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INSTITUTIONS' QUALITY AND ECONOMIC PERFORMANCE IN THE EU: INSIGHTS FROM A CLUSTER ANALYSIS*

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Abstract. The article examines the complex relationship between institutions and economic performance in the EU. Institutions' quality will be measured by corruption (measured by the Corruption Perceptions Index) and so-called "state fragility" (measured by the Fragile States Index); economic performance will be measured by GDP per capita in PPP. Using hierarchical cluster analysis, the study classifies the EU countries into two groups: (1) countries with high corruption, low quality of public institutions and low economic performance, and (2) countries with low corruption, strong public institutions and high economic performance. This method reveals differences in the impact of corruption and fragile states on economic performance, making the analysis more comprehensive than linear regression models. The study results show that in countries with high corruption and low quality of public institutions, economic performance is significantly lower, and corruption has a more significant negative impact on the economy. At the same time, in the more developed countries, where corruption is low, economic performance is related to the Fragile States Index. These differences underscore that in less developed countries, the fight against corruption should be a key priority, while in more developed countries, the focus should be on strengthening public institutions to sustain high economic performance. The results of the study have important foresight conclusions. In countries with high corruption and low level of quality of public institutions, without decisive measures to address them, economic performance could be expected to continue to decrease, leading to greater economic and social imbalances. For countries with high economic performance and strong public institutions, the emphasis on institution-building will contribute to more sustainable economic performance in the long term. It is expected that countries that effectively combat corruption and strengthen their public institutions will be able to improve economic performance, attract more investment and increase global competitiveness. The study provides a new perspective on the relationship between corruption, fragile states and economic performance, for the first time classifying the EU countries on the basis of these indicators. The results of the study point to the need to develop adapted policies aimed at strengthening public institutions and reducing corruption, which are important for sustaining and increasing economic performance in different groups of the EU countries.

Keywords: institutions; corruption; fragile states; economic performance; interconnection; cluster analysis; EU countries.

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1. Introduction

The topic of economic performance is a crucial concern in today's society. The global experiences indicate that economic performance and growth are determined by investments (Ocolisanu, 2022; Cano et al., 2023), including foreign direct investments (Saksonova et al., 2023; Tvaronavičienė et al., 2024; Preepremmote, 2024) which are stimulated, including through mergers and acquisitions of enterprises (Saksonova & Kantāne, 2017), as well as other factors. Among researchers become more actual research the fields of the relationship between economic performance, financial development, and institutions' quality, characterized by corruption (Leitão 2021; Thạch & Ngọc, 2021; Song et al., 2021; Lucarelli et al., 2024; Vyas-Doorgapersad, 2024). Studying the interconnections between institutions' quality, expressed by corruption (measured by the Corruption Perceptions Index); state fragility (measured by the Fragile States Index) and economic performance (measured by GDP per capita in PPP) allows us to better understand the causes of economic problems, and also helps to develop effective strategies for their solutions (Krivins et al., 2023; Koeswayo et al., 2024). The presence of corruption leads to inefficient allocation of resources, distorts competition and discourages investors. Studying these relationships helps develop strategies to combat corruption and strengthen state institutions that promote economic development. In this study, the authors use two concepts to characterize the economy: economic development (the process of increasing economic indicators (economic growth) without reducing social, environmental and other indicators) and economic performance (the static level of "current" economic development).

Corruption increases inequality and undermines citizens' trust in state institutions. This can lead to social protests, instability and conflict. If the state is fragile and corrupt, this is not just a theoretical problem. Imagine a country where officials make decisions in the interests of bribers, not citizens. This can lead to taxpayer money being wasted on ineffective projects, roads, schools, and hospitals deteriorating, and foreign companies ceasing to invest. All this worsens economic performance and quality of life.

Understanding the interconnection between corruption and state fragility will allow us to develop policies aimed at strengthening state institutions and improving citizens' trust in governance. Within the EU, countries cooperate on common issues, including fighting corruption and strengthening state institutions. Studying the experiences of various EU countries will also help identify successful methods of combating corruption and its applicability in other countries. Reducing corruption and strengthening state institutions helps create a more business-friendly environment. This attracts investment, promotes business development and increases countries' competitiveness.

Delia Ferreira Rubio, a recognized specialist in anti-corruption and transparency, emphasizes that combating corruption is crucial not only for improving economic metrics but also for ensuring national security and maintaining social stability. She emphasizes the importance of having reliable anti-corruption mechanisms and independent oversight bodies to effectively use state resources. Ferreira Rubio also notes that corruption undermines democratic foundations and supports populist candidates, further weakening democracy and increasing the risk of authoritarianism (Transparency International, 2024).

The article aims to study the complex relationship between corruption (measured by the Corruption Perceptions Index), state fragility (measured by the Fragile States Index (The Fund for Peace 2024a)) and economic performance (measured by GDP per capita in PPP).

A cluster analysis was selected to answer the research question about the impact of corruption and fragile states on the economic performance of the EU countries. This advanced analytical method classifies countries into groups with fundamentally different characteristics of corruption and public institutions. Clustering avoids averaging conclusions that do not consider differences between countries with different economic performance and political stability. Alternative approaches, such as linear regression analysis, could conceal these differences and lead to less precise conclusions. Cluster analysis thus provides the most appropriate and accurate tool to

identify the differentiated impact of corruption and state fragility on economic performance. The cluster analysis considers heterogeneity, i.e., significant differences between countries in levels of corruption in fragile states and economic performance. This method helps to avoid averaging problems that arise in linear regression approaches. The cluster analysis is also well suited to analyzing groups with different characteristics, as the EU countries differ greatly in their levels of economic performance and corruption, making it difficult to use common models for all countries. Clustering allows you to examine each group separately, making the findings more accurate. The comparison of effects is also well suited to cluster analysis. Clustering makes it possible to analyze how the same factors (e.g. corruption) may have different effects in more and less developed countries. This is particularly important for economic policy, as it allows for more targeted recommendations. Thus, the econometric approach based on cluster analysis is most appropriate, as it is better suited to the economic issue and allows for a more detailed examination of the differential impact of corruption and state fragility on economic performance of the EU countries.

2. Literature review

An important study on the interconnection between corruption and GDP growth was carried out by Mauro (1995), who found that the impact of corruption on GDP growth is largely indirect through its impact on investment, and the direct impact of corruption on growth is small.

Earlier, Rose-Ackerman (1999) found the mechanisms of the impact of corruption on state institutions, social stability and economic performance. Corruption often leads to the degradation of state institutions. When state officials use their positions for personal gain, it undermines citizens' trust in governance and state institutions. Corruption also leads to unfair distribution of resources and lack of transparency in decision-making, making state institutions less effective in carrying out their functions. Corruption can also cause dissatisfaction and negative reactions from citizens, especially those who suffer its consequences in the form of inequality, injustice and lack of opportunity. This can lead to social conflicts, protests and even political revolutions. Citizen dissatisfaction can also undermine the stability of state and its institutions. It has been found that corruption also negatively affects economic development since it creates an unfavourable environment for business and investment. Corruption increases the costs of business, distorts competition, reduces the investment climate and reduces the confidence of foreign investors. Moreover, corruption leads to misallocation of resources and slows down economic development.

Kaufmann et al. (1999) identified how higher levels of corruption, combined with ineffective governance, influence economic growth. They posited that corruption adversely affects economic growth and that this negative impact intensifies when the quality of public administration is subpar. Conversely, Houston (2007) contended that in nations characterized by low quality of governance, corruption often rises, suggesting that efforts to combat corruption should be focused selectively. Perhaps Meon and Sekkat made such conclusions because the economic models used in these two articles differ from each other.

Ehrlich and Lui (1999) and Mendez and Sepúlveda (2006) conducted analyses using panel data to explore the endogeneity of corruption across different nations. In their study involving 68 countries, Ehrlich and Lui (1999) posited that while corruption influences GDP levels, it does not impact GDP growth, and they characterized corruption as an exogenous factor. Mendes and Sepúlveda (2006) concluded that in "free" countries (as measured by Freedom House International's Political Rights and Civil Liberties Index), there is an inverse and nonlinear interconnection between corruption and GDP growth. In nations classified as "not free," the relationship between corruption and GDP growth lacks statistical significance.

Mo (2001) presented evidence indicating that corruption hampers economic development by obstructing the growth of human capital and eroding political stability. It has been established that a 1% increase in the level of corruption reduces GDP growth rates by 0.72%. Political instability accounts for 53% of the effect of corruption on economic growth. Corruption is most prevalent when there are bureaucratic delays and fragility in the

legislative and judicial systems. However, corruption, government regulation, bureaucratic delays, and the strength of legislative and judicial systems tend to reinforce each other, and multicollinearity prevents determining the degree of individual influence.

Meon and Sekkat (2005), using a neoclassical model of economic growth, found the direct influence of corruption on economic growth, considering the quality of public administration.

Collier (2007) found that the role of fragile states and corruption in impeding economic development is most clearly illustrated in the least developed countries, which he called the “bottom billion”. Many countries in the bottom billion are characterized by underdeveloped or ineffective state institutions. This can manifest itself in the form of a lack of strong legal systems, insufficient protection of property and contracts, and low levels of governance efficiency and transparency. The failure of the state to provide basic services typically results in low levels of human capital and social infrastructure, which is an obstacle to economic development. Corruption often flourishes in these countries due to low quality of institutions and insufficient control over power. Collier emphasized that corruption has a destructive impact on economic development because it discourages investors, reduces the efficiency of government spending, increases the costs of business and distorts market mechanisms. Moreover, corruption leads to inequality and lack of trust in society, which undermines social stability. Low level of quality of state institutions and widespread corruption may also hinder social infrastructure development and the creation of a business-friendly environment. This impedes access to markets, services and resources, which in turn limits opportunities for economic performance and development. Overall, state fragility and corruption severely constrain economic development in least-developed countries, creating negative cycles of poverty and underdevelopment. To overcome these challenges, it is necessary to strengthen the institutions of the law state, fight corruption and develop policies that promote economic development and inclusive growth.

Swaleheen and Stansel (2007) employed an econometric model that considers the relationships among corruption, GDP growth, and investment, incorporating economic freedom as a variable in their analysis. Their study, which utilized data from 60 nations, revealed that corruption hinders GDP growth in countries with low economic freedom. Conversely, in nations with high economic freedom, corruption can actually promote faster economic growth. These findings contradicted the generally accepted view that corruption leads to slower GDP growth. Swaleheen and Stansel (2007) believed that, other things being equal, corruption leads to a decrease in GDP growth rates when the choice of economic agents is sharply limited (i.e., with a low level of economic freedom); however, when people have more choices (that is when economic freedom is high), corruption promotes GDP growth by circumventing state regulations.

Acemoglu and Robinson (2012) studied the theory of institutional development, which explains why some countries are rich while others are poor and suffer from instability. They also put forward the thesis that a nation's prosperity or poverty depends on its political and economic institutions. Acemoglu and Robinson (2012) distinguished two types of institutions: inclusive and exclusive. Inclusive institutions are characterized by broad citizen participation in the political process, protection of property rights and the real possibility of individual and economic freedom. On the other hand, exclusionary institutions limit access to power and resources to a small elite, often leading to corruption, inequality and economic decline. Acemoglu and Robinson analyzed historical and contemporary examples from various countries and regions of the world to support their theory by examining how institutional factors shape economic performance. They found how the role of political revolutions, civil rights, property rights, taxation systems and other aspects of governance and law implementation contribute to economic development. Acemoglu and Robinson paid special attention to the thesis about the importance of the institutional structure for economic performance and development.

The key finding of the Mustapha (2014) study is that all three methods used (The Fixed Effect, the Random effect estimations, the pool OLS) on a panel data sample spanning from 2003 to 2011, revealed a significant and strong negative effect of corruption on GDP per capita. Other authors, Begu et al. (2019), also confirmed the close direct interconnection between the corruption perception index and GDP in Europe in 2017.

Song et al. (2021) established the theoretical framework that links economic growth to financial development and corruption. They note that while financial development is often seen as a catalyst for economic growth, corruption can undermine this relationship by distorting market mechanisms and eroding trust in institutions. To analyze the relationships among the three variables – corruption, economic growth, financial development, – the authors employ a panel data approach, utilizing a dataset encompassing 142 countries from 2002 to 2016. This methodology allows for a comprehensive examination of the effects of corruption and financial development on economic growth, controlling for various confounding factors such as governance quality, institutional frameworks, and macroeconomic stability. The study highlights that corruption has a detrimental effect on economic growth. The authors provide evidence that higher levels of corruption are associated with lower economic performance, as corrupt practices tend to divert resources away from productive uses and create inefficiencies in the economy.

Lucarelli et al. (2024) note one of the characteristics that distinguish the various countries in the Balkan region is the level of corruption, which many scholars have highlighted as a significant factor impacting the countries' economic growth. Both theoretical perspectives and empirical evidence suggest a negative relationship between corruption and economic development. The substantial social costs tied to corruption pose challenges in maintaining political, economic, and social stability, leading to increased corruption. Chaudhary and Paudel (2024) note that countries affected by high levels of corruption often face decreased investment, higher transaction costs, and diminished productivity, which obstruct economic growth.

The question arises: why do some EU countries perform better than others? To find an answer, we have explored how corruption and fragile states hinder economic performance in different countries. We divided them into two groups (those with greater challenges and those with fewer ones) and found that in countries with high corruption and low level of quality of public institutions, economic development is much more slowed down.

3. Research design and the sample

In the framework of this study, the corruption is measured by the Corruption Perceptions Index, fragile states – by the Fragile States Index, economic performance – by GDP per capita in PPP (in current prices).

The Corruption Perceptions Index (CPI) is compiled by Transparency International, an international non-governmental organization, to measure the level of perceptions of corruption among experts and business people on a hundred-point scale every year since 1995. The CPI is based on 11 different sources, which are numerical scores from corruption perception surveys of experts and business people interviewed by, among others, the Asian and African Development Banks, the World Bank and the American organization “Freedom House”. The minimum number of sources per country is 3. The index represents a score from 0 (maximum perceived corruption) to 100 (no perceived corruption), which is the average of the source indices.

In addition to the multi-layered essence of the association of European countries, additional difficulties arise due to the development of information technologies. In the new environment, corruption schemes are becoming global in scope, so the EU governing bodies have to address corruption not only within individual countries of the EU or within the EU as a whole but also at the global level.

Corruption can be defined as the exploitation of public office for personal benefit. It arises at the intersection of society's desire for stated inefficiencies and the results that would emerge under an entirely free economy. However, this intersection is unclear, as people's aspiration for economic freedom and its advantages often motivate them to bypass government regulations restricting lawful market activities. Therefore, both corruption and its economic impacts are influenced by the level of economic freedom accessible to market participants (Swaleheen & Stansel, 2007).

In turn, fragile states can be characterized by the Fragile States Index (formerly Failed States Index), which was developed by the American Fund for Peace and the American magazine "Foreign Policy" and was first published in 2005. "The Fragile States Index is based on a conflict assessment framework – known as "CAST" – that was developed by FFP nearly a quarter-century ago for assessing the vulnerability of states to collapse. The CAST framework was originally designed to measure this vulnerability and assess how it might affect projects in the field and continues to be used widely by policymakers, field practitioners, and local community networks. The methodology uses both qualitative and quantitative indicators, relies on public source data, and produces quantifiable results" (The Fund for Peace 2024a).

The analysis is based on 12 indicators of state “vulnerability” divided into three groups: social, economic and political. Social indicators: level of demographic pressure, migration of refugees, presence of discontented groups, emigration. Economic indicators: uneven economic development, level of economic instability. Political indicators: delegitimization and criminalization of state structures, quality of public services, human rights violations, influence of security forces, group and clan elites, interference of other states.

Experts assess the ability of five key institutions (political leadership, army, law enforcement, judiciary, civil services) to provide security. Open sources of information are analyzed, positive and negative scores on the indicators are calculated, and a final index is calculated on a scale from 0 (highest stability) to 10 (lowest stability). The evaluation is done using CAST, which utilizes three types of data: quantitative data, data for a content analysis and data for a qualitative review. Quantitative data: data from international statistical agencies are normalized and scaled. Data for content analysis: each of the 12 indicators is broken down into sub-indicators for which logical search phrases are applied to global media data. Between 45 and 50 million articles are analyzed annually. Data for a qualitative review: researchers-sociologists investigate each of the 178 countries, assessing the key events of the year. These data are triangulated to identify dynamic trends, and then the final indexes are calculated. The final index is designed for more in-depth analysis and planning, helping to identify problems and improve the resilience of each country.

To investigate the interconnection between corruption (measured by the Corruption Perceptions Index), fragile states (measured by the Fragile States Index) and economic performance (measured by GDP per capita in PPP), the authors use cluster analysis and regression analysis on a sample of 27 EU countries based on 2022 data. The study delves into the specific context of the EU countries, covering a wide range of more and less developed countries within one region. This makes it possible to identify how different levels of corruption and fragile states impact economic performance within a unique political and economic system.

The division of EU countries into two clusters based on corruption, state fragility and GDP per capita represents an original methodological approach. This division allows for a more comprehensive analysis and comparison of the interconnection between these indicators in different types (clusters) of countries.

4. Research results

The theoretical relationship between corruption, fragile states and economic performance is complex. The authors found that the “more fragile” the state, the higher the level of corruption and the lower values of GDP per capita. This hypothesis is also confirmed in two clusters of EU countries in the framework of the three above-mentioned indicators. These findings echoed other studies (Mauro & Yontcheva, 2017; Glaeser & Shleifer, 2017; Kaufmann & Kraay, 2018; Huang & Zhang, 2021), which found that corruption and low level of quality of public institutions either affected or were associated with low economic performance, especially in low-law-enforcement countries. The authors’ calculations are provided below, see Appendix A, Figures 1,2.

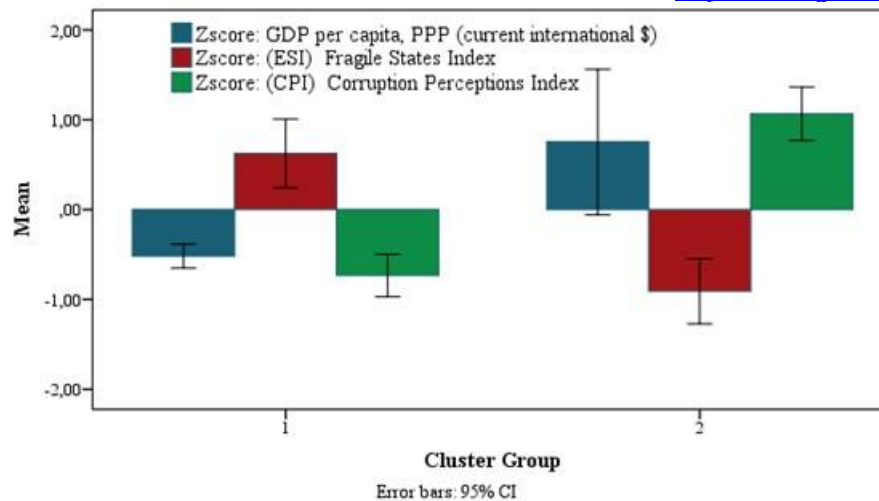


Figure 1. Average values of GDP per capita, the level of state fragility and the level of corruption perception in the 1st and 2nd cluster of the EU countries, 2022

Source: calculated by the authors using the IBM SPSS software based on the data

Cluster 1: GDP per capita is lower than the EU average, fragile states (insecurity) is above average and corruption perception is above average. Cluster 1 includes the following states: Bulgaria, Croatia, Cyprus, Czechia, Greece, Hungary, Italy, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia, Slovenia, Spain.

Cluster 2: GDP per capita is higher than the EU average, fragile states (insecurity) is below average and corruption perception is below average. The second cluster includes: Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Ireland, Luxembourg, Netherlands, Sweden.

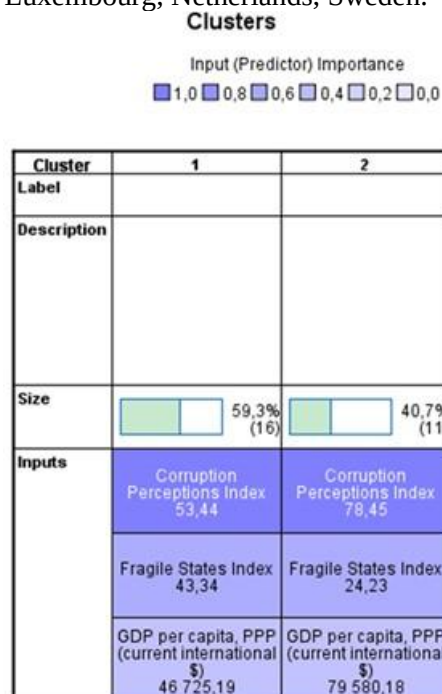


Figure 2. Cluster analysis of the EU countries (by GDP per capita, fragile states and corruption perception), 2022

Source: calculated by the authors using the IBM SPSS software on the basis of the Corruption Perceptions Index (EUROSTAT database 2024a), Fragile States Index 2022 (The Fund for Peace 2024b), GDP per capita (EUROSTAT database, 2024b).

Further analysis of the EU countries clustered according to fragile states and corruption perception shows differences in how these factors impact GDP per capita.

Cluster 1 (more fragile countries)

Fragile States Index: an increase in this index by one score causes a decrease in GDP per capita by 254 euros. The regression coefficient between the Fragile States Index and GDP per capita is -0.351 (p-value = 0.000), which indicates a statistically significant negative impact: the higher the Fragile States Index, the lower the GDP per capita (Fig. 3);

Corruption Perceptions Index: an increase in this index by one score (which means a decrease in the corruption perception level) causes an increase in GDP per capita by 388 euros. The regression coefficient is 0.367 (p-value = 0.000), indicating a statistically significant positive impact: the less corrupt a country is, the higher the GDP per capita (Fig. 4).

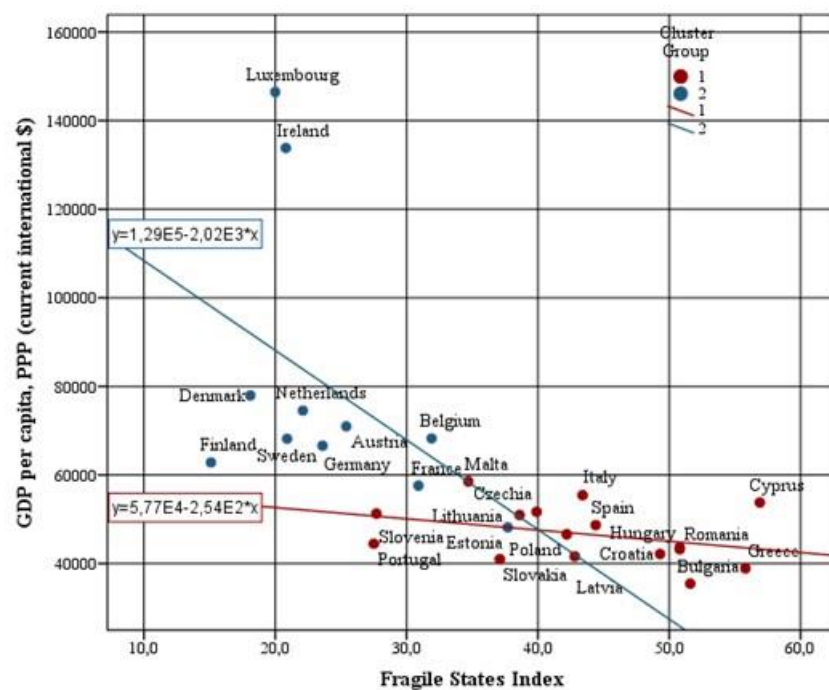


Figure 3. Regression analysis of the EU countries (GDP per capita – dependent variable, Fragile States Index – independent variable), 2022

Source: calculated by the authors using the IBM SPSS software on the basis of Fragile States Index 2022 (The Fund for Peace 2024b), GDP per capita (EUROSTAT database, 2024b).

Cluster 2 (less fragile and richer countries)

Fragile States Index: an increase in this index by one score causes a decrease in GDP per capita by 202 euros. The regression coefficient between the Fragile States Index and GDP per capita is -0.437 (p-value = 0.000), indicating an even bigger negative impact compared to the first cluster (Fig. 3);

-Corruption Perceptions Index: an increase in this index by one score causes a small increase in GDP per capita by 7.69 euros. The regression coefficient is 0.002 (p-value = 0.000), indicating that there is a statistically significant, but very small (close to zero) impact of corruption on GDP per capita within this cluster (Fig. 4).

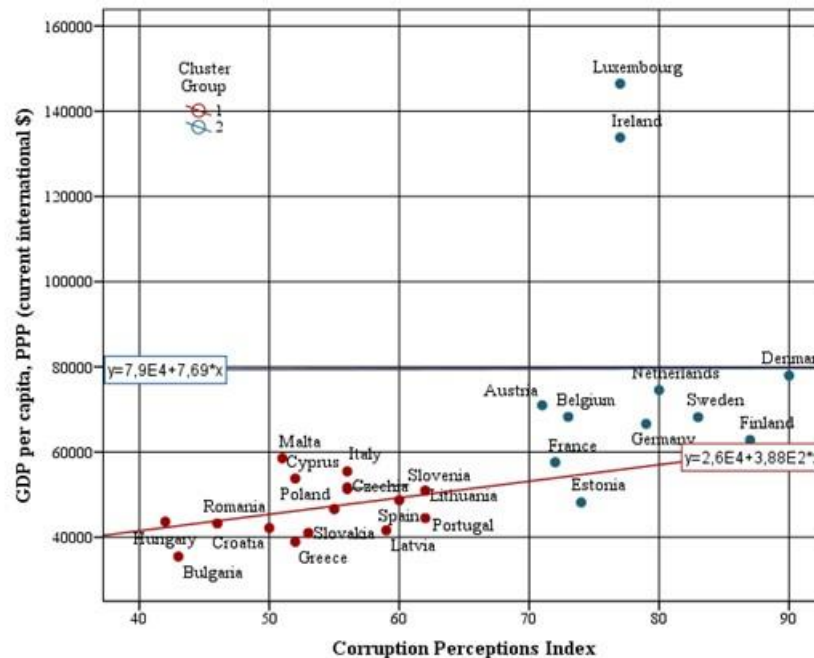


Figure 4. Regression analysis of the EU countries (GDP per capita – dependent variable, Corruption Perceptions Index – independent variable), 2022

Source: calculated by the authors using the IBM SPSS software on the basis of the Corruption Perceptions Index (EUROSTAT database 2024a), GDP per capita (EUROSTAT database, 2024b).

Thus, the results of data analysis show the following key issues: in countries with higher fragile states and higher corruption perception (Cluster 1), both indices demonstrate a significantly significant negative impact on GDP per capita; in countries with lower fragile states and lower corruption perception (Cluster 2), the impact of corruption perception on GDP per capita is very small (close to 0), but the impact of fragile states is much bigger compared to Cluster 1.

Other authors (Knack & Keefer, 2015; Rodrik, 2016; Dincer & Gunalp, 2018; Charron et al., 2020) also found that corruption significantly influences economic performance, including GDP, in the EU countries with poor governance (low level of quality of public institutions). In countries with strong public institutions, the impact of corruption is less pronounced. Thus, in countries with lower level of quality of public institutions, corruption has a significant negative impact on economic performance, while in more developed countries with strong public institutions, corruption has a lesser impact on economic performance. These studies support the hypothesis that in countries with high corruption and low level of quality of public institutions (the first cluster), corruption has a greater negative impact on economic performance, while in countries with strong public institutions (the second cluster), the impact of corruption is decreasing, but state fragility continues to have a significant impact on economic performance.

These results emphasize the importance of fighting corruption and strengthening state institutions in countries with higher fragile states, as improvements in these areas can lead to a big and statistically significant increase in GDP per capita. Whereas in more resilient and wealthier countries, more attention needs to be paid to prevent fragility of state, as even small changes in this sense can have a big impact on economic performance. As

information technology is rapidly evolving, corruption schemes have often become global in scope. Therefore, the EU faces the challenge of addressing corruption at three levels: the EU countries, the EU as a whole, and at the global world level with EU involvement.

5. Discussion and conclusions

The study “Institutions’ quality and economic performance in the EU: insights from a cluster analysis” investigates the complex interconnection between corruption as measured by the Corruption Perceptions Index, fragile states as measured by the Fragile States Index, and economic performance as measured by GDP per capita in PPP. While the study focuses on the EU countries, its findings can be useful to any country. Regardless of region, corruption and low level of quality of public institutions have a similar impact: they decrease economic performance, erode the quality of public services and prevent investment.

The authors examine how these factors affect the economies of EU countries, dividing them into two clusters: countries with a relatively low GDP per capita, high fragile states and high corruption (countries of Central, Eastern and Southern Europe); countries with a relatively high GDP per capita, low fragile states and low corruption (countries of Western and Northern Europe).

The study shows that GDP per capita decreases with increasing fragile states, demonstrating the negative impact of fragile states and corruption on economic performance. In the first cluster of countries, a decrease in corruption was associated with an increase in GDP per capita, while in the more developed and less corrupt countries of the second cluster the impact of corruption on GDP per capita was much smaller.

The authors conclude that corruption and fragile states are barriers to high economic performance in the EU countries, although they occur differently in the two types (clusters) of countries. In more developed countries, the negative impact of fragile states on economic performance is bigger, while in less developed countries, corruption has a bigger negative impact on economic performance. This finding is a key contribution to the scientific literature on this topic. These aspects make a significant breakthrough in understanding the complex interconnection between corruption, fragile states and economic performance, providing valuable insights for policymakers, economists and researchers concerned with governance, corruption and economic performance and development. The use of up-to-date data for 2022 adds value to the study by making it relevant to the current economic performance of the EU countries and anti-corruption policies. Thus, the findings of our study show that the fight against corruption and the strengthening of public institutions are not just long-term goals, but have real results. More transparent governance helps attract investment, create new jobs and improve citizens' quality of life.

For countries with high corruption, our results show that stronger anti-corruption activities can reduce financial losses and increase economic performance by improving the investment climate and stimulating competition. Countries with high corruption needed to introduce transparent procedures in public procurement, establish independent anti-corruption agencies and digitize public services to reduce the impact of human factor on the governance. Countries with low corruption but low level of quality of public institutions needed to strengthen the judicial system, increase public accountability and develop strategies for better governance.

Countries with low corruption and strong public institutions attract more investment, leading to employment growth, innovation and sustainable economic development. Business and international investors will be interested in results that show how fighting corruption and strengthening public institutions can improve the investment climate in the EU countries. Reducing corruption and increasing transparency make countries more attractive to foreign investment.

Our study underscores the importance of developing differentiated policies for countries with varying levels of corruption and fragile states. For less developed countries, anti-corruption activities should be a priority; for

more developed countries, strengthening public institutions to sustain economic performance should be a priority.

In countries where corruption remains high and public institutions quality low, continued current trends can lead to further economic lag, lower trust in government and increased social conflicts.

The results of our study apply not only to the EU countries, but also to other regions where corruption and fragile states hamper economic development. The recommendations developed could be adapted to countries with similar economic conditions. Corruption not only undermines economic performance but also increases social inequality, erodes trust in government and increases political instability, which can have serious social and economic consequences in the long run.

Appendix A. Results of cluster analysis in the IBM SPSS software

			Country	GDP per capita, PPP (current international \$)	Fragile States Index	Corruption Perceptions Index
Cluster Group 1	1	1	Bulgaria	35470	51,6	43
		2	Croatia	42171	49,3	50
		3	Cyprus	53786	56,9	52
		4	Czechia	51695	39,9	56
		5	Greece	38923	55,8	52
		6	Hungary	43660	50,8	42
		7	Italy	55442	43,4	56
		8	Latvia	41625	42,8	59
		9	Lithuania	50969	38,6	62
		10	Malta	58547	34,7	51
		11	Poland	46610	42,2	55
		12	Portugal	44484	27,5	62
		13	Romania	43240	50,8	46
		14	Slovakia	41013	37,1	53
		15	Slovenia	51282	27,7	56
		16	Spain	48686	44,4	60
Cluster Group 2	2	Total	N	16	16	16
		1	Austria	70975	25,4	71
		2	Belgium	68253	31,9	73
		3	Denmark	77953	18,1	90
		4	Estonia	48168	37,7	74
		5	Finland	62823	15,1	87
		6	France	57594	30,9	72
		7	Germany	66616	23,6	79
		8	Ireland	133823	20,8	77
		9	Luxembourg	146457	20,0	77
		10	Netherlands	74542	22,1	80
Total	N	Total	11	11	11	11
		Total	27	27	27	27

a. Limited to first 100 cases.

Source: calculated by the authors using the IBM SPSS software on the basis of the Corruption Perceptions Index (EUROSTAT database 2024a), Fragile States Index 2022 (The Fund for Peace 2024), GDP per capita (EUROSTAT database, 2024b).

References

- Acemoglu, D., & Robinson, J. A. 2012. *Why Nations Fail: The origins of power, prosperity and poverty*. Crown Currency, p. 544.
- Begu, L., Apostu, S., & Enache, A. 2019. Corruption perceptions index and economic development of the country. *Proceedings of the International Conference on Applied Statistics*, 1(1), 115-122. <https://doi.org/10.2478/icas-2019-0010>
- Cano, D.M., Cruz, L.M.H.S., Calcina-Cuevas, S.C., Pacco, P.P.M., Narvaez, H.A. 2023. Impact of Public Investment and its contribution to the economic development of the province of San Roman, Puno, 2007-2021. *Journal of High Andean Research*, 25(3), 171-178. <https://doi.org/10.18271/ria.2023.531>
- Charron, N., Dijkstra, L., & Lapuente, V. 2020. Measuring quality of government in EU regions across space and time. *Journal of Institutional Economics*, 16(2), 271-291.
- Chaudhary, A., & Paudel, R. C. 2024. Navigating economic growth challenges in developing countries: a case study of BIMSTEC. *Cogent Social Sciences*, 10(1). <https://doi.org/10.1080/23311886.2024.2431591>
- Glaeser, E. L., & Shleifer, A. 2017. The rise of the state: How state capacity and corruption affect economic development. *Journal of Economic Perspectives*, 31(3), 133-154.
- Collier, P. 2007. *The Bottom Billion: Why the Poorest Countries are Failing and What Can Be Done About It*. Oxford University Press
- Dincer, O. C., & Gunalp, B. 2018. Corruption, income inequality, and economic growth: Evidence from a cross-national study. *European Journal of Political Economy*, 55, 10-23.
- Ehrlich, I., & Lui, F. T. 1999. Bureaucratic corruption and endogenous economic growth. *Journal of Political Economy*, 107(S6), S270–S293. <https://doi.org/10.1086/250111>
- EUROSTAT database. 2024a. Corruption Perceptions Index 2022. Retrieved May 5, 2024, from https://ec.europa.eu/eurostat/web/products-datasets/-/sdg_16_50
- EUROSTAT database. 2024b. GDP per capita 2022. Retrieved May 7, 2024, from https://ec.europa.eu/eurostat/web/main/search/-/search/estatsearchportlet_WAR_estatsearchportlet_INSTANCE_bHVzuvn1SZ8J?text=GDP+per+capita
- Houston, D. A. 2007. Can Corruption Ever Improve an Economy? *Cato Journal*, 27(3), 325-342. <https://econpapers.repec.org/RePEc:cto:journl:v:27:y:2007:i:3:p:325-342>
- Huang, Y., & Zhang, X. 2021. The role of corruption in economic growth: Evidence from emerging markets. *Journal of Development Economics*, 151, 102627.
- Kaufmann, D., Kraay, A., & Zoido-Lobaton, P. 1999. *Governance Matters*. World Bank Working Paper No. 2196, 1-64. Retrieved April 10, 2024, from <https://ssrn.com/abstract=188568>
- Kaufmann, D., & Kraay, A. (2018). *Governance indicators: Where are we, and where should we be going?* World Bank Policy Research Working Paper Series, No. 4370.
- Knack, S., & Keefer, P. (2015). Institutions and economic performance: Cross-country evidence. *Journal of Development Economics*, 57(1), 44-68.
- Koeswayo, P. S., Handoyo, S., & Hasyir, D. A. 2024. Investigating the Relationship between Public Governance and the Corruption Perception Index. *Cogent Social Sciences*, 10(1). <https://doi.org/10.1080/23311886.2024.2342513>
- Krivins, A., Vilks, A., & Kipane, A. 2023. Corruption perception trends: European Union countries. *ACCESS Access to Science Business Innovation in Digital Economy*, 5(1), 58-67. [https://doi.org/10.46656/access.2024.5.1\(4\)](https://doi.org/10.46656/access.2024.5.1(4))
- Leitão, N. C. 2021. The effects of corruption, renewable energy, trade and CO2 emissions. *Economies*, 9(2), 62. <https://doi.org/10.3390/economies9020062>
- Lucarelli, S., Muço, K., & Valentini, E. 2024. Short Run and Long Run Effects of Corruption on Economic Growth: Evidence from Balkan Countries. *Economies*, 12(4), 86. <https://doi.org/10.3390/economies12040086>

- Mauro, P. 1995. Corruption and growth. *The Quarterly Journal of Economics*, 110(3), 681-712. <https://doi.org/10.2307/2946696>
- Méndez, F., & Sepúlveda, F. 2006. Corruption, growth and political regimes: Cross country evidence. *European Journal of Political Economy*, 22(1), 82-98. <https://doi.org/10.1016/j.ejpoleco.2005.04.005>
- Méon, P., & Sekkat, K. 2005. Does corruption grease or sand the wheels of growth? *Public Choice*, 122(1-2), 69-97. <https://doi.org/10.1007/s11127-005-3988-0>
- Mo, P. H. 2001. Corruption and economic growth. *Journal of Comparative Economics*, 29(1), 66-79. <https://doi.org/10.1006/jcec.2000.1703>
- Mauro, P., & Yontcheva, B. 2017. The impact of corruption on economic growth and development: A systematic review of recent evidence. *World Development*, 89, 203-217.
- Mustapha, N. 2014. The impact of corruption on GDP per capita. *Journal of Eastern European and Central Asian Research (JEECAR)*, 1(2). <https://doi.org/10.15549/jeecar.v1i2.76>
- Ocolisanu, A., Dobrota, G., Dobrota, D. 2022. The Effects of Public Investment on Sustainable Economic Growth: Empirical Evidence from Emerging Countries in Central and Eastern Europe. *Sustainability*, 14(14), 8721. <https://doi.org/10.3390/su14148721>
- Preepremmote, P. 2024. Impacts of foreign direct investment on economic development: the case of Thailand. *Montenegrin Journal of Economics*, 20(2). <https://doi.org/10.14254/1800-5845/2024.20-2.2>
- Rodrik, D. 2016. Institutions, integration, and geography: In search of the deep determinants of economic growth. *Journal of Economic Growth*, 21(4), 285-316.
- Rose-Ackerman, S. 2000. Corruption and government: causes, consequences, and reform. Cambridge University Press, p.284. <https://doi.org/10.1017/CBO9781139175098>
- Saksonova, S., & Kantāne, I. 2016. Mergers and acquisitions: Examples of best practice in Europe and Latvia. In *Contemporary Studies In Economic and Financial Analysis*, 98, 95-110. <https://doi.org/10.1108/s1569-375920160000098007>
- Saksonova, S., Konovalova, N., & Savchina, O. 2023. Effect of foreign direct investment on the economy of developing countries: Case of Latvia. *International Journal of Advanced and Applied Sciences*, 10(3), 26-36. <https://doi.org/10.21833/ijaas.2023.03.004>
- Song, C., Chang, C., & Gong, Q. 2021. Economic growth, corruption, and financial development: Global evidence. *Economic Modelling*, 94, 822-830. <https://doi.org/10.1016/j.econmod.2020.02.022>
- Swaleheen, M. U., & Stansel, D. 2007. Economic freedom, corruption, and growth. *Cato Journal*, 27(3), 343-358. <https://ideas.repec.org/a/cto/journl/v27y2007i3p343-358.html>
- Thach, N. N., & Ngoc, B. H. 2021. Impact of Economic Freedom on Corruption Revisited in ASEAN Countries: A Bayesian Hierarchical Mixed-Effects Analysis. *Economies*, 9(1), 3. <https://doi.org/10.3390/economies9010003>
- The Found for Peace. 2024a. The Fragile States Index. Methodology. Retrieved May 7, 2024, from <https://fragilestatesindex.org/methodology/>
- The Fund for Peace. 2024b. Fragile States Index 2022. Retrieved May 7, 2024, from <https://fragilestatesindex.org/indicators/e1/>
- Transparency International. (2024). What is corruption? Retrieved March 5, 2024, from <https://www.transparency.org/en/what-is-corruption>
- Tvaronavičienė, M., Šimelytė, A., Burinskienė, A., Raudeliūnienė, J., & Stirblytė, G. 2024. Impact of foreign direct investment on host country's development: a case study. *Business Management and Economics Engineering*, 22(01), 193-213. <https://doi.org/10.3846/bmee.2024.20495>
- Vyas-Doorgapersad, S. 2024. Overview of corruption in South African context. *Insights into Regional Development*, 6(4), 82-95. <https://doi.org/10.70132/m5427877235>

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