The stock market, trade liberalization and economic growth in member countries D8: analysis based on the panel co-integration approach

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Abstract: The relationship between financial development and economic growth is one of the most important issues in the economy. In the present study we have tried to examine effect of banking development, trade liberalization on economic growth in Islamic countries of group D8 for the period 2012-1993. The empirical analysis is based on panel unit root tests, tests for cointegration panel and estimation of long-term relationships cointegration panel are by estimate the dynamic ordinary least squares (DOLS). The results suggest that there is cointegration long-term relationship between stock market indices, trade liberalization and economic growth in these countries. Stock market, considering the variables of the total value of shares traded to gross domestic product and Current market value of the stock to GDP has a positive and significant impact on economic growth of D8 countries, while the impact of trade liberalization is pointless.

Key word: The stock market, trade liberalization, economic growth, panel co-integration, DOLS.

Introduction

Several empirical studies have tested the relationship between financial development and economic growth. These studies can be divided into two general categories. The first group is researches that have test impact of the exchange development and elements such as current value and the total value of shares traded on the stock market and economic growth. The second set is empirical studies that are concentrated on the relationship between the development of the banking sector and elements such as private sector credits, like money and economic growth. The economic relationship between financial policies, trade liberalization and economic growth has been interested to economists always.

Economic studies point out that a free economy is likely to have advantage towards economy is a tightly controlled. Operational observation of trade liberalization can lead to theoretical insight in the economic policies that involved economic growth is the process. In this territory decrease quantitative limitation, policies of macroeconomic prudently, government policies and political stability, have a crucial role in explaining the relationship between economic growth and trade openness of an economy.

Trade liberalization is one of the effective factors on economic growth that there is different result for its impact, so in the economic literature is mentioned on trade as a stimulant and as a barrier to economic growth. Existence a positive relationship between trade openness and grow, has been an important factor in promoting trade reform in the countries. Thus, trade liberalization and financial development policies can reduce inefficiency in the production process and to

makes nutrition of economic growth. It comes from the fact that the countries of greater economic openness and greater well-developed financial markets have experienced rapid economic growth. In this paper, we attempt to study simultaneous affect the stock market and trade liberalization as well as inflation variable and gross fixed capital formation, on economic growth of D8 countries. The methodology of the present study is based on recent approaches is in area of panel unit root test and cointegration panel. Texture of this paper is include 5srctions.The second part allocate to enunciation of theoretical theory and review of studies and empirical literature in the area of banking system as basic indicators of financial development, trade liberalization and economic growth. The third part, have been introduced the research methodology that it is consisting of model, data and econometric methodology.

Theoretical theory:

In the past two decades relationship between financial development and economic growth has focused attention of many economists in the economy literature. The general consensus of economists is that access increase to financial tools and financial institutions reduces cost of information and exchanges in the economy, and will lead to economic growth. Many economists such as Schumpeter (1911), Goldsmith (1969) and McKinnon (1973) emphasizes the importance of financial markets and their key role in economic growth and development. Schumpeter (1912) emphasized the importance of financial markets and their key role in the economic growth and development. As well as the study of King& Levine (1993), implies the positive relationship of financial

development on the economic growth. They have developed a model of endogenous growth and showed relationship between financial development, entrepreneurship and economic growth. And stated to financial systems by financial aid to entrepreneur is effective factor in their decision on investment.

In neoclassical analysis, reducing trade barriers, thereby increasing the volume of trade and the level of total factor productivity. Also in the exogenous growth model, trade through re-allocation of resources and capital accumulation, increasing economic growth,

However, this increase only during the transition period, ie until the economy reaches a sustainable level of new investment and per capita product continues.

With the introduction of endogenous growth models of Romer (1986) and Lucas (1988), the growth of trade as an engine of economic growth literature. On the one hand, and Asltj Batra (1993) argue that trade liberalization through tariff reductions can have a negative effect on growth. This view is of the opinion that the reduction in tariffs through changes in relative prices, domestic production decreases.

Literature:

Literature on the relationship between financial development and economic growth of Schumpeter (1911), Grly and Shaw (1960) and McKinnon (1973) is on. In time series analysis, Rstyn (2001) The positive effect of financial development on economic growth developed in five countries (America, Germany, Japan, the United Kingdom and France) have confirmed. Hndrvyasyn et al (2005) to help autoregresive vector models (VAR) relationship between financial development and economic growth have shown And long-run causality from financial development to economic growth in order for Greece over the period 1999-1986 has been approved. Lytav (2010), using panel data dynamic effect of financial development on economic growth in Europe Union countries, Brazil, India, Russia and China during the period 1980-2006 confirms.

On the other hand, other studies such as the Goryeo and Gydvty Gray (1992), Anderson and Trap (2003), and Ben Nakvr and Qazvny (2007) argue that the relationship between financial development and economic growth in general can be less than the traditional foundations of thought. They basically clear that the results of econometric studies based on observations of different time periods. According to data collected for 95 countries, Ram (1999) was able to confirm the positive effect on economic growth of 9 countries. This relationship was negative in 16 countries. Science and Author (1391), the positive impact of financial development and financial institutions on economic growth show D8 countries.

Many studies have been conducted on trade liberalization and economic growth and it seems as trade liberalization as a stimulus to economic growth, can also be an obstacle. Frankel and Roomer (1999) confirmed the positive impact of trade, income and growth. Wacziarg and Welch (2008) also confirmed the positive effects. Batra and Slottje (1993) argue that trade liberalization can have a negative effect on growth through rates reduction. Mehmet and Eris (2013) have not been the strong relationship between trade openness and economic growth in a long time in their article. They founded that economic institutions and macroeconomic policies is very effective in this regard.

Baltagi et al (2009) showed performance of financial development financial openness and trade liberalization with require both on the economic growth, in a panel of developing countries and developed in the years 2003-1980.

Menyah and colleagues (2014) to examine the relationship between financial development, trade liberalization and economic growth for a panel of 21 African countries, did not achieve significant results from the joint effect on economic growth.

The research hypotheses

A) The development of the financial system (Banking Development Index) significant and positive impact on economic growth of the member countries of the D8.

B) The development of the financial system (development indicators Stock Exchange) and significant positive impact on economic growth of the member countries of the D8.

C) A significant and positive impact of trade liberalization on economic growth of the member countries of the D8.

Data, models and econometric methodology
Data and model

The present study is based on data from a panel of 8 developing Muslim countries for the years 2012 to 1993 a member of the D8 is the site of the World Bank (WDI) is extracted and included economic growth rate (GY), gross capital formation constant (GFCF), inflation (INF), trade liberalization (TR) as a percentage of total exports and imports divided by GDP is obtained and the total value of shares traded to GDP ratio (ST), the current value is stock market to GDP (MCL).

In this paper, the effect of the stock market and trade liberalization on economic growth by taking into account other factors such as the impact on economic growth, inflation, and gross fix capital formation have been investigated. According to different studies and different indicators included in the financial system was done in standard growth models, our proposed

model is based on Narayan and Narayan experimental studies (2013).

$$GY_{it} = \alpha_0 + \alpha_1 X_{it} + \alpha_2 Tr_{it} + \alpha_3 F_{it} + \epsilon_{it} \quad (1)$$

In the above equation, (i) represents sections, and (t) represents time and (Yg) real GDP, (X) a vector of explanatory variables identified in standard models of growth, inflation and gross fixed capital formation, (Tr) trade liberalization and (F) taking the ratio of the total value shares traded to GDP (ST) and the current market value of the stock to GDP ratio (MCL) is.

Functional analysis of the data was based on cross-sectional and time-series data of the present study was to investigate the impact of trade openness on economic growth in the banking system and D8 group of countries for the period 2012-1993 has been made. Given the length of time and number of sections in the field of data fusion in the form of large panels placed.

Panel unit root test

The first step is to review and evaluate the relationships between variables in the model variables manayy examine these relationships. Five different unit root test is used to evaluate the static variables, these tests include tests Levin, Lin and Chu (2002), test im, pesaran and Shin (IPS) (2003), Augmented Dickey Fuller Test Fisher, PP test - Fisher.

The fundamental assumption of test LLC the existence a process unit root between the sections.

The IPS test makes it possible that there is heterogeneity among individual effects thus IPS test, called is heterogeneous panel Unit Root Test.

Panel integration tests

The presence of integration variables in the combined data as time series data is important. When there is evidence of a unit root in the data, to avoid spurious regression and the determination of a long-term relationship between variables, integration technique could be useful. Several tests for integration testing, with different frameworks have been proposed, including the ability to test pedroni (2004) pointed out.

Integration test pedroni of waste resulting from the regression estimates and long-term uses and the general form is as follows:

$$gy_{it} = \beta_{\circ_i} + \beta_{1i}X_t + \beta_{2i}Tr_t + \beta_{3i}F_t + \sum_{k=-k_i}^{k_i} \alpha_{ik}\Delta X_t + \sum_{k=-k_i}^{k_i} \gamma_{ik}\Delta Tr_t + \sum_{k=-k_i}^{k_i} \delta_{ik}\Delta F_t + \varepsilon_{it}$$

In relation to k_i و $-k_i$ the promoter sequence and are interrupted.

Dulce panel estimator, can be $\hat{\beta}_{G_D}^* = N^{-1}\sum_{i=1}^{N}\beta_{D_i}^*$ Expressed here $\beta_{D_i}^*$, Individual estimates of this equation is obtained by OLS.

$$Y_{it} = \alpha_i + \delta_{it} + \beta_{1i}x_{1it} + \beta_{2i}x_{2it} + ... + \beta_{mi}x_{mit} + \varepsilon_{it} \quad (2)$$

Where i = 1,2,.,.,.,N, for each part of the model and t = 1, 2,..., T refers to the reference period, and m is the number of explanatory variables. A_i δ_i Possible effects of certain fixed sections and also provide specific procedures. E_{it} Wastes estimates of long-term relationships.

To identify long-term relationships between variables statistically significant Pedroni γ_i by equation (2) examined:

$$\hat{E}it = \gamma_i \hat{\varepsilon}it - 1 + u\,it \quad (3)$$

The term $\hat{\varepsilon}$ wastes obtained from model (2).

Pedroni seven different statistics to evaluate and test the null hypothesis of two distinct groups based on the absence of integration vectors in heterogeneous panel models are introduced. The first group of tests is known as the second factor to consider is the current time. This group of tests to investigate the possibility of heterogeneity among sectors provides.

The next group is the possible heterogeneity between sectors provide. According to the statistics of the pedroni seven panel integration tests used are: The first group, within the dimensions of the test statistics and the second, between dimensions the test statistics.

The purpose of the panel integration tests finally answer the question of whether or not there is a long term relationship. Assuming the existence of integration panel approved the next step is to estimate the panel integration vector.

Dynamic ordinary least squares method (DOLS):

In recent years, a few approaches to estimating panel integration vector is used.

The method used has been less Dynamic ordinary least squares method (DOLS) developed by Stock and Watson (1993) suggested that by applying OLS adjustments in response to changes in the independent variables on the dependent variable to consider.

The main advantages of this method compared to other estimator's integration vector is also used in small samples and simultaneously prevents the creation bias. And the asymptotic distribution is normal.

To obtain estimates DOLS panel integration vectors, the following model is estimated:

T-statistics are also to be $t_{\hat{\beta}_{GD}^*} = N^{-\frac{1}{2}}\sum_{i=1}^{N} t_{\hat{\beta}_{Di}^*}$ expressed.

Experimental results

The first hypothesis testing:

According to the results obtained Provide an estimate of DOLS The variable model banking model, That's mean The remaining facilities of the banking system to the private sector to GDP (DOMS) had significant positive impact in 10% on economic growth in the D8 studied countries, So there is no reason to reject the first hypothesis.

The second hypothesis testing:

According to the results obtained, Provide an estimate of DOLS The second and third models variables exchange model, That's mean the ratio of current value of stock market to GDP (ST) and the ratio of the total value of shares traded to GDP (MCL) had positive impact in 5% on economic growth of D8 group. So there is no reason to reject the second hypothesis.

The third hypothesis testing:

According to the results obtained, Provide an estimate of DOLS The second and third models The

trade liberalization variable had non-significant negative impact in 10% on the economic growth of D8 studied countries. The trade liberalization variable had non-significant positive impact on the economic growth of countries in the period studied. So the third hypothesis was rejected.

5-1) Panel-data unit-root tests:

The panel-data unit root tests are presented in Table 1. According to these results the variables of gross fixed capital formation (GFCF) and trade liberalization (TR) is not viable at the level and with once time of measurement of difference is viable and so these are I (1) and the economic growth variables (GY), Inflation (INF), the ratio of the total value of exchanged shares to GDP (ST), the ratio of current value of stock market to GDP (MCL) is viable at the level and therefor these are I (0).

Table 1: Results of panel unit root tests

Method of test	Levin,lin Cho-Stat	Im,Pesaran and Shin W-Stat	ADF-Fisher chi-quare	PP-Fisher chi-quare
GY	4,7685-0.0000))	-3,1987 (0.0007)	36,6744 (0.0023)	37,9247 (0.0016)
INF	4,7692- (0.0000)	-3,9457 (0.0000)	45,2455 (0.0001)	38,3605FRA (0.0013)
GFCF	7,93626 (1.0000)	5,021814 (1.0000)	8,31814 .99982	2,38476 (1.0000)
MCL	-3.58003 (0.0002)	-95.0660 (0.0016)	34.7998 (0.0042)	38.9526 (0.0014)
GFCF	2.0836 (0.9814)	2.4452 (09928)	7.6716 (09580)	5.4938
DGFCF	9.5785- (0.0000)	-4.9832 (0.0000)	54.7435 (0.0000)	50.206 (0.0000)
TR	-1.1431 (0.1271)	-.9874 (0.1617)	20.4124 (0.2022)	18.2681 (0.3074)
DTR	-8.3016 (0.0000)	-736739 (0.0000)	75.1901 (0.0000)	85.2747 (0.0000)

Source: research findings, the numbers in parentheses represent the P-Value.

5-2) Panel cointegration tests:

Table 2: Results of the Pedroni Panel Cointegration test.model1:

Model1: gy= f(gfcf, inf, tr, st)

test	(1992)[31] Computational statistics	pedroni P-value	Weight (2004) Computational statistics	pedroni P-value
Pnel v-Statistic	0.091625	.4635	-1.87722	0.9727
Pnel roh-Statistic	-21.7291	.4140	1.002083	.8418
Pnel PP-Statistic	-3.668318	0.0001	-2.17769	0.0149
Pnel ADF-Statistic	-3.78802	0.0001	2.377711-	0.0104
Group roh-Statistic	1.624217	0.9497		
Group PP-Statistic	-6.694732	0.0000		
Group ADF-Statistic	-5.73254	0.0002		

Source: research findings

Table 3: Results of the Pedroni Panel Cointegration test. Model2:

Model2: gy= f(gfcf, inf, tr, mcl)

	(1999)[31]	pedroni	weight(2004)	pedroni
test	Computational statistics	P-value	Computational statistics	P-value
Pnel v-Statistic	-.059627	.5238	-1.859484	0.9685
Pnel roh-Statistic	-.958134	0.1799	0.938576	0.8253
Pnel PP-Statistic	5.945532-	0.0000	3.194464-	0.0007
Pnel ADF-Statistic	5.863646-	0.0000	3.211289-	0.0007
Group roh-Statistic	1.533861	0.9375		
Group PP-Statistic	5.934142-	0.0000		
Group ADF-Statistic	4.826305-	0.0000		

Source: research findings

Given that, according to the panel unit root tests was confirmed that Cointegration variables are of degree zero and one. The next step will be to test the long-run balance relationship among the variables. According to the Pedroni Panel Cointegration Method test Is presented in Tables 2 and 3.

According to results of the tests, Most statistical tests Denies null hypothesis is based on the absence of cointegration vectors so we can say there are Long-run relationship between economic growth And other presented variables Therefore, the model can be estimated.

Now, often the panel unit rest test and determined that the stacked variables are from degree zero and one, and also panel co-integration test was performed in the previous section, and due to the result that there is a long-term co-integration between the models variables, its possible to estimate the long-term co-efficient. Therefore, model estimating the dynamic least squares method (DOLs) is used. Long-term relationship of variables with regard to economic growth as the dependent variable and gross formation funds, inflation, trade liberalization and the proportion

of the total value of shares traded for gross domestic product (st) as the first model of variables stock and proportion value of the correct stock market to gross domestic production (MCL) as the second model of variable stock estimated as independent variables by using (DOLs) method. The results are presented in the table (chart) (5-6).

As the above results (5) the coefficient variables total value of traded shares to gross domestic production (st) has positive and significant impact on economic growth of countries of group D8. So that a change of one unit in st increase 0.054 unit of their economic growth, and variables of gross formation of constant fund inflation has significant and negative impact on economic growth of these countries. So that one unit increase in INF could reduce 0.116 unit in economical growth which is consistent with existing theories and one unit increase in GFCF, resulted in a slight decline in economic growth of countries of group D8.

In this model the impact of trade liberalization on economic growth of this group of countries is not significant.

Table 6- estimation of long-term co-integration relationship using DOLS method for model 2.

Error	t	sd	Coefficients	variable
5456	0607570	0028790	0.017492	INF
00000	6.481540	00000001	0.00000-	GFCF
02118	1.261118	1027934	1296435-	TR
00000	4650248	0007787	0036211	MCL

As result that table 6 show the estimated coefficient of the variable towards value of current stock market to gross domestic production (MCL) has significant positive impact on group D8 countries economic growth. So that a change of one unit in MCL increase 0.036 unit of their economic growth and variable of gross formation of constant fund (GFCF) and inflation has significant and negative impact on economic growth of these countries. so that

one unit increase in GFCF resulted in a slight decline in economic growth of D8 group of countries and one unit change inflation theory, reduce 0.017 unit in economic growth of this group of countries. In this model the impact of inflation and trade liberalization on economic growth of this groups of countries is not significant.

Results and political recommends.

Impact of financial development on economic growth is one of the most important channels of economic issues that is much discussion and controversy allocated. In this study, that relationship between financial development with emphasis on the index of the stock market and trade liberalization on economic growth of the group D8 countries in the period 1993 to 2012 were studied using DOLS method. The unit root tests in panel data and also co-integrated panel showed a long-term relationship between GDP (gross domestic production) growth inflation, gross domestic investment. Both variables the stock market and the trade liberalization are available in this study, revealed estimation results discussed in two separate models. The impact factor of the total value of traded shares to gross domestic production (st) and the current value of the GDP ration in Muslim countries of D8 group respectively is 0.036 during the study and it seems institution building in order to strengthen the capacity of financial markets and investments industries and increase production levels is essential, and with the necessary financial system development can increase the production level, as in developed countries that have greater ability to use the capacity of the capital market increase the efficiency of production and economic growth are followed. The result of the present study as well as previous research in this field in particular Nari research and Nari 2013 supports. If so D8 countries want to have good economic growth path recommended. this group of countries focus on policies of development and support of the stock market to promote economic growth. In the present study, the estimation results of the trade liberalization on economic growth in Muslim countries in group D8, in the period 1993-2012 in all three models is not significant and it seems that trade liberalization in contrast to countries that plays an important role in international trade in this group of countries is not verifiable. The recommendation is due to the capacity of the Muslim countries of D8 group. Competiveness of their production with increased interests in the mechanisms of competition and the emergence of the optimal path to be produced, to available them to have the products that can compete with the international community and ahead the opposition of their business. Some comments stated that inflation can have positive impact on economic growth. Some views are also given the high inflation rates increased transaction cost, increase investment in favor of non-manufacturing activity results. The decrease of economic growth points the negative impact of inflation. Others records that there is no relationship between these two variables. The results of the Muslim countries of the D8 group is also a function of the theory, as the first model with coefficient of 0.016

has negative impact on economic growth in Muslim countries of D8 group and in the second model, it doesn't have a significant effect on economic growth. So far continued growth in this group of countries it suggested to reduce inflation or at least be kept at a level that its impact on growth wipe out. In this context, the central banks of these countries also should have a growing emphasis on price stability and apply monetary policy to lower and stable inflation. Gross formation of constant fund is an important component of aggregate demand macroeconomic volatility loads to instability of the economy. In this study, the variables included in the model of economic growth which are discussed and it was estimated coefficients. As you seen in the impact of gross formation of constant fund on economic growth of Muslim countries of D8 group. Although these results are fully consistent with the study Nari and Nari 2013. Therefore, it is suggested according to the they are proposed by generally investment in economic infrastructure in general with increase productivity expand the market, supply and demand balance, is competitive and in other hand, increased production, increased levels of prosperity and economic growth. Appropriate infrastructure in Muslim countries of D8 group should identify and investments ought to be integrated and consist with long-term goals of government.

Reference
1. Andersen, T., & Tarp, F. (2003). Financial liberalization, financial development and economic growth in LDCs. Journal of International Development, 15 (2), 189–209.
2. Arestis, P., Demetriades, P. O., & Luintel, K. B. (2001). Financial Development and Economic Growth: The Role of Stock Markets. Journal of Money, Credit and Banking, 33(1), 16–41.
3. Ben Naceur, S., & Ghazouani, S. (2007). Stock markets, Banks and Growth in some Mena region countries. Research in International Business and Finance, 21, 297–315.
4. Batra, R., & Slottje, D. J. (1993). Trade policy and poverty in the United States: Theoryand evidence, 1947–1990. Review of International Economics, 1, 189–208.
5. Baltagi, B.H., Demetriades, P.O., Law, S.K., 2009. Financial development and openness: evidence from panel data. J. Dev. Econ. 89 (2), 285–296.
6. Mundell, R. (1965). Growth, stability and inflationary finance. Journal of Political Economy, 73, 97–109.

7. Fischer, S. (1993). The role of macroeconomic factors in growth. Journal of Monetary Economics, 32, 485–512.

8. Frankel, Jeffrey, and David Romer (1999), Does trade cause growth? American Economic Review 89:379-399.

9. Hondroyiannis, G., Lolos, S., & Papapetrou, E. (2005). Financial markets and economic growth in Greece, 1986–1999. Journal of International Financial Markets, Institutions and Money, 15, 173–188.

10. Mehmet N. Eris, Bülent Ulas.an (2013) Trade openness and economic growth: Bayesian model averaging estimate of cross-country growth regressions, Economic Modelling, 33, 867-883.

11. Kojo Menyah, Saban Nazlioglu, Yemane Wolde-Rufael, (2014) Financial development, trade openness and economic growth in African countries: New insights from a panel causality approach, Economic Modelling, 37, 388-394.

12. Narayan, P. K. Narayan, S. (2013). The short-run relationship between the financial system and economic growth: New evidence from regional panels. International Review of Financial Analysis 29 (2013) 70–78.

13. Levin A, Lin CF, Chu CS. Unit root tests in panel data: asymptotic and finite sample properties. J Econometrics 2002;108(1):1e24.

14. Im KS, Pesaran MH, Shin Y. Testing for unit roots in heterogeneous panels. J Econometrics 2003;115(1):53e74.

15. Pedroni P., 2004. Panel cointegration: asymptotic and finite sample properties of Pooled time series tests with an application to the PPP hypothesis. Economet Theor 2004;20(3):597e625.

16. Pedroni P.,1999, Critical values for cointegration tests in heterogeneous panels with multiple regressors. Oxf Bull Econ Stat 1999;61:653e70. Special issue.

17. Schumpeter, J. (1911). Theorie der Wirtschaftlichen Entwicklung Leipzig. Germany: Duncker and Humblot.

18. King, Robert G., and Ross Levine (1993), Finance, Entrepreneurship and Growth: Theory and Evidence, Journal of Monetary Economics, 32: 513-542.

19. Romer, p. 1990, Endogenous technological change, Journal of Political Economy, 95, 71-102.

20. Romer, P. 1986. Increasing returns and long-run growth, Journal of Political Economy, 94, 1002-1037.

21. Lucas, R.E. (1988), "On the mechanics of Economic Development" Journal of Monetary Economic, 22: 3-42 (2), 174-89.

22. Schumpeter, J. (1911). Theorie der Wirtschaftlichen Entwicklung Leipzig. Germany: Duncker and Humblot.

23. Gurley, J.G., & Shaw, E.S. (1960). Money in a theory of finance. Washington, DC: Brookings Institution.

24. Leitao, N.C. (2010). Financial development and economic growth: a panel data approach. Theoretical and Applied Economics, 10,15– 24.

25. Gregorio, J., & Guidotti, P.E. (1992). Financial development and economic growth. International Monetary Fund working paper 92/101.

26. Ram, R. (1999). Financial development and economic growth: additional evidence. Journal of Development Studies, 35(4), 164 –174.

27. Stock, J. H. and Watson, M. W. (1993). 'Asimple estimator of cointegrating vectors in higher order integrated systems', Econometrica, Vol. 61, No. 4, pp 783–820.

28. Wacziarg, Romain, and Karen Welch (2008), Trade liberalization and growth: New evidence, World Bank Economic Review 22: 187-231.

29. Jung, Woo S., and Peyton, J. Marshall (1985), Exports, growth and causality in developing countries, Journal of Development Economics 18: 1-12.

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