

Economic Growth and Government Size in OIC Countries: A GMM Application

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This study intends to investigate the short and long-term relationship between government size and economic growth in the Islamic Cooperation Organization (OIC) during the 2010 to 2018 period through an empirical approach to 57 OIC countries using the dynamic data panel method GMM Arellano-Bond. The results show that in the short term, government size has a negative and significant effect on economic growth, while government investment has a positive and significant effect on economic growth. The results also show that in the long run, government size has a negative and significant effect on economic growth, while government investment has a positive and significant impact on economic growth. This research also supports the previous study which stated that there is a 'inverted-U relationship' between government size and economic growth. Policy recommendations that can be taken from this research are that the governments of OIC countries can make strategic steps in their spending by restructuring taxes and expenditures to maximize the effect on economic growth. Compared with previous research, the author tries to analyze the short and long-term relationship between government size and economic growth in OIC countries, by developing a longer research period and involving all OIC members, totaling 57 countries. This paper is expected to contribute to complementing the existing literature on economic growth in OIC countries.

Keywords: Economic growth; GMM Arellano-Bond; Government size; OIC countries

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INTRODUCTION

The relationship between government size and economic growth is an ongoing debate among academics in development economics. The role of the government is believed to be a catalyst in encouraging rapid economic growth, especially in poor countries through the development of adequate legal, administrative, and economic infrastructure. However, several studies have found that a greater role of government or size of government can lead to lower rates of economic growth due to unproductive government spending. In theory, a larger government size is likely to hurt economic growth (Ghali, 1998). This is because inefficiencies in government, excessive taxation, corruption, and profit-seeking behavior are evident in developing countries. Another example, when public investment is made by heavily subsidized and inefficient state-owned companies in agriculture, manufacturing, energy, banking, and financial services, it more often reduces the likelihood of private investment and long-term economic growth. This coincides with the assumption that the government has been known in the industrialized world where infrastructure is well developed, has been around for a long time. The study by Hansson and Henrekson (1994) found that government transfers, consumption, and total expenditure had negative effects, while education spending had positive effects, and government investment had no effect on private productivity growth. Barro (1994) considers that unproductive government spending will reduce the GDP growth rate, while the effect of productive government spending on GDP growth rates is uncertain, depending on how the government behaves and whether the expenditure ratio is too small. or too much.

The law that places the importance of economic growth as a driver of government size is *Wagner's Law*. *Wagner's Law* (1958) states that government spending is elastic income and the ratio of government spending to income tends to grow along with economic development which mostly refers to productive government spendings such as education, infrastructure, and law which are important factors for economic growth. Akitoby et al. (2006) suggest that *Wagner's law* may apply to developed countries, but less likely to developing countries. The ambiguity result over the impact of government size on GDP growth prevailing in most of the previous studies is due to their differences in the specification of the econometric model as well. Also, this is due to differences in government size and the selection of sample data. Halicioğlu (2003) used the Granger causality test method in a similar study in Turkey and from that study, no causality was found between GDP per capita and share of government spending. In contrast, a study by Abu-Bader and Abu-Quar (2003) found evidence of Granger causality ranging from national income to government spending,

thereby supporting *Wagner's law*. The issue of the right 'size of government' for the economic prosperity of a nation, which is closely related to the problem of the optimal 'role of the state' has not received much attention in the previous literature.

Only a few studies have examined the effect of government size and economic growth on the assumption that there is an 'Inverted-U relationship' between government size and economic growth. One of them is Altunc and Aydın (2013), and Duasa (2018). In his research, Duasa (2018) identifies factors that affect economic growth in OIC countries. The results of his research indicate that the workforce and government size have a significant effect on economic growth. According to Kahf (1992), government involvement in the market is not occasional or temporary. The government must coexist with other economic units on a permanent and stable basis and act as a planner, supervisor, producer, and consumer. However, the importance of the government is to ensure efficiency and provide provisions that cannot be accommodated by the market system, the expansion or contraction of its role can never contract beyond the limits set out in Islamic law. Thus, it is hoped that there will be an optimal size of government that can be adopted by OIC countries to maximize the welfare of their nation, in particular, to maximize the standard of living.

This study intends to investigate the relationship between government size and economic growth in the Organization of Islamic Cooperation (OIC) through a comprehensive empirical approach (to 57 OIC countries) so that it can be widely known the influence of government size on economic growth in OIC countries.

LITERATURE REVIEW

According to Nyasha and Odiambo (2019), government size can be measured from three types of approaches, namely the expenditure, revenue, or employment approaches. The indicator approach that commonly used is the expenditure approach that comes from the national balance. In aggregate terms, total government expenditure is often used to represent the size of government. The less government expenditure, the smaller its size, and vice versa. Cusack and Fuchs (2002) divide government expenditure into five components, namely investment and consumption expenditures, subsidies, social transfers, and interest payments. Several studies related to government expenditure explain the overall relationship between government size and various macroeconomic variables. The consideration of the various components of government expenditure by various researchers is based on the understanding that different categories of government expenditure can have different effects on various macroeconomic variables. Even when the components of government expenditure are considered, the more expenditure in the category under

consideration, the greater the size of the government, and vice versa.

There are several previous studies related to government size and economic growth, one of which is [Altunc and Aydin \(2013\)](#) examined the relationship between government expenditure and economic growth rates in Turkey, Romania, and Bulgaria using data for the period 1995-2011. The main objective of this study is to examine whether there is an inverted-U-shape relationship between public expenditure and economic growth. This research was conducted to determine the optimal level of public spending for the economies in Turkey, Romania and Bulgaria. This study uses the Autoregressive Distributed Lag (ARDL) method. The results shows that the current share of public spending in GDP exceeds optimal public spending for the three countries. Then, the study results show that the optimal percentage of government expenditure is around 25, 20 and 22 percent, respectively, for Turkey, Romania and Bulgaria.

[Asimakopoulos and Yiannis \(2015\)](#) identified the relationship between government size and economic growth and identified the optimal level of government size in 129 countries using the Generalized Method of Moments (GMM) approach. The results show that the relationship between government size and economic growth is significant. In addition, an asymmetrical impact of government size on economic growth in developed and developing countries was found around the estimated threshold.

[Aleksandrovich and Upadhyaya \(2015\)](#) examined the effect of government size on economic growth in three OECD countries, namely the United States, Canada, and the United Kingdom. A standard growth model is developed in which capital, labor, government size, and tax revenue are included as explanatory variables. Annual time-series data from 1975 to 2012 were used to estimate the model. The estimation results show that government size does not have a significant positive effect on economic growth. In some cases (the UK and Canada), it shows a negative effect, perhaps due to a large crowding-out effect. Then, an increase in tax revenue does not show a negative effect in Great Britain and Canada but has a significant negative effect on GDP growth in the US economy.

Furthermore, [Sabra \(2016\)](#) examines the relationship between government size, country size, openness, and economic growth in eight Middle East and North Africa (MENA) countries from 1977 to 2013. This study uses three models, two of which use the 2SLS technique and the third model uses the GMM system analysis. The results shows that there was a negative relationship between government size and economic growth. This negative relationship suggests that the eight MENA countries are at the bottom of the Armev curve, meaning that governance growth does not improve the investment environment or reduce transaction costs or drive the private sector up.

[Meyer and Sanusi \(2019\)](#) examined the causal relationship between domestic investment, employment, and economic growth in South Africa. This study uses quarterly data from 1995Q1 to 2016Q4 and is processed using the Vector Error Correction Model (VECM) method. The results show that there is a long-term relationship between domestic investment, employment, and economic growth, with causality running from economic growth to investment and not vice versa. The results also show that investment has a positive long-term impact on employment. Further empirical evidence suggests that there is a two-way causality between employment and economic growth, while a unidirectional causality between investment and employment is also found.

Next, [Nyasha and Odiambo \(2019\)](#), where the results of their research show that the direction of causality between these two variables has four possible results. However, of the four, the most prominent is the second view, which validates Granger causality from the direction of economic growth to government size, followed by the two-way Granger causality category. Therefore, the study concludes that the causal relationship between government size and economic growth is far from clear.

METHODS

This research is quantitative using panel data regression analysis. The use of panel data is the basis for the process of estimating research data, namely the use of it in acquiring characteristics between time and between individuals. Panel data regression can minimize collinearity between variables and maximize degrees of freedom in increasing efficiency ([Firdaus, 2011](#)). The method used in this research is a dynamic panel data regression using the Arellano-Bond Generalized Method of Moment (GMM) approach. Panel data analysis can be used in dynamic models, where the dependent variable does not only depend on exogenous variables, but also the lag of the dependent variable ([Dasril, 2015](#)). This model was chosen because the cross-section data is larger than the time-series data ($N > T$).

The advantage of this method is that it can determine the short-term and long-term effects. Inclusion of the dependent variable lag into the independent variable gives a difference in the estimator model. Also, in dynamic panel data regression, according to [Anderson and Hsiao \(1982\)](#) in [Syahrul \(2011\)](#), the Instrumental Variable (IV) estimation method can be used, namely by instrumenting variables that are correlated with the error. There are two estimation procedures in the GMM framework, namely the first-different GMM (FD-GMM or AB-GMM) and the GMM system (SYS-GMM) ([Lubis and Setiawan, 2013](#)). Then proposed a serial correlation test based on GMM residues and comparing it with the Sargan test. Arellano

Bond's GMM estimation method produces unbiased, consistent, and efficient estimates.

The data used in this study uses secondary data in the form of panel data, which is a combination of cross-section and time series. This study uses data on the population of countries that are members of the Organization of Islamic Cooperation (OIC) as many as 57 countries, between 2010 and 2018. The data is in the form of annual statistics obtained officially from SESRIC.

Next, the model specifications that can be formulated in this study are as follows:

$$GDPGR_{it} = \alpha + \delta GDPGR_{it-1} + \beta_1 GOVCONS_{it} + \beta_2 LN_FXCAP_{it} + \beta_3 LABOUR_{it} + \epsilon_{it}$$

Definitions:

Variables	Symbol	Proxy	Source
Economic Growth	GDPGR _{it}	GDP growth (%)	Sabra (2016); Duasa (2018)
Government Size (Consumption)	GOVCON S _{it}	Government consumption expenditure (% of GDP)	Sabra (2016); Duasa (2018)
Government Size (Investment)	FXCAP _{it}	Gross fixed capital formation (US Dollar)	Asimakopoulou & Karavias (2015); Ali (2015); Duasa (2018)
Labours	LABOUR _{it}	Labor force participation rate (%)	Aleksandrovič & Upadhyaya (2015); Duasa (2018)
α	= Intercept	ϵ	= Error
β	= Coefficient	i, t	= OIC countries-i, year-t

RESULTS AND DISCUSSION

OIC's Economic Growth Modeling

OIC's Economic Growth Modeling is carried out using dynamic panel data of GMM Arellano-Bond on government size which is proxied by the government consumption expenditure variable (GOVCONS), then investment proxied through the gross fixed capital formation variable (FXCAP), and the labor force participation rate (LABOR). Estimation using the GMM Arrelano Bond method was carried out by involving 57 OIC countries from 2010 to 2018. In obtaining an

estimator of the coefficient of the OIC country's economic growth model, the GMM model was a two-step difference. The parameter estimation results can be obtained in Table 1 below.

Table 1: Estimation Result of GMM Arellano-Bond

Variable	One Step Diff	One-Step System	Two-Step Diff	Two-Step System	Two-Step Diff Robust
C		3.452442		1.856538	
L1.GDPGR	0.042489	-0.06128	0.046014	-0.07553***	0.046014
GOVCONS	-3.42421***	0.63127***	-3.12649***	0.46659***	3.12649***
LN_FXCAP	11.92747***	0.287069	6.779572***	0.248769	6.779572**
LABOUR	0.261987	0.035084	0.169063	0.029606	0.169063
Sargan test stat (p-value)	26.48 (0.00)	56.12 (0.00)	26.48 (0.00)	56.12 (0.00)	26.48 (0.00)
AB-test orde 2 (p-value)	-1.30 (0.194)	-1.48 (0.139)	-1.45 (0.148)	-1.48 (0.163)	-1.08 (0.278)
Total Observation	399	456	399	456	399
Total Group	57	57	57	57	57
GOVCONS (long-term)					-
LN_FXCAP (long-term)					3.27729***
					7.10657**

From the results of the GMM two-step difference estimation, it can be seen that a maximum of only two variables is significant at the 1 and 5 percent real levels in all models. The best results are in the Two-Step Difference Robust model after comparisons between the different models and the system, so that the GMM estimation uses the Two-Step Difference GMM Robust as the best model that can be used for the interpretation of the research results. Two-Step Difference Robust GMM estimates have two significant variables at the real level of one and five percent, namely government consumption expenditure (GOVCONS), gross fixed capital formation (FXCAP). These two significant variables are then required to estimate the long-run model, whose coefficient results can be found through the long-run table above. The interpretation of the above model can use the ceteris paribus assumption, namely when government consumption expenditure (GOVCONS) increases by one percent, it will reduce the economic growth of the OIC country by 3,126 percent in the short term. Then when the gross fixed capital formation (FXCAP) increases by one percent, it will increase the economic growth of the OIC countries by 6,779 percent in the short term.

In the long run, these two variables are significant at the 1 and 5 percent real levels. When government consumption expenditure (GOVCONS) increases by one percent, it will reduce the economic growth of the OIC country by 3,277 percent in the long run. Meanwhile, when the gross fixed capital formation (FXCAP) increases by one percent, it will increase the economic growth of the OIC countries by 7.1 percent in the long run. The findings in this study indicate that lower government expenditure will affect higher economic growth among OIC countries.

As a comparison, estimation is also carried out using the static data panel method using the Fixed Effect Model as the best model for estimating static data panels. The results in Table 2 below show similar results to the previous GMM Robust Two-Step Difference

estimation. In the coefficient, there is no change in the direction of the influence of each variable on the growth of the OIC country. Only the labor force participation rate (LABOR) variable has a different direction of influence when compared to the results of the GMM Robust Two-Step Difference estimation. However, this has no impact because the variable is not significant at any real level.

Table 2: Fixed Effect Model Estimation Results

Variables	Coefficient	Prob.
C	-51.2025	0.165
GOVCONS	-1.18452	0.000***
LN_FXCAP	3.181233	0.036**
LABOUR	-0.02428	0.914

Classic assumption test

To assess whether the research instrument is valid or not, it can be seen in the Sargan Test with a test result of 26.48, significant at any real level, so reject H_0 , which means that the instrument variable in the OIC country's economic growth model is invalid or the number of instrument variables is less than the number of parameters estimated. The hypothesis of the Sargan test is

H_0 : Condition overidentifying restrictions in model estimation is valid (instrument variables are not correlated with errors); and

H_1 : Condition of overidentifying restrictions in model estimation is invalid.

The estimator consistency criteria are the absence of second-order serial correlation of errors and endogenous variables in the first difference equation as shown by the results of the Arellano-Bond Test or AB Test in Table 1. The second-order test statistics (AR (2)) are 1.08 and P- The value of 0.278 is greater than the five percent real level, so the decision is to fail to reject H_0 , which means that the resulting parameter estimates are consistent or there is no second-order serial correlation of the error and endogenous variables in the first difference equation. The Arellano-Bond Test hypothesis is:

H_0 : There is no serial correlation between Δv_{it} and Δv_{it-2} (*random walk*); and

H_1 : There is a serial correlation between Δv_{it} and Δv_{it-2}

The description of the relationship between variables is explained through the correlation matrix and p-value between variables and the plot between the economic growth of the OIC countries and the variables that influence it are used to determine the relationship between variables. The multicollinearity test results can be seen in Table 3 below.

Table 3: Multicollinearity Test Results

	GDPGR	GOVCONS	LN_FXCAP	LABOUR
GDPGR	1			
GOVCONS	-0.2367	1		
LN_FXCAP	0.0037	0.0353	1	
LABOUR	0.1014	-0.1356	-0.1137	1

Based on the Pearson correlation matrix correlation value in Table 3, it shows that the coefficient on each independent variable is not higher than the absolute value of 0.8 so that there is no multicollinearity in the dynamic data panel model.

DISCUSSION

The results of this study provide several important findings. One of them is the relationship between government size which is proxied by government consumption expenditure (GOVCONS) with the economic growth of OIC countries (GDPGR). These two variables have a negative and significant relationship. The results of this study are in accordance with research from [Duasa \(2018\)](#), where government consumption expenditure has a negative and significant relationship to economic growth in OIC countries, so this indicates that there has been a 'Inverted-U relationship' between the two variables. In the case of OIC countries, smaller governments are potentially more efficient due to fewer distortions caused by policy, the greater discipline of market forces that promote efficient use of resources, and the absence of a crowding-out effect that weakens the incentives to create new capital that embodies new technology ([Dar and Amir Khalkhali, 2002](#)). Conversely, a larger size of government tends to hurt economic efficiency and growth due to inefficient governance, policy processes that impose excessive burdens and costs on the economic system, and many fiscal and monetary policies that tend to distort economic incentives and reduce system productivity ([Ram, 1986](#)).

Furthermore, the relationship between investment proxied through the formation of gross fixed capital (FXCAP) and the economic growth of the OIC countries (GDPGR). These two variables have a positive and significant relationship. The results of this study are consistent with research from [Aleksandrovich and Upadhyaya \(2015\)](#) which states that fixed capital formation has a positive and significant relationship to economic growth in the United States and Canada. From the results of this study, it means that investment can boost economic growth. Keynes argues that investment or new capital can increase aggregate demand in the economy ([Meyer and Sanusi, 2019](#)). An increase in domestic investment occurs when existing companies make new investments or new domestic investors enter the market ([Faulkner, Loewald & Makrelov, 2013](#)). Theoretically, the increase in investment is expected to increase economic growth.

Finally, the relationship between the labor force participation rate (LABOR) and the economic growth of the OIC countries (GDPGR). These two variables have a positive relationship, but both of them do not have a significant relationship. The results of this study are in accordance with research from Duasa (2018), where the level of labor force participation has a positive relationship to economic growth in the OIC country, but there is no significance. Nonetheless, the contribution of labor to economic growth appears to be very important among OIC countries. According to Duasa (2018), this is because most of the OIC countries are labor-intensive countries, which are defined as project development activities that use more human power than machine power. Since labor is one of the contributors to economic growth, the role of government in the labor market appears to be very important. This includes government involvement in increasing human resources for these countries.

CONCLUSION

This study attempts to utilize the econometric method in a sample of OIC countries from 2010 to 2018 to identify the relationship between government size and economic growth, then also tries to identify the optimal size of government by maximizing the country's economic growth using dynamic data panel estimates. The results of this study indicate that a small government size contributes to the country's higher economic growth. Apart from that, fixed capital formation was also found to be an important factor contributing to economic growth and contributing positively to growth. This research provides some evidence that the 'inverted-U relationship' between government size and economic growth as in previous studies, also occurs in OIC countries.

The policies that can be taken by the governments of OIC countries are to formulate strategic steps in their spending by restructuring taxes and expenditures to maximize the effect on economic growth. In addition, in increasing economic growth, the contribution of government expenditure will be less significant if it is allocated inefficiently for projects or attracting private investment. These findings will be useful for policymakers starting the task of allocating budget spending and restricting, that is, redirecting spending to activities that increase growth.

REFERENCES

- Abu-Bader, S., & Abu-Quar, A. (2003). Government Expenditures, Military Spending and Economic Growth: Causality Evidence from Egypt, Israel and Syria. *Journal of Policy Modeling*, 25:567–583.
- Akitoby, B., Clements, B., Gupta, S., & Inchauste, G. (2006). Public Spending, Voracity, and Wagner's Law in Developing Countries. *European Journal of Political Economy*, 22: 908–924.
- Aleksandrovich, A., & Upadhyaya, K. P. (2015). Government Size and Economic Growth: Evidence from Selected OECD Countries. *International Journal of Economics and Finance*, 7(5): 38–43.
- Altunc, O. F., & Aydın, C. (2013). The Relationship between Optimal Size of Government and Economic Growth: Empirical Evidence from Turkey, Romania and Bulgaria. *Procedia - Social and Behavioral Sciences*, 92, 66–75. <https://doi.org/10.1016/j.sbspro.2013.08.639>
- Asimakopoulou, S., & Yiannis, K. (2015). The impact of government size on economic growth: a threshold analysis. *Economics Letters*, 139, 1–9.
- Barro, R. (1990). Government spending in a simple model of endogenous growth. *Journal of Political Economy*, 98: S103–S125.
- Dar, A. A., & AmirKhalkhali, S. (2002). Government Size, Factor Accumulation, and Economic Growth: Evidence from OECD Countries. *Journal of Policy Modeling* 24, 679–692.
- Dasril, R. O. (2015). Dampak Inklusi Keuangan terhadap Kebijakan Kebijakan Moneter: Pengalaman Empiris dengan Data Panel Dinamis. Skripsi IPB Bogor.
- Duasa, J. (2018). Government Size and Economic Growth: Empirical Study on Organization of Islamic Cooperation Countries. *Journal of Social Science and Humanities*, 1(6): 7–12.
- Faulkner, D., Loewald, C., & Makrelov, K. (2013). Achieving higher growth and employment: Policy options for South Africa. *South African Reserve Bank Working Paper*, 13(3): 1–35.
- Firdaus, M. (2011). *Aplikasi Ekonometrika untuk Data Panel dan Time Series*. Bogor (ID): IPB Press.
- Ghali, K. H. (1998). Government size and economic growth: evidence from a multivariate cointegration analysis. *Applied Economics*, 31: 975–987.
- Halicioğlu, F. (2003). Testing Wagner's Law for Turkey, 1960–2000. *Review of Middle East Economics and Finance*, 1(2), 129–140.
- Hansson, P., & Henrekson, M. (1994). A New Framework for Testing the Effect of Government Spending on Growth and Productivity. *Public Choice*, 81: 381–401.
- Kahf, M. (1992). *Financing the Public Sector in An Islamic Perspectives*. In *Resource Mobilization and Investment in an Islamic Economic Framework*, edited by Sattar, Z., 55–174. Herndon, VA: International Institute of Islamic Thought.
- Meyer, D. F., & Sanusi, K. A. (2019). A Causality Analysis of the Relationships Between Gross Fixed Capital Formation, Economic Growth and Employment in South Africa. *Studia Universitatis Babeş-Bolyai Oeconomica*, 64(1), 33–44. <https://doi.org/10.2478/subboec-2019-0003>

- Nyasha, S., & Odhiambo, N. M. (2019). Government Size and Economic Growth: A Review of International Literature. *SAGE Open*, 9(3): 1-12.
- Sabra, M. M. (2016). Government size, country size, openness and economic growth in selected MENA countries. *International Journal of Business and Economic Sciences Applied Research (IJBESAR)*, 9(1): 39-45.
- Syahrul, S. (2011). Penaksiran Parameter Model Regresi Data Panel Dinamis Menggunakan Metode Blundell dan Bond. Skripsi UI Jakarta.
- Wagner, A. (1958). *Three Extracts on Public Finance*. In *Classics in the theory of public finance*, edited by R. A. Musgrave, & A. T. Peacock, 1–15. New York: MacMillan, 1958 (extracts from Finanzwissenschaft, Part I, Third Edition, Leipzig, 1883, pp. 4–16, 69–76).