

## THE INFLUENCE OF CORRUPTION ON ROMANIA'S ECONOMIC DEVELOPMENT

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**Abstract:** *Corruption manifests itself in various forms and represents an abuse of public power for private gain. Corruption is an economic, social and political phenomenon, spread across the globe, the extent of which differs from one country to another. The Corruption Perceptions Index (CPI), laid down by the Transparency International each year, measures the degree to which corruption is perceived in each country's public sector. This paper aims to show that corruption has a negative influence on economic development in Romania, and for this purpose, multiple linear regression is used. To quantify economic development, the Gross Domestic Product per capita is used, and to assess the degree of corruption, the most appropriate indicator is the Corruption Perceptions Index. Corruption Perceptions Index, Gross national income per capita Official exchange rate. Along with the Corruption Perceptions Index, the independent variables Gross National Income per capita and Official Exchange Rate are also used. The results of the econometric tests validate the model. Therefore, in Romania, corruption has a significant negative impact on economic development.*

**Keywords:** *corruption, Corruption Perceptions Index, economic development, GDP per capita.*

**JEL Classification:** *D73, C51, O11.*

### 1. Introduction

Corruption is a type of economic crime, which represents a complex social, political and economic phenomenon, very widespread in our country. Corruption includes illegal activities, which generally become public through scandals, investigations or criminal prosecutions, which is why it is very difficult to measure the level of this category of economic crimes in a country (Manole and Erdniç, 2014). As there is no unanimously accepted definition, it is almost impossible to find a precise and objective measure of this phenomenon. Therefore, to assess the degree of a country's corruption level, indirect methods based on surveys are used. The assessment of a country's corruption level can be carried out using the following instruments: Corruption Perceptions Index and Global Corruption Barometer of the Transparency International Organization, Worldwide Governance Indicators of the World Bank, Global Integrity Index of the Global Integrity Organization.

The Worldwide Governance Indicators include six aggregate indicators, of which one is Corruption Control, which measures the level at which public power is exercised for private benefit, including forms of petty and grand corruption, as well as the "capture" of the state by elites and private interests.

The Corruption Perceptions Index, published by Transparency International every year, was launched in 1995, and our country has been evaluated since 1997. This indicator is a composite index that assesses the level of perceived corruption in a country's public sector. The Corruption Perceptions Index measures the corruption degree of a state or territory via a score on a scale from 0 to 10 (until 2011) and from 0 to 100 (after 2012). The minimum value of 0 corresponds to a very high level of corruption, and the maximum value (10 or 100)

corresponds to the total absence of corruption. Next, we present the situation of Romania in recent years, regarding the level of corruption, assessed by the Corruption Perception Index.

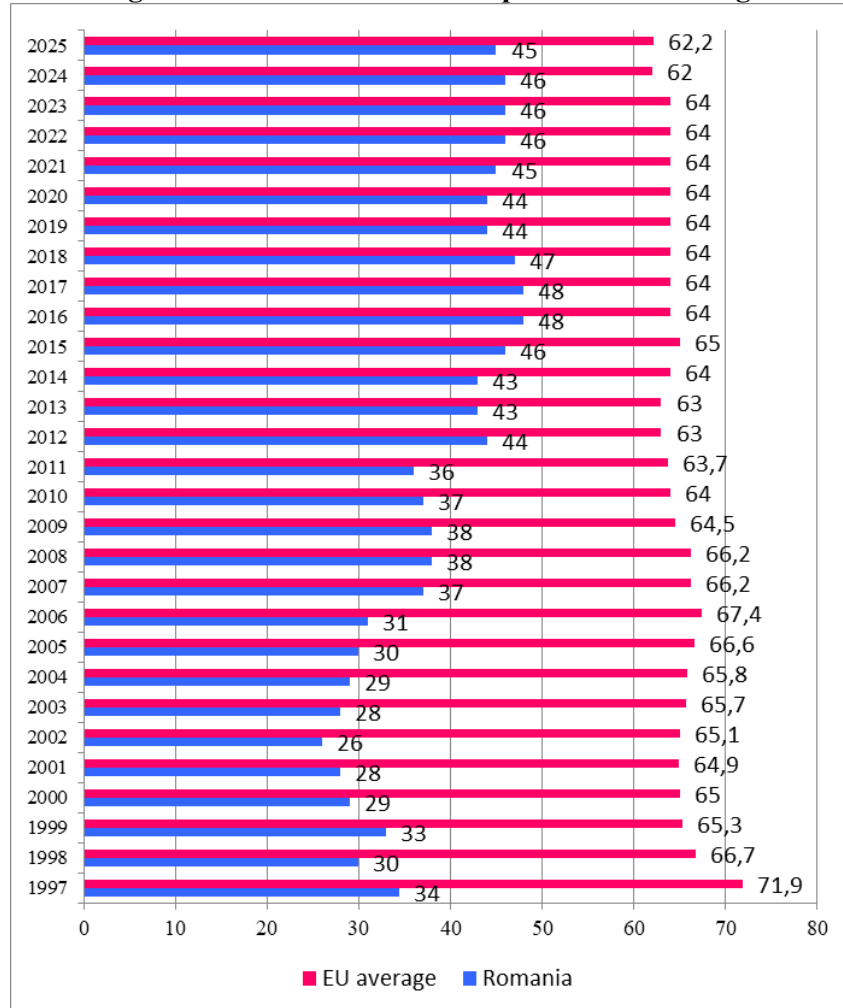
In 2023, the top countries in the ranking are Denmark (90), Finland (87) and New Zealand (85), and Romania obtained a score of 46, ranking 63rd in the overall ranking (out of 180 countries monitored) and the second-to-last place in the ranking of countries in the European Union, ahead of Bulgaria (45) and Hungary (42).

In 2024, the ranking of the 180 countries monitored is also led by Denmark (90), followed by Finland (88) and Singapore (84). Romania ranked 65th in the overall ranking (tied with Malta), with a score of 46, also ranking the second-to-last place in the European Union ahead of Bulgaria (43) and Hungary (41).

At the top of the overall ranking, in 2025, are Denmark (89), Finland (88) and Sweden (80), our country having a score of 45 and ranking 70th (out of 182 countries monitored). In the European Union, Romania ranks second to last, followed by Bulgaria and Hungary, which have the same score of 40.

Figure no. 1 presents the dynamics of the Corruption Perception Index for Romania, alongside the European Union average during the period 1997-2025. Scores from 1997-2011 were multiplied by 10 to ensure uniformity in the data.

**Figure no. 1. Romania vs. European Union Average**



Source: Prepared by the authors based on the data from Transparency International.

Analyzing Figure no. 1, it can be seen that the difference between the European Union average and the score recorded by Romania has a decreasing trend. In the last 5 years, our country has obtained scores of 45 or 46, and the best recorded score was 48 (in 2016 and 2017).

## 2. Short Literature Review

There are numerous studies in the specialized literature investigating the influence of corruption on economic development.

Akkoyunlu and Ramella (2020) analyze the influence of corruption on income per capita, productivity, and income inequality for 143 countries in 2000, using an instrumental variables approach. The main finding is that corruption control has a positive effect on income per capita and productivity, but corruption does not have a significant impact on income inequality.

Blackburn et al. (2006) and Blackburn and Forgues-Puccio (2010) recommend dynamic general equilibrium models, in which economic development and bureaucratic corruption are determined jointly. The mutual interaction between aggregate economic activity and bureaucratic decision-making generates threshold effects and the possibility of multiple long-run equilibria. Forgues-Puccio and Lauw (2021) analyze the effect of bureaucratic corruption on economic development based on a dynamic general equilibrium model in which capital accumulation drives economic development. The main result is that a policy of increasing women's participation in the public sector potentially reduces corruption and fosters economic development. Zhang et al. (2023) conduct a theoretical study in which they start from the premise that there is an interconnection between corruption and anti-corruption efforts on the one hand, and political and economic concerns on the other. The model is based on improving the government's governance capabilities by maximizing benefits given the costs of anti-corruption supervision and the losses incurred due to corruption.

Wei (1999) shows that countries with high levels of corruption experience poorer economic performance, based on statistical evidence. Channels through which corruption hinders economic development are: reduced foreign direct investment, reduced domestic investment, exaggerated government expenditure with a distorted composition.

Saha and Gounder (2013) show that there is a nonlinear relationship between corruption and the level of economic development of countries, and also a strong negative linear link between income and corruption across nations. Horvat et al. (2021) use GDP per capita, GDP growth, the Human Development Index, Hofstede's cultural dimensions and the Corruption Perception Index within an analysis on a sample of emerging economies over the period 1995-2015. The results of the multiple linear regression analysis they obtained prove that corruption and cultural dimensions influence the economic development of emerging economies.

Kalyuzhnova et al. (2009) investigate the link between economic development and corruption in energy-rich economies, based on data from 48 countries with energy resources. The results indicate that corruption reduces the level of GDP per capita.

Muhammad et al. (2023) analyze the problem of corruption in Africa, with Nigeria, Uganda, and Zimbabwe as case studies. The study results reveal the huge influence of corruption on Africa's economic development, with annual losses ranging between \$60 billion and \$100 billion due to illicit financial flows. Ibraheem et al. (2013) show that corruption has negatively affected economic development in Nigeria using linear regression models. They found that an increase in the Corruption Perceptions Index by 1 results in an increase in Nigeria's GDP by \$116 billion. In addition, Ola et al. (2014), Oghuvbu (2021), Obayelu (2007), Jacob and Umoh (2017), Ajie and Wokekoro (2012) show that corruption has negative effects on economic development in Nigeria.

Kutan et al. (2009) estimated the impact of corruption on economic development, measured by GDP per capita, for countries in the Middle East, North Africa and Latin America, for the period 1993-2003. From examining countries in the two distinct developing regions, it was found that the effects of corruption on economic development vary across regions.

Lopez (2019) investigates the impact of corruption (quantified by the Corruption Perceptions Index) on economic development (assessed by GDP per capita and the Human Development Index) in Mexico, Brazil and Chile, during the period 1995-2017. The results he

obtained are somewhat surprising, as a strong positive correlation was found between the Corruption Perceptions Index and the Human Development Index, and also a strong negative correlation between the Corruption Perceptions Index and GDP per capita.

Pulok (2010) investigated the impact of corruption on the economic development of Bangladesh, based on the Solow model of economic growth, in which he included the public sector and human capital, and reformulated it by incorporating corruption. He finds that a 1% increase in the level of corruption during the period 1984- 2008 would cause an approximately 10% reduction in GDP per capita of Bangladesh.

Feruni et al. (2020) empirically test the influence of corruption, urbanization, and economic freedom on economic development for both Western Balkan and EU countries, over the period 2009-2018, for a comparative analysis. Corruption, assessed by the Corruption Perceptions Index, has a negative impact on economic development, represented by the Human Development Index, for both groups of countries, stronger for the Western Balkans. Xhindi and Gjika (2022) analyze the relationship between corruption and economic development in the Western Balkan countries during the period 2003-2019, based on the panel time-series autoregressive distributed lag (ARDL) model. The results obtained show that corruption (assessed by the Corruption Perceptions Index) has a significant negative effect on economic development (assessed by the Human Development Index).

### 3. Research Methodology

In order to study the influence of corruption on Romania's economic development, we used a multiple linear regression model. For this empirical research, the annual series of these indicators for Romania for the period 1997-2022 were used. The data was extracted from Transparency International (TI) – for the Corruption Perception Index and from the World Development Indicator (WDI) – for the other indicators. The description of the variables in the model is made in Table no. 1.

**Table no. 1 Description of Variables and Source**

| Variable                         | Acronym | Description                                                                                                                                                                                                                                                                                                                       | Source     |
|----------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| GDP per capita                   | GDPpc   | GDP per capita is the dependent variable. GDP is expressed in current international dollars, converted by purchasing power parities (PPPs).                                                                                                                                                                                       | WDI (2026) |
| Corruption Perceptions Index     | CPI     | CPI is the independent variable. The CPI assesses the degree to which corruption is perceived in a country's public sector.                                                                                                                                                                                                       | TI (2026)  |
| Gross National Income per capita | GNIpc   | GNIpc is the independent variable. Gross national income is the total income earned by all residents of a country during a year. It is equal to gross domestic product, plus earned income receivable from abroad, minus earned income payable abroad, and converted into current US dollars using the World Bank's Atlas Method. | WDI (2026) |
| Official Exchange Rate           | OER     | OER is the independent variable. It is the exchange rate determined by national authorities for US dollars. This indicator is derived as an average over a period of one year.                                                                                                                                                    | WDI (2026) |

Source: Authors' Conception.

Gross domestic product per capita (at purchasing power parity) is an essential indicator for economic development. Also, to assess the corruption level, the Corruption Perception Index was used, which we consider the most appropriate tool for measuring corruption. The other influencing factors of Gross Domestic Product per capita in the model are Gross National Income per capita and Official Exchange Rate.

Next, we present information regarding the distribution of the data series used in the model (Table no. 2).

**Table no. 2. Descriptive Statistics for Variables**

|              | GDPpc     | CPI    | GNIpc    | OER    |
|--------------|-----------|--------|----------|--------|
| Mean         | 20049.71  | 38.36  | 8025.36  | 3.21   |
| Median       | 18079.27  | 38     | 9150     | 3.31   |
| Maximum      | 49077     | 48     | 17600    | 5      |
| Minimum      | 5545      | 26     | 1580     | 1      |
| Std. Dev.    | 12973.078 | 7.380  | 4943.262 | 1.031  |
| Skewness     | 0.771     | -0.229 | 0.153    | -0.245 |
| Kurtosis     | -0.325    | -1.524 | -0.955   | 0.227  |
| Jarque- Bera | 2.746     | 2.732  | 1.264    | 3.271  |
| Probability  | 0.253     | 0.255  | 0.531    | 0.195  |
| Sum          | 561392    | 1074.4 | 224710   | 90.77  |

Source: Author's computation based on World Development Indicator and on data from Transparency International.

Since the time series of Gross Domestic Product per capita and Gross National Income per capita have only positive terms and their orders of magnitude are much larger than the terms of the other variables, their terms are logarithmized. We use the following notations for the variables in the model:

$\ln\_GDPpc$  = the natural logarithm of GDP per capita;

CPI = Corruption Perceptions Index;

$\ln\_GNIpc$  = the natural logarithm of Gross National Income per capita;

OER = Official exchange rate.

The values of the Pearson correlation coefficients between the four variables in the model, which provide information about the strength and direction of the linear relationship between them, are given in Table no. 3.

**Table no. 3. Correlations between Variables**

|              | $\ln\_GDPpc$ | CPI     | $\ln\_GNIpc$ | OER     |
|--------------|--------------|---------|--------------|---------|
| $\ln\_GDPpc$ | -            | 0.842** | 0.940**      | 0.748** |
| CPI          | 0.842**      | -       | 0.803**      | 0.686** |
| $\ln\_GNIpc$ | 0.940**      | 0.803** | -            | 0.802** |
| OER          | 0.748**      | 0.686** | 0.802**      | -       |

\*\*, Correlation is significant at the 0.01 level (2-tailed)

Source: Personal data processing.

The analysis of the table above shows that the natural logarithm of GDP per capita is positively correlated with the other variables, the correlation with the Official Exchange Rate being strong, and with the Corruption Perceptions Index and the natural logarithm of Gross National Income per capita being very strong.

The analysis of the impact of corruption on the economic development of our country is based on the estimation of the following multiple linear regression:

$$\ln\_GDPpc_t = a_0 + a_1CPI_t + a_2\ln\_GNIpc_t + a_3OER_t + \varepsilon_t \quad (1)$$

where

$a_k$  – coefficients of the independent variables that must be determined,  $k = 1, 2, 3$ ;

$a_0$  – intercept that must be determined;

$\varepsilon_t$  - residual variable.

#### 4. Research Results and Analyses

The least squares method was used to estimate the coefficients of the econometric model (1). The following table presents the results of the estimation of model parameters and statistical tests.

**Table no. 4. Results from Model**

| Variable                          | Coefficient          | Std. Error                | t-Statistic        | Prob.  |
|-----------------------------------|----------------------|---------------------------|--------------------|--------|
| Constant                          | 3.873984             | 0.356070                  | 10.87985           | 0.0000 |
| CPI                               | 0.018463             | 0.006172                  | 2.991476           | 0.0063 |
| ln_GNIpc                          | 0.526679             | 0.066623                  | 7.905323           | 0.0000 |
| OER                               | 0.157020             | 0.035103                  | 4.473084           | 0.0002 |
| <b>R-Squared</b>                  | 0.9764               | <b>Adjusted R-squared</b> | 0.9734             |        |
| <b>F-statistic</b>                | 330.5757<br>(0.0000) | <b>Durbin-Watson stat</b> | 2.0703             |        |
| <b>Breusch-Godfrey test</b>       | 1.9325<br>(0.1686)   | <b>Ramsey Reset test</b>  | 1.4863<br>(0.1508) |        |
| <b>Breusch-Pagan-Godfrey test</b> | 2.6353<br>(0.0728)   | <b>Jarque-Bera test</b>   | 0.8803<br>(0.6439) |        |

(.) is the p-value.

Source: Author's computation.

The probabilities associated with the  $t$  - statistic are lower than the 0.01 significance level for all coefficients, so the model parameters are significantly different from zero.

The value of the determination coefficient shows that 97.64% of the variation in the natural logarithm of GDP per capita is explained by the independent variables in the model. The adjusted determination coefficient which has almost the same significance but penalizes the introduction of independent variables with a small influence on the dependent variable (Ohtani, 2000) is also high (0.9734).

The Snedecor-Fisher statistic has a value of 330.5757, and the associated probability is very small, less than the significance threshold of 0.01, which shows that the null hypothesis that all regression coefficients are zero (except the intercept) is rejected. Therefore, the model is significant (at least one coefficient in the regression, except for the intercept, is significantly different from 0).

The absence of autocorrelation in the residuals must also be verified. The errors are not autocorrelated because the value of the Durbin-Watson statistic is close to 2 (2.0703). The Breusch-Godfrey Serial Correlation LM test has an associated probability greater than the 0.05 significance threshold (0.1686), which means that there is no serial correlation of errors in the regression equation.

It is also necessary to verify that the errors have a constant variance (homoscedasticity). The null hypothesis of the Breusch-Pagan-Godfrey test is the homoscedasticity hypothesis, and the alternative hypothesis is the heteroscedasticity hypothesis. Since the probability associated with the F-statistic in this test is greater than 0.05 (0.0728), the null hypothesis cannot be rejected, so the hypothesis of homoskedasticity of the residuals is accepted.

The Ramsey RESET test is a diagnostic tool for detecting misspecification in regression models and has the null hypothesis that the model is correctly specified. Since the probability associated with the test is greater than the 5% significance level (0.1508), the null hypothesis cannot be rejected, resulting in the correct specification of the model.

It is also tested that the residuals are normally distributed using the Jarque-Bera test. The null hypothesis of the test is that the errors have a normal distribution. The probability associated with the Jarque-Bera statistic (0.6439) is greater than the significance threshold of 0.05, which means that the null hypothesis cannot be rejected, which implies that the residuals are normally distributed.

The results of these econometric tests validate the model. Therefore, Corruption Perceptions Index, Gross National Income per capita and Official Exchange Rate have a significant influence on economic development.

Thus, an increase of 1 in the Corruption Perceptions Index determines an increase of 0.108% in GDP per capita. At the same time, an increase of 1% in Gross National Income per capita results in an increase of 0.527% in GDP per capita. Also, an increase of 1 leu in the exchange rate for US dollars determines an increase of 0.157% in GDP per capita.

## 5. Conclusions

The article analyzes the dependence of economic development on corruption in Romania. To quantify economic development, we used GDP per capita, and for corruption, the Corruption Perceptions Index was used. The study is based on a multiple linear regression, in which the dependent variable is GDP per capita, and the independent variables are Corruption Perceptions Index, Gross National Income per capita and Official Exchange Rate.

The results of the *t*-test, *F*-test, R-Squared and Adjusted R-squared, Durbin-Watson test, Breusch-Godfrey test, Breusch-Pagan-Godfrey test, Ramsey test, Jarque-Bera test validate the model. Therefore, there are significant relationships between the variables in the model.

The factors considered – Corruption Perceptions Index, Gross National Income per capita and Official Exchange Rate have a significant positive influence on the resulting variable – GDP per capita. Thus, 97.64% of the variation in the natural logarithm of GDP per

capita is due to the variables considered – Corruption Perceptions Index, Gross National Income per capita and Official Exchange Rate. The influence of corruption on economic development is remarkable: a decrease in the level of corruption by increasing the Corruption Perceptions Index by 1 results in an increase in GDP per capita by 0.108%.

For a more in-depth analysis, it would have been necessary to consider other tools for measuring corruption, such as: the Global Corruption Barometer of the Transparency International Organization and the Global Integrity Index of the Global Integrity Organization. It would also be interesting to see to what extent corruption also affects economic growth. Therefore, we propose conducting a more complex analysis in a future paper in which we will also take these aspects into account.

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