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Relationship Between Trade Openness & Economic Growth

Of Bangladesh: Time Series Analysis

Prepared by

Monem Sahariar

ID: 121 143 006

Supervised by

Musharrat Shabnam Shuchi

Lecturer

School of Business & Economics

United International University

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Contents

Abstract

Does Trade Openness really be a benefit to Bangladesh? Is this relationship positive or negative? These are the type of questions that can never be answered conclusively. However, there is no in attempting to investigate the matter. This paper attempts to do that exactly by examining certain factors that are directly related to the economic growth of Bangladesh. The objective is to determine how these growth factors behaved against an increase or decrease in the level of GDP growth. The whole study is based on data collected from the World Bank databases. A number of tests, such as: "Augmented Dickey-Fuller Test", "Cointegration Test" & "Johansen Test for Cointegration" is used using the collected data.

Keywords: economic liberalization, cointegration, economic development, trade openness, GDP

Introduction

Trade openness plays an important part in the economy and expected to be a machine of growth. Trade is an attractive place not only in terms of resources but also in terms of technology, flows of ideas and knowledge spill over. Trade openness in the global economy during time is measured by economists that it has a positive impact on economic growth. Trade openness is most important for the Bangladeshi economy to progress economic growth. Trade openness can be seen as the decrease or removal of imports and exports limitations (tariff and quotas) and building an easy entree to the trading connections.

According to Manni and Afzal (2012), trade liberalization policies open up the opportunity for nations' economies to improve growth and short-term overall development. During last few decades world globalization progression brought about many important changes in the basic building of economic activities at both countrywide and international level. One of the most important features of integration of the world economy is the quick movement towards the trade liberalization. The role of IMF, World Bank, and WTO cannot be abandoned in this regard **(Parikh, 2004).** Historical data of the last decades shows that the volume of world trade has been melodramatically increased. The World development indicator showed that in 1990s world trade to GDP-ratio increased which increases the per capita income of about 3 billion people in the world.

Literature Review

(2011) presented research on Iran. Where they observed the effect of trade liberalization on the economy through the retro 1980 to 2006. The results from the ARDL method trade liberalization and economic progress are cointegrated and trade liberalization had an optimistic and significant outcome on economic development.

(Umme Humayara Manni, 2012) in this paper, the author used the Inflation, Real Export, and Real Import, Real GDP Growth as variables. Her research methodology Ordinary Least Square (OLS) technique. And she found out Results reveal that bigger openness has a favorable effect on the economic development of Bangladesh.

(Silva, 2013) tried to control the relationship between trade openness and economic development in Sri Lanka over the retro 1960-2010. The results offered that trade openness has no important effect on economic development though they are positively related to economic development.

(Qayyum, 2018) in this paper the author used the Gross fixed capital formation, Trade liberalization, Labor force participation, inflation, interest rate are important explanatory variables. His research methodology was ADF and Johansen Test. And he found out Results reveal that trade liberalization has a positive impact on economic growth.

(Chitauro, 2018) in this paper the author used the Foreign Direct Investment (FDI), Employment Rate (EMP), Labor force, Imports and Exports are important variables. His research methodology was Auto-Regressive Distributive Lag (ARDL). The ARDL bounds test has uncovered that there is a lasting relationship between the significant economic aspects: economic development, trade openness, FDI, and employment. Additionally, it was discovered that, in both short and long duration, trade openness and foreign direct investments impact positively and crucially on economic development. However, employment influences economic development positively only in the prolonged period.

Methodology

The paper demonstrates the link between trade openness & economic growth of Bangladesh, absorbing a time series method of cointegration policy. The rationale behind the analysis is that if we could uncover a uniform and significant relationship between economic growth & trade openness both in the long-run & short-run.

This is a quantitative research paper. The primary objective was to collect data from a dependable source; thus, it was collected from the World Bank website. After having collected the essential data, a number of variables were selected in order to begin the statistical analysis. In the following step, a number of statistical tests were shown by putting the data through "STATA".

The results assumed by "STATA" was interpreted and a detailed analysis was conducted.

To conduct the study, we have carefully chosen variables on the base of the literature review. The time period under consideration is from 1994 to 2017. All the data is gotten from the World Bank publication of World Development Statistics.

For regression analysis, here is the function form of planned Model:

$$GDP_t = \alpha + \beta_1 t + \beta_2 TRO_t + \beta_3 FDI_t + \beta_4 GCF_t + \beta_5 LFPR_t + u_t$$

Variable Description:

GDP growth (annual %):

The yearly proportion development rate of GDP at marketplace imposes on persistent resident money. The agglomeration of data is based on persistent 2010 U.S. dollars. GDP is the sum of gross value summed by all local manufacturers in the economy positive the taxes of any type of item; taxes and drawback any aids are not incorporated in the worth of the goods. It is strategized without the involvement of manufacture deductions for the devaluation of invented resources or for reduction & squalor of natural resources.

Exports of goods and services (% of GDP):

The exports of products & facilities show the total worth of products and facilities that are formed within the limits of a state and exported or traded to foreign states. I used this variable by mentioning TRO in my paper.

Imports of goods and services (% of GDP):

The Import of products and facilities show the total value of products & facilities that are accepted or imported from foreign states. In other words, these remain the type of goods and services that a country discovery more appropriate to buy from a foreign republic, rather than manufacturing it locally. I used this variable by mentioning TRO in my paper as well.

Foreign direct investment, net inflows (% of GDP):

FDI is the net inflows of investment to acquire a long-term management interest in the innovation functioning in an economy beside the investor. With the summation of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the equilibrium of payments. The series signifies the net inflows in the writing economy garnered from foreign depositors and then it is divided by GDP.

Gross capital formation (% of GDP):

Expenditures along with the perpetual resources hailing from the economy positive net deviations as indicated in the inventories' magnitude, which are incorporated in the gross capital formation.

Labor force participation rate, total (% of total population ages 15-64):

The portion of the inhabitants, aging between 15-64, who are regarded to be animated economically is defined as the labor force participation. It is accounted for all those people who bring forth, for a particular period, labor for the purpose of producing goods and providing services.

Table 1: Augmented Dickey-Fuller Test

Order	Level Term		1st difference		Integrated Level
Variable	Cal. Value	Critical Value	Cal. Value	Critical Value	
GDP	1.105	3.600	4.104	1.761	I(1)
TRO	1.282	3.600	2.419	1.761	I(1)
FDI	1.355	3.600	4.151	1.761	I(1)
GCF	2.256	3.600	2.220	1.761	I(1)
LFPR	3.517	3.600	1.968	1.761	I(1)

In order to scrutinize the unit root, Augmented Dickey-Fuller (ADF) test is utilized. Augmented Dickey-Fuller (ADF) is denoted as the lengthened version of Dickey-Fuller test. In the Dickey-Fuller test, we take into consideration all those error terms, which are recognized as uncorrelated or white noise.

Nonetheless, if there is a correlation found between error terms, then Augmented Dickey-Fuller is regarded as the most suitable testing procedure as it also allows for the analysis of Serial Correlation.

Cointegration Test:

In this paper, our major objective is to examine the relationship between GDP and TRO, GCF, LFPR. This means we want to investigate the long-run cointegrating relationship between them. Cointegration means such a long-run association among the variables that lead to stationarity.

Johansen Test for Cointegration:

This approach is based on multivariate cointegration analysis. The advantage of this approach is that we can identify multiple cointegrating vectors in a model that construct long-run stationary relationship and we can estimate all of these relationships simultaneously. So, this is basically a vector representation of the variables. Johansen approach is originally based on two tests: Trace test and Maximum Eigenvalue test. When test statistics is less than the critical value then null hypothesis of r cointegrating vector cannot be rejected and at this point the search procedure for cointegrating vector stop.

Maximum Rank	Parms	Eigenvalue	Trace Statistic	5% cri. value
0	50	-	179.1920	59.46
1	59	0.98311	93.4927	39.89
2	66	0.94197	33.7092	24.31
3	71	0.65715	**11.2294***	12.53
4	74	0.37693	1.2944	3.84
5	75	0.05978	-	-

Table 3: Johansen Normalization Restrictions Imposed

Beta ce1	Coef	Std Err	Z	P>|Z|
GDP	1			
TRO	0.00000023			
FDI	0	(omitted)		
GCF	-.011	.079	-0.15	0.885
LFPR	-.095	.035	-2.72	0.007

Ce1: GDPt = 0.00000023TRO – 0.011GCF – 0.095LFPR

In this particular model, there is no presence of Foreign Direct Investment (FDI) since FDI is excluded. This implies that there is an absence of cointegration association of FDI and GDP in Bangladesh's context. There is a positive relationship between GDP & TRO. If we increase TRO by 1 unit the GDP will be increased by 0.00000023 Unit. Holding all other variables constant. If GCF increased by 1 unit then GDP will decrease by 0.011 unit. Again, there is a negative relationship between GDP & LFPR by increasing every unit of LFPR, GDP will decrease by 0.095 unit.

Beta ce2	Coef	Std Err	Z	P>|Z|
GDP	0	(omitted)		
TRO	1			
FDI	0.00000050			
GCF	-1.145	.340	-3.37	0.001
LFPR	.132	.151	0.87	0.383

Ce2: TROt = 0.00000050FDI - 1.145GCF + 0.132LFPR

From this model, we can see that FDI and LFPR has a positive relationship with TRO. If FDI increased by 1 unit then TRO will be increased by 0.00000050 unit and if LFPR increased by 1 unit then TRO will be increased by 0.132 unit. But GCF has a negative relationship with TRO. If GCF increased by unit then TRO will be decreased by 1.145 unit.

Here, direct variable GDP is omitted but we can't say that TRO and GDP have no relation because FDI, GCF & LFPR all of these are definitely a part of GDP and have a huge impact on the country's economy.

And we can say that in this model there is a positive correlation between TRO and GDP because 2 variables - FDI & LFPR is positive.

Beta ce3	Coef	Std Err	Z	P>|Z|
GDP	0	(omitted)		
TRO	0.00000011			
FDI	1			
GCF	-.080	.035	-2.29	0.022
LFPR	.027	.015	1.76	0.079

Ce3: FDIt = 0.00000011TRO − 0.080GCF + 0.027LFPR

FDI, GCF & LFPR all are included in GDP and this will affect the GDP.

GCF has a negative relationship with FDI which means if GCF increased by 1 unit then FDI will decrease by 0.08 unit this will eventually decrease GDP.

Again, If LFPR increased by 1 unit then FDI will be increased by 0.027 unit which again means that GDP will be increased.

But in this model, we can see that there is a direct positive relationship between FDI and TRO. For every unit increase in TRO, FDI will be increased by the 0.00000011 unit. And FDI is directly involved in GDP which means increasing FDI will also increase the GDP.

Conclusion

Using an Augmented Dickey-Fuller Test & Johansen Test for Cointegrating approach with annual time series data from 1994 to 2017, the study has predictable and examined the impacts of trade openness on the economic growth in Bangladeshi economy. It was discovered that variables, which are in the economic growth function, are cointegrated.

Based on the World Bank databases, an applicable model had been created, in order to investigate whether Trade Openness plays any part in increasing the Economic Development in Bangladesh or not. While it was hoped that this paper would provide a conclusive answer to the above-mentioned questions. According to the report, Trade Openness & Economic growth of Bangladesh are interlinked. But this increase in Economic Growth was very low. So, from the above results and investigation, it is outward that Bangladesh has been ensuing a regular trade openness policy to promote imports in order to support exports and later improvement the GDP.

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