



DOES TRADE LIBERALIZATION LEADS TO HIGH ECONOMIC GROWTH? (A CASE STUDY OF PAKISTAN)

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ABSTRACT

The current world is beyond doubt emerging as a global home, with the increasing economic, political, social and technical interdependence among countries and regions. This scenario is providing opportunities for the countries to gain benefits from economic integration through adopting a rational liberalize trade regime. In that regard the current thesis is an attempt to test empirically the trade liberalization and economic growth nexus. A recently developed Auto regressive distributed lag (ARDL) model approach is applied to the time series data for the period 1973 to 2013 to analyze the long run relationship between trade openness and economic growth. Augmented Dickey Fuller test and Phillips perron procedures have been utilized provides the results as per the requirement of ARDL approach. The coefficient of Error Correction Term of 0.719 is consistent with the previous literature to a maximum degree. The Bound testing procedure suggests the existence cointegration between dependent variable and set of independent variables.

KEY WORDS: Trade Liberalization, Economic Growth, Cointegration, Stationary, Error Correction Term.

INTRODUCTION

Technically Trade liberalization refers to reduction in the degrees of barriers to the flow of goods and services across international boundaries. As in the words of Papa Georgiou, et al. (1991) "Trade liberalization implies any change which leads to a country's trade system towards neutrality in the sense of bringing its economy closer to the situation which would prevail if there were no government interference in the trade system. Put in other words, [trade liberalization] confers no discernible incentives to either the importable or the exportable activities of the economy". Further Bhagwati and Krueger stated that, "any policy which reduces the anti-export bias will lead towards liberalization of trade" and diminution in the Import permit premium is the primary step on the way to a liberalized trade regime. A new concept presented by Edwards (1993) explains a liberalize trade regime as one in which all trade distortion such as import tariffs and export subsidies are entirely eradicated.

It is generally believed that those countries who embrace the contemporary globalization and more liberalize trade policies to the global exchange of goods and services as well as to the ideas and technologies, enjoy the stable and high growth rates. A group of researchers also supposed that the primary validation for that high growth rate of various East Asian countries was the involvement in international trade during the last 50 years (World Bank 1993). And this assertion is without any doubt that international trade facilitates technological advancement as when a country exports wheat and imports steel, the country benefits in the same way as if it had invented a technology for turning wheat into steel" (Mankiw 2004, 551).

Standard economic theory which starts from Ricardo neoclassical model is fairly clear about the benefits of trade among countries based on comparative advantage and relative factor endowments (Heckscher-Ohlin). The main findings of the free trade models are that all countries get benefits from trade and world production is improved; that the countries will be likely to specialize in commodities that make extensive use of their abundant resources abundant; and given the same technologies and output throughout the world, resource prices will be equalized throughout the trading countries.

TRADE LIBERALIZATION MEASURES

An ample body of research has been done on the linkage between trade openness and economic growth. As a broad stratification, trade openness measures are classified into two categories, where's the first category measures trade openness in terms to trade related policies that are tariff rates, non-tariff barriers. Focusing on the outcomes of the trade policies, data collection and data handling with this measure is harder, as the gathering information about the tariff rates from the

national accounts of any country are not a guileless task. On the other hand aggregating various non-tariff barriers is again not free from labour measuring directly trade restriction. The second category measures trade openness in terms of the volume of trade, which includes trade ratios, adjusted trade flows and priced based measures. Every country as an important macro-economic indicator and to assess its economic international comparative competitiveness provides the statistics about trade flows. The data on trade follows is readily available, making easy the analysis.

RELEVANT LITERATURE

The debate on the link between trade liberalization and economic growth can be divided into two categories, one who plead for the positive effects of trade liberalization and economic growth and the second category who are argue that trade openness is not significantly linked the economic growth.

SUPPORTERS OF TRADE OPENNESS

Those who pleads for the positive nexus of trade liberalization and economic growth anticipated that trade openness pave the way for economic development by reducing the ineffectiveness in the production process, expands the market, faster the activities of research and development, readjust employment to more modern activities that need more human capital and increases information flow among countries. Earlier work done by (Dollar (1992), Barro and Lee (1994), Islam (1995), Harrison (1996), Ferrantino, et al, (1997), Sala-i-Martin (1997), Edwards (1998), Irwin and Tervio (2000), Easterly and Levine (2001), Dollar and Kraay (2002), Fiestas (2005), Mahmood & Sohail, (2007), khan & Qayyum (2007), Chuhday et. Al, (2010); claims that trade openness leads to the efficient utilization of the economy resources and thereby logically leading to increase gross domestic product and prosperity (Mattoo et. al; 2001). The main theme of open trade theories is that opening national borders for international trade increases the productive capability of the countries by allowing the best technology flowing from industrial nations to developing. Trade also grant the opportunity to specialize in the fabrication of the commodity of least opportunity cost, and enable country to go beyond the production possibility frontier, as it is generally assumed that with trade the nation acquire both capital and consumption goods from the rest of the world.

OPPONENTS OF TRADE LIBERALIZATION

The criticism in opposition to international trade theory arises from the strength of some of the assumptions developed by the advocates of the theory. For instance, it is not clear that all productive factors have the same quality or are completely mobile inside and across the trading countries. Neither is the technology of production alike nor the markets are always competitive looking for cost minimization and profit maximization. Under these conditions the realized benefits

from trade may deviate from the intended benefits. Musleh-ud-din et al. (2003); Amir Hussain siddiqui (2005); Greenaway et al. (1994), Brunner (2003), Simornagkir (2006), Economidou and Murshid (2008) failed to find out significant positive relationship between economic growth and trade liberalization practices. Furthermore, even if trade is found to motivate growth it is not obvious if growth can automatically translate into poverty alleviation. The Anti-globalization and anti-growth opinion that dominates among non-economists today stems mainly from the concern of income inequalities. The distributional effects of trade have not been essentially to be positive in beginning.

Both the supporters and opponents of the trade openness practices are having their beliefs on the basis of research findings. As opening the economy to global trade has helped in accelerating the economic growth in the South and East Asian countries, Mauritius, Chile, Tunisia and Botswana but it has failed to produce the similar results in case of many others. Further opening borders for international trade may lead to improvement in socioeconomic conditions of a country, like it may reduce the poverty but in many cases the distributional problems of poverty are still there.

METHODOLOGY

To investigate the long-run relationship between trade liberalization and economic growth in case of Pakistan, the current paper has adopted the modern technique of Auto Regressive Difference Lag modeling (ARDL). The advantage of using the Bound testing approach for detecting the long run relationship is the flexibility of the technique to deal with the mix of I (0) and I (1) variables in the model.

The conventional Error Correction Model for co-integrated data set will appear like

$$\Delta Y_t = \beta_0 + \sum_{j=1}^p \beta_j \Delta Y_{t-1} + \sum_{i=0}^q \gamma_i \Delta X_{1t-i} + \sum_{i=0}^r \sigma_k \Delta X_{2t-i} + \sum_{i=0}^n \gamma_p \Delta X_{3t-i} + \varphi Z_{t-1} + e_t \tag{3.1}$$

Here in this ECM model “Z” is the error correction term, which is the ordinary least square stochastic error term from the long run “co-integration regression”.

However obtaining the results using the above procedure will not be obvious and further the calculation of standard errors will become a laborious task, so to cut all these problems we will use the following ECM specification:

$$\Delta Y_t = \mu + \sum_{i=1}^{n-1} a_i \Delta Y_{t-1} + \sum_{i=0}^{m-1} \gamma_i \Delta X_{t-1} + \sum_{i=0}^{p-1} \delta_i \Delta X_{t-i} + \theta_1 Y_{t-1} + \theta_2 X_{t-1} + \theta_3 X_{t-1} + \mu \dots \tag{3.2}$$

Keeping n=1 into above equation the second term will vanish and we will get $\theta_2 = \sum_{i=1}^m \gamma_i$ it is the numerator of the long run partial coefficient of β_1 and given that $\theta_1 = -(1 - \sum_{i=1}^n a_i)$ The long-run parameter of β_0 is given by $\beta_0=1/\theta_1$ and the long run parameter $\beta_1 = -(\theta_2/\theta_1)$. Therefore the level

terms of Y_t and X_t in the error correction term show us explicitly about the co-integration or long-run parameters. Given this, the explanatory way to develop the ECM is as below:

$$Y_t = \mu + \sum_{i=1}^{n-1} \alpha_i \Delta Y_{t-1} + \sum_{i=0}^{m-1} \gamma_i \Delta X_{t-i} + \theta_1 \left(Y_{t-1} - \frac{1}{\theta_1} - \frac{\theta_2}{\theta_1} X_{t-1} \right) + \mu_t \dots \dots \dots 3.3$$

$$Y_t = \mu + \sum_{i=1}^{n-1} \alpha_i \Delta Y_{t-1} + \sum_{i=0}^{m-1} \gamma_i \Delta X_{t-1} - \pi (Y_{t-1} - \hat{\beta}_0 - \hat{\beta}_1 X_{t-1}) + \mu_t \dots \dots \dots 3.4$$

Where $\pi = 0$ And also, knowing that $Y_{t-1} - \hat{\beta}_0 - \hat{\beta}_1 X_{t-1} = e_t$, so we can regenerate our equilibrium error term as:

$$\Delta Y_t = \mu + \sum_{i=1}^{n-1} \alpha_i \Delta Y_{t-1} + \sum_{i=0}^{m-1} \gamma_i \Delta X_{t-i} - \pi e_{t-1} + \varepsilon_t \dots \dots \dots 3.5$$

Where π is the error correction term, or it is the speed of adjustment, its value will must be negative and significant. It will show us that how much of the adjustment to the equilibrium takes place each period, or how much the error in the equilibrium is adjusted, if it is equal to -1 all of the adjustment take place within that time period, if it is equal to -0.5 than half of the adjustment take place in each time period, and if it is equal to 0 then no adjustment, and it will be useless to claim that Y^* is the long run part of the Y_t .

4. RESULTS AND DISCUSSION

4.1 UNIT ROOT TEST RESULTS

To test for the stationarity of the series the augmented dickey fuller test was exercised. As the on the average basis to draw about inferences from the time series data it is desirable to test the series for stationarity, because the inclusion of non-stationary time series in the model make the analysis and future forecasting meaningless.

Table: 2

Variables	Augmented dickey fuller test			Remarks
	Actual Value		Critical value	
	ADF(0)	ADF(1)		
Lnpci	-1.177	-4.686	-2.935	I(1)
Lntop	-2.712	-6.961	-2.935	I(1)
Lnxdp	-1.557	-7.139	-2.935	I(1)
Lnmgdp	-1.745	-7.177	-2.935	I(1)
Lntot	-1.509	-6.625	-2.935	I(1)
Lncpi	-2.979	-6.883	-2.935	I(0)
Lnfdi	-2.117	-8.081	-2.935	I(1)
Lnghc	-2.236	-5.780	-2.935	I(1)

The results of the test are provided in table: 2. The remarks indicate that only inflation rate i.e Lncpi is non-stationary at level and it became stationary at first difference leading to conclusion that Lncpi is I(1) while all the remaining variables are level stationary I(0). So we are have a mix of I (0) and I (1) variables and hence we can apply the ARDL approach towards cointegration.

4.2 UNRESTRICTED ERROR CORRECTION MODEL

Keeping into mind the lag selection the following model has been estimated on the basis of equation 3.3, the results are then provided in table3

$$\Delta Y_t = \beta_0 + \sum \beta_j \Delta X_{1t-j} + \sum \sigma_k \Delta X_{2t-k} + \sum \gamma_p \Delta X_{3t-p} + \theta_0 Y_{t-1} + \theta_1 X_{1t-1} + \theta_2 X_{2t-1} + \theta_3 X_{3t-1} + e_t \dots \dots \dots 4.1$$

The parameters $\theta, i = 1,2,3,4,5,6,7$, are the long-run multipliers, on the other hand the, $a, b, c, d, e, f, g, h, i, j, k, l$, capture the short-run dynamics of the present ARDL model. First we have to test for the joint hypothesis, using the F-test, about the long-run multipliers. Where's the null hypothesis is $\theta_{15} = \theta_{16} = \theta_{17} = \theta_{18} = \theta_{19} = \theta_{20} = 0$, meaning that there is no-cointegration. At this step the equation 3.3 is estimated without the error correction term.

Table 3: Estimated model based on Equation 4.1

Variable	Coefficient	Std.Error	t-statistic	Prob.
C	-2.129965	1.342876	-1.586122	0.1311
D(Lntop(-1))	-0.861470	0.306969	-2.806378	0.0121
D(Lnfdi(-1))	0.023890	0.012585	1.898230	0.0748
D(Lnfdi(-2))	0.012832	0.011103	1.155759	0.2638
D(Lnfdi(-3))	0.013792	0.008850	1.558397	0.1376
D(Lnmgdp(-1))	0.597708	0.213183	2.803726	0.0122
D(Lnmgdp(-2))	0.013214	0.032943	0.401113	0.6933
D(Lngfc(-1))	-0.115056	0.073935	-1.556190	0.1381
D(Lngfc(-2))	-0.077372	0.060838	-1.271778	0.2206
D(Lngfc(-3))	0.048632	0.068503	0.709934	0.4874
D(Lnxdgdp(-1))	0.286525	0.095149	3.011338	0.0079
D(Lnxdgdp(-2))	0.019512	0.031220	0.624968	0.5403
D(Lncpi)	0.006185	0.009836	0.628844	0.5378
D(Lncpi(-1))	0.012758	0.012251	1.041317	0.3123
Lncpi(-1)	-0.063708	0.132778	-0.479810	0.6375
Lntop(-1)	0.746172	0.324374	2.300342	0.0344
Lnfdi(-1)	-0.024578	0.013405	-1.833427	0.0843
Lnmgdp(-1)	0.557941	0.227202	2.455704	0.0251
Lnxdgdp(-1)	0.280261	0.106796	2.624259	0.0178
Lngfc(-1)	0.078349	0.082599	0.948551	0.3561
Lntot(-1)	-0.016525	0.071321	-0.231698	0.7232
Lncpi(-1)	-0.470371	0.206976	-2.272587	0.0023
Model summary				
Good fit of the model	R-square: 0.705, Adjusted R-square:0.601			
Overall significance of the model	F-statistic: 4.143, Prob(F-statistic): 0.0600			
Durbin-Watson test	d-statistic: 2.01			
Information Criterion	AIC: -5.272, SC: -4.94, H-QC: -4.965			

Table:3 provide the F-test results, the summary of the null hypothesis and finally the table provide the critical values at 1, 5 and 10 percent level of significance for k+1 variables.

4.3 BOUND TEST RESULTS

Table: 3

Wald Test results			
Test Statistic	Value	Degrees of freedom	Probability
F-Statistic	3.7796	(6,17)	0.0142
Chi-square	22.678	6	0.0009
upper and lower bound critical values at 1, 5 and 10 percent level of significance			
Level of significance	Lower bound	Upper bound	
1%	2.96	4.26	
5%	2.32	3.50	
10%	2.03	3.06	
Null hypothesis summary:			
Normalized Restriction (=0)	Value	Std.Error	
C(15)	-0.063708	0.132778	
C(16)	0.746172	0.324374	
C(17)	-0.024578	0.013405	
C(18)	-0.557941	0.227202	
C(19)	-0.280261	0.106796	
C(20)	0.078349	0.082599	

The F-calculated value at 95 percent confidence level exceed the upper bound critical value, leading us to the conclusion that at 5 percent level of significance we are not having sufficient evidence to accept the null hypothesis of no co-integration, so alternatively we conclude that there is long run relationship among the variables included in the model.

4.4 LONG RUN COEFFICIENT OF THE MODEL

Long run coefficients of the model are calculated by utilizing the formula developed in the methodology section. The estimates shows that the in the long run any single unit change in Lntop will effect per capita income by 5.09, any one unit change in Lnmgdp, Lnxgdp and Lngfc will leads to 8.7578, 4.3991 and 1.2298 percent changes in per capita income respectively. On the other hand any single percentage change in Lnfdi, Lncpi and Lntot will leads to 0.3858, 7.3832 and 2.6717 percent changes in per capita income in opposite direction.

4.5 ECM-ARDL MODEL

Table: 4 Short Run Error Correction Elasticity estimates ARDL (1, 3, 2, 3, 2, 1, 1)

Variable	Coefficient	Std.Error	t-statistic	Probability
C	0.021693	0.005475	3.962236	0.0007
D(LTOP(-1))	-0.111026	0.317402	-0.349795	0.7300
D(LFDI(-1))	0.009698	0.010603	0.914664	0.3708
D(LFDI(-2))	0.000658	0.010264	0.064080	0.9495
D(LFDI(-3))	0.005308	0.010139	0.523531	0.6061
D(LMGDP(-1))	0.073919	0.222784	0.331794	0.7433
D(LMGDP(-2))	-0.000555	0.039649	-0.014008	0.9890
D(LGFC(-1))	0.036107	0.086983	0.415098	0.6823
D(LGFC(-2))	-0.079109	0.079949	-0.989491	0.3337
D(LGFC(-3))	0.013219	0.077673	0.170190	0.8665
D(LXGDP(-1))	0.063289	0.099180	0.638125	0.5303
D(LXGDP(-2))	0.010149	0.038902	0.260888	0.7967
D(LCPI(-1))	0.011285	0.011807	0.955778	0.3501
D(LCPI(-2))	0.010737	0.014761	0.727410	0.4750
ECT1(-1)	-0.719154	0.103564	-6.944053	0.0000
Model summary				
Good Fit of the Model	R-square:0.712913, Adjusted R-square : 0.645145			
Over all Significance of the model	F-statistic: 4.68, Prob(F-statistic): 0.0173			
Information criterion	AIC: -4.66, BC: -4.00, H-QC: -4.431			

The Error Correction Term coefficient should be statistically significant with a negative sign. The highly statistically significant the ECT the More stable the long-run relationship. The Error Correction Term in table 6 is (-0.719154) the partial significance test shows that the error term is highly significant. The magnitude shows that 71 percent of any disequilibrium in the model is corrected in the coming period.

4.6 TESTS FOR SERIAL CORRELATION

For the estimation of the Auto Regressive Distributed Lag ARDL model, one of the preliminary assumptions for the model is that the model should be free from the problem of serial correlation. Breusch-Godfrey procedure is utilized for the purpose.

Table: 5

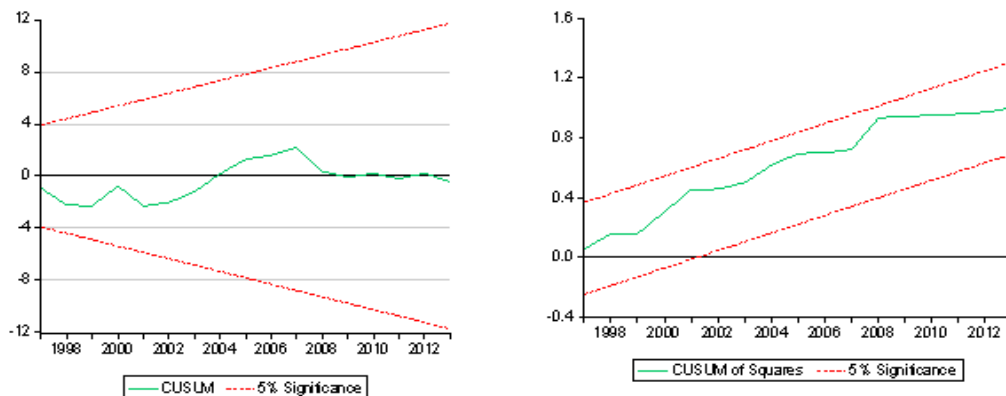
Breusch-Godfrey Serial Correlation LM Test:			
F-Statistic	1.357723	Prob. F(2,15)	0.2871
Obs* R-Squared	5.671406	Prob .Chi-Square (2)	0.0857

The probability value of the observed R square suggests that model is free from serial correlation.

4.7 STABILITY CHECK FOR THE MODEL

For the stability check of the model, Following the Pesaran and Pesaran (1977) and Brown et al. (1975), CUSUM and CUSUMSQ graphs are presented below.

CUSUM and CUSUMSQ



The test checks the validity of null hypothesis of constant coefficient vector in every period against the alternative hypothesis of non-constant coefficient vector (Bahmani-Oskooee, 2001). The CUSUM and CUSUMQ estimates are plotted against the 5 percent significance critical bound. If the plot of both estimates remains inside the critical bound of 5 percent level of significance, the null hypothesis of simultaneous stability of the entire partial coefficient in the Error correction model is then accepted Wing NG (2002).

As the figures shows both CUSUM and CUSUMSQ plots are within the critical bounds of 5 percent level of significance, so the stability of the per capita income is confirmed.

5. CONCLUSION AND POLICY RECOMMENDATIONS

Overall the results of the analysis are compatible with the previous literature; the hypothesis of the positive link between trade liberalization and growth was confirmed by Frankel and Romer (1999)¹. The ARDL bound testing ²approach towards co-integration confirms the existence of the long-run association between trade liberalization and economic growth. The error correction model indicates that any disequilibrium in the model is corrected at a high speed of 71 percent.

5.1. POLICY IMPLICATIONS

In light of all the above analysis, summary and conclusion the following recommendations are given.

¹ They found out that any single percentage increase in trade-to-GDP ratio will leads to increase the Per capita income by two percentage points.

² Rao Muhammad Atif et al. (2010) found the same in case of Pakistan.

1. As the results shows that trade openness is directly linked with economic growth, the government should adopt multidimensional trade policies, so as to get benefits of the increasing international trade.
2. The results are supporting the exports led growth theory, so being a labour abundance country, Pakistan should focus on the export and production of labor intensive products.
3. The policy makers should focus on the capital formation, and to do that government should
 - i. Stimulate saving rate in the economy.
 - ii. Strengthen financial sector in the economy.
 - iii. Provide investment opportunities
4. Pakistan in order to reap the fruits of trade openness, it must take some practical and sound macroeconomic policies.
5. To take advantage of foreign direct investment Pakistani government should take some steps to make Pakistan as an investment heaven.

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