The Effect of Government Size on Economic Growth in Selected Islamic Countries

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Abstract: Islamic countries need to integrate their economies and to achieve maximum economic growth so as to create a union like European Union. Most Islamic countries possess oil- dependent economy which is among factors of rentier states emergence. So, an optimal change in the government expenditures to gross domestic product (government size) is a milestone to reach maximum economic growth. This paper presents evidence for the existence of a relation between economic growth and government expenditure through production function and neoclassical model. Through panel data method, 8 selected Islamic countries were assessed and the results revealed that government size increase has a negative effect on economic growth. If the estimates are accurate, the results may increase economic efficiency of the selected Islamic countries.

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1. Introduction

Enormous scientific endeavors have by present undertaken as regards the relation between economic growth and government expenditures. A great deal of empirical evidence represents the reverse relation between economic growth and government size; albeit this issue is directly related to the studied countries and their development stage. So with respect to different theoretical basic principles in this section, it is required to use econometrics for empirical analysis among selected Islamic countries.

Several essential points have been considered in this paper. The selected countries have many cultural, religious and economic commonalities. In order to estimate the effect of government size on economic growth, production function and neoclassical growth model have been adopted since the economic structures of the selected countries lack a proper economic growth in spite of enjoying abundant capital which may be due to exogenous technology and or two- stage investments.

This paper is comprised of five sections namely, 1) introduction, 2) subject background, 3) model specification, 4) estimate and results obtained from model, and 5) conclusions.

2. Research Literature

Among theoretical basic principles, regardless of technology issue which is one of the differentiating factors between neoclassical growth model and endogenous growth, investment factor is also discussed because according to the neoclassical model, return of investment is descending and causes economic growth only at the first stage and it has no considerable effect on economic growth at the second stage; while in endogenous growth model, the physical capital continually brings about economic growth, because human resources contribute to increase the efficiency of physical capital.

The question that is raised here is whether the endogenous economic growth model in all the selected countries is superior to neoclassical growth model or not.

It is obvious that in developing countries, human capital does not receive particular attention, and on the other hand according to previous studies (Londau) in developing countries, government expenditures in education field has no significant effect on economic growth and this is due to inefficiency of human capital to increase the efficiency of physical capital in these countries. The research method in this paper has been based on the overall view and methodology used by Alexiou Constantinos as he has applied neoclassical growth model and on the other hand, the variables used in this paper are among the elements comprising gross domestic product; these two points are regarded as the strengths of the present paper.

As per the subject background, below table can be provided.

Table 2.1- Domestic H	Researches
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			Table 2.1 Domestic Researches
Author	Model and estimation	Time span	Results
	method		
Saeed Mirza	Time series/	1959-	In agriculture sector, as the coefficients related to consumption and capital expenditures are not
Mohammadi	OLS	1988	significant, these two variables do not have any effect on the added value. In industry sector,

(1991)		Iran	the coefficient of government consumption costs is not significant, while the coefficient of	
			government capital costs is positive and significant. In services sector, both consumption costs	
			and capital costs have positive coefficients and significant effects on services added value.	
Ruhollah	Time Series	1960-	In the studied time span, there is no significant relation between labor force growth rate (active	
Khodarahmi	Rati Ram	1990	population) and gross domestic product growth, and this is not justifiable in our country due to	
(1992)	Model/ OLS	Iran	lack of complete employment conditions.	
			The coefficients related to net investment (whether public or private) to gross domestic product	
			have been estimated to be positive which indicates the positive relation between these	
			variables and production growth.	
Morteza Sameti	Time Series	1959-	The effect of government public expenditures on economy has been positive during 1959-1979	
(1992)	Rati Ram	1991	and negative after Islamic Republic (1979-1991). In fact we have a government with a large	
	Model/ OLS	Iran	volume and low influence in the economic activities.	
Mohammad	Time Series	959-	The maximum and minimum foreign and general impacts of government size on growth	
Reza Salehi	Rati Ram	1998	belong respectively to services sector and industry and mining sector. Also construction budget	
Robati (2001)	Model/ OLS	Iran	have more influenced growth compared with current budget.	

Table 2.2- International Studies

Author	Model and estimation method	Time span	Results
Daniel Londau (1986)	Production function Neoclassical growth model Weight least squares OLS	1960-1985 65 countries	Government consumption expenditures have negative significant effect on economic growth (without considering costs pertaining to defense and education). Government expenditures in education field to create a real education have acted inefficiently, because real education has had a strong relation with growth rate, yet there is no relation with government costs level in education field. Defense costs have no considerable effect on economic growth. Government capital costs play a positive yet weak role in economic growth.
J. Diamond (1989)	Dennison growth accounting Weight least squaresOLS	1980-1985 42 countries	Government general and capital expenditures have a positive relation with economic growth and government current expenditures have a negative relation with economic growth.
Rati Rom (1986)	Production function Neoclassical growth model Weight least squares OLS	1960-70s	Almost in all cases the government impact on economic growth is positive. Foreign impacts of government size are mainly positive. Factors productivity in public sector has been higher at least in 1960s. Although observations number of time series for each country is relatively low, there is an extensive consistency between time series and sectional estimates The positive impact of government size has been stronger in 1970s compared with 1960s, but relative productivity of production factors in public sector decreased during 1970s. Davidson and Mc Kenyan tests reveal that the studied models are preferable to previous works. Positive effects of government size on economic growth in low income countries are likely to be stronger.
J. Barro (1994)	Endogenous growth model Weight least squares LS	1960-1985 98 countries	It indicates a reverse relation between government consumption share in GDP and economic growth, but it concludes a direct relation between private investment to GDP and economic growth.
Mesgha Yasin (2003)	Production function Panel data	1987-1997 26 African countries	Government expenditures, trade freedom and private investments have a positive significant effect on economic growth.
Pacheco Cancado (2005)	Barro model Endogenous growth Panel data	1952-2000 15 Latin American countries	The results reveal that as life expectancy, freedom and investment increase, economic growth increases; and as government expenditures and democracy increase, economic growth decreases.
Clement Mulamba (2009)	Wagner Rule Panel data	1988-2004 SADC countries	It approves a long term relation between government expenditures and economic growth in SADC countries, and there is a one-sided relation from economic growth to government expenditures whether in long or short term.
Brady Christian (2007)	Barro model Endogenous growth Panel data	1986-2003 50 states of America	By one percent increase in government total costs, 0.287% decrease in real GDP will occur.
Alexiou Constantinos (2009)	Neoclassical growth Panel data	1995-2005 7 south east European countries	Government size increase has had a positive impact on economic growth. Also other mentioned variables have had a positive significant effect on the economic growth in these countries.

In the above mentioned studies, secondary variables are widely applied that take a passive

instance against each country economic-political structure, economically speaking. These variables

may be used in time series models where countries are studied separately; while in panel data model where countries are studied all together, main effective variables are sought on a group of countries that have certain commonalities. Applying the variables dependent upon economic- political structure does not have a result other than heterogeneous and meaningless variables; thus we use main variables comprising gross domestic product that are mainly independent of economicpolitical structure of target countries.

3. Model specification

Various researches have applied different methods for assessing the effect of government size on economic growth that each owns its specific properties.

According to Alexiou paper (2009), production function is used that has been expanded as per below.

$$Y = f(K, L) \tag{3.1}$$

As we know, production is a function of essential variables such as capital (K) and labor force (L). The above function has hypotheses that are presented in the following.

As K > 0 and L > 0, then we have:

$$\frac{\partial F}{\partial K} > 0, \ \frac{\partial 2F}{\partial K2} < 0 \tag{3.2}$$

$$\frac{\partial F}{\partial L} > 0, \ \frac{\partial 2F}{\partial L2} < 0 \tag{3.3}$$

The function has a constant return relative to the scale:

 $F(\lambda K, \lambda L) = \lambda. F(K, L) \text{ for}$ (3.4) all $\lambda > 0$

As per the model expanded by Barro, government expenditures may be identified as an essential variable that is effective on production.

Government expenditure is one of the effective factors on production. The government provides the stage of economic growth by increasing its expenditures in the field of security and economic infrastructures, so we have:

$$Y = f(K, L, G)$$
 (3.5)

Another variable that may be effective on economy is trade liberalization. The world economic freedom index published by Fraser Institute measures how much a country policies and entities support economic freedom, and one of the areas in which economic freedom is specified is international trade freedom. So we have:

$$Y = f(K, L, G, H)$$
 (3.6)

To obtain economic growth, first we take total differential from the above production function.

$$dY = (\partial Y / \partial K) dK + (\partial Y / \partial L) dL + (\partial Y / \partial G)$$

$$dG + (\partial Y / \partial H) dH$$
(3.7)

Then we must divide both sides of the equation to Y so that the left side of the equation will be converted into economic growth.

$$dY/Y = (\partial Y / \partial K) dK/Y + (\partial Y / \partial L) DL/Y + (\partial Y / \partial G) dG/Y + (\partial Y / \partial H) dH/Y$$
(3.8)

dY/Y represents economic growth and measures GDP changes relative to primary GDP.

dK/Y represents investment changes relative to GDP.

dL/Y represents labor force changes relative to GDP.

dG/Y represents government expenditures changes relative to GDP.

 $(\partial Y / \partial K)$, $(\partial Y / \partial L)$, $(\partial Y / \partial G)$, $(\partial Y / \partial H)$ are the coefficients of independent variables that must be estimated.

To apply above mentioned data and variables, several points must be regarded.

It must be noted that different indices may be used to measure government size. The index adopted in the present paper is changes in government expenditure relative to GDP.

Data used for the above variables must be real and based on purchasing power parity to price of the year 2000 so as to be able to apply them for the trend estimation and information comparison.

To use the labor force variable (L), the related index i.e. each country population must be adopted because there is no accurate and reliable information regarding labor force of different countries, and on the other hand there is an assumption that the more population, the more labor force.

One of the effective factors on the economic growth of each country is trade freedom; and to incorporate this variable we are obliged to use the related index that is the total trade volume of each country.

The unit used for gross domestic product, investment, government expenditures and total trade is dollar, and the unit used for labor force is person.

Some the required information including total trade and government expenditures in Iran and United Arabic Emirates for years 2008 and 2009 did not exist in the used databases, so the missing data was replaced by the information relating to the last two years built by using moving average.

In order to estimate the above variables coefficients, the information has been derived from

two international resources namely WDI and Economy Watch.

Panel data method and EViews 6 have been applied to estimate the variables coefficients among the selected countries.

4. Model Estimation

4.1 Variables Reliability Results

To investigate the effect of government size on economic growth of the selected Islamic countries, the model discussed in the previous sections must be estimated. The econometrics common methods in empirical works are based on variables reliability assumption. On the other hand, most time series in macro economy are unreliable. So preceding using time series variables, we must be assured about their reliability. In so doing, Levin, Lin & Chu Test is applied to determine whether time series variables in panel data models are reliable.

With regard to the studied outputs for unit root we have:

		6		
The variable dGDP/ GDP(-1) with intercept and trend		The variable dGDP/ GDP(-1) without intercept and trend		
Levin, lin & chu	0.1332	Levin, lin & chu 0.0324		
Im, Pesaran and Shin	0.7665	ADF	0.3763	
ADF	0.5067	РР	0.4228	
РР	0.6415			

Table 4.1- Results obtained from unit root test of economic growth variable

• The critical value is at the level 5%.

The assumption indicating existence of unit root in the second test that is without intercept and trend, is rejected and the economic growth variable, as per Levin, Lin & Chu test results, does not have unit root in level and is I_0 .

Table 4.2- The results obtained from unit root test of population changes to gross domestic product

The variable dL/ GDP(-1) with intercept and trend		The variable dL/ GDP(-1) without intercept and trend		
Levin, lin & chu	0.0000	Levin, lin & chu	0.0073	
Im, Pesaran and Shin	0.1718	ADF	0.0585	
ADF	0.0194	РР	0.0004	
РР	0.0000			

As per Levin, Lin & Chu, ADF, and PP tests results, population changes to gross domestic product variable does not have a unit root in level and is I_0 .

Table 4.3- The results obtained from unit root test of	government expenditures c	hanges to gross o	domestic product
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The variable dG/ GDP(-1) with intercept and trend		The variable dG/ GDP(-1) without intercept and trend	
Levin, lin & chu	0.0000	Levin, lin & chu	0.0012
Im, Pesaran and Shin	0.2506	ADF	0.0571
ADF	0.0787	РР	0.0000
РР	0.0001		

As per Levin, Lin & Chu and PP tests results, government expenditures changes to gross domestic product variable does not have a unit root in level and is I_0 .

Table 4.4- The results obtained from unit root test of investment changes variable to gross domestic product

The variable dK/ GDP(-1) with intercept and trend		The variable dK/ GDP(-1) without intercept and trend	
Levin, lin & chu	0.8759	Levin, lin & chu	0.0072
Im, Pesaran and Shin	0.7966	ADF	0.0643
ADF	0.8911	РР	0.0002
РР	0.0044		

As per Levin, Lin & Chu and PP tests results, investment changes relative to gross domestic product variable does not have a unit root in level and is I_0 .

Tuble 5.1 The festil obtailed non and foot test of total funde changes to gross domestic product			
The variable dTRD / GDP(-1) with intercept and trend		The variable dTRD / GDP(-1) without intercept and trend	
Levin, lin & chu	0.1297	Levin, lin & chu	0.0000
Im, Pesaran and Shin	0.7561	ADF	0.0042
ADF	0.9015	РР	0.0020
РР	0.0502		

Table 5.4- The result obtained from unit root test of total trade changes to gross domestic product

• The critical value is at the level 5%.

The assumption of unit root existence in the second test without intercept and trend is rejected and trade volume changes relative to gross domestic product, as per Levin, Lin & Chu, PP, and ADF tests results, does not have a unit root in level and is I_0 .

4.2 F Test and Likelihood Ratio for exploring Fixed Effects Model

First we must determine whether the related function follows pooled structure or other structures; that is, whether the intercepts relating to different countries are identical or different. And if different, whether Fixed Effects model or Random Effects model must be applied.

a. If the error distribution is normal, t and F statistics are valid:

$$\frac{\frac{R_{ur}^2 - R_r^2}{contraints number}}{1 - R_{ur}^2/\text{freedom degree}}$$
(4.1)

It is evident that pooled model is a constrained model as constraints have been imposed on it for assimilating α_i s. FE model is an unconstrained model that leaves them free. So,

$$F_{n-1, nT-n-k} = \frac{R_{FE}^2 - R_{POOLED}^2}{1 - R_{FE}^2/nT - n - k}$$

$$(4.2)$$

Obviously if there is no need to imposing constraint and data itself accepts constraint, then we have,

$$R_{FE}^2 \approx R_{POGLED}^2 \tag{4.3}$$

$$F \approx 0 \tag{4.4}$$

Yet if data does not accept constraint,

$$H_0: \alpha_1 = \alpha_2 = \dots = \alpha_n \tag{4.5}$$

Model explanatory power and R^2 drop sharply; that is, the difference between R^2_{POOLED} and R^2_{FE} becomes great so that test function falls in the right side critical zone of F distribution.

Hence if F value becomes so large that falls in the critical zone or its probability is lower than 5%, the stage for rejecting H_0 , i.e. α_i s equality, is provided and FE model must be selected.

b. If distribution of error sentences is not normal, t and F distributions are not valid. In the related literature, three test functions namely WALD, LM, and LR are applied, and LR software presents the likelihood ration as per below.

$$LR = 2Ln\left(\frac{L_{UR}}{L_{R}}\right)$$
(4.6)

And it must be noted that L_R possesses χ^2 asymptotic distribution (Teimur Mohammadi, 2011, working paper).

Before F test, the function must be estimated by Fixed Effects structure and F test must be carried out. F test results are present in the below table. 0.0023

Diagra	m 4.6- F Test	Results	
Effects Test	Statistic	d.f.	Prob.

Cross-section F3.764654(7.52)0.0023As we see, H₀ is rejected; that is, identical

As we see, H_0 is rejected, that is, identical intercepts for different countries is not accepted. So we must apply Fixed Effect structure.

4.3 Fixed Effect Model Estimate

The related coefficients estimates reveal that H_0 is rejected; that is, estimated coefficients have a significant effect on the dependent variable.

Variables applied in the software are as below.

dGDP/gdp(-1): gross domestic product changes to primary gross domestic product (economic growth).

dTRD/gdp: trade volume changes to gross domestic product.

dG/gdp: government expenditure changes to gross domestic product.

dK/gdp: investment changes to gross domestic product.

dPOP/gdp: population changes to gross domestic product (population is an indicator of labor force).

To estimate the coefficients, two points must be taken into account. Labor force is influenced by several essential factors namely experience accumulation that goes up every year, technology increase that raises efficiency, retirement of expert forces, and exit of human capital from the country due to different reasons. So labor force must be assessed annually. The next point relates to some invisible factors that may influence all or some Islamic countries due to their transactions and lead to non-zero simultaneous covariance among error terms of two different countries. Through residual covariance structure, a correlation is entered into the model, so seemingly unrelated regression model is applied (Mehregan, 2008, pp. 47-48).

With respect to the statistics obtained from the above table as the output of EViews 6 software, the model used in this paper can be assessed.

As presented in the above, the coefficients for independent variables (except for some years in population change to gross domestic price) are significant, and on the other hand in Fixed Effects (Cross), virtual variables have been considered by the software in order to remove the problem pertaining to disregarding invisible variables including economic structure.

The information provided in the underneath part of the table can contribute to the used method accuracy. Since Durbin- Watson statistic has reached from 1.49 to 2.1 and R-squared has reached from 0.51 to 0.99 after estimation by weight statistics, we can be sure about the estimation accuracy.

dK/gdp variable coefficient represents that each unit of positive change in investment increases economic growth by 0.27 unit.

dTRD/gdp variable coefficient represents that each unit of positive change in total trade increases economic growth by 0.13 unit.

dG/gdp variable coefficient represents that each unit of positive change in government size decreases economic growth by 0.2 unit.

dPOP/gdp variable coefficient represents as a result of annual estimate that population changes influence negatively the economic growth, each year with a different numerical value.

Table 4.7- Fixed Effects Model Estimation Results
Dependent Variable: dGDP/gdp(-1)?
Method: Pooled EGLS (Cross-section SUR)
Date: 09/26/11 Time: 08:29
Sample (adjusted): 2001 2009
Included observations: 9 after adjustments
Cross-sections included: 8
Total pool (balanced) observations: 72
Linear estimation after one-step weighting matrix

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.049727	0.004767	10.43076	0.0000
dK/gdp?	0.276486	0.050108	5.517828	0.0000
dTRD/gdp?	0.134863	0.017549	7.684774	0.0000
dG/gdp?	-0.203748	0.048825	-4.173062	0.0001
dPOP/gdp?2001	-2288119.	470547.8	-4.862671	0.0000
dPOP/gdp?2002	-1880520.	586057.2	-3.208765	0.0023
dPOP/gdp?2003	-1118091.	587254.0	<mark>-1.90393</mark> 0	0.0625
dPOP/gdp?2004	-2388433.	652648.5	-3.659602	0.0006
dPOP/gdp?2005	-718717.4	593704.6	-1.210564	0.2315
dPOP/gdp?2006	-1181714.	606351.7	-1.948892	0.0567
dPOP/gdp?2007	-872935.2	580959.5	-1.502575	0.1390
dPOP/gdp?2008	-2835582.	798458.7	-3.551320	0.0008
dPOP/gdp?2009	-3051731.	675141.5	-4.520136	0.0000
Fixed Effects (Cross)				
_IRC	0.010059			
_TUKC	-0.013030			
_INDC	0.022242			
_MALC	0.001776			
_UARC	-0.006368			
_SARC	-0.020846			
_ALGC	-0.008200			
	0.014374			
Effects Specification				
Cross-section fixed (dummy variables)				
Weighted Statistics				
R-squared	0 999260	Mean depend	lentvar	46 58546
Adjusted R-squared	0.998990	S.D. dependent var		122 0433
S.E. of regression	1.076049	Sum squared resid		60.20982
F-statistic	3696.620	Durbin-Watson stat		2.105774
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.510560	Mean dependent var 0.1		0.043317
Sum squared resid	0.029942	Durbin-Watso	on stat	1.498707

4.4 Hausman Test

To indentify whether the proper model is the fixed effects model or random effects one, Hausman offers a test whose null hypothesis is as below.

$$H_0: E(U_{it} / X_{it}) = 0$$
(4.7)

Where U_{it} (and consequently $\mu_i s$) is independent of X_{it} (i.e. it assumes the random effect model). If it is not random effect model, then:

 $E(U_{it} / X_{it}) \neq 0$ (4.8) And $\bigwedge_{\beta_{GLS}}$ will be a biased and inconsistent β_{GLS} estimate of \bigwedge_{β} , yet in Within model, Within conversion eliminates μ_{i} s and $\bigwedge_{\beta_{Within}}$ will be an β_{Within} unbiased and consistent of \bigcap_{β} . Hausman compares $\bigwedge_{\beta_{CLS}} \beta_{Within}$ that both of them are consistent β_{CLS} by with β_{Within} is not correct, their probability ratios will be different. In fact, either H_0 is correct or not, $\bigwedge_{\beta_{Within}}$ is consistent; while $\bigwedge_{\beta_{GLS}}$ is BLUE if H_0 is correct and is inconsistent if H_0 is false. So a natural test can be carried out based on the difference of $\bigwedge_{\beta_{GLS}}$ and β_{GLS}

 β_{GLS}

$${}^{\wedge}_{q_1} = {}^{\wedge}_{\beta_{\text{GLS}}} - {}^{\wedge}_{\beta_{\text{Within}}}$$
(4.9)

Now Hausman test statistic is defined as per below.

$$\mathbf{\hat{q}_1}^{\mathbf{n}} = \mathbf{\hat{q}_1}^{\mathbf{n}} \left[Var(\mathbf{\hat{q}_1})^{-1} \right]^{-1}$$
(4.10)

So under H₀, this statistic has χ_k^2 distribution with K freedom degree where K is the number of explanatory variables or number of β s. If χ^2 value obtained (m₁) is more than χ^2 with K freedom degree, H₀ (i.e. Random Effect) is rejected and Fixed Effect assumption is accepted.

Now to carry out Hausman test, Random Effect model must be applied.

Unfortunately Random Effect model cannot be modified by the related weights due to statistical constraints in this research. So Hausman test resulted by this model is not reliable (Teimur Mohammadi, 2011, working paper).

4.5 Fixed Effect Model Analysis

With regard to the Fixed Effect model diagram, the estimated coefficients are significant at the level 5%. Two independent variables namely dTRD/gdp and dK/gdp have positive coefficients because as per the extant theories in previous seasons, as investment and economic freedom raise economic growth increases.

dG/gdp and dPOP/gdp variables have negative coefficients. These two variables require more explanations.

As regards population (dPOP/gdp), there are numerous theories which consider a negative relation between population and economic growth. For example in Solow model, we have (Anguk Trang, 2011, thesis):

$$Y = A^{\frac{1}{(1-\alpha)}} \left(\frac{Y}{\partial}\right)^{\alpha} (1-\alpha)$$
(4.11)

In this formula, as investment rate (χ) increases, production per worker (y) increases; yet as depreciation rate (∂) increases, production per worker decreases. So, increase in capital depreciation rate results in negative relation between population growth (labor force indicator) and economic growth.

It must be noted that population growth increases demand, and when supply is less than demand, consumer goods become rare and consequently the related goods price increases. On the other hand, purchasing power in developing countries is low and this leads to poverty, hunger and diseases which decrease economic growth.

Age structure also influence this matter which can be divided into three groups: young population (0-14), working-age population (15-64), and old population (higher than 65). Now as young and old populations do not often work and have low incomes and savings, so investment per capita decreases and purchasing power declines; and this implies the negative relation between economic growth and population.

As regard dG/gdp variable, it must be noted that the hypothesis mentioned in the beginning of this paper is rejected; that is, there is a reverse relation between economic growth and dG/gdp. This means that in the studied countries, government performance is not efficient and it does not only cause economic growth but it also decreases that. Here it is suggested to reduce government expenditures and replace it by private sectors.

To make sure that the model has been selected accurately, Durbin- Watson and R-squared statistics must be considered. In the above table weight and non-weight statistics are compared and it is evident that after imposing weight to the variables, DurbinWatson and R-squared reach respectively to 2.1 and 0.99, and this implies accurate selection of model.

5. Conclusions and Suggestions

With respect to the studied variables, below results are attained.

- 1) A positive change unit in government size decreases economic growth rate by 0.203 units, so economic growth increase can be expected by decreasing government size in the statistical universe.
- 2) Positive changes in population have a positive effect on economic growth, and these changes in different years, due to various reasons such as population structure and experienced labor force departure and increase in depreciation rate of capital, have had different and negative effects on economic growth.
- 3) A positive change unit in investment increases economic growth rate by 0.276 units, in average. That is, changes in investment and economic growth are consistent. So by increasing investment, economic growth increase in the statistical universe may be expected.
- 4) A positive change unit in trade volume (substitute variable for economic freedom) increases economic growth rate by 0.134 units in average. This implies consistency of changes in trade volume and economic growth. So by increasing trade volume, economic growth increase in the statistical universe may be expected.

Considering the above results, it is found out that in the statistical universe as government size increases, economic growth decreases.

Consequently, policy makers may be recommended to increase economic growth by reducing government expenditures and regulating population.

This paper investigated whether changes in government size influence economic growth in the selected Islamic countries. It was concluded that increasing changes in government size have a negative impact on the economic growth in the selected Islamic countries. However, it was not discussed that what the optimal government size will be to achieve the maximum economic growth.

Government small size and low expenditure share in GDP are not prerequisites of development; yet what matters is government efficiency and public financial management that play an important role in economic growth and development. So public expenditures management can be more taken into account rather than reducing expenditures quantity in the economic growth process which may leads to decrease in goods and public services quality and brings about public dissatisfaction.

It is recommended to investigate in future studies that what the optimal government size must be to maximize economic growth. Because too increase and decrease in government size will cause decline in government expenditures efficiency as well as market disruption which are the most important reasons of decrease in economic growth.

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