single country by increasing economic integration and the movement of goods, services, and capital between countries. The phenomenon of corruption can also spread to other countries as a result of economic and political relations (Çelen, 2007).

Fighting corruption is an important component for development. Research on corruption has both empirical and theoretical difficulties. One of the main empirical difficulties is measurement, as corruption is an illegal and hidden phenomenon. The actions of the parties involved in corruption can change during monitoring processes, making measurement difficult (Banerjee, Mullainathan, and Hanna, 2012).

The purpose of this study is to test the determinants of corruption in the D-8 countries using panel data analysis. To achieve this, panel data analysis was conducted using data from selected corruption determinants from Indonesia, Bangladesh, Iran, Egypt, Malaysia, Pakistan, Nigeria, and Turkey between the years 2003 and 2021. The study is composed of five chapters, including an introduction and conclusion. The second chapter discusses the concept of corruption theoretically and addresses the determinants of corruption within the framework of the variables used in the analysis. The third chapter reviews the literature on empirical studies related to the determinants of corruption. The fourth chapter focuses on the analysis conducted as per the aim of the study, which includes the presentation of the data and methods used and the examination of the findings and testing. The final chapter includes the conclusions and recommendations of the analysis.

The Concept of Corruption and Its Determinants

The general definition of corruption is the misuse of public duty for personal gain or interests. However, this definition is general and vague, leaving it open to criticism. For example, there are distinctions between political-bureaucratic, local-national, and country-specific-international forms of corruption (Farrales, 2005, p. 40).

Public corruption is the misuse of public duty for personal benefit that causes harm to the state. For example, the sale of state properties by officials, commission and bribery in public procurement, and the embezzlement of state resources are all included in this definition. Definitions of corruption typically focus on public corruption. However, corruption can also take the form of secret agreements between companies or the misuse of corporate entities that impose costs on consumers and investors. Relationships between company and state officials can result in corruption, even if they appear to fall within the limits of the law. For example, lobbying, campaign contributions, or giving gifts can be seen as parallel to corruption practices. In some areas, offering post-retirement job opportunities to government officials responsible for regulation and oversight can be seen as a covert corruption practice (Svensson, 2005, p. 21).

Factors that affect corruption can be divided into two main categories: those that affect the demand for corruption actions by the public and those that affect the supply of corruption actions by public officials. Factors that affect demand include: regulations and permits, certain features of tax systems, certain spending decisions, and the provision of goods and services below market price. Factors that affect supply include: bureaucratic tradition, the price of public duties, the severity of punishment for these crimes, corporate oversight, transparency of laws and processes, and examples set by leaders. The argument made by some economists that "corruption can have a positive contribution to economic functioning" has been rejected, and it has been shown that corruption has serious negative effects on growth (Tanzi, 1998).

Measuring corruption is important in order to reveal the extent of corruption in a country. This can provide information about the development of corruption in the country, offer the opportunity to compare with other countries and country groups, and make it possible to develop policies on the causes and consequences of corruption. It is not possible to clearly measure the corruption problem with a single definite criterion. Most of the different types of measurement are considered to be "approximate criteria" (Bayar, 2010, p. 107).

In countries where democraincy is not strong, corruption has a more pronounced effect on economic growth. Many empirical studies show that corruption has a negative impact on economic growth (Gründler and Potrafke, 2019). Rehman and Naveed (2007) found that one of the most important determinants of corruption was GDP per capita when they examined 11 years of data for 104 countries. They found that middle school enrollment and public spending on education strongly reduced the corruption index.

Corruption causes a decline in investments and a slowdown in growth. High inflation in a country is one of the significant causes of corruption. Empirical evidence has shown that there is a relationship between high inflation and high corruption. Indirect causes of corruption can be identified as the independent of the central bank and, political instability (Al-Marhubi, 2000, p. 201). Braun and Di Tella (2004) showed that there is a positive relationship between corruption and the inflation variable in their study that incorporated data from 75 countries. It has been shown in numerous empirical studies that the amount of corruption in a country is positively related to the variance of inflation. The correlation is robust when including other theoretically plausible explanatory variables for the impact of corruption. The basic cross-section estimate shows that a standard deviation increase in the variance of inflation is associated with an increase of up to 0.47 points in corruption, or 32 percent of corruptions standard deviation (Braun and Di Tella, 2004).

The causes of corruption can be evaluated in a very broad framework. When trade restrictions are imposed on imported or exported goods, the prices of these goods may

rise and public officials may want to take advantage of this increase by taking bribes. State subsidies can produce opportunities by transferring resources through specific spending on goods and services. Certain goods and services may be set below market price due to social and political reasons. This can lead to demand exceeding supply. Limited supply can only be offered through allocation mechanisms. Public officials involved in this allocation process may engage in corruption. Granting permits and licenses for extracting and preparing the use of state-owned natural resources can cause corruption in public bureaucracy. Additionally, ethnic and sociological factors can be among other elements that cause corruption in a country (Çelen, 2007).

Literature Review

Many empirical studies have been conducted in the literature on corruption and its determinants. In these studies, economic and non-economic factors affecting corruption were examined, through different techniques. In particular, some studies in the literature that are relevant to the empirical methods and variables used in this study are included in this section.

Studies on the determinants of corruption have been applied for a single country or group of countries, as well as for a single year or multiple years. For example, in his study, Tosun (2003) examined the factors causing corruption for 44 countries using data from 1982-1995. The variables that the author considered as determinants of corruption were: rule of law, bureaucratic quality, the share of general government spending in GDP, urban population growth rate, economic growth rate, the share of wages and salaries in total government spending, and inflation rate. The study used the random effects ordered probit model. The results obtained showed that rule of law, bureaucratic quality, and the increase in government spending reduced corruption, while the increase in urban population growth rate increased corruption. The study did not find any significant relationship between corruption and growth rate, the share of wages and salaries in GDP, and inflation rate.

In another study, Swaleheen and Stansel (2007) examined the impact of economic growth and economic freedom related to corruption. The sample of the study consisted of 60 countries. The findings of the study revealed that corruption reduces economic growth in countries where there is little to no economic freedom. In addition, it has been observed that corruption has a positive effect on economic growth in countries with economic freedom.

Yamak et al. (2022) used the panel data fixed-planted ordinal logit model in their study in which they analyzed some economic and non-economic variables as the determinants of corruption. The sample of the study consists of the data of the G20 countries for the period 2002-2020. The results of the analysis show that increases in

GDP per capita, foreign direct investment, labor force participation rate, rule of law, and government effectiveness reduce corruption. On the other hand, increases in the inflation rate and unemployment rate have been shown to cause corruption.

Piplica (2011) examined the relationship between corruption and inflation in 11 European Union member countries. The data included in the analysis covers the years 1995 to 2008. The findings of the study reveal that the effect of corruption on inflation is positive, and this effect is indirect and lagged.

Alsahran (2019) examined the determinants of corruption for Middle Eastern countries using panel data analysis. In the study, which deals with the period of 2012-2018 for Middle Eastern countries, some economic and non-economic variables were included in the analysis as determinants of corruption. The analysis results reveal that economic freedom, education level, population growth, freedom index, human development index, per capita GDP, and foreign direct investments reduce corruption, while, democratization was shown to increase corruption.

Gerni et al. (2012) examined the determinants of corruption in a group of 23 countries which are referred to as transition economies using panel data analysis. The study, which covers the period of 2002 to 2010, included government spending as a percentage of GDP, inflation rate, human development index, economic freedom index, population growth rate, and the share of imports and exports in GDP as variables that determine corruption. The results of the study show that economic freedom, human development index, the share of imports and exports in GDP and increase in inflation rate increase corruption. On the other hand, the inflation rate and government spending as a percentage of GDP did not yield any meaningful results.

Akçay (2000) tested the relationship between corruption and economic and political freedoms in 78 developed and developing countries. The findings revealed that there is an inverse relationship between economic and political freedoms and corruption. As economic and political freedoms decrease, corruption increases, and as economic and political freedoms increase, corruption decreases.

Ghura (1998) examined the changes in tax revenue-GDP ratios and economic policies and corruption levels in 39 sub-Saharan African countries between 1985 and 1996. The results of the study show that there is a statistically significant and negative relationship between corruption level and tax revenues.

Akca et al. (2012) tested the one-way relationship between inflation and corruption in their study. In this context, the effects of inflation, growth, trade deficit, regulatory quality, government efficiency, political stability, and responsibility variables on corruption were discussed. A total of 97 countries from three different income levels for the 2002-2010 period constituted the sample of the analysis. The results of the

panel data analysis showed that inflation had a statistically significant and positive effect on corruption in all of the countries in the sample.

Methodological Analysis and Method

Data Set

In this section of the study, the determinants of corruption are investigated using panel data analysis. This study investigates the determinants of corruption for D-81 countries, including Turkey, using the annual data for the years 2003 to 2021. In the analysis, corruption was used as the dependent variable, while general government spending, economic freedom, GDP, human development index, the share of total taxes in GDP, and inflation were used as explanatory variables. The corruption levels of the D-8 countries were measured by the International Transparency Organization's Corruption Perception Index (CPI). This index ranges from 0 to 10 and determines the corruption levels of the countries. The (CPI) ranks countries according to how corrupt a country's public sector is perceived to be, so as the index approaches 0, the corruption level increases, and as it approaches 10, it decreases (International Transparency Organization, 2019). This data was obtained from statistics published annually by the International Transparency Organization.

Indicators for evaluating the impact of corruption have been selected to reflect the widest possible range of current variables (economic, political, and socio-cultural) that may affect corruption. Based on the literature research (Paldam, 1999; Topal and Ünver, 2016; Bitterhout & Simo-Kengne, 2020; Yamak et al., 2022; Linhartová et al., 2022), the most frequently mentioned determinants of corruption have been selected as explanatory variables. The gross domestic product (GDP), total GDP values in dollars of the countries in that year, and the general government expenditure were used in the analysis as the percentage of government consumption expenditure. This data was obtained from the World Bank database. The variable of tax ratio was obtained by compiling data from the World Bank database and the country's own statistical databases, as the percentage of total tax revenues in GDP. The human development index is an index calculated by the UNDP. This index, which takes a value between 0 and 1, is established by calculating a person's estimated life expectancy, the average and expected education duration of countries, and the per capita income. This data was obtained from UNDP statistics. Economic freedom data obtained from the Heritage Foundation is an index calculated by considering the economic independence of countries in the framework of sixteen categories. This index, which takes a value between 0 and 100, shows that as it approaches 0, economic freedom is restricted, and as it approaches 100, it increases. Lastly, inflation data from the World Bank database

1 Türkiye, Egypt, Malaysia, Nigeria, Pakistan, Bangladesh, Iran and Indonesia.

Table 1
Descriptive Statistics for Countries D-8

	CPI	ECOFREE	ENF	GDP	GSPEN	HDI	TAX
Mean	3.177632	5.614.342	143.4213	4.12E+11	8.080.855	0.656265	18.17518
Median	2.900000	5.550.000	113.9685	3.44E+11	8.435.000	0.690000	16.88780
Maximum	5.390000	7.470.000	1031.658	1.13E+12	9.650.000	0.842000	33.34289
Minimum	1.300000	4.030.000	37.95650	9.54E+10	4.500.000	0.450000	5.115393
Std. Dev.	0.950327	7.135.766	117.1993	2.39E+11	1.176.305	0.112430	6.938349

Source: Transparency International (2022a), World Bank (2021,2022) and Heritage Foundation (2022).

showing the consumer price index of the countries is included in the analysis as an explanatory variable.

The sample of the study consists of the D-8 countries analyzed during the period between 2003 and 2021. This time period can be considered sufficient in terms of showing the potential effects of the explanatory variables on the level of corruptio. Table 1 provides a general overview of the descriptive statistics of the data used.

The average CPI of the D-8 countries during the period of 2003 to 2021 is quite poor at 3.18. Among the eight economies, the country with the best perception of corruption is Malaysia with an average of 5.39, while the worst is Bangladesh, with an average of 1.30. Turkey's perception of corruption during the specified years is 4.09, which is above the average among the countries included in the sample. The countries in question have an average inflation rate of 43%. The country with the highest inflation rate is Iran, at 103%. Turkey's average inflation rate during this period is 36%. The average tax rates of the countries are 18.17%. The country with the highest tax rate is Turkey, while the lowest is Nigeria. The economic freedom level among the eight economies is at a reasonable level of around 60%. The country with the highest economic freedom is Malaysia, at around 75%, while the lowest is Iran at 45%. In terms of the Human Development Index, the countries appear to be in a good situation. The average human development of the eight countries is 0.65, with Turkey having the highest score, at 0.83. The country with the lowest human development is Nigeria, with an index level of 0.45.

The correlation matrix of the data set is presented in Figure 1.

Before the panel data analysis was performed, it was tested whether there was a multicollinearity problem in the variables using the Pearson correlation

Figure 1. Correlation Matrix

CPI	1.000							
ECOFREE	0.743051	1.000						
ENF	-0.038800	-0.097583	1.000					
GDP	0.282836	0.314947	0.211903	1.000				
GSPEN	-0.328529	-0.170940	0.149089	-0.182621	1.000			
HDI	0.685427	0.349009	0.272269	0.426918	-0.271788	1.000		
TAX	0.597809	0.362475	-0.160390	0.289137	-0.739379	0.546956	1.000	

coefficient. It is seen in Figure 1 that the correlation coefficients between the variables are less than 0.8. If the correlation coefficient is greater than 0.8 or 0.9, there is a multicollinearity problem (Senaviratna and Cooray, 2019). As can be seen from the correlation matrix in Figure 1, all explanatory variables are less than 0.8. Therefore, it cannot be said that there is a multicollinearity problem between the variables.

Model and Research Method

Multiple regression analysis is one of the most used methods to estimate the effect of several explanatory variables on a dependent variable. The simplest multidimensional regression model contains two explanatory variables. However, multiple regression analysis is not suitable for the use of panel data analysis (Wooldridge, 2010). Panel data has several advantages over cross-section or time series data, leading panel data analysis to attract more and more attention in econometric analysis. The first of these advantages is that in the analyzes produced with panel data, the number of observations increases, since the data of the cross-section and time series are used together, and this reduces the possibility of a linear relationship that may arise in the data of the variables used. Thus, it will be possible that the estimations to be made will yield more reliable results (Baltagi 2005). Another advantage of panel data is that panel data analysis can capture individual differences due to cross-sections or measurements (Sandu & Ciocanel, 2014).

Panel data includes a series of observations of units over time. The observations include two dimensions of data: the cross-sectional dimension denoted by the subscript i, and the time series dimension denoted by the subscript t. (Davies and Lahiri, 1995; Hsiao, 2007). In this study, panel data analysis is carried out on the potential determinants of corruption represented by the explanatory variables. Since the number of units followed over time is constant, the resulting panel data set is

balanced, and classical tools can be used to estimate panel data models (Baltagi, 2005). The model used in the study to determine the determinants of corruption is as follows:

$$\log(CPI)it = \beta 0i + \beta 1 \log(G\text{spen})it + \beta 2 \log(\text{Gdp})it + \beta 3 \log(\text{Enf})it + \beta 4 \log(E\text{cofree})it + \beta 5 \log(H\text{di})it + \beta 6 \log(\text{Tax})it + \varepsilon it$$

In the model, $CPIit$ represents the corruption perception index of country i in year t; $G\text{spen}it$ represents the final consumption expenditure of the government of country i in year t; $\text{Gdp}it$ represents the GDP of country i in year t; $\text{Enf}it$ represents the inflation rate of country i in year t; $E\text{cofree}it$ represents the level of economic freedom of country i in year t; $H\text{di}it$ represents the level of human development of country i in year t; $T\text{ax}it$ represents the level of tax revenue as a percentage of GDP of country i in year t; and finally, εit represents the error term.

The likelihood ratio test and Hausman test were performed to test the applicability of the model. The likelihood ratio test was used to test the classic model against the random effects model. The unit effect, time effect, or both effects of the model were evaluated based on the chi-square value obtained, according to the 5% significance level.

H0: Classical Model is True

H1: The Classical Model Is Not Correct.

In order to test the applicability of the model, the LR likelihood test and Hausman test were carried out. The LR likelihood test is used to test the classic model against the random effects model. By looking at whether there is unit effect, time effect, or both in the model, the chi-square value obtained will be evaluated according to the 5% significance level. According to this, the results of the LR likelihood test are presented in Table 2. As the probability values are less than 0.05, the H0 hypothesis, "the classic model is correct," is rejected and the H1 alternative hypothesis, "the classic model is not correct," is accepted. This indicates that there is a unit, time, or both unit and time effect in the model, and that the use of fixed effects or random effects model is more appropriate than the classical model.

Table 2
LR Likelihood Test Results

	Statistics	**Degrees of Freedom**	**Possibility**
Horizontal section	9.232452	7,138	0,0000***
Horizontal Chi-square	58.385326	7	0,0000***

Note: *** at 1%, ** at 5%, and * at 10% defines statistical significance.

The Hausman Test was used to test whether the effects determined by the likelihood ratio obtained as a result of the LR likelihood test were fixed effects or random effects.

The Hausman test hypothesis is as follows:

H0: The random effects model can be used.

H1: The random effects model cannot be used. (Therefore, the fixed effects model should be used in the analysis.)

A summary of the Hausman Statistics test is given in Table 3. The Hausman test was conducted in line with the null hypothesis of: "The random effects model can be used". Accordingly, the null hypothesis that there is no correlation between the explanatory variables and the specific (unit) effect was rejected, at a 0.05 significance level for the model used in the study. In this framework, the panel data analysis was tested with the random effects model because the random effects estimator was consistent and efficient.

Table 3
Hausman Test Statistic Results

Test Summary	**Model**
Hausman Statistics	10.718941
Degrees of Freedom	6
Probe value	0,0975

Note: *** at 1%, ** at 5%, and * at 10% defines statistical significance.

Analysis and Findings

The results of the panel data analysis of the estimated model are shown in Table 4. According to this, Table 4 summarizes the results of the estimated effects of economic freedoms, inflation rate, GDP, government consumption expenditures, human development index, and government total tax revenues on corruption.

The results of the random effects model of the panel data analysis, which covers the years 2003 to 2021, includes Turkey and the other D-8 countries, and associates economic freedoms, inflation rate, GDP, government consumption expenditures, human development index, and government total tax revenues with corruption, show that the explanatory variables used in the estimation, economic freedom, human development index, and government total tax revenues, were found to be positively and at least at a 5% significance level, in line with the literature. Other explanatory variables in the model, inflation rate, GDP, and government expenditures, yielded insignificant results at a 5% significance level. This shows that none of these three explanatory variables have an effect on the corruption perception index. The R2 value of 75% in the model indicates that 75% of the dependent variable, the corruption perception index, can be explained by the explanatory variables. The F statistic probability value indicates that all variables yield significant results at a 1% level.

Table 4
Model Estimation Results

Variable	Coefficient	Std. Error	t-Statistics	Prob.
C	-2.843.077	1.023.331	-2.778.258	0.0062**
LOG(ECOFREE)	1.203.324	0.104403	1.152.580	0.0000***
LOG(ENF)	0.018521	0.028324	0.653918	0.5142
LOG(GDP)	-0.031080	0.027050	-1.148.951	0.2525
LOG(GSPEN)	-0.033630	0.114170	-0.294565	0.7687
LOG(HDI)	0.771502	0.102908	7.496.999	0.0000***
LOG(TAX)	0.120208	0.058448	2.056.685	0.0415**
R-square	0.761266			
Adjusted R-square	0.751387			
F-Statistics Value	77.06159			0,0000***

Note: *** at 1%, ** at 5%, and * at 10% defines statistical significance.

In conclusion, a one-unit increase in economic freedoms increases the corruption perception index by 1.2%. It is seen that when the corruption perception index is high, there is less corruption, which is a positive outcome. This result is in line with some studies in the literature (Topal and Ünver, 2016; Yamak et al, 2020). Similarly, the human development index also stands out. As seen in the table, a one-unit increase in the human development index increases the corruption perception index by 0.77%. This result is also in line with some studies in the literature (Alsarhan, 2019). Similarly, a one-unit increase in the government's total tax revenues as a share of GDP also increases the corruption perception index by 1.2%.

Conclusion

In the economic development process, there are some common problems that countries face. For example, while inflation is not a significant macroeconomic problem in most developed countries, it is one of the more serious problems faced by developing economies. One common problem for all economies is corruption. This problem, which is related to human behavior, can be found among the economic and social problems of nearly every country.

In this study, which investigates the determinants of corruption in the D-8 countries, including Turkey, annual data from the period between 2003 and 2021 was used. The study was conducted using panel data analysis. In the analysis, corruption was used as the dependent variable and general government expenditures, economic freedom, GDP, human development index, total taxes as a share of GDP, and inflation were used as explanatory variables.

To make the analysis of the study, firstly, the LR test of the model was applied. The results of the test indicate that using the random effects or fixed effects panel data analysis model would be more appropriate than using the classical model. Then, the Hausman test was applied to determine whether random effects or fixed effects panel data analysis would be used in the model. The results showed that the random effects model is more appropriate. Finally, the model was estimated by using random effects panel data analysis. The results of the model estimates show that the variables of economic freedom, human development index, and the government's total tax revenue as a share of GDP positively affect the corruption perception index. No significant relationship was found between the other explanatory variables of, inflation rate, GDP, and government spending and corruption.

Based on the results of the analysis, it is important to prioritize policies that provide human, social, and cultural development to combat corruption in countries with high corruption perception, particularly in less developed or developing countries. Such policies can help to promote economic development and increase people's standard of living. Additionally, establishing laws and mechanisms to ensure compliance that improve human welfare, such as reducing inflation, excessive taxation, and government's overuse of financial policies, can also help to reduce corruption. Moreover, policies that tackle the economic situations that lead to the reduction of people's standard of living, such as inflation, excessive taxation, and governments' overuse of financial policies, can help to reduce corruption.

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