



Institutional Quality and Economic Growth in Muslim Countries

Zuhairan Yunmi Yunan[✉]

¹Department of Economics, Universitas Islam Negeri (UIN) Syarif Hidayatullah Jakarta, Indonesia

Article Information Abstract

History of Article

Received July 2023

Accepted September 2023

Published November 2023

Keywords:

*Institutional Quality,
Economic Growth, Muslim
Countries, Generalized Method
of Moments*

This research analyzes the link between institutions and growth in a selection of Muslim nations to determine which elements have the most influence. The study spans 20 years, from 2002 to 2021, and employs a cross-country analysis to conclude that only three aspects of institutional quality (government effectiveness, political stability and lack of violence/terrorism, and voice and accountability) are strongly related to economic growth. The findings, obtained through a dynamic panel setting, reveal that most control variables exhibit significant effects consistent with expected outcomes. However, the investment coefficient, while positive, lacks statistical significance, suggesting that the impact of investment on economic growth in Muslim nations is not robust enough to be statistically validated. Moreover, the study delves into institutional quality's impact on economic performance and finds that three out of five variables significantly influence growth. Government effectiveness, political stability, and absence of violence/terrorism demonstrate substantial positive correlations, particularly at the 1% significance level. While still positively related to economic growth, regulatory quality and the rule of law only exhibit significance at the 10% level. To further understand the impact on economic development, this paper advises that future research explore numerous institutional quality criteria and segregate Muslim countries based on their political systems.

INTRODUCTION

Institutional quality refers to the reliability and efficiency of a country's governing bodies, such as its courts, regulatory agencies, and political systems. By creating and enforcing economic rules and regulations, these institutions play a significant part in shaping the economy (Salman *et al.*, 2019). Solid institutions that provide a stable and predictable economic environment can aid private sector development (Phucet *et al.*, 2019; Prasetyo *et al.*, 2020). In addition to helping the government run smoothly, they ensure that the rule of law is upheld and that power is not abused in a political context. Economic growth and development may be stymied when weak institutions lead to corruption, inefficiency, and poorly implemented policies (Tebaldi & Mohan, 2010; Hayat, 2019). Therefore, governments need robust institutions that can sustain and promote economic growth.

Institutional quality and economic expansion are intertwined in complex ways. Institutional quality may impact economic performance, whether direct or indirect. Research shows that nations with more developed economies have higher levels of political stability. However, economic crises can also affect governance, with governments often focusing on short-term economic recovery at the expense of long-term governance development. This can potentially harm the long-term economic recovery of a country. It is essential to note that the relationship between economic growth and governance may change over time and may not be the same in the short and long term (Aisen & Veiga, 2013; Bashir & Xu, 2014; Radu, 2015).

Some databases are developed to provide information about institutional quality in various countries. These databases measure and compare the effectiveness, efficiency, economic and political structures stability worldwide. Some of the primary databases include the Worldwide Governance Indicators from the World Bank, Economic Freedom, Global Competitiveness Index, and the Transparency International Corruption Perceptions Index. Accordingly, this

paper will focus more on the the quality of institution measurement provided by the World Bank's Worldwide Governance Indicators, which include government effectiveness, political stability and absence of violence/terrorism, regulatory quality, rule of law, voice and accountability. However, control of corruption will be excluded from the analysis since corruption's effect on economic performance has been widely discussed in various contexts of the kinds of literature (Shittu *et al.*, 2018; Yunan & Andini, 2018; Sharma & Mishra, 2022; Spyromitros & Panagiotidis, 2022).

Academic literature has debated the connection between institutional qualities and economies, especially in developing nations. Some studies have found that good governance, as measured by indicators such as regulatory quality, government effectiveness, rule of law, and control of corruption, has a positive impact on economic performance and economic development (Jalilian *et al.*, 2007; Méndez-Picazo, Galindo-Martín & Ribeiro-Soriano, 2012).

Some studies have also found that political stability and government effectiveness have a positive correlation with economic growth (Cooray, 2009; Huynh & Jacho-Chávez, 2009), while voice and accountability and control of corruption have inversely affected the rate of economic performance in developing countries (Gani, 2011). Other research has found that a country's income level is critical in connecting governance and economic growth (Hammudeh *et al.*, 2020; Misi Lopes *et al.*, 2023).

The quality of the regulatory framework favours economic performance and commercial activity in democratic countries (Malikane & Chitambara, 2017). Similarly, the rule of law positively correlated with real per capita income and income for low-income people (Haggard & Tiede, 2011; Castiglione *et al.*, 2015; Dutta & Kar, 2018). Evidence from empirical studies of the connection between democracy and economic growth has produced mixed results. Democracy and economic growth have been shown to exhibit a favourable correlation in multiple studies (Gründler & Krieger, 2016;

Acemoglu et al., 2019). Accordingly, democratic regimes may produce more favourable economic development conditions, such as higher property rights protection, rule of law, and political stability. Other studies contend that the link is more complex, with factors such as economic liberalization and institutional quality also playing a role in determining a country's economic performance (Bumann et al., 2013).

Other research, such as those by Siwu et al. (2021), on the other hand, has revealed either a weak or negative association between democracy and growth. These studies suggest the negative relationship may be because democratic regimes might be prone to short-term thinking and prioritize distributional concerns over long-term economic growth. Two main arguments suggest how democracy may hinder economic growth. The first argues that it leads to pressure for immediate consumption and reduced investment. In contrast, the second contends that democratic politics can impede the implementation of necessary structural and economic reforms. However, the experiences of some authoritarian countries do not always support the idea that autocracy leads to faster economic growth (Wright, 2008).

Institutional quality ensures political stability, allowing firms to function without interruption or intervention and individuals to make long-term plans and investments without fear of political change. In the Islamic paradigm of economic thought, political stability is seen as particularly important because it is believed that social upheaval and instability can have negative consequences for economic activity (Brune et al., 2022; Elorrieta et al., 2022; Wood et al., 2022). Such instability can create an uncertain and unpredictable environment, discouraging investment and business activity. Political stability is therefore seen as necessary for creating the conditions needed for economic development and prosperity.

However, despite this belief, various forms of political instability, including regional wars, foreign invasions, coups, uprisings, ethnic violence, political insurgency, and revolution, have been prevalent in many Muslim nations.

This has been especially true in the decades after World War II, with many Muslim countries suffering crises almost once every four years between 1955 and 2003, according to research by (Gurr et al., 2005). In recent years, the Arab Spring uprisings in 2011 have further contributed to political instability in countries such as Tunisia, Libya, Egypt, and Syria.

Given this context, one plausible explanation for the slow economic growth of many Muslim nations is poor institutional quality. While other factors may also be at play, the frequent disruptions caused by political instability could make it difficult for businesses and economies to thrive. Therefore, this paper contributes to the expanding body of research in political economies. Quality institutions and political economy's influence on economic development has been understudied, particularly in Muslim countries.

Recently, it has risen in the prominence of studies examining the economic consequences of institutional quality. However, research on the influence of institutional quality has produced mixed and occasionally conflicting results, possibly due to discrepancies in methodology, sample size, or contextual variables. To completely comprehend the effect of the quality of institutions on economic growth, it is necessary to investigate how it impacts various countries, mainly Muslim countries.

This study examines the relationship between a thriving economy and a stable government in Muslim nations. The theory goes that better institutions and political policies will result in a more business-friendly climate and less inefficiency, resulting in increased economic growth.

This paper's remaining sections are organized as follows. The second section will describe the methodology, including the data sources, measured variables, and estimated methods. The results of the research are going to be presented in the third section. In this part, the findings of the analysis will be given. These will include the results of any statistical tests and the key inferences that can be drawn from the data. The fourth and last section will end the research,

providing some policy implications based on the results. The possible ramifications of the research for policymakers will be discussed in this section.

RESEARCH METHODS

The analysis in this study includes 16 Muslim-majority countries used by (Asutay & Mohd Sidek, 2021). The estimate will utilize the 2002–2021 dataset. An empirical growth model examines how a country's institutions affect economic growth.

This section uses a growth model to study the correlation between a country's institutional make-up and economic output. The conventional growth model is affected by baseline per capita income, factor accumulation, institutional quality, and country-specific variables. (Barro, 1991; Levine & Renelt, 1992; Caselli et al., 1996). In addition to physical and human capital, the amount of Gross Domestic Product (GDP) invested in the economy is another significant factor in economic growth.

Initial income per capita. First, initial per capita income. In the neoclassical growth model, nations will reach their stable states at different rates depending on how far they are from it. Lower-income countries proliferate (Baumol, 1986; Barro, 1991). The term for this occurrence is absolute convergence, as seen in industrialized nations. The convergence theory, which asserts that less developed countries will ultimately achieve the same level of economic development as more developed nations, has been supported by several studies.

The theory has been put into question by several facts, including the presence of conditional convergence (in which the pace of convergence is dependent on variables such as human capital) and the non-linear connection that exists between income and growth (Barro, 1991; Mankiw et al., 1992; Barro & Lee, 1993; Knight et al., 1993). It has also been observed that middle-income countries have the fastest economic growth after accounting for policy changes (Temple, 1999; Easterly & Levine, 2001).

Population growth. The second factor is the expansion of the human population, which is generally measured by its rate of increase. Population growth is often seen as and assessed within the neoclassical paradigm. However, numerous schools of thought have tried to use the growing working-age population to estimate genuine labour growth (Barro, 1991; Mankiw et al., 1992; Knight et al., 1993; Islam, 1995). Evidence suggests a negative correlation between population and economic growth, with the fertility rate playing a pivotal role in this phenomenon (Barro & Lee, 1994). It is not entirely apparent whether or not a slowdown in population growth will result in increased economic performance or the other way around, as income and fertility may be interconnected (Sala-i-Martin et al., 2004).

Infrastructure. Infrastructure is a further component that is anticipated to impact economic growth substantially. Infrastructure has been shown to contribute to economic development positively and productivity (Levine & Renelt, 1992; Mankiw et al., 1992; Barro & Lee, 1993; Knight et al., 1993). Its benefits include reducing transportation costs, increasing regional connectivity, and lowering capital installation costs (Rietveld, 1989; Henderson, 2000). Returns on infrastructure investments may diminish over time.

Investment. Investment is essential in supporting higher output and increasing the steady-state income level in an economy. It mentions that the investment ratio (gross capital formation as a share of GDP) is often used for measuring investment as a proxy. Empirical findings have shown that investment is a robust predictor of growth (Barro, 1991; Levine & Renelt, 1992; Caselli et al., 1996; Sachs & Warner, 1997). However, (Sala-i-Martin et al., 2004) found that the average price of investment goods was more important for predicting long-term growth than the investment share itself.

Human capital. Human capital, including measures such as education and health, is an essential factor in endogenous growth theory. Early education and human capital accumulation have been demonstrated in studies

to have a favourable influence on economic growth and technical advancement (Romer, 1990; Mankiw et al., 1992; Sala-i-Martin et al., 2004). Human capital is proven to be a significant component in explaining disparities in income levels between nations when incorporated in models (Barro, 1991; Barro & Lee, 1993; Knight et al., 1993). Measuring human capital is difficult, primarily when it is defined as education. There is no standard method for measuring educational quality, and other factors may influence the significance of education (Levine & Renelt, 1992). Health has been employed as a measure of human capital in several studies, including life expectancy and infant mortality rates (Temple, 1999). However, data restrictions prohibit the inclusion of other critical human capital factors, such as workplace training, which can correctly indicate labour quality.

Data and growth model. The specific form of the growth regression used in this analysis is outlined in a paper by (Caselli et al., 1996). With the inclusion of the variable mentioned above, the whole growth equation is as follows:

$$Y_{it} = \beta_0 + \beta_1 Y_{it-4} + \sum \beta_j X_{jit} + \sum \delta_k X_{kit} + \sum Dy_t + \eta_i + \mu_{it} \dots\dots\dots(1)$$

Where, Y_{it} is a proxy of income of country i at time t , which is GDP per capita (annual %), $t - 4$ is estimator muse periods spaced out over four years that eliminate the possibility of growth (business cycle) changes in a dataset that is collected annually (Islam, 1995). X_{jit} is a set of control variables of country i at time t covering Gross capital formation (% of GDP), which

represents Investment; Life expectancy at birth, total (years) represents Human capital; Access to electricity (% of population) represents Infrastructure; Population growth (annual %), X_{kit} is a set of institutional qualities of country i at time t , covering government effectiveness, political stability and absence of violence/terrorism, regulatory quality, the rule of law, voice and accountability with a scale from -2.5 (weak) to +2.5 (strong). To achieve consistency, the index is modified by adding 2.5. Accordingly, the scale is changed from 0 to 5, Dy is a dummy variable that represents several periods and is used to adjust for omitted time-variant variable bias, macroeconomic circumstances' influence, and institutional quality development, η denote the unobserved heterogeneity caused by the country-fixed effect, and μ is an error term.

According to Table 1, the equation can also be written as follows:

$$Y_{it} = \beta_0 + \beta_1 Y_{it-4} + \beta_2 PGRT_{it} + \beta_2 INVT_{it} + \beta_2 HUCP_{it} + \beta_2 INFR_{it} + \sum \delta_k X_{kit} + \sum Dy_t + \eta_i + \mu_{it} \dots\dots\dots(2)$$

Many reasons have come across to be related to economic growth. However, utilizing all of them in a model is not practical. This is due, in part, to the fact that some variables must be approximated using proxies, which might add bias. Furthermore, many factors, such as human capital, population growth, and investment, are interrelated and may be impacted by wealth. This causes an endogeneity problem in the regression, in which the omitted variables that are not included in the model might alter the estimated coefficients of the other variables.

Table 1. Variables and Data Sources

Variable	Notation	Source
Population Growth	PGRT	World Development Indicator
Investment	INVT	World Development Indicator
Human Capital	HUCP	World Development Indicator
Infrastructure	INFR	World Development Indicator
Institutional Quality	See the note in the table 2, 3, and 4	World Governance Indicator

Source: Data Processed, 2023

Fixed and random effects models are standard in panel data analysis (Baltagi, 2005). Fixed effects models change the mean of individual observations over time by estimating and removing a fixed effect. However, this strategy may still be biased due to missing factors in the error term. Conversely, the random effects model cannot be employed in growth regression because correlations incorrectly render ordinary least squares (OLS) estimation (Islam, 1995).

The left-side variable is still considered endogenous in the fixed effects method, meaning other variables inside the model impact it. This can be troublesome since it can lead to skewed estimates of the connection between the left- and right-side variables. This might lead to endogeneity issues since the dependent variable in the present period is impacted not only by the right-side variables but also by its value in the prior era. There may also be omitted variables in the model which are essential to the connection under study but not included in the model. These missing variables might pose endogeneity issues since relate to dependent and explanatory factors.

Endogeneity (the inverse link between dependent and explanatory variables) can be a concern in econometric models. To overcome this issue, Arellano and Bond (1991) suggested the different generalized methods of moments (difference GMM). By taking the first difference of the regression equation to remove individual fixed effects and using the lagged variable as the instrumental variable for the endogenous variables in the difference equation, this method generates the GMM of moment conditions.

Despite its effectiveness in dealing with endogeneity, difference GMM is susceptible to the problem of weak instruments when working with finite samples, resulting in low accuracy in the results (Bond et al., 2001). As a result, this research employs lagged variables as instruments in difference and level equations, as proposed by Arellano & Bover (1995) and Blundell & Bond (1998). Endogeneity and other concerns, such as omitted variable bias, multicollinearity, unobserved country heterogeneity, and measurement errors, are addressed using the

system GMM estimator recommended over the difference GMM estimate (Bond et al., 2001).

RESULTS AND DISCUSSION

This section discusses the link between institutional strength and economic performance. This paper examines this link using data from 2002 to 2021 and begins with ordinary least squares techniques. It uses GDP per capita as the dependent variable, with several control variables included to consider factors that may influence economic growth. As shown in Table 2, The control variables are all significant at some level of significance, and all have the expected sign (1%, 5%, or 10%). This implies that these variables have a significant influence on economic growth. The only exception is the investment coefficient, which is positive. However, a statistically insignificant result. This shows that while investment may influence economic growth in Muslim nations, the association is not statistically significant.

Furthermore, the result for institutional quality and its influence on economic performance indicated that only three out of five variables had a substantial impact on growth. This was the conclusion drawn from the study. Additionally, the significance of one of these indicators (government effectiveness) was only at the 10% level. This outcome could be because the study period averages were calculated from 2002 to 2021, so it doesn't consider any changes or fluctuations within that period. This approach of using averages may not fully capture the nuances and complexities of the relationship between institutional quality and growth. There may be deviations from the mean regarding economic performance or other variables, and this approach would not account for those deviations.

Table 3 involves conducting a cross-sectional time-series analysis (balanced panel data) to tackle this issue. It sets a more comprehensive and accurate understanding of the issues being studied. The panel set-up in this study does not include 20 annual observations for all variables because of the potential for growth fluctuations in annual dataset.

Table 2. OLS Estimation (Cross-Country Studies)

Variable	1	2	3	4	5
Population Growth	-0.934*** (-4.91)	-0.886*** (-4.42)	-0.931*** (-4.92)	-0.944*** (-4.83)	-0.883*** (-4.71)
Investment	0.301 (2.04)	0.264 (1.73)	0.323 (2.17)	0.309 (2.04)	0.229 (1.57)
Human Capital	0.044** (1.12)	0.055*** (1.4)	0.046*** (1.18)	0.048** (1.22)	0.038** (0.97)
Infrastructure	0.390*** (1.56)	0.273*** (3.21)	0.173*** (3.23)	0.212*** (3.22)	0.268*** (3.17)
Institutional Quality	0.109* (3.17)	0.126*** (3.69)	0.119 (3.62)	0.117 (3.45)	0.119*** (3.62)
Dummy 2009	-0.879** (-1.24)	-0.529** (-1.12)	-0.343** (-1.02)	-0.385** (-1.04)	-0.211** (-0.92)
Dummy 2013	0.964 (0.68)	0.816 (2.43)	0.714 (2.29)	0.269 (2.38)	0.981 (2.19)
Dummy 2017	0.875 (0.64)	0.743 (1.51)	0.877 (1.43)	0.316 (1.21)	0.911 (1.25)
Dummy 2021	0.715 (1.54)	0.843 (1.31)	0.776 (1.32)	0.325 (1.52)	0.922 (1.22)
Constant	1.031** (1.61)	1.096** (0.25)	1.114* (1.76)	0.933 (1.09)	1.625** (2.00)
R-squared	0.685	0.666	0.688	0.674	0.694
Adjusted R-squared	0.618	0.597	0.622	0.607	0.629
F-stat (Prob > F)	0.000	0.000	0.000	0.000	0.000

Note: *, **, *** represent significance levels at 10%, 5%, and 1%, respectively. Numbers in parentheses are t-values. Columns (1), (2), (3), (4), and (5) present growth estimation for government effectiveness, political stability and absence of violence/terrorism, regulatory quality, rule of law, voice and accountability, respectively.

Source: Data Processed, 2023

The fluctuations can have a significant effect on growth. This might lead to deceptive findings in a panel situation, especially for relatively small Muslim countries, which comprise a considerable portion of the country in this paper. Therefore, the study uses the data grouped into five time periods: 2002–2005, 2006–2009, 2010–2013, 2014–2017, and 2018–2021. By using 4-year averages, the study aims to smooth out any potential fluctuations in growth and provide a more accurate representation of the data.

In Table 3, all the factors thought to influence economic performance are confirmed by the data with what was predicted, and they have various statistical significance. The only exception is the variable infrastructure, which has a positive correlation but no longer has a statistically significant impact. This can easily be explained by the fact that infrastructure is often

used to represent the characteristics of countries, and these characteristics are already accounted for in the model by the fixed effects. Consequently, this suggests that the model can effectively capture the diversity of the country sample and provide meaningful insights into the factors that may be driving the results.

Additionally, institutional quality and economic performance results show that government effectiveness, political stability, absence of violence/terrorism, voice and accountability are positively associated with economic growth. It is indicated by a significant estimated coefficient of 1%, demonstrating a very tight positive correlation with economic development. The other two institutional variables have a positive sign, meaning that an improvement in the regulatory quality and the rule of law is favourably linked to economic growth but is not significant.

Table 3. Panel Analysis (Country Fixed-Effects)

Variable	1	2	3	4	5
Population Growth	-0.688*** (-3.46)	-0.842*** (-4.05)	-0.642*** (-3.16)	-0.773*** (-3.98)	0.865** (-4.04)
Investment	0.234*** (0.47)	0.462*** (0.87)	0.179*** (0.35)	-0.223*** (-0.41)	0.381*** (0.69)
Human Capital	0.026*** (0.36)	0.024*** (0.31)	0.008*** (0.11)	0.001*** (0.01)	0.006*** (0.07)
Infrastructure	0.387 (1.83)	0.298 (1.66)	0.341 (1.37)	0.419 (0.97)	0.418 (1.37)
Institutional Quality	0.154*** (0.94)	0.115*** (2.01)	0.177 (1.4)	0.124 (1.92)	0.135*** (2.45)
Dummy 2009	-1.12*** (-0.57)	-0.396*** (-0.19)	-1.658*** (-0.82)	-1.391*** (-1.16)	-0.895*** (-0.41)
Dummy 2013	1.473 (0.97)	1.902 (1.15)	0.84 (0.54)	0.867 (0.56)	1.358 (0.82)
Dummy 2017	0.377 (0.29)	0.321 (0.23)	0.552 (0.43)	0.819 (0.63)	0.812 (0.58)
Dummy 2021	0.875 (0.64)	0.343 (1.51)	0.177 (1.43)	0.346 (1.52)	0.907 (1.25)
Constant	1.743*** (3.03)	1.534* (1.07)	0.949*** (2.99)	0.861*** (3.08)	1.119* (0.83)
R-squared (within)	0.524	0.456	0.522	0.526	0.451
Durbin-Watson	1.451	1.412	1.387	1.398	1.432
F-stat (Prob > F)	0.000	0.000	0.000	0.000	0.000

Note: *, **, *** represent significance levels at 10%, 5%, and 1%, respectively. Numbers in parentheses are t-values. Columns (1), (2), (3), (4), and (5) present growth estimation for government effectiveness, political stability and absence of violence/terrorism, regulatory quality, rule of law, voice and accountability, respectively.

Source: Data Processed, 2023

Several key factors to consider regarding government effectiveness and its impact on economic growth exist. One of the most crucial is the perception of quality government public services. Suppose citizens believe the government is providing high-quality services that meet their needs. In that case, they are more likely to have confidence in the government and support its policies, which can contribute to economic growth (Rodríguez-Pose & Garcilazo, 2015).

Civil service independence from political restraints is another crucial aspect to be considered. Another critical issue is the quality of the civil service (Sabir et al., 2019). A well-functioning and independent civil service is essential for effective policy formulation and implementation, which can also contribute to economic performance. The quality of policy development is also crucial since well-designed policies that are carried out effectively may contribute to accelerating economic

performance. For example, policies that support business development and investment can help to create jobs and boost economic activity.

The government effectiveness shows that a wide range of causes may influence economic growth and that improving the quality of public services, the independence and quality of the civil service, the quality of policy conception and implementation, as well as the credibility of the government's commitment to its programs are all factors that have the potential to contribute to higher economic growth in Muslim nations.

In addition to the political stability and absence of violence/terrorism, business activities may also be negatively impacted by these disruptions in supply chains, loss of infrastructure and property, and decreased consumer spending. These disruptions can lead to reduced production and revenue for businesses, ultimately harming the economy. It aligns with the study stating that political

instability and violence can discourage foreign investment, further exacerbating the adverse effects on a country's growth rate (Tabassam et al., 2016).

Political stability and the absence of violence/terrorism are crucial for the growth and development of a country's economy. Business activities rely on a stable and predictable environment to operate and thrive. Political instability and violence may significantly influence the economy, resulting in lower investment, output, and income for enterprises.

Economic growth is also susceptible to changes in voice and accountability since it measures the degree to which people in a country may influence the government and the political process. This includes the freedom to choose their government through free and fair elections, the freedom to express their opinions and ideas without fear of repression or retaliation, the freedom to associate with others and form groups or organizations, and the freedom of the media to report on political events and issues without censorship or intimidation. These characteristics contribute to a society where people have a voice and can hold their government accountable for its actions. This conclusion backs with prior studies that found a favourable association between economic growth and core democratic rights (Gründler & Krieger, 2016) even though the methods used in the different studies may vary.

However, while examining the link between institutional quality, economic factors, and economic growth, it is vital to remember that changes in these variables may not result in an instantaneous shift in economic growth. Economic operations sometimes include physical and procedural restrictions that require time to overcome. For example, changes in government policies or laws may take time to implement and impact economic growth. Similarly, changes in other economic factors may take some time to be reflected in the economy's growth rate.

Given this, analyzing such associations using delayed independent variables may be

more suitable. We provide an adjustment time for economic growth to adapt to institutional quality and economic activity changes by lagging the independent variables for one or four years. This method recognizes that changes in these factors may not instantly affect economic development and considers the time it takes to reflect these changes in the economy.

In the previous estimation (Table 2 and Table 3), this paper has expected that the control variables and the institutional quality indicators are not affected by other factors (exogenous). However, this is unrealistic when considering economic activities, as economic growth can significantly impact overall economic variables (endogenous). Economic growth may lead to increased capital stock, bringing new technologies and rising investment rates depending on a specific country's circumstances.

Consequently, this paper applies the generalized method of moments (GMM) model proposed by Arellano & Bond (1991), which allows for the estimation of the causal relationship between the dependent variable (economic growth) and the independent variables (control variables and institutional quality indicators) while accounting for the potential endogeneity of these variables. Using the GMM approach, this paper can estimate the effect of institutional quality indicators on economic growth while controlling potential endogeneity. This is important as it enables a more precise evaluation of the relationship between institutional quality and growth.

In addition, time-series analysis can result in correlated disturbances, leading to biased coefficient estimates and affecting the comprehension of the link between institutional quality and economic performance. One solution is to include the previous period's economic growth as a variable in the regression equations to address autocorrelation and reflect its relevance to current development.

Table 4. Arellano-Bond Dynamic Panel Data Estimation

Variable	1	2	3	4	5
Lagged	0.286*** (2.24)	0.234*** (1.72)	0.336*** (2.47)	0.298*** (2.35)	0.235*** (1.77)
Population Growth	-0.461*** (-1.94)	-0.594*** (-2.58)	-0.406*** (-1.6)	-0.494*** (-2.19)	-0.539*** (-2.16)
Investment	0.063 (1.01)	0.092 (1.45)	0.079 (1.28)	0.084 (1.42)	0.099 (1.54)
Human Capital	0.267 (0.33)	0.763 (0.95)	0.152 (0.17)	0.317 (0.15)	0.801 (0.93)
Infrastructure	0.162** (0.07)	0.145** (0.4)	0.112** (0.12)	0.232** (0.24)	0.214** (0.22)
Institutional Quality	0.272*** (2.19)	0.601*** (2.52)	0.375* (2.03)	0.162* (2.32)	0.055*** (0.02)
Dummy 2009	-0.186** (-0.42)	-0.299** (-0.11)	-0.168* (-0.55)	-0.177* (-0.65)	-0.245** (-0.08)
Dummy 2013	0.174 (0.09)	0.173 (0.61)	0.585 (0.27)	0.117 (0.06)	0.945 (0.46)
Dummy 2017	0.551 (0.44)	0.278 (0.21)	0.686 (0.53)	0.752 (0.6)	0.533 (0.39)
Dummy 2021	0.587 (0.63)	0.343 (1.25)	0.417 (1.34)	0.416 (1.66)	0.927 (1.33)
Constant	1.698*** (0.55)	2.131** (0.94)	2.193*** (0.38)	1.134*** (0.31)	1.122** (0.96)
Wald Test (<i>p</i> -value)	0.000	0.000	0.000	0.000	0.000
Sargan Test (<i>p</i> -value)	0.706	0.784	0.769	0.878	0.825

Note: *, **, *** represent significance levels at 10%, 5%, and 1%, respectively. Numbers in parentheses are z-values. Columns (1), (2), (3), (4), and (5) present growth estimation for government effectiveness, political stability and absence of violence/terrorism, regulatory quality, rule of law, voice and accountability, respectively.

Source: Data Processed, 2023

The results of the dynamic panel estimate are shown in table 4. It indicates that variations in previous economic growth have a more significant impact than the other control variables. Overall, the results of the Sargan test suggest that the model being used is effective in all the specifications presented. The model considers investment and infrastructure as endogenous variables. Despite this, it was impossible to include additional endogenous variables in the specification as it did not significantly improve the acceptance of the Sargan test. As a result, this leads one to believe there is no substantial endogeneity problem in the link between all the determinant factors and economic growth. Using a lag variable in the growth regression model is essential as it results in a coefficient that is less than 1 for the previous GDP per capita, which is the expected outcome when using GDP per capita in the regression as

the dependent variable. Despite this, the Arellano-Bond estimator is believed to be a better choice than the other two previously used estimation methods, as it effectively addresses any shortcomings mentioned in the analysis.

The use of year dummy variables demonstrates how national macroeconomic conditions affect growth. The GDP per capita growth rate during 2006-2009 was notably lower than the growth rate during 2010-2013, 2014-2017, and 2018-2021. This decrease in growth during 2006-2009 can be attributed to the global financial crisis that occurred during that time. As a result, we may conclude that exogenous variables, such as the state of the economy both domestically and globally, had a significant role in the stagnation of income growth. However, the period following 2009 saw a recovery in economic growth as the growth rate returned positive.

Furthermore, the time following 2009 may be the consequence of different policy adjustments and measures by the government and central bank to counteract the impacts of the global financial crisis. These actions may have helped to stabilize the economy and foster growth. Furthermore, the time after 2009 may signify a worldwide recovery from the crisis since many nations enjoyed a comparable comeback in economic growth.

The results for the five institutional quality indicators reveal that all indices of institutional quality have a substantial influence on economic development. The greatest significance level, at 1%, is discovered by the study utilizing OLS and fixed effects panel settings, where many factors are shown to be significant and positively impact economic growth. Specifically, government effectiveness, political stability, absence of violence/terrorism, and voice and accountability have the strongest positive impact on economic growth.

Other institutional quality characteristics, such as regulatory quality and rule of law, benefit economic growth in addition to these core variables. However, the predicted coefficients for these variables have a significant level of just 10%, showing that changes in regulatory quality and rule of law are not as closely connected with changes in GDP per capita as the main factors.

CONCLUSION

This paper examined the link between economic growth and institutions in several Muslim nations, intending to identify alternate hypotheses regarding the relative importance of these variables. It should be underlined that the most significant contribution is not to provide new policy recommendations but rather to convey research findings clearly and straightforwardly.

The paper conducts a cross-country analysis over 20 years in the first part of this study and finds that only three indicators of institutional quality (government effectiveness, political stability and absence of violence terrorism, voice and accountability) are closely associated with economic growth. The report

emphasizes that a typical strategy employed in past research, which is being reviewed, does not consider how the study's essential components may have altered over time. This is critical to remember while interpreting the results.

The paper uses a fixed-effects panel setting in the second part of the analysis. It establishes far more statistically significant links between institutional quality and economic growth. However, it also remarks that because of the autocorrelation and endogeneity of the independent variables, this specification may result in biased conclusions. This is something that is pointed out in this study.

In the study's third and last section, the research uses the Arellano-Bond GMM dynamic estimator, which effectively tackles both autocorrelation and endogeneity within the context of the time-series analysis. The results show that government effectiveness, political stability, absence of violence terrorism, and voice and accountability are essential determinants of economic growth in Muslim countries. Additionally, regulatory quality and rule of law also play a role, although to a lesser degree.

It is advised that future studies might separate Muslim countries based on the political regime of its government, either democracy or autocracy. Likewise, future studies could use different institutional quality indicators to see various impacts on economic growth.

REFERENCES

- Acemoglu, D. *et al.* (2019) 'Democracy Does Cause Growth', *Journal of Political Economy*, 127(1), pp. 47–100. Available at: <https://doi.org/10.1086/700936>.
- Aisen, A. and Veiga, F.J. (2013) 'How does political instability affect economic growth?', *European Journal of Political Economy*, 29, pp. 151–167. Available at: <https://doi.org/10.1016/j.ejpoleco.2012.11.001>.
- Arellano, M. and Bond, S. (1991) 'Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations', *The Review of Economic Studies*, 58(2), p. 277. Available at: <https://doi.org/10.2307/2297968>.

- Arellano, M. and Bover, O. (1995) 'Another look at the instrumental variable estimation of error-components models', *Journal of Econometrics*, 68(1), pp. 29–51. Available at: [https://doi.org/10.1016/0304-4076\(94\)01642-D](https://doi.org/10.1016/0304-4076(94)01642-D).
- Asutay, M. and Mohd Sidek, N.Z. (2021) 'Political economy of Islamic banking growth: Does political regime and institutions, governance and political risks matter?', *International Journal of Finance & Economics*, 26(3), pp. 4226–4261. Available at: <https://doi.org/10.1002/ijfe.2011>.
- Baltagi, B.H. (2005) *Econometric Analysis of Panel Data*. 3rd ed. New York: John Wiley & Sons, Ltd.
- Barro, R.J. (1991) 'Economic Growth in a Cross Section of Countries', *The Quarterly Journal of Economics*, 106(2), pp. 407–443.
- Barro, R.J. and Lee, J.-W. (1993) 'International comparisons of educational attainment', *Journal of Monetary Economics*, 32(3), pp. 363–394. Available at: [https://doi.org/10.1016/0304-3932\(93\)90023-9](https://doi.org/10.1016/0304-3932(93)90023-9).
- Barro, R.J. and Lee, J.-W. (1994) 'Sources of economic growth', *Carnegie-Rochester Conference Series on Public Policy*, 40, pp. 1–46. Available at: [https://doi.org/10.1016/0167-2231\(94\)90002](https://doi.org/10.1016/0167-2231(94)90002).
- Bashir, M.F. and Xu, C. (2014) 'Impact of political freedom, economic freedom and political stability on economic growth', *Journal of Economics and Sustainable Development*, 5(22).
- Baumol, W.J. (1986) 'Productivity Growth, Convergence, and Welfare: What the Long-Run Data Show', *The American Economic Review*, 76(5), pp. 1072–1085.
- Blundell, R. and Bond, S. (1998) 'Initial conditions and moment restrictions in dynamic panel data models', *Journal of Econometrics*, 87(1), pp. 115–143. Available at: [https://doi.org/10.1016/S0304-4076\(98\)00009-8](https://doi.org/10.1016/S0304-4076(98)00009-8).
- Bond, S.R., Hoeffler, A. and Temple, J.R.W. (2001) *GMM Estimation of Empirical Growth Models*, Available at SSRN: <https://ssrn.com/abstract=290522>. Available at: https://papers.ssrn.com/sol3/papers.cfm?Abstract_id=2905.
- Brune, L. et al. (2022) 'Social protection amidst social upheaval: Examining the impact of a multi-faceted program for ultra-poor households in Yemen', *Journal of Development Economics*, 155, p. 102780. Available at: <https://doi.org/10.1016/j.jdevco.2021.102780>.
- Bumann, S., Hermes, N. and Lensink, R. (2013) 'Financial liberalization and economic growth: A meta-analysis', *Journal of International Money and Finance*, 33, pp. 255–281. Available at: <https://doi.org/10.1016/j.jimonfin.2012.11.013>.
- Caselli, F., Esquivel, G. and Lefort, F. (1996) 'Reopening the convergence debate: A new look at cross-country growth empirics', *Journal of Economic Growth*, 1(3), pp. 363–389. Available at: <https://doi.org/10.1007/BF00141044>.
- Castiglione, C., Infante, D. and Smirnova, J. (2015) 'Environment and economic growth: is the rule of law the go-between? The case of high-income countries', *Energy, Sustainability and Society*, 5(1), p. 26. Available at: <https://doi.org/10.1186/s13705-015-0054-8>.
- Cooray, A. (2009) 'Government Expenditure, Governance and Economic Growth', *Comparative Economic Studies*, 51(3), pp. 401–418. Available at: <https://doi.org/10.1057/ces.2009.7>.
- Dutta, N. and Kar, S. (2018) 'Relating the rule of law and budgetary allocation for tourism: Does per capita income growth make a difference for Indian states?', *Economic Modelling*, 71, pp. 263–271. Available at: <https://doi.org/10.1016/j.econmod.2017.12.017>.
- Easterly, W. and Levine, R. (2001) *It's not factor accumulation: stylized facts and growth models*. 164.
- Elorrieta, B., Cerdan Schwitzguébel, A. and Torres-Delgado, A. (2022) 'From success to unrest: the social impacts of tourism in Barcelona', *International Journal of Tourism Cities*, 8(3), pp. 675–702. Available at: <https://doi.org/10.1108/IJTC-05-2021-0076>.
- Gani, A. (2011) 'Governance and Growth in Developing Countries', *Journal of Economic Issues*, 45(1), pp. 19–40. Available at: <https://doi.org/10.2753/JEI0021-362445>.
- Gründler, K. and Krieger, T. (2016) 'Democracy and growth: Evidence from a machine learning indicator', *European Journal of Political Economy*, 45, pp. 85–107. Available at: <https://doi.org/10.1016/j.ejpoleco.2016.05.005>.
- Gurr, T.R., Woodward, M. and Marshall, M.G. (2005) *Forecasting Instability: Are ethnic wars and Muslim countries different?*
- Haggard, S. and Tiede, L. (2011) 'The Rule of Law and Economic Growth: Where are We?', *World Development*, 39(5), pp. 673–685. Available at: <https://doi.org/10.1016/j.worlddev.2010.10.007>.
- Hammudeh, S. et al. (2020) 'Non-linear relationship between economic growth and nuances of globalization with income stratification: Roles

- of financial development and governance', *Economic Systems*, 44(3), p. 100761. Available at: <https://doi.org/10.1016/j.ecosys.2020.100761>
- Hayat, A. (2019) 'Foreign direct investments, institutional quality, and economic growth', *The Journal of International Trade & Economic Development*, 28(5), pp. 561–579. Available at: <https://doi.org/10.1080/09638199.2018.1564064>.
- Henderson, J.V. (2000) *The Effects of Urban Concentration on Economic Growth*. Cambridge, MA. Available at: <https://doi.org/10.3386/w7503>.
- Huynh, K.P. and Jacho-Chávez, D.T. (2009) 'A nonparametric quantile analysis of growth and governance', *Nonparametric Econometric Methods*, 25, pp. 193–221. Available at: [https://doi.org/10.1108/S0731-9053\(2009\)0000025009](https://doi.org/10.1108/S0731-9053(2009)0000025009).
- Islam, N. (1995) 'Growth Empirics: A Panel Data Approach', *The Quarterly Journal of Economics*, 110(4), pp. 1127–1170. Available at: <https://doi.org/10.2307/2946651>.
- Jalilian, H., Kirkpatrick, C. and Parker, D. (2007) 'The Impact of Regulation on Economic Growth in Developing Countries: A Cross-Country Analysis', *World Development*, 35(1), pp. 87–103. Available at: <https://doi.org/10.1016/j.worlddev.2006.09.005>.
- Knight, M., Loayza, N. and Villanueva, D. (1993) 'Testing the Neoclassical Theory of Economic Growth: A Panel Data Approach', *Staff Papers - International Monetary Fund*, 40(3), p. 512. Available at: <https://doi.org/10.2307/3867446>.
- Levine, R. and Renelt, D. (1992) 'A Sensitivity Analysis of Cross-Country Growth Regressions', *American Economic Review*, 82(4), pp. 942–963.
- Malikane, C. and Chitambara, P. (2017) 'Foreign Direct Investment, Democracy and Economic Growth in Southern Africa', *African Development Review*, 29(1), pp. 92–102. Available at: <https://doi.org/10.1111/1467-8268.12242>.
- Mankiw, N.G., Romer, D. and Weil, D.N. (1992) 'A Contribution to the Empirics of Economic Growth', *The Quarterly Journal of Economics*, 107(2), pp. 407–437. Available at: <https://doi.org/10.2307/2118477>.
- Méndez-Picazo, M.-T., Galindo-Martín, M.-Á. and Ribeiro-Soriano, D. (2012) 'Governance, entrepreneurship and economic growth', *Entrepreneurship & Regional Development*, 24(9–10), pp. 865–877. Available at: <https://doi.org/10.1080/08985626.2012.742323>.
- Misi Lopes, L.E., Packham, N. and Walther, U. (2023) 'The effect of governance quality on future economic growth: an analysis and comparison of emerging market and developed economies', *S.N. Business & Economics*, 3(6), p. 108. Available at: <https://doi.org/10.1007/s43546-023-00488>.
- Phuc Canh, N., Schinckus, C. and Thanh, S.D. (2019) 'Do economic openness and institutional quality influence patents? Evidence from GMM systems estimates', *International Economics*, 157, pp. 134–169. Available at: <https://doi.org/10.1016/j.inteco.2018.10.002>.
- Prasetyo, P.E., Setyadharma, A. and Kistanti, N.R. (2020) 'The Relationship Between Institutions and Business Opportunities Toward Economic Growth', *Economics Development Analysis Journal*, 8(4), pp. 281–291. Available at: <https://doi.org/10.15294/edaj.v8i4.36311>.
- Radu, M. (2015) 'Political Stability - A Condition for Sustainable Growth in Romania?', *Procedia Economics and Finance*, 30, pp. 751–757. Available at: [https://doi.org/10.1016/S2212-5671\(15\)01324-6](https://doi.org/10.1016/S2212-5671(15)01324-6).
- Rietveld, P. (1989) 'Infrastructure and Regional Development: A Survey of Multiregional Economic Models', *The Annals of Regional Science*, 23, pp. 255–274.
- Rodríguez-Pose, A. and Garcilazo, E. (2015) 'Quality of Government and the Returns of Investment: Examining the Impact of Cohesion Expenditure in European Regions', *Regional Studies*, 49(8), pp. 1274–1290. Available at: <https://doi.org/10.1080/00343404.2015.1007933>.
- Romer, P.M. (1990) 'Endogenous Technological Change', *Journal of Political Economy*, 98(5, Part 2), pp. S71–S102. Available at: <https://doi.org/10.1086/261725>.
- Sabir, S., Rafique, A. and Abbas, K. (2019) 'Institutions and FDI: evidence from developed and developing countries', *Financial Innovation*, 5(1), p. 8. Available at: <https://doi.org/10.1186/s40854-019-0123-7>.
- Sachs, J.D. and Warner, A.M. (1997) 'Fundamental Sources of Long-Run Growth', *The American Economic Review*, 87(2), pp. 184–188.
- Sala-i-Martin, X., Doppelhofer, G. and Miller, R.I. (2004) 'Determinants of Long-Term Growth: A Bayesian Averaging of Classical Estimates (BACE) Approach', *The American Economic Review*, 94(4), pp. 813–835.

- Salman, M. *et al.* (2019) 'The impact of institutional quality on economic growth and carbon emissions: Evidence from Indonesia, South Korea and Thailand', *Journal of Cleaner Production*, 241, p. 118331. Available at: <https://doi.org/10.1016/j.jclepro.2019.118331>
- Sharma, C. and Mishra, R.K. (2022) 'On the Good and Bad of Natural Resource, Corruption, and Economic Growth Nexus', *Environmental and Resource Economics*, 82(4), pp. 889–922. Available at: <https://doi.org/10.1007/s10640-022-00694-x>.
- Shittu, W.O., Hassan, S. and Nawaz, M.A. (2018) 'The nexus between external debt, corruption and economic growth: evidence from five SSA countries', *African Journal of Economic and Management Studies*, 9(3), pp. 319–334. Available at: <https://doi.org/10.1108/AJEMS-07-2017-0171>.
- Siwu, G.D., Azike, L.C. and Ngwu, J.C. (2021) 'Poverty and Economic Growth Nexus in Nigeria', *ESUT Journal of Social Sciences*, 6(2).
- Spyromitros, E. and Panagiotidis, M. (2022) 'The impact of corruption on economic growth in developing countries and a comparative analysis of corruption measurement indicators', *Cogent Economics & Finance*, 10(1). Available at: <https://doi.org/10.1080/23322039.2022.2129368>.
- Tabassam, A.H., Hashmi, S.H. and Rehman, F.U. (2016) 'Nexus between Political Instability and Economic Growth in Pakistan', *Procedia - Social and Behavioral Sciences*, 230, pp. 325–334. Available at: <https://doi.org/10.1016/j.sbspro.2016.09.041>.
- Tebaldi, E. and Mohan, R. (2010) 'Institutions and Poverty', *Journal of Development Studies*, 46(6), pp. 1047–1066. Available at: <https://doi.org/10.1080/00220380903012730>.
- Temple, J. (1999) 'The New Growth Evidence', *Journal of Economic Literature*, 37(1), pp. 112–156. Available at: <https://doi.org/10.1257/jel.37.1.112>.
- Wood, R. *et al.* (2022) 'Resisting Lockdown: The Influence of COVID-19 Restrictions on Social Unrest', *International Studies Quarterly*, 66(2). Available at: <https://doi.org/10.1093/isq/sqac015>.
- Wright, J. (2008) 'Do Authoritarian Institutions Constrain? How Legislatures Affect Economic Growth and Investment', *American Journal of Political Science*, 52(2), pp. 322–343. Available at: <https://doi.org/10.1111/j.1540-5907.2008.00315.x>.
- Yunan, Z.Y. and Andini, A. (2018) 'Corruption, Poverty, and Economic Growth (Causality Studies among Asean Countries)', *JEJAK: Jurnal Ekonomi dan Kebijakan*, 11(2), pp. 413–428. Available at: <https://doi.org/10.15294/jejak.v11i2.16061>.