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Does institutional quality promote economic growth in West Africa?

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Abstract. *This research examines the effect of institutional quality on economic growth in West Africa. Several dimensions of institutional quality are used: the composite index of institutional quality, three aggregate indicators (economic, political, and institutional governance), and the World Bank's six governance indicators. Using a sample of 15 countries, we estimate a panel data model using the Augmented Mean Group method, whose robustness is reconfirmed by the Driscoll-Kraay method over the period 2000-2023. We obtain three main results: first, the composite institutional quality index promotes economic growth. Second, economic, political, and institutional governance stimulate economic growth. Ultimately, the six governance indicators have a positive influence on economic growth. The results suggest a general improvement in the quality of institutions. In particular, these countries must fight corruption, have sound and robust regulations, strengthen the principles of the rule of law, have qualified administrative staff, maintain political stability, and promote democratic principles.*

Keywords: institutional quality, economic growth, AMG, Driscoll–Kraay, West Africa.

JEL Classification: C23, 011, 043, 047.

1. Introduction

Since Smith (1776), the debate on the origins and disparities of wealth between nations has remained a controversial topic. It is generally accepted that disparities in countries' development are largely linked to productivity, which determines their economic performance. It took observing the differences in per capita income between developed and developing countries for new ideas to emerge about the determinants of economic growth. As a result, the analysis of the determinants of economic growth has been the subject of numerous developments in economic literature.

On a theoretical level, following the failure of exogenous growth theory to explain stable growth at equilibrium, authors such as Romer (1986), Lucas (1988), and Barro (1990) developed new growth theories in the 1980s, known as endogenous growth theories. These authors suggest that economic growth results from a combination of technology, physical capital, public capital, and human capital. However, these models explain only part of the differences in growth and development around the world.

Thus, over the past two decades, the issue of economic growth has remained a major challenge for leaders in developing countries, given the inability of traditional theories to explain long-term growth and after years of macroeconomic adjustment. In order to catch up with developed countries in terms of economic growth and kick-start development, African countries in general, and the West African sub-region in particular, have embarked on a vast program of reforms. The aim is to create conditions conducive to the emergence of a market economy, to clean up the political and social landscape, and to establish the rules of good governance. However, the economic growth announced after the restoration of the major balances has not always been sufficient to drive development in the countries that have embarked on these adjustments.

This highlights the fact that quantitative factors alone are not sufficient to explain differences in per capita income between countries. As a result, since the 1990s, most research on development economics has focused on studying the contribution of other factors, particularly institutional quality. Since then, spurred on by the pioneering work of North (1993) and Williamson (2000), institutional economics has enjoyed a resurgence of interest. Economic literature reveals that the quality of institutions is one of the fundamental causes of differences in countries' growth rates (Acemoglu et al., 2001). This is because the effectiveness of any economic policy is highly dependent on the institutional and political environment in which it is implemented (Rodrik et al., 2004).

North (1990) defines institutions as the rules of the game in a society. They represent constraints that determine human interactions. High institutional quality reduces uncertainty and transaction costs in exchanges and, as a result, optimizes the expectations of economic agents in a country (Coase, 1937; North, 1990; Acemoglu and Robinson, 2010). In addition, better quality private property rights institutions stimulate investment and ensure better allocation of economic resources, which promotes economic growth (North and Thomas, 1973, and North, 1981). Thus, the key to economic growth is the development of quality institutions that promote economic and political competition (Acemoglu and Robinson, 2012). As such, economic institutions, due to their ability to coordinate economic activities and optimize the investment decisions of economic actors, determine long-term economic growth (Acemoglu et al., 2005).

Empirically, several studies have concluded that institutional quality has a positive effect on economic growth (Vianna and Mollick, 2018; Salman et al., 2019; Dirir, 2023; Hussen, 2023; Liko, 2024), while others have hypothesized a nonlinear relationship between institutional quality and economic growth (Thi Tran, 2021). A third group of authors highlights a bidirectional causality between institutional quality and economic growth (Law et al., 2013; Jaunky, 2013).

For West African countries, the debate concerning the effect of institutional quality on economic growth remains relevant. According to World Bank statistics, the average annual GDP growth rate in this region stood at 4.4% between 2000 and 2023. Estimated at 4.54% in 2000, the average annual growth rate reached 5.7% in 2010. It fell sharply to -0.43% in 2020, then rose in 2022 to 5.87% and fell again in 2023 to an average annual rate of 4.74%. In addition, West African countries have lower GDP growth compared to South Asian countries, which recorded an average growth of 5.3% between 2000 and 2023 (World Bank, 2024a). These statistics suggest that growth is volatile in the countries of the West African subregion. This situation is partly due to the impact of the global COVID-19 pandemic and also to the low level of institutional quality.

For example, the average institutional quality indices, measured by the World Bank's governance indicators, are recorded at -0.596 for control of corruption, -0.8 for government effectiveness, -0.54 for political stability and absence of violence, -0.649 for regulatory quality, -0.672 for rule of law, and -0.357 for citizen voice and accountability. The value of these indices ranges from -2.5 (very poor performance) to 2.5 (very good performance). This reflects the poor quality of institutions in West Africa, as the average values of the six governance indicators are negative (World Bank, 2024b).

In light of the above, what is the effect of institutional quality on economic growth in West Africa? The objective of this research is to empirically analyze the effect of institutional quality on economic growth in West Africa. The research hypothesis is that institutional quality stimulates economic growth in West Africa.

This research is part of recent literature on the effects of institutional quality. The contribution of this research to the literature is threefold. Unlike previous research, this study uses several institutional dimensions to comprehensively analyze the effect of institutional quality on economic growth in West Africa. First, a composite index of institutional quality is calculated using principal component analysis (PCA). Next, three aggregate indicators of institutional quality (economic, political, and institutional governance) and individual indicators of institutional quality are considered. This makes it possible to capture the overall effect and the differentiated effects of institutional quality. Finally, our methodological approach is robust, as this research uses estimation techniques that have the advantage of resolving several econometric problems such as cross-sectional dependence, heterogeneity of slopes, endogeneity, and non-stationarity of variables.

The rest of the article is organized as follows: Section 2 reviews the theoretical and empirical literature. Section 3 presents the stylized facts. Section 4 describes the methodology. Section 5 presents the results and their discussion.

2. Literature review

Economic literature shows that an economy's growth rate can be explained by its endowment of natural resources, investment, technology, and human capital (Ricardo, 1817; Solow, 1956; Romer, 1986; Lucas, 1988). However, in the 1990s, the literature was renewed with the introduction of institutions as a necessity in the process of economic growth (North, 1990; Williamson, 1994). In essence, this is the institutional explanation of economic growth within the framework of the New Institutional Economics.

Thus, the New Institutional Economics consists of a development of neoclassical tools for analyzing the role of institutions in the coordination and implementation of economic activities (North, 1993; Williamson, 2000). Unlike Solow's model (1956), which attributes a key role in growth to capital accumulation and technical progress, North (1991) emphasizes that these factors are not the causes of economic growth, but rather its manifestations.

An examination of economic theory shows that institutions can affect economic growth through a number of channels. The first is the transaction cost channel. According to the transaction cost theory of Coase (1937) and Williamson (1975), these costs are defined as the expenses associated with exchanges between economic agents, in addition to the prices of the goods themselves. These include the costs of negotiation, information gathering, and contract enforcement. According to North (1991), commercial exchanges develop if transaction costs are limited and uncertainty is reduced. Institutions are therefore designed to reduce uncertainty in exchanges and define transaction costs that are profitable for economic activity (North, 1991). Consequently, institutional quality through the reduction of transaction costs is essential for economic growth. The second is the property rights channel. A property rights system that provides effective protection and reduces uncertainty helps maximize the profitability of economic activity. In addition, private property allows individuals to make decisions that lead to economic efficiency (North, 1990).

Empirically, several studies have concluded that the quality of institutions has a positive effect on economic growth. For example, Liko (2024) applied fully modified ordinary least squares (FMOLS) and dynamic ordinary least squares (DOLS) methods to a sample of eight Balkan countries over the period 2000-2022. He found a positive and significant effect of institutional quality on economic growth. Ha et al. (2023) used the generalized method of moments (GMM) for their study on Vietnam between 2010 and 2020. The results of the study indicated the overall positive effect of institutional quality on total factor productivity. Thi Tran et al. (2021) investigated the impact of institutional quality on economic growth in 48 Asian countries from 2005 to 2018. The results of the estimates using quantile regression methods show that institutional quality promotes economic growth. Similarly, Uddin et al. (2023), considering a sample of 70 developing countries between 2002 and 2018, found, using the CS-ARDL (cross-sectional augmented autoregressive distributed lag) estimator, that the quality of institutions has a positive impact on economic development.

Regarding the effects of disaggregated institutional quality indicators, Dirir (2023) indicated, through the application of FMOLS and DOLS, that political stability, citizen voice and accountability have a favorable effect on the economic development of countries torn by war over the past 20 years. Misi Lopes et al. (2023) considered a sample of five emerging economies and three developed economies between 1996 and 2018 and found, using OLS, FE, and RE techniques, that regulatory quality has a positive and significant effect on economic growth. Destek et al. (2023), using cross-sectional data estimates for countries in the MENA region over the period 1996 to 2019, found, using the generalized system of moments method, that institutional quality, measured by control of corruption, political stability, the rule of law, and voice and accountability, contributes significantly to increased GDP growth. Jaunky (2013) analyzed the link between democracy and economic development for 28 sub-Saharan African countries over the period 1980-2005. Estimates made using the generalized method of moments in a VAR causality test panel system reveal the existence of a bidirectional causality between democracy and economic growth.

Regarding the literature on African countries, Hussen (2023), considering a sample of 31 countries in sub-Saharan Africa from 1991 to 2015, and using the Generalized Moments Method (GMM) technique, found that the quality of institutions has a positive and significant effect on economic growth. In particular, the results show that democratic and regulatory institutions promote economic growth. Bannor et al. (2023) analyze data from a sample of 39 African countries during the period 1996-2019 using the PMG method and find that indicators of political stability and government efficiency have a direct positive and significant impact on economic growth. Iheonu et al. (2017) use panel data from 13 West African countries covering the period 1996 to 2015. Data estimated by the double-least-squares method show that government efficiency has a positive and significant impact on countries' economic performance. Similarly, Atangana Ondoa (2013) applied the Generalized System Moments (GMM) method and found that political stability and the quality of regulation have a positive influence on economic growth in Africa. On the other hand, the control of corruption and the rule of law do not have a significant influence on economic growth.

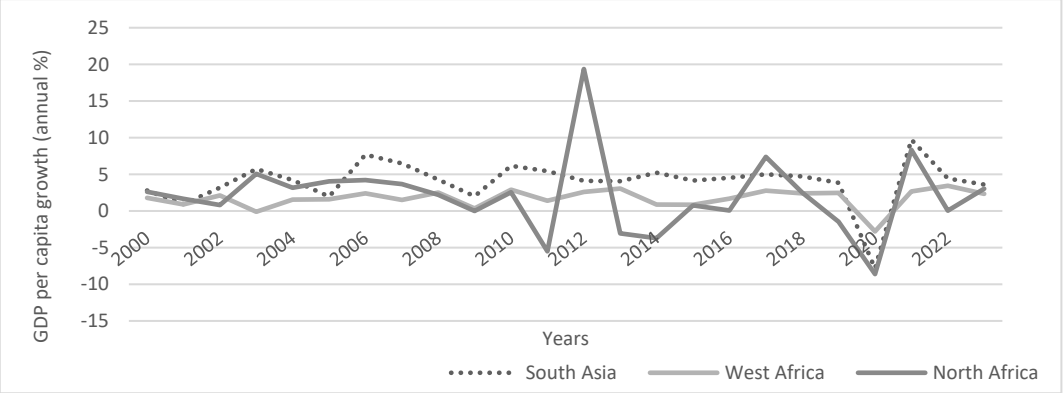
Most of these studies have analyzed either the effect of the composite index or the disaggregated indicators of institutional quality on economic growth. This research aims to fill a gap in the literature by analyzing not only the effect of the composite index and the three aggregate indicators (economic, political, and institutional governance), but also the six World Bank governance indicators on economic growth in West Africa.

3. Institutional Quality and Economic Growth in West Africa: Stylized Facts

Figure 1 shows the average growth rates of GDP per capita in different regions of Africa over the period 2000-2023. Average growth rates are generally very volatile, as can be seen from the significant fluctuations in Figure 1. For example, the years 2003, 2009, and 2020 are characterized by significant declines in GDP per capita growth rates in West Africa. In addition, the average annual GDP per capita growth rate from 2000 to 2023 is 1.70% in West Africa, compared with 1.80% in North Africa and 4% in South Asia. The explanatory

factors are, on the one hand, the effects of the subprime crisis and the volatility of commodity prices, and, on the other hand, the economic impact of the COVID-19 pandemic, as well as the insecurity caused by terrorism.

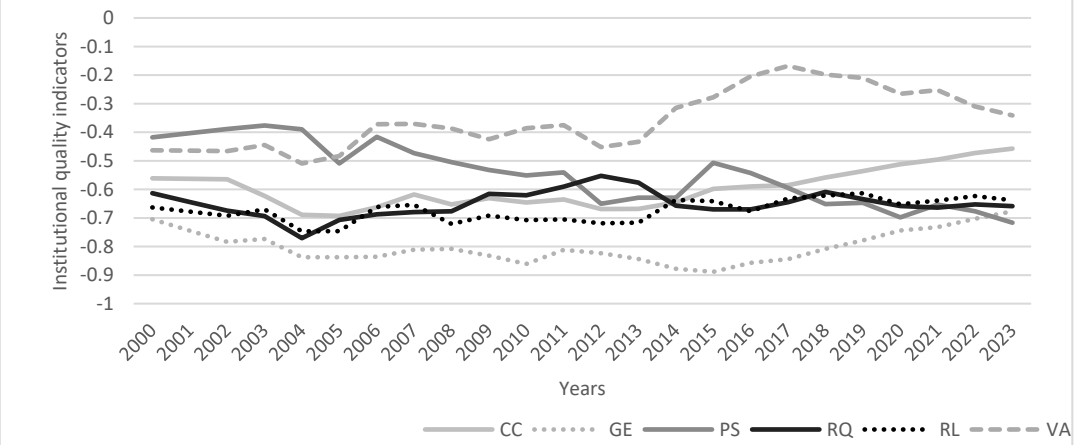
Figure 1. *Change in GDP per capita growth (% annual) in regions between 2000 and 2023*



Source: Authors

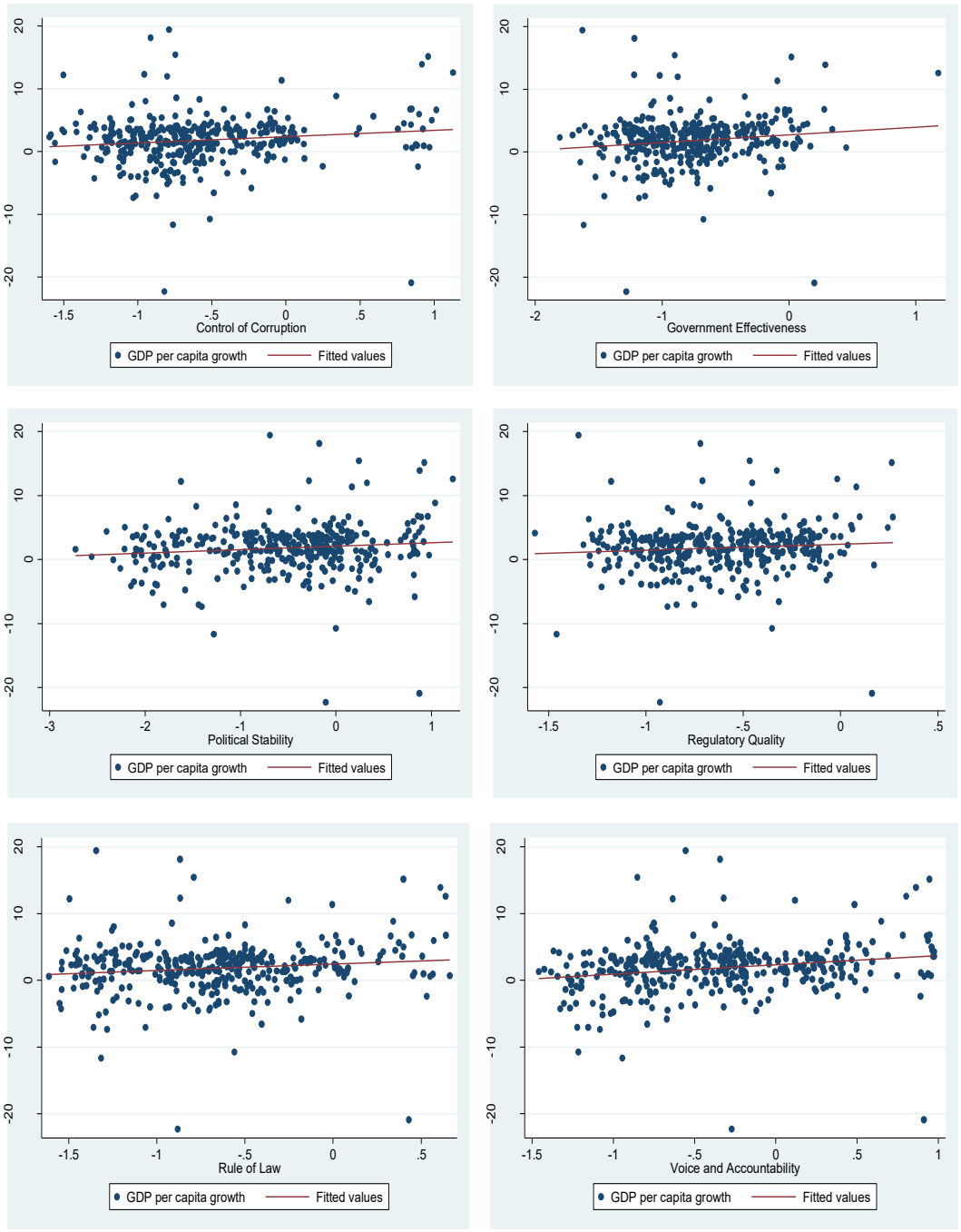
Economic growth in West African countries has taken place against a backdrop of poor institutional performance. Figure 2 shows the average change in institutional quality indicators in West Africa over the period 2000-2023. All indicators have negative values, and some show a downward trend, such as political stability and regulatory quality. This can be explained, on the one hand, by the numerous coups d'état that have taken place in recent years in the subregion, causing political instability. This is the case in Burkina Faso, Guinea, Mali, and Niger. On the other hand, this trend can be explained by the numerous terrorist activities that have shaken the West African subregion in recent years, creating insecurity and political instability. However, the other indicators have improved in recent years.

Figure 2. *Evolution of institutional quality indicators, 2000-2023*



CC: control of corruption; GE: governance effectiveness; PS: political stability; RQ: regulatory quality; RL: rule of law; VA: voice and accountability.
Source: Authors

Figure 3. *Correlation between institutional quality and economic growth*



This figure shows a positive relationship between per capita GDP growth and institutional quality indicators in West Africa. This means that West African countries with high institutional quality indicators are likely to have high economic growth rates. However, correlation analysis only illustrates the nature of the correlations and not the actual effect of institutional quality on economic growth. Therefore, it is relevant to conduct an empirical analysis.

4. Methodology and data

4.1. Specification of the econometric model

This research examines the effect of institutional quality on economic growth. To do so, a growth model derived from that of Mankiw et al. (1992) was specified, introducing institutional indicators into the regressors. In our model, we assume that institutional quality, as measured by indicators such as control of corruption, government effectiveness, political stability and absence of violence, regulatory quality, rule of law, and voice and accountability, plays a key role in economic growth by promoting investment and innovation. The basic model of Mankiw et al. (1992) is given by:

$$Y_{it} = \mathrm{F}(K_{it}, H_{it}, A_{it}, L_{it}) = K_{it}^{\alpha} H_{it}^{\beta} (A_{it} L_{it})^{1-\alpha-\beta} \quad (1)$$

Where Y represents production, K: physical capital stock, H: human capital stock, L: labor, and A: technological level. Thus, technological improvements are the result of high-quality institutions (North, 1990, 1991), which increase the efficiency of the productive sector and improve economic growth.

After transforming equation (1) into logarithmic form, we obtain:

$$\ln(y) = \ln A_0 + gt + \alpha/(1-\alpha)\ln(s_k) - \alpha/(1-\alpha)\ln(n+g+\delta) + \beta/(1-\alpha)\ln(h^*) \quad (2)$$

Where δ is the depreciation rate, L and A are assumed to grow exogenously at rates n and g, s_k is the share of income invested in physical capital, h^* is the equilibrium state of human capital toward which the economy converges, and the term A_0 reflects technology, natural resources, and institutional quality.

Thus, equation (2) can be rewritten in matrix form as follows:

$$y_{it} = \alpha + \beta IQ_{it} + \gamma X_{it} + \varepsilon_{it} \quad (3)$$

Where y_{it} is the per capita GDP growth rate; IQ_{it} is institutional quality, which can represent either the composite index, the three aggregate indicators, or the six World Bank governance indicators; X_{it} is a vector of control variables; ε_{it} is the error term; i represents a West African country (i = 1, 2, 3, ..., 15) and t denotes the year (t = 2000, 2001, 2002, ..., 2023). Institutional quality indicators include control of corruption, government effectiveness, political stability and absence of violence, regulatory quality, rule of law, and voice and accountability. Several empirical studies have established a positive and significant influence of institutional quality on economic growth (Atangana Ondoa, 2013;

Hussen, 2023; Liko, 2024). Therefore, we anticipate a positive and significant result for institutional quality on economic growth.

In line with recent literature on institutional quality (Acheampong et al., 2021; Diallo and Ouoba, 2023; Bayili and Maiga, 2025), our research first uses principal component analysis (PCA) to create the composite index of institutional quality. PCA is a statistical analysis that seeks to reduce a large amount of information to a limited number of major dimensions (called principal components). The results of the principal component analysis are presented in Table A5 in Appendix A. The criteria used to validate the PCA are those of Bartlett's sphericity test, where the overall KMO index is significant at the 1% threshold. Then, with reference to Diallo and Ouoba (2023) and Bayili and Maiga (2025), the three aggregate indicators of economic, political, and institutional governance are obtained as follows: economic governance is the simple average of two indicators of institutional quality, namely government effectiveness and regulatory quality. Political governance is the simple average of institutional quality indicators such as political stability and absence of violence, citizen voice, and accountability. Institutional governance is the simple average of indicators such as control of corruption and rule of law. Finally, to facilitate interpretation, all institutional quality indices are normalized using the min-max method. Thus, a value close to 0 implies poor performance, while a value close to 1 indicates very good institutional quality performance.

Based on the literature, the vector of control variables X includes potential determinants of economic growth: natural resources are measured by total rents from natural resources as a percentage of GDP. While some authors find a positive effect of natural resources on economic growth (Miamo and Achuo, 2021; Sharma and Paramati, 2022), others highlight a negative effect (Avom et al., 2022; Achuo, 2023). The sign is ambiguous. In line with Atangana Ondoa (2013), human capital is measured by the gross enrollment rate in primary education. This is a variable frequently used to quantify human capital (Hall and Jones, 1999). According to endogenous growth theory, human capital is considered to be the driver of economic growth (Lucas, 1988). We expect human capital to have a positive impact on economic growth. According to Achuo (2023), trade openness is measured by the sum of exports and imports as a percentage of gross domestic product. Trade liberalization promotes long-term economic growth through increased productivity (Iyke, 2016). It generates economies of scale and technology transfer. Several empirical studies show that trade liberalization has a positive effect on economic growth (Zahonogo, 2017; Manwa et al., 2019; Liko, 2024; Votsoma et al., 2024). We anticipate a positive result. Table A2 in Appendix A presents the definition and source of the different variables.

4.2. Data

Data on macroeconomic variables are taken from World Development Indicators (2024). Data on institutional quality variables are taken from Worldwide Governance Indicators (2024). The sample comprises 15 West African countries, listed in Table A1 in Appendix A. The study period covers 2000 to 2023. Descriptive statistics and the correlation matrix for the analysis variables are presented in Tables A3 and A4 in Appendix A. The correlations between the different variables are not high enough, suggesting an absence of multicollinearity. Furthermore, the correlation matrix indicates that economic growth

remains positively linked to the institutional quality index, human capital, trade openness, and natural resources. These positive relationships demonstrate the role of these variables in increasing economic growth.

4.3. Estimation technique

4.3.1. Cross-sectional dependency test

When analyzing panel data, it is essential to perform a cross-sectional dependence test due to the specific characteristics of the countries in the sample. We therefore apply three tests: the Pesaran CD test (2004), the Friedman test (1937), and the LM test adjusted for bias by Pesaran, Ullah, and Yamagata (2008). The null hypothesis of these tests is the absence of cross-sectional dependence. Table 1 presents the results of the three tests. They reveal the rejection of the null hypothesis. Consequently, West African countries are dependent on each other and thus share common factors.

Table 1. *Results of the cross-sectional dependence tests*

Tests	Statistics	p-value
Pesaran CD test	3.108	0.0019
Friedman test	45.957	0.0000
LM adjusted	3.964	0.0001

Source: Authors

4.3.2. Slope heterogeneity test

The slope heterogeneity test is essential when dealing with panel data (Aladejare and Nyiputen, 2023). The objective is to examine whether the slopes are homogeneous or different between the panel units. Therefore, this research applies the Pesaran and Yamagata test (2008). In this test, the null hypothesis is that the slope coefficients are homogeneous. Table 2 presents the results of the heterogeneity test. The results reject the null hypothesis that the slope coefficients are homogeneous.

Table 2. *Results of the slope heterogeneity test*

Test	Value	p-Value
Adj Delta test	16.084	0.000
Adj Delta test	18.572	0.000

Source: Authors

4.3.3. Unit root test

After confirming the heterogeneity of the slope and the existence of cross-sectional dependence between the units in the panel, it is essential to use second-generation unit root tests, which are appropriate for resolving the above-mentioned problems. We therefore apply Pesaran's (2007) stationarity test to verify the order of integration. A variable is stationary when the statistic is less than the critical value of the distribution at the 5% threshold. Otherwise, there is a unit root. The results in Table 3 show that variables such as per capita GDP growth, natural resource rents, government efficiency, and political stability are stationary in level. However, variables such as human capital, trade openness, institutional quality index, control of corruption, regulatory quality, rule of law, and citizen voice and accountability are stationary in first difference.

Table 3. *Results of the unit root test*

Variables	Level		First difference		Decision
	Intercept	Intercept and Trend	Intercept	Intercept and Trend	
GDP per capita growth	-4.044***	-4.443***			I (0)
Human capital	-1.598	-2.102	-3.799***	-4.200***	I (1)
Trade openness	-2.050	-2.424	-4.478***	-4.478***	I (1)
Natural resource	-2.441**	-2.708*			I (0)
Institutional quality index	-1.540	-2.399	-3.944***	-4.115***	I (1)
Control of Corruption	-1.908	-2.623	-4.403***	-4.327***	I (1)
Government Effectiveness	-2.409**	-3.220***			I (0)
Political stability	-2.560***	-2.832**			I (0)
Regulatory Quality	-1.509	-2.159	-4.628***	-4.745***	I (1)
Rule of Law	-1.681	-2.251	-4.392***	-4.553***	I (1)
Voice and Accountability	-1.927	-2.112	-4.151***	-4.237***	I (1)

Note. *** p<0.01, ** p<0.05, * p<0.1, respectively. The critical values of the CIPS test at 10%, 5% and 1% levels of significance are −2.14, −2.25, and -2.45 for constant, and -2.66, −2.76, and -2.96 for constant plus trend, respectively.
Source: Authors

4.3.4. Cointegration test

Given the cross-sectional dependence observed in West African countries, Westerlund's (2007) test is used to describe the long-term relationship between variables. This test is based on the second-generation error correction model and assumes the null hypothesis of no cointegration. The results are presented in Table 4. The results support the rejection of the null hypothesis of no cointegration and confirm the presence of a long-term relationship between the variables.

Table 4. *Cointegration test*

Statistic	Value	Z-value	P-value
Gt	-4.716***	-7.907	0.000
Ga	-13.584	1.694	0.955
Pt	-17.596***	-7.425	0.000
Pa	-12.199	0.760	0.776

Source: Authors

4.3.5. Long-RunEstimation

In practical terms, estimating our models poses two main problems: slope heterogeneity and cross-sectional dependence. To correct these problems, this research uses the Augmented Mean Group (AMG) estimator developed by Eberhardt and Teal (2010). The AMG technique takes into account structural breaks and shocks (Dahmani et al., 2022). In addition, the AMG method uses time indicator variables and treats the unobservable factor not as a nuisance but as a common dynamic process (Eberhardt, 2012). This technique also solves the problem of endogeneity between variables and the non-stationarity of certain variables (Zuo et al., 2022). The AMG estimator is carried out in two stages. The first stage is expressed by the following equation:

$$\Delta Y_{it} = \alpha_i + \beta_i \Delta X_{it} + \varphi_i \delta_t + \sum_{t=1}^{T} \theta_t D_t + \varepsilon_{it} \quad (4)$$

Where β_i denotes the slope, $\delta_t$the unobserved common factor, $\varphi_i$the heterogeneous factor loadings, D_t the annual dummy variables, and $\theta_t$the coefficients. In the second step, we

add a unit coefficient for each unit in the group to the group-specific regression specification, then calculate the mean of the group-specific parameters across the entire panel.

$$AMG= \frac{1}{N}\sum_{i=1}^{N}\widehat{\beta}_i \quad (5)$$

5. Presentation and discussion of results

5.1. Effect of institutional quality on economic growth in West Africa

First, we estimate the models relating to the effect of the composite institutional quality index and the three aggregate institutional quality indicators on economic growth. Second, we estimate the effect of the six disaggregated institutional quality indicators on economic growth in West Africa.

Overall, institutional quality has positive and statistically significant effects on economic growth at the 5% and 1% thresholds (Table 5). Thus, an improvement in the composite index of institutional quality, as well as the aggregate indicators of institutional quality, stimulates economic growth in West Africa. These results are consistent with the predictions of New Institutional Economics, which states that institutions are one of the determining factors of long-term economic growth (Williamson, 1975; North, 1990). Indeed, New Institutional Economics suggests that institutional quality encourages economic agents to invest and innovate, which increases productivity and, consequently, improves economic growth.

These results also indicate that economic growth is promoted by a high-quality institutional framework that creates an environment conducive to economic activity. Economic growth is thus stimulated by economic governance through respect for private property rights and contractual rights. For example, good economic institutions assure investors that they will be able to enjoy the fruits of their investments, which encourages them to increase their investments and allocate the resources necessary to stimulate economic growth. This result is consistent with the findings of Lassoued et al. (2019), according to which economic governance has an indirect positive effect on economic growth. Second, political governance supports economic growth because it improves the credibility of states and reduces uncertainty, which encourages economic activity. Good political governance ensures sound resource management, macroeconomic stability, and the implementation of growth policies. Finally, institutional governance is a factor in economic growth in that it protects investments and allows economic agents to optimize their expectations. These results are expected and confirm those of Thi Tran et al. (2021) and Uddin et al. (2023).

With regard to other exogenous variables, the results in Table 5 reveal a positive and significant effect of human capital on economic growth. The positive effects of human capital are stable across all estimates. Thus, a 1% improvement in human capital stimulates GDP per capita growth by 0.0658 to 0.108%. This result is expected and consistent with endogenous growth theory, which states that the accumulation of human capital improves

the quality of work and stimulates research and development, thereby increasing productivity and, consequently, positively influencing economic growth. This result is consistent with the conclusions of Ouoba (202) and Destek et al. (2023).

The coefficients relating to the trade openness variable are positive and statistically significant at the 1% threshold. Thus, a 1% increase in trade openness leads to an increase in the GDP per capita growth rate from 4.218% to 5.661%. Trade openness creates more opportunities for local economies in terms of product variety, market size, and economies of scale. In addition, trade openness allows West African economies to benefit from technology transfer, which boosts productivity. Thus, economic growth in the West African subregion is driven in part by exports of natural resources (African Development Bank, 2025). This result corroborates the findings of Atangana Ondoa (2013) and Votsoma et al. (2024).

Table 5. *Effects of institutional quality on economic growth in West Africa*

Dependent variable:	**GDP per capita growth (annual %)**			
Estimation method:	**Augmented Mean Group (AMG)**			
Explanatory variables	**Institutional quality index**	**Economic governance index**	**Political governance index**	**Institutional governance index**
Human capital	0.0658**	0.108***	0.0782**	0.0970***
	(0.0286)	(0.0389)	(0.0392)	(0.0341)
Trade openness (log)	5.494***	4.218***	5.661***	4.371**
	(1.766)	(1.518)	(1.652)	(1.716)
Total natural resources rents	-0.0868	-0.0425	-0.0864	0.0108
	(0.146)	(0.0991)	(0.0921)	(0.0985)
Institutional quality index	15.02**			
	(6.568)			
Economic governance index		8.640**		
		(3.472)		
Political governance index			15.54***	
			(5.518)	
Institutional governance index				9.296**
				(4.275)
Constant	-36.78***	-29.87***	-39.68***	-30.36***
	(11.15)	(7.617)	(12.53)	(7.867)
Number of observations	360	360	360	360
Number of groups	15	15	15	15
Wald chi2 (P-value)	19.98 (0.0005)	38.28 (0.0000)	17.89 (0.0013)	63.80 (0.0000)

Source: Authors

Table 6 presents the results of the analysis in terms of disaggregated institutional quality indicators. These results show that the coefficient of the institutional quality variable controlling for corruption is positive and statistically significant at the 10% threshold. A 1% increase in corruption control leads to a 6.748% improvement in the GDP per capita growth rate. This result implies that economic growth in these countries is stimulated by the fight against corruption. Indeed, low levels of corruption reduce uncertainty and transaction costs associated with economic activities, which encourages investment. The fight against corruption helps to clean up management and ensures the optimal allocation of financial resources to fund productive investments. These results corroborate those of Atangana Ondoa (2013) and Destek et al. (2023), who found that corruption control promotes economic growth.

The results of the estimates indicate that economic growth is influenced by the quality of institutions as measured by government efficiency. The coefficient of this institutional variable is positive and statistically significant at the 5% threshold. Thus, a 1% improvement in government efficiency translates into a 9.138% increase in the GDP per capita growth rate. Indeed, economic growth increases when government officials are competent, public services are of high quality, and public authorities fulfill their commitments. Our results are consistent with the findings of Mtiraoui (2020), according to which effective governance has a positive impact on economic growth.

The results in Table 6 indicate that political stability stimulates economic growth. This variable has a positive and statistically significant effect on economic growth at the 1% level. A 1% improvement in political stability increases the GDP per capita growth rate by 11.82%. This result shows that economic growth is important in politically stable countries. Indeed, political stability creates a predictable and secure environment, which encourages investors to invest in long-term projects. For example, a politically stable country has easy access to the financing necessary for the development of economic activities. Political stability promotes competitiveness through investment in worker training. This result is in line with those of Atangana Ondoa (2013) and Dirir (2023).

The results show that the coefficient associated with the quality indicator of regulation is positive and statistically significant at the 10% level. A 1% increase in the quality of regulation leads to a 5.878% increase in the GDP per capita growth rate. Indeed, the ability of governments to develop and implement good regulatory policies conducive to private sector development allows for the development of private initiatives that stimulate economic growth. This result confirms that of Atangana Ondoa (2013) and Dirir (2023).

The rule of law has a positive and statistically significant effect on economic growth at the 10% threshold. Thus, a 1% improvement in the rule of law translates into an 8.208% increase in the GDP per capita growth rate. These results show that economic growth is linked to the principles of the rule of law. Indeed, when citizens have confidence in the laws of society and are committed to respecting them, and above all, when the jurisdiction of the judiciary is established, economic agents are willing to invest, innovate, and produce, which are essential factors for long-term economic growth.

The citizen voice and responsibility variable has a positive and statistically significant effect on economic growth at the 5% threshold. A 1% improvement in democratic principles is associated with a 10.08% increase in economic growth. Indeed, countries with democratic regimes have high growth rates. Democracy improves the credibility of states through the separation of powers, which promotes private investment. It enables citizen participation in the formulation of development programs, which enhances economic performance. This finding is consistent with the findings of Adika (2020), who found that democracy is one of the necessary prerequisites for promoting economic growth in sub-Saharan Africa.

Table 6. *Effects of Institutional Quality on Economic Growth in West Africa*

Dependent variable:	GDP per capita growth (annual %)					
Estimation method:	Augmented Mean Group (AMG)					
Explanatory variables	**CC**	**GE**	**PS**	**RQ**	**RL**	**VA**
Human capital	0.104*** (0.0337)	0.0864** (0.0392)	0.0809** (0.0396)	0.129*** (0.0439)	0.0571 (0.0354)	0.0773** (0.0356)
Trade openness (log)	5.160*** (1.907)	4.508*** (1.304)	5.120*** (1.358)	3.750** (1.581)	4.787*** (1.269)	5.697*** (1.969)
Total natural resources rents	-0.0430 (0.109)	-0.0151 (0.0980)	-0.0981 (0.0975)	-0.121 (0.115)	-0.0828 (0.163)	-0.0793 (0.112)
Control of corruption (CC)	6.748* (4.039)					
Government effectiveness (GE)		9.138** (3.884)				
Political stability (PS)			11.82*** (3.747)			
Quality of regulation (RQ)				5.878* (3.246)		
Rule of law (RL)					8.208* (4.270)	
Voice and accountability (VA)						10.08** (3.982)
Constant	-33.96*** (11.21)	-28.52*** (5.532)	-35.43*** (8.951)	-28.38*** (8.183)	-27.70*** (5.978)	-34.19*** (8.775)
Number of observations	360	360	360	360	360	360
Number of groups	15	15	15	15	15	15
Wald chi2 (P-value)	29.00 (0.0000)	55.58 (0.0000)	25.21 (0.0000)	23.04 (0.0001)	45.03 ((0.0000)	43.37 (0.0000)

Source: Authors

5.2. Analysis of the robustness of the results

In order to ensure the robustness of our results, we change our estimation technique. Thus, the technique of Driscoll and Kraay proposed by Driscoll and Kraay (1998) was used. This method is robust for addressing issues of cross-sectional dependence, heteroscedasticity, endogeneity, and serial correlation (Aladejare and Nyiputen, 2023; Diallo and Ouoba, 2024). Table 7 presents the results of the Driscoll and Kraay (1998) estimate. Subsequently, this research uses GDP per capita expressed in constant prices (PPP, 2021 US dollars) as an alternative measure of economic growth. This indicator has been widely used in the literature to measure economic growth (Henry, 2019; Achuo, 2023; Mahran, 2023). The results show the stability of the coefficients of the base model. Thus, all disaggregated institutional-quality indicators still have a positive and significant influence on economic growth. Similarly, human capital and trade openness continue to have a positive and significant impact on economic growth. The results corroborate those of the basic model in terms of signs and significance. In summary, our baseline results are therefore robust.

Table 7. *Results of the robustness analyses*

Dependent variable:	GDP per capita (log)					
Estimation method:	Driscoll and Kraay (1998)					
Variables	**CC**	**GE**	**PS**	**RQ**	**RL**	**VA**
Human capital	0.00469*** (0.000839)	0.00523*** (0.000727)	0.00386*** (0.00129)	0.00561*** (0.000784)	0.00472*** (0.000777)	0.00400*** (0.00110)
Trade openness (log)	0.377*** (0.0749)	0.304*** (0.0739)	0.440*** (0.0872)	0.357*** (0.0672)	0.408*** (0.0841)	0.467*** (0.0671)

Dependent variable:	GDP per capita (log)					
Estimation method:	Driscoll and Kraay (1998)					
Variables	**CC**	**GE**	**PS**	**RQ**	**RL**	**VA**
Total natural resources rents	0.00274 (0.00302)	0.00635** (0.00274)	0.00287 (0.00378)	0.00625** (0.00284)	0.00405 (0.00307)	0.00262 (0.00378)
Control of corruption (CC)	0.624*** (0.124)					
Government effectiveness (GE)		1.147*** (0.180)				
Political stability (PS)			0.349** (0.168)			
Quality of regulation (RQ)				0.665*** (0.102)		
Rule of law (RL)					0.427** (0.184)	
Voice and accountability (VA)						0.377** (0.150)
Constant	5.849*** (0.320)	5.890*** (0.278)	5.744*** (0.387)	5.699*** (0.256)	5.761*** (0.314)	5.614*** (0.291)
R2	0.300	0.351	0.268	0.304	0.278	0.277
Fisher test statistic (P-value)	566.65 (0.0000)	158.09 (0.0000)	138.87 (0.0000)	275.42 (0.0000)	206.73 (0.0000)	141.72 (0.0000)
Number of observations	360	360	360	360	360	360
Number of countries	15	15	15	15	15	15

Source: Authors

6. Conclusion and policy implications

This research examined the effect of institutional quality on economic growth using a sample of 15 West African countries from 2000 to 2023. For empirical application, we used several dimensions of institutional quality: the composite index of institutional quality, the aggregate indicators of economic, political, and institutional governance, and the six World Bank governance indicators. The empirical strategy is the Augmented Mean Group (AMG) method on panel data.

Three main findings emerge:

- First, the overall institutional quality index drives economic growth.
- Second, the three aggregate indicators of economic, political, and institutional governance have a positive influence on economic growth.
- Third, each of the World Bank's six governance indicators drives economic growth.

Based on these results, we suggest that West African countries build strong and credible institutions. In particular, institutions with exceptional power to better fight corruption, put in place sound policies and strong regulations that are favorable to the private sector. These countries must also promote freedom of association and freedom of the press, and strengthen political stability through transparency and participation. Finally, they must strengthen the efficiency of public administration through competent civil servants, the provision of quality public services, and also respect the principles of the rule of law.

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Appendix A

Table A 1. *List of countries*

1. Benin	6. Ghana	11. Niger
2. Burkina Faso	7. Guinea	12. Nigeria
3. Cape Verde	8. Guinea-Bissau	13. Senegal
4. Ivory Coast	9. Mali	14. Sierra Leone
5. Gambia	10. Mauritania	15. Togo

Source: Authors

Table A2. *Variables, definitions, and sources*

Variables	Definition	Source
Economic growth	Gross Domestic Product (GDP) per capita growth (annual %)	WDI (2024)
Human capital	Gross primary school enrolment	WDI (2024)
Trade openness	The sum of exports and imports (% of GDP)	WDI (2024)
Total natural resources rents	Sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents.	WDI (2024)
Control of corruption	Reflects perceptions of the extent to which public power is exercised for private gain.	WGI (2024)
Government effectiveness	Reflects perceptions of the quality of public services, civil service, and the degree of its independence from political pressures.	WGI (2024)
Political stability and absence of violence	Measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism.	WGI (2024)
Quality of regulation	Reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.	WGI (2024)
Rule of law	Reflects perceptions of the extent to which agents have confidence in and abide by the rules of society.	WGI (2024)
Voice and accountability	Reflect perceptions of the extent to which a country's citizens can participate in selecting their government, as well as freedom of speech and association, and an independent media.	WGI (2024)
Institutional quality		Author's calculations

Source: Authors

Table A3. *Descriptive statistics*

Variables	Obs	Mean	Std. Dev.	Min	Max
GDP per capita growth	360	1.810	3.975	-22.313	19,4307
Institutional quality index	360	0.386	0.204	0	1
Economic governance index	360	0.416	0.177	0	1
Political governance index	360	0.499	0.217	0	1
Institutional governance index	360	0.389	0.207	0	1
Control of corruption	360	0.373	0.196	0	1
Government effectiveness	360	0.350	0.148	0	1
Political stability	360	0.558	0.207	0	1
Quality of regulation	360	0.520	0.194	0	1
Rule of law	360	0.426	0.224	0	1
Voice and accountability	360	0.454	0.242	0	1
Human capital	360	90.001	20.078	31.847	156.802
Trade openness	360	4.007	0.355	2.794	4.769
Total natural resources rents	360	9.731	6.777	1.972	49.206

Source: Authors

Table A4. *Correlation matrix*

	GDP per capita growth	Institutional quality index	Human capital	Trade openness	Total natural resources rents
GDP per capita growth	1				
Institutional quality index	0,154	1			
Human capital	0,125	0,111	1		
Trade openness	0,136	0,358	0,246	1	
Total natural resources rents	0,140	0,010	0,200	0,332	1

Source: Authors

Table A5: *Results of the principal component analysis (PCA)*

Component	Eigenvalue	Proportion	Cumulative			
1	4.6659	0.7777	0.7777			
2	0.5756	0.0959	0.8736			
3	0.3411	0.0568	0.9304			
4	0.1765	0.0294	0.9599			
5	0.1427	0.0238	0.9836			
6	0.0981	0.0164	1			
Indicators	CC	GE	PS	RQ	RL	VA
KMO Index	0.9231	0.9096	0.9290	0.9109	0.8676	0.9365
Bartlett test	Statistics of χ2 (p-value)			Average KMO index		
	2169.190 (0.000)			0.909		

Source: Authors