“Institutional quality and economic growth in resource-rich countries: The case of Azerbaijan”

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INSTITUTIONAL QUALITY AND ECONOMIC GROWTH IN RESOURCE-RICH COUNTRIES: THE CASE OF AZERBAIJAN

Abstract

Studying the institution's development process and its influence on economic results in countries rich in natural resources and whose export is mainly connected with the sale of natural resources can give new ideas for institutional theory. The purpose of this study is to investigate the impact of institutional quality on non-commodity economic growth in Azerbaijan. The study was conducted using the ARDL Bound Test based on data covering the years 1996–2022. The model included growth rates of non-oil GDP and indices of government effectiveness and regulatory quality. The results show that in Azerbaijan, regulatory quality has a positive influence on the growth of non-oil GDP in the long and short-run perspectives. Thus, a 1% increase in regulatory quality leads to a 19.8% increase in the growth rate of non-oil GDP. However, there was no statistically significant relationship between government effectiveness and non-oil GDP. These results confirm the idea of strengthening the work to improve the quality of regulation. It is also necessary to increase the indicator of government effectiveness, the quality of legal institutions, public services, and civil services. The insignificance of institutional quality influence on non-resource tradeable sectors determines the relevance of research on institutions' impact on increasing the economic complexity of rich-resource countries.

Keywords regulatory quality, government effectiveness, decent work and economic growth

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INTRODUCTION

The reasons why countries differ in their economic growth and development rates remain a topical topic of modern economics. The answer to this question has been sought in both exogenous (Solow, 1956; Rostow, 1959) and endogenous growth theories (Romer, 1990; Lucas, 1988). In explaining growth inequality, exogenous theories place the accumulation rate, choice preference, and total factor productivity at the forefront, while endogenous theories place investment volumes directed at innovations at the forefront. However, how are factors of economic growth forming? What are the reasons that determine their quantitative and qualitative characteristics? These questions necessitate the re-actualization of political economy. Pasinetti (2021) noted the possibility of conducting research on social institutions within the framework of classical and post-Keynesian theories to answer such questions.

Studies devoted to the history of economic development in developed countries note that the institutional structure plays a significant role in shaping the factors that determine the nature and speed of economic growth. Institutional theories, on the other hand, attach special importance to the role of the state in the creation of good institutions, considering it a political institution that influences the formation and development of both legal and economic institutions.

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Another question of modern theories is related to the direction of the cause-and-effect relationship between institutions and economic growth. Do good institutions ensure economic growth, or does economic growth create opportunities for the creation of good institutions? Can good institutions ensure economic development under any conditions? Can institutional development ensure the development of non-resource tradeable sectors in countries whose economic growth depends on the export of natural resources? The answers to such questions are of particular interest to countries with small-scale economies, which recently regained their independence and are rich in natural resources.

The process of forming economic institutions in Azerbaijan, which is rich in natural resources such as oil and gas, began only 35 years ago. Over the past 20 years, approximately 90% of the country's total exports have been related to oil and gas production, and the state's economic weight (the weight of budget expenditures in GDP) is around 30% (SSCAR, 2025). The aforementioned facts make the process of forming economic institutions in Azerbaijan a unique object of research.

1. LITERATURE REVIEW

A considerable body of evidence in the economic literature suggests that political, economic, social, and geographic factors play a noteworthy role in the emergence and development of institutions that yield positive outcomes.

Acemoglu et al. (2004) argued that long-lasting economic institutions are formed as social choices of groups with political power. The study noted the special importance of resource allocation and political institutions in the emergence and development of economic institutions. It emphasized that economic institutions that support economic growth can be created through political institutions in the following cases:

- when political power is distributed among groups interested in protecting property rights;
- when effective barriers are created for those in power to abuse their position;
- when the relative rents that those in power can earn by abusing their position are low.

Acemoglu et al. (2004) have attempted to demonstrate that good economic institutions are not created voluntarily by elites but are often formed under compulsion. However, elites also play an important role in this process. The elite's reaction to public opinion dissatisfaction with the distribution of economic and political resources can take completely different forms and be based on different strategies (repressions, total use of force, political-legal and economic reforms, etc.). Political elites of developed countries gave priority to economic and legal reforms.

Acemoglu and Robinson (2019) likened the state, the main political institution of the country, to Thomas Hobbes's Leviathan, arguing that good economic outcomes are determined by the balance between the power of society and the state and emphasizing that a chained Leviathan provides better economic outcomes than a despotic and weak Leviathan. In their opinion, for the state to remain in the position of a Leviathan chained by the power of society for a long time requires continuous efforts from both society and the state.

One of the ways proposed by neoclassical theory to reduce economic development inequality is to create a favorable environment for foreign direct investment in a less developed country. Based on data from 104 countries, Hayat (2019) studied the impact of foreign direct investment on economic growth and showed that good institutions further strengthen the impact of FDI on economic growth. At the same time, FDI brings more effective results in low- and middle-income countries with relatively good economic institutions than in developed high-income countries. The impact of good institutions on a country's attractiveness for foreign investment is also accepted as a current research direction in economics. Chen and Jiang (2023), using data from 42 countries, found that good institutions support the flow of FDI to a country, while the country's financial development and resource abundance further strengthen

this flow. Studies conducted in African, South and Southeast Asian countries (Kouladoum, 2024; Bhujabal et al., 2024) also prove that overall institutional quality supports foreign direct investment and its impact on economic growth (although the impact of the components of institutional quality on FDI attraction is in different directions).

Slesman et al. (2015) conducted a study on a sample of 112 countries (88 developing countries, including 39 OIC countries, and developed countries). They found that the positive impact of economic institutions on economic growth in OIC countries is observed only after political institutions reach a certain level of development (1.99–3.45 points on a 10-point scale). This study, which confirms the existence of the hierarchy of institutions hypothesis only in developing countries, shows that political institutions are important for economic growth in such countries. Another interesting result is that political institutions and conflict prevention institutions are more critical in developing countries (excluding OIC countries) (Slesman et al., 2015). The aforementioned result is also consistent with the findings of Acemoglu et al. (2004): good political institutions create conditions for the formation of better economic institutions, and good economic institutions lead to higher economic outcomes.

Asghar et al. (2015) examined the impact of overall institutional quality on economic growth in 13 developing Asian countries. A causal relationship was found between overall institutional quality and economic growth in the short term. However, assessing the impact of political, economic, and legal institutions separately on long-term economic growth revealed a completely different picture. According to the results, in the long term, the quality of legal institutions plays a significant role in economic growth, while the impact of the quality of political and economic institutions on growth is not so significant. An assessment of the combined impact of all three institutional qualities on economic growth also showed that the result was insignificant. The article argued that this situation is due to the weak impact of political and economic institutions on economic growth, stating that it is necessary to improve all three institutional qualities to achieve good economic results.

In Vietnam, where the economic size of the state is relatively high, Bon (2019) examined the impact of institutional quality on the investment-economic growth relationship. The result shows that the presence of good institutions enhances the positive impact of public and private investment on economic growth.

Maruta et al. (2020) assessed the impact of foreign donor support to education, health, and agricultural sectors, and institutional quality on economic growth in 74 developing countries in Asia, Africa, and South America. Improving institutional quality increases the effectiveness of aid directed to the education sector in South America. Financial assistance directed to the agricultural sector in Africa and to the health sector in Asia has a better impact on economic growth. The diversity of institutions formed in countries is noted as one of the primary reasons for the differing picture. Pradhan et al. (2023) targeted a sample of middle-income countries and found that foreign aid has a positive impact on innovation, and innovation has a positive impact on institutional quality.

Ji et al. (2014) assessed the relationship between resource endowments, resource revenues, institutional quality, and economic growth in the regions of the People's Republic of China. The positive effect of resource abundance on economic growth was found to be nonlinearly dependent on institutional quality. Here, the "trust in courts" indicator was used to assess the level of institutional quality.

Constantine and Khemraj (2019) examine how differences in the structure of national economies affect economic development and argue that economic structure shapes the source of de facto political power by determining the appropriate distribution of resources. The variability or stability of the economic structure is determined by the intensity of competition between de facto and de jure political power and occurs as a result of this competition. The results emphasize that the country's geographical location also plays a meaningful role in shaping its economic structures.

The World Bank uses six sets of indicators (Worldwide Governance Indicators – WGI) to assess institutional quality in countries: the ability

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of society to influence the formation of political power through voting, political stability, regulatory quality, government effectiveness, rule of law, and control of corruption.

A study conducted on 29 developing countries located in different regions of the world by Nguyen et al. (2018) provides empirical evidence that institutional quality has a positive impact on economic growth.

Nawaz et al. (2014) used global governance indicators as a basis for assessing the level of institutional quality. The study examined the impact of institutions on economic growth using data from a sample of 35 developed and developing Asian countries. The impact of each component of institutional quality on economic growth was examined separately, and it was determined that as institutional quality increases, the opportunities for abuse by officials decrease, and economic growth increases. The results show that in Asian countries, corruption control and rule of law have a greater impact on ensuring long-term economic growth. Moreover, the impact of institutions on economic growth differs according to the stages of economic development. Institutions support economic growth better in developed than in developing countries.

There are also studies that confirm the significant role of institutional development and human capital in enhancing the innovation indicators of countries (Danta & Rath, 2024).

The impact of institutional quality on economic development in resource-rich countries is also of particular interest. Amiri et al. (2019) studied this issue based on data from 28 countries rich in natural resources. They adopted the ratio of value added created in the service sector to value added created in the manufacturing sector as the dependent variable of the model. The results showed that in the absence of quality institutions, the dependent variable of the model increases. This means that in a resource-rich country when there are no good institutions, the tradeable sectors weaken while the non-tradeable sectors develop better. This result confirms the existence of a relationship between resource constraints and institutional quality. When an economic structure based on one or more natural resources is formed in a country, the efficient allocation of resources does not occur, the balance between real and legal political power is disturbed, and thus, the basis for the formation of good institutions is not created (Amiri et al., 2019).

The special role of human capital and institutional quality in preventing resource abundance from becoming a resource curse is also one of the issues that researchers are focusing on. Hussain et al. (2021) prove, using the example of 23 high-income and natural resource-rich countries, that institutional quality and human capital can create a perfect foundation for the emergence of technological innovations and more efficient use of natural resources by supporting financial development in such countries. The development of human capital in a country is directly related to the institutional foundations of society. Therefore, institutional development can be considered a basic condition for resource abundance to remain a blessing of nature rather than a curse.

Chung and Jin (2025) analyzed the role of institutional quality in preventing natural resource abundance from becoming a curse using a sample of 43 countries. It is argued that the economic effects of the resource curse vary depending on the type of resource and the level of economic development of the country, with institutional quality acting as a mediator in this process. The results also confirm that institutional quality is important for natural resource abundance to remain a blessing of nature.

Of particular interest are the results of Destek et al. (2023), who examined how institutional quality affects the sustainable development index, along with income from natural resources, the human capital index, and trade openness, in 23 resource-rich countries. The results show that improving institutional quality and financial and human capital development have the power to reduce the negative impact of the resource curse on the sustainable development index.

Fengju and Wubishet (2024) selected data from 18 East African countries and noted that institutional quality enhances the impact of financial development on economic growth. Some studies evaluate the impact of natural resource

abundance on a country's financial development without considering the institutional framework. Guan et al. (2020) claim that globalization, human capital, and economic growth have a positive impact on financial development in China, while resource abundance has a negative impact. According to the results, trade openness and support for human capital are essential for ensuring the efficient use of natural resources.

Considering the Turkish economy, Faisal et al. (2024) determined that institutional quality has a positive impact on the country's financial stability, while the negative impact of the shadow economy on financial stability is greater. Increasing institutional quality is also crucial in ensuring financial stability by reducing the incentives for the shadow economy to thrive.

Salman et al. (2019) covered Indonesia, South Korea, and Thailand and found a causal link between institutional quality to economic growth as well as that the rule of law can be an effective tool in reducing carbon emissions. There is also a growing body of research in both developed and developing countries that confirms that institutional development plays a positive role in achieving the Sustainable Development Goals by supporting green finance (Sun et al., 2025).

Azimi et al. (2025), targeting eight South Asian countries, found that institutional quality mitigates the negative impact of imported energy consumption on economic growth. De Pascale et al. (2024) provide evidence that institutional quality has a positive impact on environmental development and better waste management and provides positive impetus for digital development.

Numerous studies have investigated the influence of institutions on economic development (Zhao, 2024) and economic complexity (Olaniyi & Odhiambo, 2023). The impact of institutions on the relationship between financial development and economic growth (Bayraktar et al., 2023) and public debt and economic growth (Ramzan et al., 2023), as well as on mitigating negative environmental outcomes (Azimi & Rahman, 2023), has also been a focus of attention. The impact of institutional quality on the human potential development index (Uddin et al., 2023) and the investment decisions of transnational companies (Tan et al., 2023), the variation of the relationship between it and financial development depending on the income level (Uzar et al., 2023), the impact of natural resources and institutional quality on economic growth (Huo et al., 2023) and the entrepreneurial environment (Medase et al., 2023), and the impact of natural resource abundance on the relationship between financial development (Dosso, 2023) have also been topics of interest to researchers.

The review shows that in resource-rich countries, where good institutions are lacking, tradable sectors are weakened, and institutional development prevents the resource curse. In developing countries, the quality of legal institutions plays a more important role in economic growth in the long run than political and economic institutions. Another point of interest is that the positive impact of economic institutions on economic growth is observed only after political institutions reach a certain level of development. Moreover, good institutions strengthen the positive impact of public and private investment on economic growth and, together with human capital, support financial development, the emergence of technological innovations, and the efficient use of natural resources.

The aforementioned nuances are also of great importance for achieving the Sustainable Development Goals. There is fairly consistent empirical evidence in the economic literature that institutions have significant effects on economic, social, and environmental processes. However, the existence of divergent arguments about the direction and extent of these effects suggests that there is a need to continue the debate about the nature of the relationship between institutions and economic outcomes.

In this regard, the study of the institutional development impact on non-oil GDP growth in Azerbaijan, which has unique characteristics and rich hydrocarbon reserves, is of particular interest and can provide theoretical approaches to studying non-resource-based economic growth in such countries with new empirical results.

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2. METHODS

When examining the impact of institutions on economic growth, it is essential to consider the country's economic structure and the state's economic influence within it. The fact that the share of the oil sector in total GDP in Azerbaijan is around 50% makes it more correct to accept the indicator of non-oil GDP growth as the dependent variable of the model (since oil revenues mainly depend on prices formed on world markets). The high economic weight of the state in Azerbaijan also gives grounds to say that the state plays a special role in the creation and development of economic institutions. In this regard, the six indices calculated by the World Bank are more consistent with the idea of hierarchizing institutions in terms of their impact on economic growth (Asghar et al., 2015; Slesman et al., 2015). It is considered acceptable to include indices such as government efficiency and regulatory quality from the six indices presented by the World Bank in the model.

Table 1. Variable definitions

Variables	Definitions	Source
GR	Non-oil GDP growth rate (%)	Central Bank of Azerbaijan Republic
GE	Government Effectiveness	Worldwide Governance Indicators
RQ	Regulatory Quality	Worldwide Governance Indicators

During the years of independence of Azerbaijan, reforms were carried out to strengthen the regulatory mechanisms of the state and improve the efficiency of government. Figure 1 reflects the dynamics of non-oil GDP growth, government effectiveness, and regulatory quality indicators in Azerbaijan.

The fact that the levels of indicators are lower than in developed and a number of developing countries indicates the need for additional work in this area. At the same time, the weak synchronicity between non-oil GDP growth and institutional indicators indicates the complexity and ambiguity of the links between institutions and macroeconomic indicators.

The availability of only annual data on indices characterizing institutional quality creates certain limitations for the application of econometric models, as it reduces the number of observations. The relatively short period series for the variables of the model (1996–2022) and the presence of only annual indicators in the databases necessitated the use of the ARDL Bound Test model, which allows for evaluation with a small number of observations. Information limitations also require that the number of variables that can be included in the model be as small as possible. The theoretical and applied features of the ARDLBT model have been extensively studied in the economic literature (Abbasov & Aliyev, 2018). The stationarity of the variables was tested using the Augmented Dickey-Fuller test (Dickey & Fuller, 1981), and lag selection was performed using the Akaike information criterion. Data processing and model application were performed using the Eviews-12 program.

Source: Worldwide Governance Indicators and CBAR (n.d.).

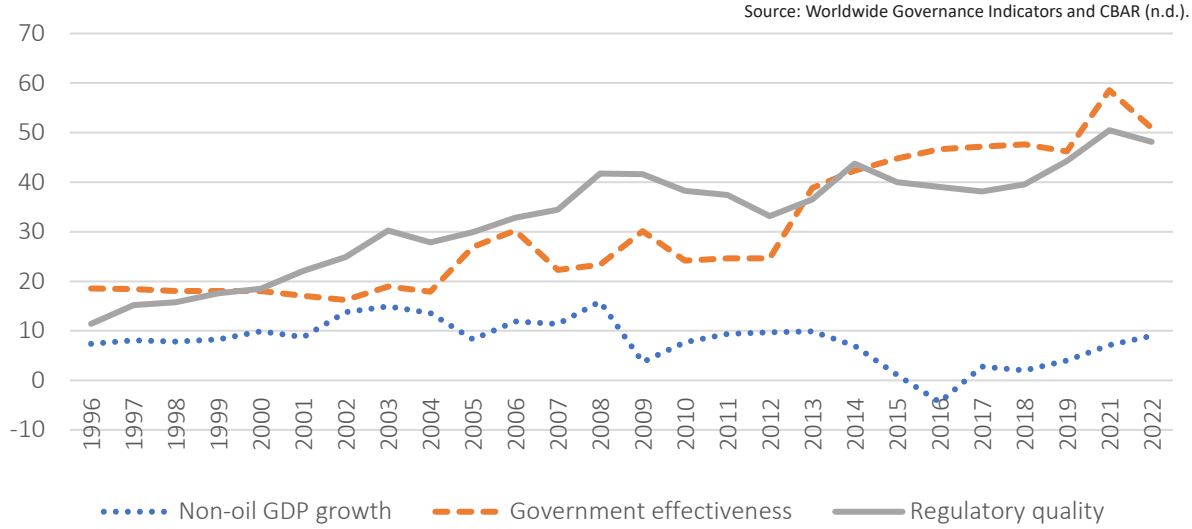

Figure 1. Non-oil GDP growth, government effectiveness, and regulatory quality indexes in Azerbaijan

3. RESULTS

The results of the stationarity assessment of the variables are given in Table 2.

The results show that the variables of the model have different stationarity at the initial and first difference levels and allow the application of the ARDL Bound Test model.

The minimum level of the Akaike information criterion (Figure 2) allows for choosing lag 1 for non-oil GDP growth, lag 0 for the government efficiency indicator, and lag 1 for regulatory quality. The results of the Bound test are given in Table 3.

The fact that the results of the *F*-statistic for the bounds test at the 5% statistical significance level are greater than the limits presented by Narayan (2005) suggests that there is a significant relationship between the variables in the long run. Based on these results, the study proceeded to assess the long-run and short-run relationships between the variables. The long-run results of the model are presented in Table 4.

Table 2. Results of the ADF test

Indicators		level		1st difference	
		p-value	t-statistic	p-value	t-statistic
GR	Intercept	0.1596	–2.370 cr.values –3.724*	0.0000	–6.049 cr.values –3.737***
	Trend and intercept	0.2116	–2.795 cr.values –3.238*	0.0004	–5.907 cr.values –4.394***
	None	0.2660	–1.0259 cr.values –1.609*	0.0000	–6.185 cr.values –2.664***
	Result	none		I(1)	
GE	Intercept	0.8684	–0.5336 cr.values –3.737*	0.0001	–5.8203 cr.values –3.724***
	Trend and intercept	0.1977	–2.838 cr.values –3.2380*	0.0004	–5.8292 cr.values –4.3943***
	None	0.9001	0.9251 cr.values –1.609*	0.0000	–5.4108 cr.values –2.6648***
	Result	none		I(1)	
RQ	Intercept	0.5228	–1.488 cr.values –2.632*	0.7175	–1.037 cr.values –2.655*
	Trend and intercept	0.4109	–2.315 cr.values –3.238*	0.0054	–4.777 cr.values –4.467***
	None	0.9685	1.582 cr.values –1.609*	0.3207	–0.882 cr.values –1.607*
	Result	none		none	

Note: *, ** and *** – 10, 5, and 1% level of statistical significance. GR = non-oil GDP growth rate (%); GE = government effectiveness; RQ = regulatory quality.

Table 3. F-bounds test results

Source: Narayan (2005).

Test statistic value	Significance	I(0)	I(1)
F-statistic = 5.58	5%	2.23*	5,43*

Note: * indicates statistical significance at the 1% levels.

Table 4. Long-run form and bounds test

Variables	Dependent variable: Log of GR
Constant	15.793** (8.057)
Log of RQ	9.707** (3.590)
Log of GE	–3.606 (2.904)

Note: *, **, and *** indicate statistical significance at the 1, 5, and 10% levels; values in brackets represent standard errors. GR = non-oil GDP growth rate (%); GE = government effectiveness; RQ = regulatory quality.

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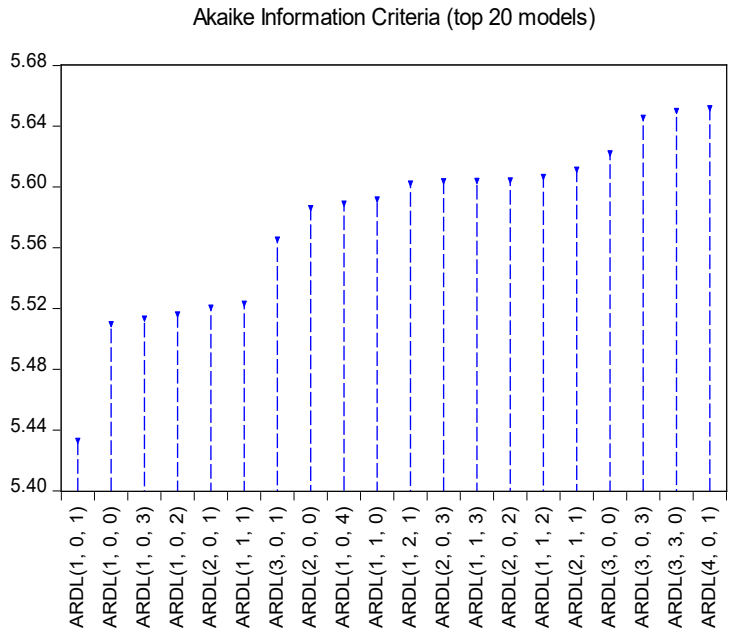

Figure 2. Optimal lag selection

The results obtained confirm that, in the long run, regulatory quality has a positive effect on non-oil GDP growth at the 5% statistical significance level. The negative effect of the government efficiency indicator, which is not statistically significant at the 5% level, suggests that the effectiveness of government resources in supporting domestic production in the long run has been weak. The results of the model for the short run are reflected in Table 5.

Table 5. Short-run results

Variables	Dependent variable: log of GR
$CointEq_{t-1}$	–0.835*** (0.167)
Log of RQ	19.839** (5.636)

Note: Numbers in brackets represent standard errors. GR = non-oil GDP growth rate RQ = regulatory quality.

The absolute value of the cointegration coefficient is less than 1 and negative, confirming the quality of the obtained model. The quality of regulation has a positive coefficient at the 5% statistical significance level, which gives grounds to say that the increase in this indicator in Azerbaijan supports the development of the non-oil sector (when the quality of regulation index increases by 1%, the growth of non-oil GDP increases by 19.8%).

The results of the tests for the presence of serial correlation and heteroskedasticity among the residuals of the model, as well as the tests for the normal distribution of the residuals, indicate that the quality of the model is at the required level (Table 6).

The stability of the model was assessed using the CUSUM and CUSUM of Square stability tests (Figure 3). The CUSUM test is used to show that the mean of the model's time series is within normal limits, while the CUSUM of Squares test is used to show that the changes in the model's con-

Table 6. Robustness tests

Metric	Result
R-squared	0.63
Adjusted R-squared	0.56
Observations	25
Serial correlation (LM)	X^2_{SC} = 0.13 (0.94)
Heteroskedasticity (BP)	X^2_{SC} = 1.40 (0.27)
Normality test (Jarque-Bera)	2.17 (0.33)

Note: Values in brackets represent standard errors.

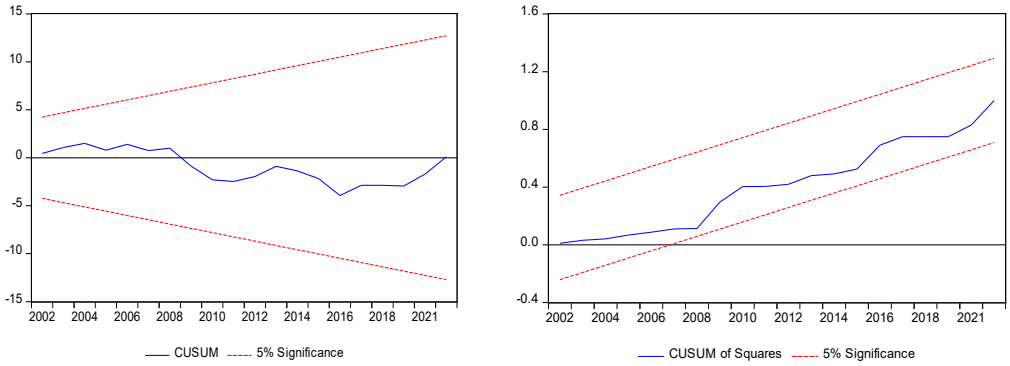

Figure 3. CUSUM and CUSUM of Square stability tests

ditional parameters are within normal limits. The results of both tests indicate that the stability of the model is normal.

The results of the model quality control tests indicate that the model's results are reliable.

4. DISCUSSION

The existence of a cointegration relationship between the variables of the developed model and the positive impact of regulatory quality on non-oil GDP in the long and short term is consistent with the results of many studies (Chung & Jin, 2025; Hussain et al., 2021; Nawaz et al., 2014; Nguyen et al., 2018).

Many studies have been conducted to assess the impact of individual components of regulatory quality on economic processes in Azerbaijan. Several studies have found that the government's protectionist fail to have the desired impact on the development of domestic tradeable sectors and export diversification (Seyfullayev, 2020). Other studies have found that the country's financial development fails to create positive impulses for the development of the domestic processing industry, that the availability of credit supports imports more (Seyfullayev & Seyfullali, 2023), and that domestic credit has a positive impact on the overall growth of the non-oil sector (mainly due to non-tradeable sectors) (Seyfullayev, 2023; Mammadov & Ahmedov, 2021). The sensitivity of small and medium-sized businesses to environmental issues in the country has also not reached the desired level of development (Mammadli, 2022). Kalbiyev and Seyfullali (2024) also found that government spending in Azerbaijan supports non-oil economic growth in the long run; however, a negative link exists between them in the short run.

In recent times, the widespread use of tax breaks that stimulate economic activity in Azerbaijan, the exemption of residents of industrial and technology parks from many taxes, and the creation of technical capabilities and serious incentives to ensure transparency are bearing fruit.

The existence of a statistically insignificant negative effect of government effectiveness on economic growth confirms that the work done to improve the performance of state bodies is not yet sufficient to support the non-oil sector.

The existence of a positive effect of regulatory quality on economic processes in both the long and short run is consistent with the results in the literature review and the findings of studies conducted in Azerbaijan. The fact that government effectiveness does not support economic growth in the non-oil sector can be explained by the idea that institutions need to reach a certain level of development to produce good economic results (Slesman et al., 2015; Asghar et al., 2015). This result indicates the need to develop government effectiveness more rapidly.

CONCLUSION

The study aims to examine the relationship between institutional development and non-resource economic growth in a resource-rich and developing economy.

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The existence of cointegration relationships between the non-oil GDP growth in Azerbaijan, regulatory quality, and government efficiency indicators confirms the argument that "institutional quality supports non-resource-based economic growth."

According to the results of the developed model, an increase in the quality of regulation index in Azerbaijan has a positive impact on the non-oil GDP growth in both the short and long terms. Government efficiency has a statistically insignificant negative impact on economic growth.

These results support the idea of continuing efforts to increase the efficiency and effectiveness of regulation. The development of legal institutions can create opportunities for increasing government efficiency and increasing its role in diversifying the economy.

The results obtained suggest a parallel between the improvement of institutional quality and the development of non-tradable sectors in Azerbaijan. However, there is yet no solid evidence to attribute this idea to the non-resource tradable sectors of Azerbaijan, as well as the vast majority of oil-exporting countries. This raises the following question: Can the improvement of institutional quality in countries whose exports are mainly related to the sale of natural resources lead to the development of non-resource tradable sectors in modern times? How can efficient institutions be formed by using revenues from resources? These questions are not only important for the sustainable development goals of the world, but also provide ideas for new empirical research.

AUTHOR CONTRIBUTIONS

Conceptualization: Demet Cak.
Data curation: İlgar Seyfullayev.
Formal analysis: İlgar Seyfullayev.
Funding acquisition: İlgar Seyfullayev.
Investigation: İlgar Seyfullayev.
Methodology: İlgar Seyfullayev.
Project administration: Demet Cak.
Resources: İlgar Seyfullayev.
Software: İlgar Seyfullayev.
Supervision: İlgar Seyfullayev.
Validation: İlgar Seyfullayev.
Visualization: Demet Cak.
Writing – original draft: İlgar Seyfullayev.
Writing – review & editing: Demet Cak.

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