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# The Relationship Between Trade Openness and Economic Growth in Muslim Countries: An Empirical Investigation

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**Abstract:** This paper studies the association between openness and growth for selected Muslim countries. The rationale for conducting this study only on Muslim countries is to explore this relationship among economies having different religion, economic and social characteristics. This paper employed random and fixed effect model (RE & FE). Also, Pedroni and Kao Cointegration test is used to explore the long run relationship between openness and growth. The finding from Pedroni Cointegration test has indicated the long run relationship among variables. However, this long run relationship is absent in Kao Cointegration test. The results of RE and FE model have shown that openness has significant and positive effect on growth. In addition, foreign direct investment, inflation and human capital are also affecting growth in Muslim countries.

**Keywords:** Economic Growth, Muslim Countries, Trade Openness, Cointegration, Random Effect, Fixed Effect

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## 1. Introduction

Muslim world has been facing many social, political and economic problems in recent era. The political instability in Middle East has generated serious repercussion for rest of the world. Therefore, it is necessary to identify and resolve the socio-economic and political problems in Muslim World. It is also pertinent to mention here that all Muslim countries are developing, and not a single Muslim country is among developed nations. Therefore, an attempt is made in this paper to explore the relationship between openness and growth in Muslim countries. The debate about trade policies for developing countries has been discussed in several theoretical models and empirical studies. David Ricardo and John Stuart Mill argue in favor of free trade policies because it enhances output and employment opportunities. Similarly, higher growth and development can also be achieved by trade openness (Winter, 2004). In contrast to classical economist, Singer and Prebisch (1950) argue in favor of protection policies in economies to curb the out flow of income from poor to rich countries. On the other hand, for industrialization in economies, outward export promotion policies are suggested by free trader view. In contrast to

earlier view, protectionists argue in favor of inward looking import substitution policies. Though, outward export promotion policies became more popular and many developing countries adopted these policies.

Trade openness is considered as important factor for economic growth by many researchers. Empirical studies (Wacziarg, 2001; Hassen et al., 2013; Chang et al., 2009; Georgis, 2003; and Chen, 1999) and theoretical models have shown the positive and significant impact of trade openness on economic growth. Similarly, the endogenous models explain the effect of openness on growth and this effect might be positive (Grossman & Helpman, 1990, 1991; Young, 1991 and Romer 1991 etc.). Openness has positive effects on development and economic growth, which occurs via increasing competition and by enhancing technological progress (Grossman & Helpman; 1990, 1991). The models of Ben –David and Loewy (1998, 2000, and 2003) extend the neoclassical model by including features of open economy endogenous growth. According to them trade liberalization facilitates the rate of knowledge accumulation which causes economic growth. In short, these models have shown that trade liberalization (unilateral and Multilateral) has positive benefits for all countries.

Developing countries obtained more benefits from trade

liberalization with developed countries in terms of foreign exchange earnings; through imports they can access high tech goods and intermediate goods (Spilimbergo, 2000). However, many disagreements still exist and results of empirical studies have shown the absence of relationship between openness and growth (Sarkar & Bhattacharyya, 2008). The relationship among openness and growth exists only in middle income countries (Sarkar, 2008). Also, the relationship among trade openness and growth only exist in long run; in short run this relationship does not exist (Sakyi et al., 2012). The impact of free trade on GDP growth and technical progress is differing in developed and developing countries (Young, 1991). In sum, the findings of empirical studies vary across individual and group of countries.

This study is unique as compared to earlier studies because an attempt has been made in this study to test this relationship for Muslim countries from 1973-2013. These countries are mostly located in Asia and Africa. The rationale for choosing Muslim countries is due to many reasons like (i) different belief, culture and social system as compared to rest of the world (ii) facing many economic and social problems like poverty and unemployment (iii) political instability and social unrest in many Muslim countries especially in Middle East and Afghanistan. The last an important reason for focusing this study only on Muslim countries is to identify, whether this relationship varies among various economies with varying economic and social characteristics or not. This study will help policy makers and academician in understanding the impact of open economic policies in Muslim countries.

The structure of this study is as follows; the first part is introduction, in the second part we review some past studies, third part is about methodology, in fourth and fifth part we discuss results and conclusion.

## 2. Empirical Studies on Trade Openness and Growth

In past, there were several empirical studies conducted on openness and growth; on group of countries (Sakyi et al., 2012; Sarkar, 2008; Wacziarg, 2001 etc.); on individual countries (Hassen et al., 2013 etc.) and on regional blocks (Chen, 1999 etc.).

Sakyi et al. (2012) adopted heterogenous panel Cointegration for sample of middle income countries and their findings show long run, uni-directional and significant association among openness and growth. However, absence of short run association between the openness and growth, which imply that countries can achieve their target results in longer and medium period of time instead of short run periods. Similarly, Wacziarg (2001) study has also show that openness has positive and significant effect on growth in long run for sample of 57 countries. The existence of significant and long run association among openness and economic growth is also found in Tunisia (Hassen et al. (2013). Their results have shown that fdi, trade openness,

human capital and financial development have significant and positive impact on growth.

Like the earlier studies, Redlin & Gries (2012) find bi-directional causality among trade openness and growth, while in short run the direction is negative for sample of 158 countries. Their results suggest that in long run trade openness has positive effect for both panels (lower and higher income panel) while in short run it has negative effect for lower income panel. Likewise, openness of trade has statistically significant, permanent and positive effect on economic growth along with robust results (Georgis, 2003). The study of Chen (1999) for Latin America and East Asia have also shown the presence of positive and significant relationship among trade openness and growth after controlling for factors which affects growth (real GDP, investment and human capital). Also, for enhancing economic growth open economic policies are suggested by Nduka et al. (2013) in Nigeria.

Sarkar (2008) examine the relationship between trade liberalization and growth for 51 less-developed countries. The results have shown the absence of positive and long run association between openness and economic growth. His result indicated that this relationship only exist in middle income group. Furthermore, Sarkar & Bhattacharyya (2008) also found the absence of association between trade openness and real gdp per capita for India and Korea. The negative association between growth and trade openness has also been shown in the study of Ali & Abdullah (2015) in long run. They argue that poor institutional quality is the reason for this negative relation. However, Chang et al. (2009) result shows positive impact of trade openness on growth for developed and developing countries and their results suggest that, this effect became stronger in developing countries by making reforms, in financial development, stability of inflation, governance, labor market and infrastructure along with reforms in trade. Lastly, Yanikkaya (2002) measure the openness by two measures (i) trade volumes (ii) trade restriction. The results for earlier measure show positive association among trade openness and economic growth. However, the results of second measure of openness i.e. measure of trade restrictions are in-consistent with previous empirical studies which argue that opposite association among trade restrictions and growth, but the overall results of this study shows positive association between growth and openness.

## 3. Research Methodology

To explore the effect of trade openness on growth for 25 selected Muslim countries this paper used random and fixed effect model. Furthermore, Pedroni (1999, 2004) and Kao (1999) Cointegration test is used to find the long run association between the variables. Also, Panel unit root test (Maddala and Wu, 1999; Choi, 2001; LLC, 2002 and IPS, 2003) is employed to know the stationarity/non-stationarity of the variables. The time period for this study is from 1974 to 2013 for selected countries and the main source of data is

World Bank Development Indicators (WDI). The sample countries are selected among all Muslim countries on the basis of availability of data for most of the variables used in this paper.

For this empirical research the proposed model is given as

$$lngdp_{it} = \beta_0 + \beta_1 lntop_{it} + \beta_2 lnfdi_{it} + \beta_3 hc_{it} + \beta_4 inf_{it} + u_{it} \quad (1)$$

The indicator of trade openness is represented as  $lntop_{it}$  which is measured as trade as a percentage of GDP. Similarly, growth rate is measured in terms of log of gross domestic per capita ( $lngdp_{it}$ ). While consumer price index ( $inf$ ) is used to control for macroeconomic stability and gross secondary enrolment ( $hc_{it}$ ) is used to capture the effect of human capital. Lastly, foreign direct investment is represented by  $lnfdi$ . In this paper we have follow the previous empirical studies like Yanikkaya (2003) and Redlin & Gries (2012) etc.

### 4. Data Analysis and Results

We used random and fixed effect for empirical analysis of this study and Hausman test is used to choose among fixed or random effect model. The results in table 1 have shown that trade openness, human capital, foreign direct investment and inflation have significant impact on economic growth in random and fixed effect model. However, inflation has negative impact on economic growth.

Table 1. RE and FE Model.

Variable	Fixed effect	random effect
lntop	.14485224***	.15313358***
lnfdi	.0150322**	.01328495*
hc	.00987178***	.01032233***
inf	.00027738**	-.00027063*
Hausman Test: Prob>chi2 =0.0646		

Note:\*p <0.05, \*\*p <0.01, \*\*\*p <0.001

#### Panel Unit Root Test

On the basis of results of panel unit root from table 2, we can reject the null hypothesis (Ho: Panel data has unit root) and accept the alternative hypothesis (Ha: Panel data doesn't have unit root) for variable gross domestic per capita ( $lngdpc$ ). The results have shown it is initially non-stationary at level. Similarly, trade openness ( $lntop$ ) variable is also non-stationary at level.

Table 2. Panel Unit root test at level.

individual intercept	lngdpc	lntop
Levin, Lin & Chu	0.9796	0.1472
Im, Pesaran & Shin W-stat	1.0000	0.6148
individual intercept and trend		
Levin, Lin & Chu	0.7922	0.3728
Im, Pesaran & Shin W-stat	1.0000	0.1892
none		
Levin, Lin & Chu	1.0000	0.5251

From table 3, we accept the null hypothesis (Ho: Panel data has unit root) and reject the alternative hypothesis (Ha:

Panel data doesn't have unit root) for both the variables ( $lngdpc$  and  $lntop$ ). Hence we have concluded that both variables are now stationary at first difference.

Table 3. Panel unit root test at First Difference.

individual intercept	lngdpc	lntop
Levin, Lin & Chu	0.0000	0.0000
Im, Pesaran & Shin W-statistics	0.0000	0.0000
individual intercept and trend		
Levin, Lin & Chu	0.0000	0.0000
Im, Pesaran & Shin W-statistics	0.0000	0.0000
none		
Levin, Lin & Chu	0.0000	0.0000

#### Pedroni Residual Cointegration Test

From table 4, we reject the Null Hypothesis (Ho: No Cointegration) for almost all of the Panel statistics because probability is less than 5% which is indicating the acceptance of the alternative hypothesis. However, the probability value for panel v- statistics is greater than 5%, therefore we cannot reject null hypothesis. Hence, on the basis of majority of the results, we conclude that there exists "long run association between trade openness and economic growth" in Muslim countries.

Table 4. Pedroni Residual Cointegration Test.

	statistics	Probability
Panel v-Statistic	0.040456	0.4839
Panel rho-Statistic	-16.94314*	0.0000
Panel PP-Statistic	-18.92330*	0.0000
Panel ADF-Statistic	-19.66650*	0.0000
Group rho-Statistic	-11.90465*	0.0000
Group PP-Statistic	-19.17955*	0.0000
Group ADF-Statistic	-18.78656*	0.0000

Note:\*p <0.05

#### Kao Residual Cointegration Test

From table 5, we cannot reject null hypothesis (Ho: No Cointegration) and reject the alternative hypothesis (Ha: Cointegration) because the probability value is less than 5 %. Therefore, the findings have shown the absence of long run relation among trade openness and economic growth.

Table 5. Kao Residual Cointegration Test.

t-Statistic	Probability
-0.509135	0.3053

### 5. Conclusion

This paper investigated the connection among trade openness and economic growth for selected Muslim countries from 1973-2013. For empirical analysis we have adopted random and fixed effect model to know the impact of various variables on economic growth. Likewise, Pedroni and Kao Cointegration test is used to analyze the long run association among openness and growth. For this purpose, this paper chooses trade as a percentage of GDP as an indicator of trade openness. The results of Pedroni

Cointegration have shown the long run association between the variables, but Kao Cointegration test shows the absence of long run relation among variables. On the other hand, the results from random and fixed effect model have shown that, openness has significant impact on growth. Similarly, gross secondary enrolment which is proxy for human capital has also significant effect. The empirical studies like Sachs & Warner (1997) have also shown the positive relations among human capital and economic growth. As far as inflation is concerned, it has also significant and negative effect on economic growth. This paper recommends that Muslim countries should follow the open economy policies for enhancing growth and development like the suggestions of Nduka et al. (2013). In addition, these economies should maintain price stability in economies and also priority should be given to human capital to enhance economic growth. However, these recommendations should be considered with caution.

## Appendix

Group A. List of sample countries.

S.No	Country Name	S.No	Country Name
1	Algeria	14	Mozambique
2	Bangladesh	15	Morocco
3	Bahrain	16	Nigeria
4	CAR	17	Oman
5	Chad	18	Pakistan
6	Egypt	19	Qatar
7	Gambia	20	Senegal
8	Indonesia	21	Syria
9	Iran	22	Tanzania
10	Jordan	23	Tajikistan
11	Kuwait	24	Tunisia
12	Malaysia	25	Turkey
13	Mauritania		

Source:

<https://funcomor.wordpress.com> and <http://arabicpaper.tripod.com/country.html>

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