

The impact of corruption on competition in the countries of Southeast Europe

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Abstract. This article is an extended piece of research on the impact of corruption on the market competition in Southeast Europe (SEE). The aim of the paper is to investigate the relationship of corruption and competition in the selected SEE countries. This paper analyses the annual data over the period of 1996 – 2019 from the World Bank and Transparency International. The starting hypothesis is that corruption has great influence on restricting competition in SEE and a significant negative impact on it. Multiple regression and analysis of time series are used in this research. The results verify the hypothesis. Our findings allow us to conclude that corruption must be reduced for SEE economies to take advantage of potential resulting benefits. Additionally, the conclusions also indicate that competition in these countries would be significantly reduced by policies on controlling corruption. Finally, several political implications for the regulation of corruption in SEE arise from these findings, as well.

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1. INTRODUCTION

The subject of the research is the impact corruption has on the development of market competition in the SEE countries, which have been in transition towards market economy since 1990. The complexity of the research problem is explained by the consideration of both the transition of the economies in the countries in question and their transformation in social, economic, political, cultural, and technological terms (Draskovic et al., 2019; Draskovic et al., 2020; Tomas, 2020). Additionally, the initial conditions of each country differ, including the level of development and structural characteristics, geography, and history (in particular, the type of communist regime).

This study offers a theoretical approach to the research problem first, followed by a quantitative research that uses linear regression methods and time series analysis. The dependent variable is the level of

market competition in the SEE countries. The starting point of the hypothesis is that the factor defined as an independent variable - corruption - strongly influences the establishment of market competition in the SEE countries.

There have been few studies about corruption and competition carried out in developing and emerging economies and not much attention has been paid to the impact of corruption on competition in SEE countries. In most studies, corruption is described as catastrophic activities, which diminish democratic governance and the rule of law and have a negative impact on competition and economic growth (Piplica et al., 2021; Subanti et al., 2021; Meyer, 2018). Transparency International (2016) defines corruption as “*the misuse of power in order to have personal advantages*”, which is the definition accepted in this paper.

Corruption is considered damaging emerging economies and a barrier to economic growth in general. According to the literature on economics, this negative impact on economic growth is explored via a number of transmission channels. Particularly, it is proved that corruption is negatively correlated with trade and economic growth due to its influence on the physical capital accumulation (Sahakyan & Stiegert, 2012). Also, very problematic influence of corruption on institutions is obvious. Nonetheless, from other researchers' points of view, it is impossible to always blame corruption on its damaging effects because it can also provide benefits for the growth. According to Haque & Kneller (2015), corruption is positively related to economic growth as it simplifies administrative procedures and promotes transparency of the juridical system.

Accordingly, currently there has been a dispute over ethical and economic implications between the contrary effects of corruption, especially in emerging and developing economies in which these effects have not been considered studying. Based on quantitative analysis, this research will give more details of effects on competition SEE economies, and contribute to the literature in this area. In this research, with regression model, we aimed to predict the effects on competition in the future. In other words, via this model it is possible to investigate how corruption impact market competition. Hence the research is expected to contribute empirical evidence of the influence of corruption on economic market competition in SEE countries by employing regression analysis, and the forecasting model ARIMA.

This research is presented as follows: the next section is literature review. Section 3 describes methodology and data, followed by the section of results and discussion. The final section presents conclusion, and suggestions for further studies.

2. LITERATURE REVIEW

Corruption has many comprehensive effects on society and is associated with a number of social phenomena. As a complex phenomenon, it has been researched so far in several aspects, however, research dealing with criminal law aspects dominates. Recently, research has focused on how corruption affects macroeconomic indicators and market competition. Thus, the research includes the ratio of corruption and GDP per capita, corruption and economic growth rates, corruption and market structure, corruption and investment rates, corruption and international trade, corruption and state revenues, corruption and the gray economy, corruption and the quality of public infrastructure, corruption and total investment, corruption and foreign direct investment, etc.

These studies address more of the problems of Western developed countries while the analysis of the cause-and-effect relationship between corruption and market competition in transition countries of Eastern Europe is still not sufficiently performed, and there is a deficit of knowledge about this relationship.

Persistence of corruption is a characteristic of many transition countries with great economic and political changes, but also of many other. K. Murphy, A. Shleifer, and R. Vishni (1993) investigated the situation in Russia. The authors concluded that corruption has negative effects on competition. They also noted that corruption could be costly because a weak central administration tolerates bureaucracies imposing high levels of bribery. J. Sachs and A. Warner (1997) claimed that corruption has a negative impact on economic growth. P. Mauro (1995) has a very important paper regarding this research, in which he investigated the relationship between corruption and GDP growth per capita in a large cross-section of 68 countries.

He proved that corruption has negative effects on investment, competition, and economic growth. T. Louis (1996) argued that corruption has a positive short-term effect on allocative efficiency and a negative effect on the long-term growth rate. I. Guetat (2006) investigated the situation in the Middle East and North Africa on a sample of 90 countries. He found that the negative effects of corruption on the market economy stem from bad institutions. L. Pellegrini and R. Gerlagh (2004) concluded that corruption has no direct impact on economic growth.

In fact, corruption has a direct impact (mostly negative) on investment, education, trade policy, and political stability; as a final result it has an indirect impact on economic growth (Zakaria et al., 2021). Interestingly, according to R. Barreto (2001) there is a positive direct impact of corruption on economic growth.

T. Aidt, J. Dutta, and V. Sena (2008) pointed out that a high level of institutional quality reduces corruption. They stress that economic growth reduces corruption and that corruption has no impact on economic growth in countries with poor institutions. Subsequent research also proves that there is a link between high levels of corruption and low levels of market economy in the countries with low GDP per capita. Recent research conducted by d'Agostino et al. (2016a; 2016b) indicates a direct negative link between corruption and economic growth. Specifically, he suggested that corruption slows economic growth by increasing military spending (d'Agostinio et al., 2016a) and negatively affects the market mechanism in resource allocation.

According to d'Agostinio, corruption contributes to the decline in economic growth in the case of low investment rates (Cieslik & Goczek, 2018a). E. Tsanana et al. (2016) prove that corruption has a negative relationship with economic growth in the EU countries. According to M. Ivanyna et al. (2015), corruption is negatively related to government revenues and becomes an obstacle to economic growth. However, a different approach to the problem of corruption confirms the conflicting results.

Based on empirical research of the relationship between China's continuously high GDP growth and the presence of corruption, T. Jiang and H. Nie (2014) show that corruption in the Chinese environment has a positive effect on resource allocation and productivity. Likewise, J. Huang (2016) points out that this relationship is positive in South Korea. A review of the selected literature shows both negative and positive views. However, the prevailing view is that corruption negatively affects competition, i.e. economic growth.

We have seen that corruption happens all over the world, and the level of corruption varies from country to country. Corruption is inversely related to economic growth and its effects on society, directly and indirectly (Easterly, 2002). Table 1 compares several developed and the SEE countries in terms of corruption and GDP per capita. SEE countries lag significantly behind in terms of GDP per capita compared to developed countries, having high corruption compared to them.

Table 1

Corruption and development relationship			
Country	CPI Rankings	GDP per capita (2020) (Current prices US\$)	CPI results
Australia	11/180	52.820	77/100
Japan	19/188	40.150	74/100
USA	25/180	63.420	67/100
Montenegro	57/180	7.690	45/100
Serbia	94/180	7.640	38/100
Bosnia and Herzegovina	111/180	5.010	35/100
Albania	104/180	5.290	36/100
North Macedonia	111/180	5.920	35/100

Source: Transparency International 2020, World Bank 2020, UNDP 2020

Abbreviation: CPI: Corruption Perception Index

Note: Corruption Perceptions Index for 2020, and rank 1 is given for the least corrupt state, while higher rank means more corrupt state.

3. METHODOLOGY

From the 2000s onwards, Transparency International Corruption Perceptions Index (CPI) was used in most empirical research to investigate the determinants of corruption and its economic and political outcomes. In this research, we opted for such an approach because the current knowledge about the impact of corruption on the level of market competition is very important to us, and this facilitates the application of the comparative method. The data panels were prepared in accordance with database of the World Bank and the Transparency organization.

The data is measured as follows (1 - the lowest corruption, 10 - the highest corruption). Linear regression was applied to determine the interdependence of the selected variables. Our linear regression model is as follows:

$$y_{it} = a_{it} + \beta_i x_{it} + \varepsilon_{it}$$

where:

- y - level of competition,
- x - corruption perception index,
- a - constant,
- β - regression coefficient, and
- ε - stochastic variable.

Data of five countries (Montenegro, Serbia, Bosnia and Herzegovina, North Macedonia, and Albania) were analyzed. If we view the data for the three considered countries, the observation unit $i = 1, 2, \dots, N$, where $N = 120$, and time period $t = 1, 2, \dots, T$.

In our research, the dependent variable is the level of competition. In this model of research, starting from previous insights and key approaches in perceiving the extent of competition in the market, the assessment of the variable curve is based on economic freedoms data. Namely, the starting point is that competition mainly depends on barriers that may prevent new companies from entering into the market. The basic precondition for the existence of intense competition is that entering the market is quite easy. This should apply to both domestic and foreign participants. Thus, competition should be correlated with the absence of bureaucratic obstacles to opening new businesses and barriers to international trade.

Consequently, the Freedom of Business Index and the Freedom of Trade Index are proposed as a substitute for competitive pressures from domestic and foreign markets. The two indices are among the components of the index of economic freedom calculated annually by the Heritage Foundation. The main advantage of these indices is that they are available to a large number of countries and for significant time series. Thus, they can be used to analyze the economic impact of competition on growth in a dynamic perspective.

Freedom of business is an overall effectiveness indicator of government regulation of business. The quantitative result for each country ranges between 0 and 100, with 100 being the freest business environment. The assessment was derived from 10 factors that measure the difficulty of starting, operating, and closing a business, based on data from the World Bank's Doing Business study. The Freedom of Business Index has therefore been proposed as an indicator of competitive pressures from the internal market due to the existence of other producers or the entry of new companies into the market. The Freedom of Trade Index and the Freedom of Investment Index are also being taken. Thus, the level of market competition is measured by the average value of these three indices.

The starting hypothesis is: market competition in transition economies is affected by specific restrictive factors, which are not explained in the theoretical model of competition, and corruption is very present with a major negative impact on competition in the economy of SEE countries, having a significantly lower level of competition in comparison with countries of Central and Eastern Europe and the European Union.

4. EMPIRICAL RESULTS AND DISCUSSION

4.1 Integral results

The results obtained by analyzing the data panels using linear regression and time series for the dependent variable (competition level) and the independent variant (corruption level - CPI) are given in Table 2 and Table 3.

Table 2

Summary indicators at the model level

R	R ²	Adjusted R ²	Standard error
0,688	0,483	0,469	9,26

Source: author's calculation

Table 3.

Descriptive model statistics

Variables	Arithmetic mean	Standard deviation	Min	Max	B	p-value
Level of corruption	60,4667	13,56710	34,00	80,00	137,82	0,000
Corruption	6,80	5,409	5,40	8,40	-11,246	0,000

Source: author's calculation

To decide between fixed or random effects, the Hausman test was done where the null hypothesis is that the model with random effects is in relation to the fixed effects alternative (Greene, 2008). It basically tests whether unique errors are correlated with regressors, the null hypothesis is that they are not. The Hausman test showed that a model of data panel regression analysis with random effects can be applied.

Hausman test results.

Coefficients	(b) Fixed	B) random	(b-B) Difference
X1 –Corruption	-11.39696	-11.24613	-.1508329

$$chi2(1) = (b-B)'[(V_b - V_B)^{-1}](b-B)$$

$$Prob > chi2 = 0,0512$$

Functional dependence was determined. Using the random effect, an adequate econometric model is:

$$Y = 137,82 - 11,24 \times X$$

The average value of corruption in the reference period calculated by the CPI method is 6.80 in the selected countries (on the scale of 1-lowest and 10-highest corruption), while the lowest corruption is 5.40 and the highest is 8.40. This is a higher level of corruption in all states. Compared to the average level of corruption in developed countries, this level is not satisfactory at all. In the control sample of developed countries, the CPI is <3, thus corruption is more than 50% above in the observed transition countries. What is confirmed with certainty in relation to previous research on the relationship between corruption and competition is that high corruption is present in countries with a low level of competition.

The correlation coefficient of corruption (measured by the corruption perception index) and of the corruption level is positive and amounts to 0.68, which means that these variables are largely related. As pointed out, corruption is a complex phenomenon and acts with other factors on competition indirectly, therefore it is expected that this negative impact in transition countries will intensify with other unfavorable factors in the transition environment, which are less pronounced in developed countries. In accordance with the above, we conclude that the reduction of corruption in the observed countries in a given period of time has a very positive impact on the level of competition.

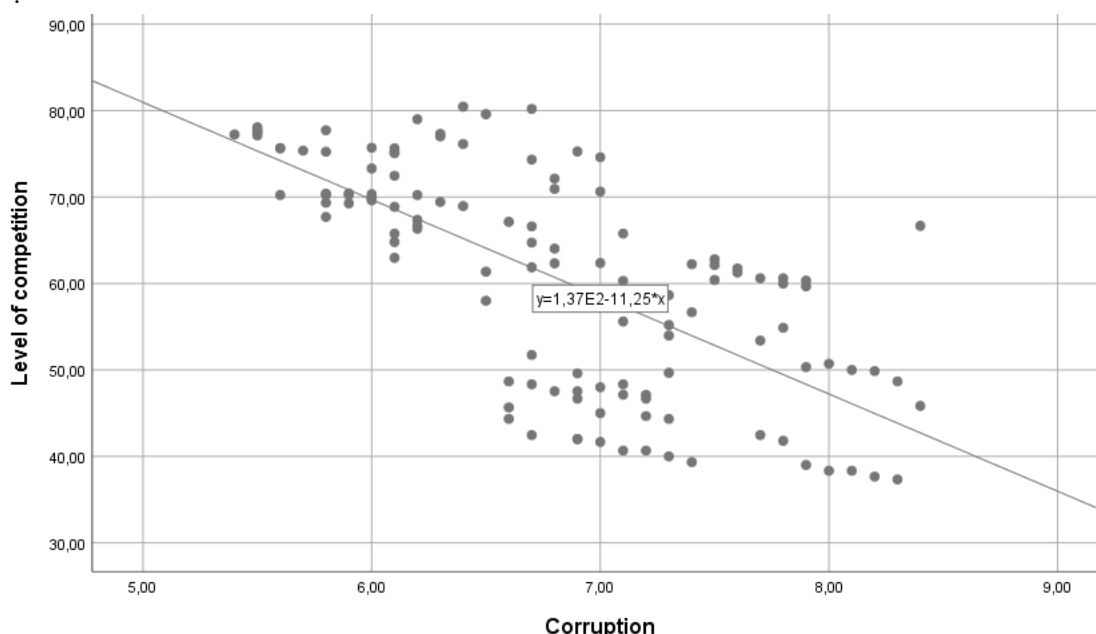


Figure 1. Impact of corruption on market competition

Source: author's calculation

Figure 1 shows the linear relationship between the level of corruption and the level of competition. Observed at the level of the overall model, the p-value ($p=0.000$) is low, while the F-statistic is high ($F=105.95$), which clearly indicates the high significance of the set model. The conclusion is that in the observed SEE countries, corruption significantly explains the low level of competition

4.2 Results by country and forecast

Table 4 shows the obtained results of the regression analysis for each observed country. The results are similar by country, with the highest corruption in Albania being 7.07, and the further ranking according to the average value of corruption being: Serbia 6.93, North Macedonia 6.9, Bosnia and Herzegovina 6.67, and Montenegro 6.42.

Table 4

Average values of variables by country

Variables	Arithmetic mean				
	Montenegro	Serbia	Bosnia and Herzegovina	Albania	North Macedonia
	57,0736	54,6278	59,8042	68,0069	63,9375
Corruption	6,4250	6,9333	6,6708	7,0750	6,9042

Source: author's calculation

Figure 2 shows the level of competition in the period 1996-2019 in the observed countries with a forecast until 2025. Taking the functional connection obtained in the model, a forecast until 2025 was created using the ARIMA method. The braking effect of corruption will be reflected in the projection period with a significant distortion of market competition.

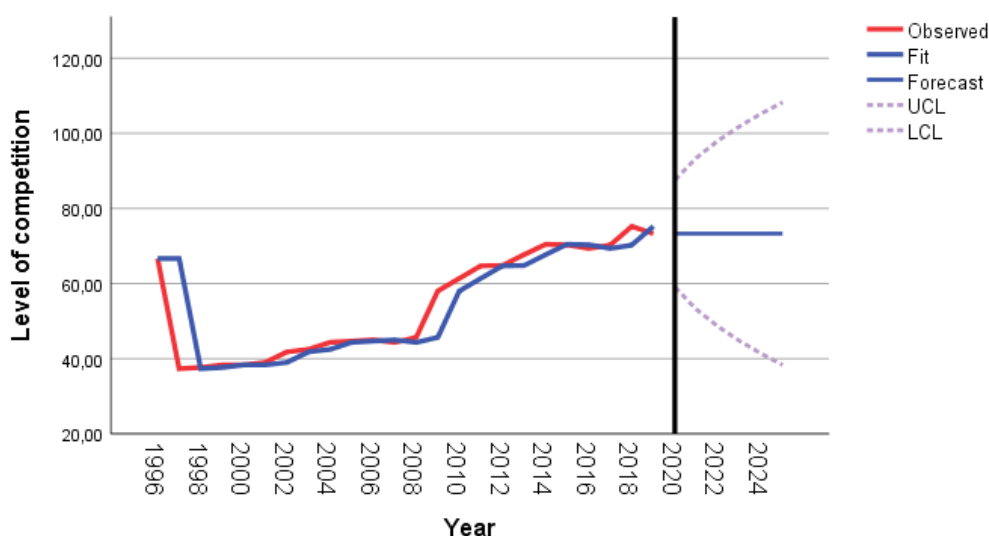


Figure 2. Model for the level of competition under the impact of corruption in the SEE countries with forecasts until 2025, author's calculation

Source: author's calculation

5. CONCLUSION

This paper presents a theoretical and methodological framework for quantitative modeling of the impact of corruption on market competition in the SEE countries. For modeling purposes we used the following: statistical analysis, linear regression method, and time series analysis.

Functional dependencies between the dependent variable and the independent variable were determined. Based on the conducted analysis, it was concluded that the restrictive effect of corruption on market competition in the SEE countries is high. Based on statistical modeling, it is shown that the average expected values of the dependent variables are: Montenegro 57.3; Serbia 54.62; Bosnia and Herzegovina 59.80; Albania 68; North Macedonia 63. According to the above, the initial hypothesis has been fully verified. The desired level of competition has not been achieved due to the effects of corruption to a large extent.

From the perspective of the development of market competition in the SEE countries, the findings of this research provide reliable knowledge that corruption should be considered and its impact as perhaps the most important in the strategy of further transition of the SEE countries. In addition to confirming the initial hypothesis based on theoretical consideration based on numerous studies, it has also been proven quantitatively using regression analysis. The model explains as much as 48% of the variation of the dependent variable ($R^2 = 0.480$). If the countries under study strive to develop market competition, understanding this factor influencing competition is valuable knowledge.

Despite some limitations, this research makes a significant contribution. First, it fills the gap of lack of research in this area. Second, an analysis of one important influencing factor is given with new findings from the previous research. Third, it provides a theoretical framework for further research.

Further research should be conducted with the focus on deeper research related to anti-corruption measures and policies. There are significant internal reserves for improvement in order to achieve a higher level of competition in the SEE countries. From the perspective of improving the level of market competition, this research findings support the decision-making on the course of action, that when setting a good development strategy, corruption and its impact should be considered extremely important.

We propose the following three important policy implications for moving forward towards good governance reforms in SEE countries in order to control corruption:

- Corruption can be reduced by creating a solid legislative structure by building an independent accountability body to trace cases, and penalize them. The need for high-level awareness campaigns against the corrupt peoples and support them through law enforcing agencies;
- The stringent regulatory policies, autonomous judicial decisions, the self-governing rule of law, and timely decisions of the cases are the ultimate solutions to support combat against corruption;
- Lastly, importance of informing the general public to identify awful institutional policies and the corrupt peoples and further creates an autonomous governing body to penalize the fraudulent persons and institutions for moving forward towards reduction of corruption.

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