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Level of Corruption, Institutions and Economic Growth: Comparative Analysis from Developed and Developing Countries

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ABSTRACT

This study aims to analyze the factors influencing corruption levels across developed and developing countries, focusing on the roles of institutional quality, sustainable economic growth, income per capita, and human development in shaping corruption outcomes. The study also investigates the comparative differences in corruption levels between these two groups of countries. The analysis utilizes a quantitative approach based on secondary data from 27 European Union countries, covering the period from 2010 to 2022. Using a 13-year panel dataset of 351 observations, the study applies econometric models suited for panel data—specifically, fixed effects and random effects models. Findings reveal that institutional quality significantly reduces corruption levels (B=0.58), while human development shows a positive association with corruption (B=11.56). Conversely, income per capita exhibits a negative relationship with corruption (B=-0.98). The fixed effects model shows a high explanatory power (R-squared=77.61%) and confirms no multicollinearity (VIF=1.59) and homoscedasticity (p=0.6636). Results also highlight that developed countries experience higher corruption levels compared to developing countries (B=3.97).

Keywords: Corruption, Institutional Quality, Economic Growth, Income per Capita, Developed and Developing Countries.

JEL: D73, E02, F43,O11, O57.

1.INTRODUCTION

In this study, we examine the factors affecting corruption rates across the countries considered. Corruption generally refers to unethical or dishonest behavior, often involving the abuse of power for personal gain (Chan & Owusu, 2017). It encompasses arious activities where individuals, typically in positions of authority, engage in actions that violate integrity, transparency, and accountability principles. These activities include bribery, embezzlement, nepotism, fraud, and other forms of misconduct (Basabose, 2019). Economies afflicted by high levels of corruption, characterized by the misuse of power to achieve illegal, dishonest, or unfair goals, are often less capable of

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achieving prosperity than those with lower corruption levels (Hadžić, 2020).

Economic growth is a key objective for many nations, leading to higher living standards, poverty reduction, and improved quality of life (Amar & Pratama, 2020). However, economic growth does not automatically ensure equitable wealth distribution or address issues like income inequality and environmental sustainability, which are also important for a well-rounded assessment of a country's development (Grandville, 2017). Developed countries tend to have higher living standards, advanced infrastructure, and stable political systems, while developing countries face lower living standards, economic dependence on specific industries, and political and economic instability (Dang & Pheng, 2015). These categories are general and may not fully represent the complexities within each group (Mastini et al., 2021).

The objectives of this study include examining how variations in institutional quality affect corruption levels in developed and developing countries, assessing whether stronger institutions lead to lower corruption, and investigating how corruption impacts sustainable economic growth. We also explore the relationship between income levels and corruption, the impact of corruption on human development, and the comparative differences in corruption levels between developed and developing countries.

We study the influence of some driving variables for the growth and stabilization of the corruption rate in this paper, importance of the corruption rate in the economic advancement of any country, while the factors that have been selected to study corruption are: the quality of institutions (QINST), sustainable economic growth (SDEV), income per capita (GDPC), the human development index (HDI) and the last variable is a categorical variable (DINCOME) generated to distinguish between developed and still developing countries according to the criteria of the World Bank. In order to present the report between corruption, institutions and economic growth in a comparative analysis between developed countries and those still in development, the quantitative methodology based on secondary data was used, which includes the 27 countries of the European Union.

Since there are not many studies in this group of countries, this study will help to identify the factors that have influenced the volatility of corruption. The main purpose of this study is to determine the corruption trend in the selected countries.

The research is divided into five sections; introduction, a review of the literature from a theoretical perspective, a description of the methodology and an elaboration of the econometric model. The econometric results of the STATA program will be reported in the fourth part of paper, and conclusions and suggestions will be given at the end.

2. LITERATURE REVIEW

Corruption is widely recognized as a significant barrier to economic development. Ugur and Dasgupta (2011) found that institutional weakness, manifested in corruption, can negatively affect economic growth. Their meta-analysis of 72 empirical studies shows that corruption generally hampers GDP growth per capita, with indirect effects through public finance and human capital proving more damaging than direct effects. The study also found that mixed-income nations experience more significant negative effects from corruption compared to low-income countries.

Bitterhout and Simo-Kengne (2020) explored corruption's impact on economic development in the BRICS nations from 1996 to 2014. Their findings suggest a negative correlation between corruption and production growth under fixed effects models, though a positive impact was observed when heterogeneity and endogeneity were considered. This suggests that corruption might only start hindering growth after a certain threshold.

In this study Abubakar (2020) analyzed institutional quality and economic growth in Nigeria from 1979 to 2018. His findings indicate a mutual relationship between institutional quality and economic growth. The study supports the idea that effective governance can foster economic development, though foreign direct investment and local investment have a significant influence on growth.

Radulović (2020) examined institutional quality's impact on economic growth in Southeast Europe from 1996 to 2017. The study used the Worldwide Governance Indicators to measure institutional quality and GDP growth rate. It found a long-term relationship between institutional quality and economic growth in EU countries, while non-EU countries showed significant correlations with specific indicators like political stability and government effectiveness.

Dreher (2009) was focused on the relationship between corruption, the shadow economy, and institutional quality. They found that improvements in institutional quality reduce corruption and diminish the shadow economy, though the strength of this relationship depends on the effectiveness of institutional quality.

In a more recent study, Çiçen (2023) examined the relationship between institutional quality and corruption in Turkey, using data from 1984 to 2015. The study found no significant link between the two variables, although institutional quality in Turkey has shown considerable improvements over time.

According to Taylor et al. (2022), corruption in both political and bureaucratic systems negatively affects economic development by promoting income inequality, discouraging economic progress, and undermining public trust. Their System Dynamics model showed that increasing institutional quality could help mitigate corruption, but only through a national strategy that integrates anti-corruption measures.

Dang et al. (2023) analyzed corruption, institutional quality, and the shadow economy in 29 Asian countries. Their results showed that corruption positively affects the shadow economy, especially in countries with weak political institutions. The study also found that stronger economic institutions help reduce corruption's negative impacts.

The literature highlights that corruption is consistently identified as a significant barrier to economic growth, with its effects varying based on the quality of institutions in a given country. Weak institutions are more susceptible to corruption, which hinders public finance, reduces investment, and undermines human capital development. This results in slower economic growth and wider income inequality. The negative impact of corruption is often more pronounced in mixed-income and developing nations, where institutional frameworks may be less resilient to corruption, leading to more severe economic consequences. In some cases, corruption can have a less detrimental effect or may even act as a temporary facilitator in specific contexts, particularly in countries with low regulatory efficiency.

While institutional quality plays a crucial role in mitigating the effects of corruption, the relationship between the two is complex and context-dependent. In nations with stronger institutional frameworks, improvements in governance tend to reduce corruption and promote economic development. Countries with weaker political and economic institutions may struggle to reduce corruption, even with efforts to improve institutional quality. The link between corruption and economic development also highlights the importance of comprehensive anti-corruption strategies that address both political and bureaucratic systems. Literature emphasizes the need for robust, transparent institutions and national strategies to effectively combat corruption and foster sustainable growth.

3. METHODOLOGY

In order to present the report between corruption, institutions and economic growth in a comparative analysis between developed countries and those still in development, the quantitative methodology based on secondary data was used, which includes the 27 countries of the European Union. Statistical data for the realization of the research are secondary data which have been collected from the World Bank database and the Global Economy Database. The collected data covers the long-term period of 13 years, namely from 2010 to 2022, so the presentation of statistical data includes a total of 351 observations.

The paper also contains empirical analyses, which are carried out through the presentation of correlation analysis and various regressions. Since the analysis includes 27 countries and 13 years of the study period, then the data consists of panel data, so the econometric models executed include more advanced models for this type of data such as: fixed effects (FE) model and random effects (RE) model. Meanwhile, the Hausman test was used for model selection.

In a fixed-effects model, the influence of the independent variables remains constant for all individuals or units sampled. Thus, any changes in the dependent variable are attributable only to changes in the independent variables. This method is usually used when researchers want to discover causal relationships about a particular treatment or intervention. On the other hand, a random-effects model posits that the effects of the independent variables vary randomly across individuals or sample units. Therefore, variation in the dependent variable derives not only from variations in the independent variables, but also from unobserved factors between individuals. These models are often used when researchers want to generalize results to a larger population or when dealing with hierarchical or clustered data structures (Borenstein et al., 2007).

The Hausman test is used to choose between fixed effects and random effects models when comparing them. This statistical test assesses whether the estimated coefficients of the independent variables differ significantly between the two models. If the coefficients show significant differences, this indicates that the random effects model is a better fit for the data set. Conversely, if the coefficients do not change significantly, the fixed effects model is potentially a better choice (Amini et al., 2012).

This is the categorization of countries in developed and still developing countries according to the distribution of income per capita according to the classification of the World Bank, where countries with this indicator higher than 12,056 US dollars are considered developed countries and vice versa.

Table 1. *Description of research variables*

Variable	Abbreviations	Unit	Source	Expected Impact
Corruption	COR	Index, 100 = no Corruption	Global Economy	
Quality of Institutions	QINST	Index, 100 = High Quality	Global Economy	+
Sustainable economic growth	SDEV	%	World Bank Open Database	-
GDP per Capita	GDPC	US $	World Bank Open Database	-
Human Development Index	HDI	Index,	World Bank Open Database	-
D_IncomeC	DINCOME	Dummy (1 - Developed Countries)	Generated by Authors	+

Source: Author's systematization

The equation of the econometric model used:

$$COR = B0 + B1(QINST) + B2(SDEV) +$$

$$+ B3(GDPC) + B4\,(HDI) + (DINCOME) + Ui$$

Based on the equation presented above, the corruption variable (COR) is the dependent variable of the study, while the independent variables are the quality of institutions (QINST), sustainable economic growth (SDEV), income per capita (GDPC), the human development index (HDI) and the last variable is a categorical variable (DINCOME) generated to distinguish between developed and still developing countries according to the criteria of the World Bank. The error term (U) was presented at the end of the equation, which includes other explanatory variables in the corruption of the countries selected for research.

4. RESULTS AND FINDINGS

In this part, the results of the statistical analysis of the research are presented, initially the descriptive results according to the 27 countries of the European Union are presented.

When comparing corruption levels among European countries, Denmark stands out as the least corrupt with a score of 89.92, closely followed by Finland at 88.54. These nations demonstrate robust anti-corruption measures and strong institutional frameworks to maintain transparency and accountability. At the other end of the spectrum, Bulgaria ranks lowest with a corruption index of 40.92, indicating higher levels of perceived corruption within its institutions. Other countries with relatively lower scores include Romania, Greece, and Italy, suggesting ongoing challenges in combating corruption and reinforcing governance structures. In the middle range, countries like Croatia, the Czech Repuplic, and Hungary exhibit moderate levels of corruption, with index scores hovering around the 50-point mark. While they may not face the same severity of corruption as some of the lowest-ranking nations, there is still room for improvement in enhancing transparency

Table 2. Descriptive statistics by country

NR	Country	COR	QINST	SDEVP	GDPC	HDI
1	Croatia	46.85	73.94	1.75	14526.95	0.83
2	Republic of Cyprus	59.38	77.02	2.26	28744.05	0.87
3	Romania	43.85	66.13	2.90	11135.37	0.81
4	Malta	55.15	63.99	5.59	27729.35	0.87
5	Bulgaria	40.92	68.92	2.18	8957.49	0.79
6	Austria	74.69	72.18	-0.87	49377.18	0.91
7	Belgium	74.92	69.08	0.10	46079.99	0.93
8	The Czech Republic	52.62	72.56	-0.47	21721.99	0.89
9	Denmark	89.92	76.83	-1.55	60430.44	0.92
10	Estonia	70.15	76.75	1.01	20773.06	0.88
11	Finland	88.54	74.22	-1.49	48557.14	0.93
12	France	69.92	64.10	-0.69	40706.30	0.89
13	Germany	79.92	72.93	-0.16	45760.77	0.94
14	Greece	43.69	57.60	-4.29	20753.06	0.88
15	Hungary	47.77	66.57	0.20	15025.00	0.84
16	Ireland	73.85	78.80	5.45	69245.51	0.93
17	Italy	47.54	62.11	-2.81	34225.44	0.89
18	Latvia	54.00	69.85	-1.05	16083.69	0.85
19	Lithuania	57.54	74.16	1.68	17435.61	0.87
20	Luxembourg	81.54	75.22	0.90	116634.42	0.92
21	Netherlands	82.69	75.31	-1.68	51793.09	0.93
22	Poland	58.31	67.38	1.09	14609.25	0.87
23	Portugal	62.15	64.80	-1.59	22204.34	0.85
24	Slovakia	48.62	67.02	0.51	18481.78	0.85
25	Slovenia	59.69	64.02	-1.60	24640.37	0.91
26	Spain	60.23	67.81	-0.99	28946.42	0.89
27	Sweden	87.38	73.55	0.31	55815.70	0.93

Note: These data are presented as an average for the period 2010-2022

Source: Data calculated by the Author's using STATA software

and strengthening anti-corruption measures. Meanwhile, Western European nations such as Germany, France, and the Netherlands score relatively well on the index, reflecting their efforts to uphold integrity within public and private sectors.

Comparing the quality of institutions across European countries using the Quality of Institutions (QINST) index reveals a mixed landscape. Denmark emerges as a leader in institutional quality with a score of 76.83, reflecting its strong governance

structures and well-established institutional frameworks. Other Nordic countries like Sweden and Finland also demonstrate high institutional quality, contributing to their stable and transparent governance environments. Meanwhile, countries such as Greece, Italy, and Portugal lag behind with relatively lower QINST scores, indicating potential weaknesses in their institutional setups. These nations may face challenges related to bureaucracy, inefficiency, or lack of transparency, which could hinder their overall governance effectiveness. In the middle range, countries like Croatia, Bulgaria, and Poland exhibit moderate levels of institutional quality, with QINST scores hovering around the 70-point mark. While these nations may not match the institutional robustness of their Nordic counterparts, they still maintain relatively stable governance structures. Additionally, some Eastern European countries like Estonia and Lithuania demonstrate notable improvements in institutional quality, reflecting their efforts to modernize and strengthen governance systems.

Comparing GDP per capita across European countries reveals significant disparities in economic prosperity. Luxembourg stands out with the highest GDP per capita at $116,634.42. Ireland follows closely behind, benefitting from a strong presence of multinational corporations and a vibrant tech sector, resulting in a GDP per capita of $69,245.51. Nordic countries like Denmark, Sweden, and Finland also boast high GDP per capita figures, reflecting their advanced economies, strong social welfare systems, and high standards of living. At the other end of the spectrum, countries like Bulgaria, Hungary, and Romania exhibit much lower GDP per capita figures, highlighting economic challenges and disparities within Eastern Europe. These nations may face issues such as lower productivity, limited access to capital, and disparities in income distribution, which contribute to their relatively lower economic output per person.

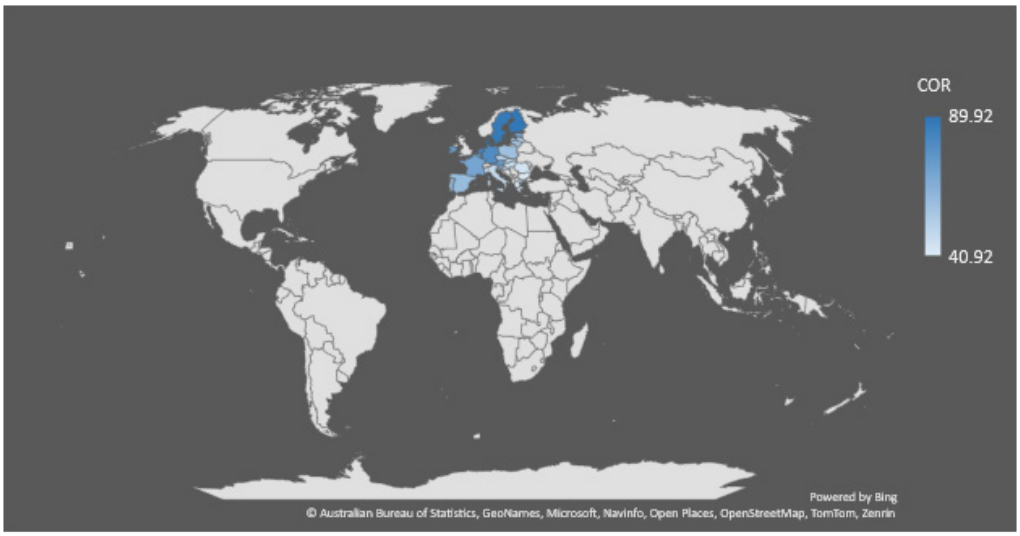

Figure 1. *Map of the level of corruption in the countries of the European Union*
Source: Data from Global Economy, processed by the Author's

Table 3. Correlation Analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) COR	1.000					
(2) QINST	0.565	1.000				
(3) SDEVP	-0.042	0.199	1.000			
(4) GDPC	-0.728	0.438	0.047	1.000		
(5) HDI	0.754	0.330	-0.064	0.658	1.000	
(6) D_Income	0.351	0.089	-0.071	0.274	0.506	1.000

Source: Data calculated by the Author's using STATA software

The table above presents the ratio of the variables according to the correlation coefficient, according to the results presented by this coefficient, the increase in institutional quality has an impact on the reduction of corruption in the countries of the European Union (r=0.56), the impact on the reduction of corruption also has an increase of the human development index (0.74). Meanwhile, two variables have an influence on the growth of corruption; sustainable economic growth (r=-0.042) and increase in income per capita (r=-0.72).

Table 4. Results of regression analysis

Variables	OLS	OLSR	FE	RE
QINST	0.823***	0.823***	0.588***	0.586***
	(9.52)	(8.84)	(5.86)	(5.66)
SDEVP	-0.321**	-0.321**	0.0586	-0.0102
	(-3.07)	(-2.84)	(1.18)	(-0.19)
GDPC	0.199***	0.199***	-0.980**	0.542*
	(7.88)	(3.68)	(-2.45)	(2.26)
HDI	154.7***	154.7***	11.56***	22.58*
	(10.57)	(3.63)	(4.28)	(2.33)
D_Income	0.705	0.705	3.977**	3.897**
	(0.34)	(0.25)	(3.16)	(2.86)
_cons	-138.5***	-138.5***	11.56	-2.891
	(-11.12)	(-4.40)	(1.22)	(-0.29)
N	351	351	351	351
R-Squared	0.7300	0.7339	0.7761	0.6752
Hausman Test	0.0001			
VIF	1.59			
Hettest	0.6636			

Source: Data calculated by the Author's using STATA software

Note: t-statistics in parentheses
Note: * p<0.05, ** p<0.01, *** p<0.001

The table above summarizes the results of the four econometric models executed, where for interpretation we will base the results of the model with fixed effects since the value of the Hausman Test (p=0.0001) shows that the results of this model are more accurate and reliable. The model with fixed effects also achieves a higher explainability with a coefficient of determination (R-squared=0.7761) 77.61%. In the presented data, the problem of multicollinearity is not shown (vif test=1.59), however, from testing the data with the Breusch Pagan Test (p=0.6636), the data are homoscedastic and the problem of heteroskedasticity is not shown either.

According to the results of the model with fixed effects, institutional quality has an impact on the improvement of the corruption index B=0.58. So, for every 1 increasing unit in the quality index of institutions, the corruption index increases by 0.58 on average. The coefficient is statistically significant at the 1% significance level (t=5.86).

Sustainable economic growth also has a positive impact on the corruption index (B=0.05), where for every 1% of sustainable economic growth, the corruption index increases by 0.05% on average. While per capita income has an impact on the growth of corruption (B= -0.98), where for every 1 dollar increase in per capita income, the corruption index decreases by 0.98 on average, which means that countries become more corrupt. This coefficient is statistically significant at the 5% significance level (t=-2.45).

The human development index has a positive impact on corruption (B=11.56), so for every 1 increasing unit in the human development index, the corruption index increases by 11.56 on average. This coefficient is statistically significant at the 1% significance level (t=4.28).

The last variable which is a categorical variable (D_Income) has a coefficient B=3.97, so developed countries have the highest corruption index above 3.97, compared to countries still developing. Since the corruption index is evaluated in the 100=no corruption method, then the interpretation means that developed countries are less corrupt compared to developing countries. This coefficient is statistically significant at the 5% significance level (t=3.16).

5. DISCUSSION

The results of this study are consistent with previous findings, particularly with Ugur and Dasgupta (2011), who argued that institutional weakness fosters corruption and hinders economic growth. The significant positive impact of institutional quality on the corruption index (B=0.58) reinforces their conclusion that stronger institutions help reduce corruption. Radulović (2020) found that institutional quality is essential for economic stability in Southeastern Europe, especially in EU countries. These findings contradict Çiçe (2023), who found no significant relationship between institutional quality and corruption in Turkey. The discrepancy may be due to regional differences or variations in governance reforms across countries.

The study's findings on the effect of economic growth on corruption (B=0.05) are consistent with Bitterhout and Simo-Kengne (2020), who noted that corruption can hinder growth only after a certain threshold. Dreher (2009) argued that corruption and the shadow economy tend to decrease when institutional quality improves, while this study suggests that economic growth alone does not automatically lead to lower levels of corruption. This highlights the complexity of the corruption-growth relationship, where

economic progress needs to be accompanied by strong institutional oversight to effectively curb corrupt practices.

In terms of per capita income, the study found that higher levels of income are associated with increased corruption (B=-0.98), which contradicts the assumption that richer countries experience less corruption due to better enforcement mechanisms. These findings contrast with Taylor et al. (2022), who argued that corruption exacerbates income inequality and economic inefficiency. The positive effect of the human development index on corruption (B=11.56) further challenges the assumption that social progress inherently reduces corruption. This contradicts the findings of Abubakar (2020), who found that institutional quality and governance improvements in Nigeria had a mutually reinforcing relationship with economic growth. The finding that developed countries have lower corruption compared to developing countries (B=3.97) is consistent with Dang et al. (2023), who found that corruption is higher in countries with weak political institutions. This reinforces the idea that institutional frameworks play a more crucial role than economic indicators alone in reducing corruption. While previous research emphasized the role of governance in mitigating corruption, the results of this study suggest that economic development must be accompanied by institutional reforms to effectively curb corruption and promote long-term economic stability.

6. CONCLUSIONS

The study's findings underscore the significant role of institutional quality in shaping corruption levels across both developed and developing nations. The positive impact of institutional quality on reducing corruption is evident from the correlation coefficient (r=0.56) and the fixed effects model results (B=0.58). As institutional standards improve, enforcement and accountability mechanisms become stronger, curbing opportunities for corrupt practices. Building robust institutions is a crucial element in corruption mitigation, particularly for developing countries striving to establish effective governance structures. Countries with high institutional quality tend to foster transparency and accountability, contributing to lower corruption rates and supporting healthier economic environments.

Economic growth, while generally viewed as beneficial, appears to have a complex relationship with corruption in the studied sample of EU countries. The results indicate a slight positive correlation between sustainable economic growth and corruption. This finding implies that economic growth, when unaccompanied by institutional safeguards, may inadvertently create opportunities for corruption, possibly due to increased financial flows and lucrative contracts in expanding markets. This outcome underscores the importance of embedding anti-corruption measures within economic policies, as growth alone does not guarantee reduced corruption and, in some cases, may even exacerbate it.

The study also highlights an intriguing relationship between income per capita and corruption. The inverse association (B=-0.98) suggests that higher per capita income correlates with lower corruption. Higher income levels facilitate opportunities for corruption through more significant resources or that countries with relatively low per capita income may exhibit transparency efforts to attract foreign investment. These findings suggest a need for nuanced, country-specific policies that focus on improving income distribution

and ensuring that wealth accumulation does not lead to unethical practices.

Human development, as measured by the Human Development Index (HDI), shows a strong positive relationship with corruption (B=11.56), indicating that countries with higher HDI levels may still experience elevated corruption. This result reflects that as countries develop, corruption does not necessarily decrease, and in some cases, becomes more sophisticated and less visible. It emphasizes the need for continuous monitoring and anti-corruption reforms even in nations with high human development achievements, ensuring that advancements in education, health, and living standards do not inadvertently shield or rationalize corrupt behaviors.

The categorical variable distinguishing these country classifications (B=3.97) reveals that developed countries tend to exhibit lower levels of corruption compared to developing ones, as per the 100=no corruption index scale. This disparity is likely due to established governance frameworks, more substantial legal systems, and consistent anti-corruption measures in developed nations. For developing countries, the findings suggest a strong incentive to focus on long-term institution building and fostering a culture of accountability to combat corruption effectively.

The study underscores the complex interplay between institutional quality, economic development, and corruption, emphasizing that while economic growth and human development are desirable goals, they must be pursued alongside robust institutional frameworks. Without such safeguards, both developed and developing nations risk exacerbating corruption issues. Future policy efforts should thus focus not only on economic and human development but also on building institutional capacities and enhancing transparency to prevent corruption at its roots. The study's findings align with the literature on governance and corruption, suggesting that reforms targeting institutional quality and transparency are crucial for sustainable growth and equitable development.

This study, while providing valuable insights into the relationship between institutional quality, economic development, and corruption, has several limitations. First, the analysis relies on secondary data sources, which may contain biases or inconsistent reporting across countries. The study focuses primarily on European Union countries, limiting the generalizability of the findings to other regions with different governance structures and economic conditions. The study examines macro-level relationships; it does not explore the micro-level mechanisms through which institutional reforms directly affect corruption. Future research could benefit from incorporating qualitative analyses, longitudinal case studies, or survey-based approaches to provide a more complete understanding of the causal dynamics.

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