AN EMPIRICAL STUDY: INFLUENCE OF TRADE LIBERALIZATION ON GOVERNMENT REVENUE OF BANGLADESH

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Date of Submission: 17th January 2018

1.1 Introduction

Bangladesh started liberalizing its trade policy ever since its liberation. Initially as a newly formed independent country, it started liberalizing its import policy and later it also started liberalizing its export oriented policies. Continuous reform of tariff, export, import, and also industrial policies made the country increase its government revenue which in turn raised the standard of living and GDP of the country. This continuous reduction in the barriers to trade made greater competition in domestic market with national and international firms. However looking at a brighter side the more neutral the market is, easier to obtain cheap raw material and modern machineries as I have learnt from law of comparative advantage. It also argues that Resources are allocated with much more efficiently. Production Patterns are more closely matched with a country's comparative advantage. The ultimate result is export expansion which in turn supports stronger economic growth. In Bangladesh, for instance the sudden growth of ready-made-garment (RMG) and knitwear exports has created new Job opportunity and also made GDP to increase in turn increasing standard of living of the country. This trade liberalization has played a vital role in structural reform since mid 1980.however the scenario was quite different in the previous decade. The trade regime was highly restricted and inward-oriented in nature. Later from mid 1980s Bangladesh has become far less restrictive, more outward-oriented in terms of trade policy. In initiative towards globalization has resulted in commendable progress in eliminating a sizable portion of quantitative restrictions (QRs) and also in decreasing average rate and spread of import tariffs. This initiative to relaxing trade barriers did not limited itself to that boundary rather subsequently its policy became more favorable for export oriented industry and also welcomed more Foreign direct investments and many more. This increased investment for the country definitely created jobs for the local people whether this investment is by FDI operating in Bangladesh or an export oriented firm which increased production to serve international market. It goes without saying that this opportunity has increased income, brought in new technologies, taught new techniques of production and also has increased living standard and GDP of the country. However, it is not all as good as it sounds. Another school of thought oppose the view and argued that the country has been facing a tremendous problem of dumping goods by nearby countries, domestic small producers are more exposed to risk by foreign products and also last but not the least government revenue has been

highly affected due to cut down in tariff and other trade barriers. My area of concern in this report is whether this liberalization or openness to international trade has made government revenue to increase or decrease over the period.

1.2 Literature Review:

Trade liberalization made the many countries work together making it as if they operate in one border. This situation has many pessimist view as well as optimistic view. To start with foreign exposures to other countries across the border, affect the country's size and composition of national tax and public expenditure. Trade liberalization creates an imbalance between national – sized public sector and international sized market. Since nations are smaller in size compared to international markets government try to regulate national policies, which face tremendous implementation issues (Husemeyer, 2004). Efficiency Hypothesis was introduced in this study where it says mobility forces government to use fiscal resources efficiently. An initiative to trade liberalization makes the country to withdraw certain tariff and non tariff barriers to international trade. While doing so, mobility of visible and visible trade does not bring in tariff revenue for the country so it forces governments to utilize fiscal resources much more efficiently. This process of using resources efficiently is known as Efficiency hypothesis This efficiency hypothesis believe that trade liberalization creates a direct threat to the revenue earning ability in the form of tax for the state (Lee and McKenzie, 1989; Kurzer, 1993; Steinmo, 1994; Tanzi, 1995). It may affect both composition and size of the public expenditure.

On contrary some researchers believe that trade liberalization actually encourage tax revenue and spending simultaneously. They reinforce their statement by saying that to keep pace with fast economic growth these fiscal instruments need to increase in size (Grunberg,1998), Another says that to mitigate increased risk and also to compensate for volatility in income (Rodrik, 1998) or risk associated with capital flow (Rodrik 1998; Katsimi, 1998 and 1999). Here compensation hypothesis claims that trade openness process may bring in some losers, who will drive some compensatory government intervention. This research advocates for a position relationship between government expenditure with trade openness.

Bazoni and Nashashibi (1994), Rao and Khattry (2002),Gadenne and Cagé (2014), came up with further research on the subject matter and found that trade liberalization directly influences

a country's direct revenue. Further Stotsky, Gropp, and Ebrill(1999) and Bevan, Chambas , and Adam (2001) have also gave same view that trade openness is highly correlated to tax revenues. To dig deeper into the subject matter a further research has been done by Sèna Kimm Gnangnon which examined the different revenue sources and how it is affected by trade liberalization. The analysis suggests that trade liberalization increases government revenue especially in developing countries even by a disaggregated revenue model. A result of this study shows that Open Market policy in liberalization trade persistently has a favorable effect on government revenue both in the short run and long run. it holds true for developing countries in general.

Karimia, Kaliappana and Hamzaha (2015) shows that for developing countries the impact of trade liberalization, through a policy of cutting down tariff, affects domestic expenditure taxes (VAT) positively. Hatzipanayotou et al. (1994) and Keen (2002) concerning that substitution of tariff by domestic indirect taxes brings in social benefit, which supported the argument of previous study. Moreover, the findings of other works like Khattry and Rao (2002), Tosun (2005), Agbeyegbe et al. (2006), and Aizenman and Jinjarak (2009) is also consistent with the previous study. On a concluding remark it is stated that trade liberalization in any forms will affect country's direct and indirect revenue sources.

Following Benarroch and Pande (2017) there exit a causal relation between high exposure to foreign trade and the magnitude and structure of government expenditures- productive versus unproductive. This paper employs three measures to explain the responsiveness of government revenue to higher foreign exposure. The measures are: Trade-GDP ratio, import- GDP ratio, export-GDP ratio. None of least developed countries exhibited causal linkage between trade openness and total government spending- productive or unproductive. for all low and high-income countries independently, it found a significant affirmative causal relationship between the trade share of import and productive spending. Similar finding was not produced by export-GDP share. Results emphasize that government with higher import- GDP ratio increases productive spending to overcome the adverse impacts of higher exposure to external competition.

2.1 Model Specification:

Considering the previous research and the surveys conducted it is obvious that trade openness does affect the government revenue and expenditure of a country but whether it is positive or negative is yet debatable. To get a proper insight of the subject matter, I plan to disaggregate the model to see the causal relationship of trade openness to government revenue and government expenditure. The first model will incorporate all the sources of government revenue for Bangladesh due to trade openness. Although it might seem that trade openness is an independent event and will directly influence tariff but in reality it might have hidden effect on all sources of revenue collection of a country. We investigate the affect of trade openness on government earnings where the later is determined by open Market index and other tariff and non tariff revenue from international trade. The possible relationship between the dependent and independent variables could be as follows:

(i) $GovtRev = \lambda + \lambda_1 OMI + \lambda_2 Customs\ Duty + \lambda_3 Excise + \lambda_4 Export\ Duty + \lambda_5 Import\ VAT + \lambda_6 Supplementary\ Import\ tax + \lambda_7 Income\ Tax + \lambda_8 Corporate\ Tax$

(ii) $Log(GovtRev) = \lambda + \lambda_1 log(OMI) + \lambda_2 Log(customsDuty) + \lambda_3 log(exciseDuty) + \lambda_4 Log(Export\ Duty) + \lambda_5 Log(ImportVAT) + \lambda_6 log(supplementaryImporttax) + \lambda_7 log(Income\ Tax) + \lambda_8 log(corporateTax)$

2.2. Variables Used:

2.2.1 Dependent Variable:

Government revenue: Main source of Government revenue of Bangladesh is Income Tax, VAT, customs and Excise duty, and also corporate tax. Since the aim is to study the impact that Trade openness exerts on government revenue, government revenue is the dependent variable.

2.2.2 Independent Variables:

- Open market index (OMI) : Trade liberalization as defined is the withdrawal of or cutting down of protectionism or barriers that stand in the way of free exchange of goods and services between nations or states. This initiative aims at removal or reduction of tariff obstacles like duties and surcharges, and nontariff obstacles like licensing rules, quotas

and other such requirements. This paper uses Trade openness as a proxy measure to empirically analysis the impact of this liberalization on government revenue. According to Kyrre Stenses (2006) trade openness is defined in relation to barriers to international trade imposed by governments. The degree of global trade openness exit in Bangladesh is measured on number of economic issue and recorded as Open market index(OMI) The four main components of OMI 2017 are:

- o Observed openness to trade
- o Trade policy settings
- o Foreign direct investment (FDI) openness
- o Trade-enabling infrastructure

Therefore I want to see the impact of this OMI on government revenue.

- Tariff/customs is the direct revenue collected from imports. Due to increase in trade openness, trade restrictions (tariff) will be reduced to encourage free flow of goods in the country. The pessimist view and the shrinking hypothesis as per literature review indicates that trade openness is negatively related to tariff in causal model. Liberalizing trade policy leads to a significant reduction in tariffs on all products and is associated with lower international trade tax revenue. Even with higher level imports due to liberalization it might fail to compensate for the decline in domestic revenue (direct and indirect).

- Income Tax: Trade openness as already mentioned is not restricted to imports and exports rather it will encourage Foreign direct investments as well. This liberalization in government trade policy to encourage FD1 might seem as a negative vibe towards government revenue temporarily but considering the long run consequence and thereafter it will generate revenue for the country both in direct and indirect ways.FDIs will take in Bangladeshi labors which will create employment opportunity for the host country and also will increase the Total taxable income of the country and in turn will increase government income tax. By relaxing trade barriers, Bangladesh will now have the international market to operate and also to earn money. Trade policy relaxation could create new trade activities for example opening up of Small and Medium Enterprises (SMEs). On contrary, it could also cause companies that are less competitive in the

domestic market to shut down its operation. Openness in trade policy can bring in higher export revenue for both the public and private sectors of the economy. The ultimate outcome is higher profits, an increase in labor wages and as well as new employment opportunities for the people of the country. As a result, direct income taxes will increase, thereby increasing government revenues. The whole chain of effect will result in more taxable income and as a result will increase income tax for the country.

- Indirect tax (VAT): The increase in income level could increase purchasing power of the citizens of the country and ultimately will lead to higher domestic demand/consumption. This could generate higher indirect tax revenues from VAT and excise duties. Trade policy openness may decrease price of imported products, thus benefiting consumers and producers in the importing countries. Consumers' increase in purchasing power will increase total consumption (domestic and imported) leading to higher imports hence higher indirect tax revenue and perhaps higher import tax revenue for the government

- Corporate Tax: Assuming FDIs will be able to make profit in the near future by covering up its costs (fixed and variable) will fall under corporate tax bracket. This situation will bring in revenue for the host country, Bangladesh. Moreover FDIs will also bring in new technology which will encourage domestic investors, creating more opportunity for employment and also earn profit to provide for corporate tax revenue Again, Since tariff will be cut down on imported inputs used in the production of exportable goods, foreign trade-oriented firms will be more competitive in the international trade market and eventually will generate higher direct and indirect tax revenues for the country of origin. Moreover, domestically oriented trade firms operating in the informal sector of the domestic economy will now be motivated to move to the formal sector to take advantage of the reduced costs of imported inputs used in their production process. Similarly, domestic companies in the formal sector would be motivated to stay in this sector to take full advantage of the cut down prices of imported inputs generated by multilateral trade policy liberalization. Therefore, the government would be able to collect more tax revenues from the rising number of companies operating in the formal sector.

Therefore to build up a model and in support to an optimistic view we are assuming that although the direct impact on tariff/customs as a source of government revenue might go down but in the long run the spillover effect on the revenue is much higher than the temporary loss in revenue. To examine the view the model has been tested.

2.3 Methodology:

As already stated, my objective of this research has been to validate the relationship between the above mentioned dependent and independent variables based on the data set. Since we do not know the exact functional relationship between the independent and dependent variables, we carried out Ordinary Least Square (OLS) on the said variables. Based on our regression outputs, we could figure out that the above mentioned functional relationships gave us highest level of R^2 values. In order to calculate the above relationships we had a sample size 45 yrs and functional relationship is tested (based on Ramsey Reset test) we can be fairly sure that we are going to end up with a good fit for the above regression model. However we also need to figure out if there is any problem of multicollinearity in this proposed model. A number of tests were employed to figure out any presence of problem of multicollinearity. Similarly we tried to figure out presence of other problems of estimation like heteroscadasticity and autocorrelation. After having the model properly defined Granger Causality test will be done for determining the direction of causalities between the variables. The software EViews 3.1 used in the paper in order to evaluate the research model and also for forecasting.

3. Analysis:

The analysis part of this thesis paper is divided into two parts. The first part will consist of the model specification error testing. And the second part will consist of the analysis of the model constructed.

3.1 Data Description

The variables included here in the model have been tested under unit root test at various order of integration to see its stationary property. Since stationary data is the pre requisite for any time serious data to run regression therefore the summary of the output from unit root test is given below:

Variable	Order of Integration	ADF	Critical Value	Order of stationary
Government Revenue	Level			I(1)
	1ST difference	-2.92	-2.6059	
Income tax	Level	1.3	-2.6	I(2)
	1st difference	0.134	-2.6	
	2nd difference	-3.2	-2.6	
Export Duty	Level	0.78	-2.6	I(1)
	1st difference	-3.9	-2.6	
Excise Duty	Level	-2.7	-2.6	I(0)
Customs Duty	Level	3.2	-2.6	I(1)
	1ST difference	-4.89	-2.6	
ST import	Level	-3.6	-2.6	I(1)
ST domestic	Level	5.4	-2.6	I(2)
	1st difference	-1.11	-2.6	
	2nd difference	-6.8	-2.6	
VAT domestic	Level	1.1	-2.6	I(2)
	1ST difference	-0.166	-2.6	
	2nd difference	-2.9	-2.6	
VAT import	Level	5.2	-2.6	I(2)
	1st difference	-1.27	-2.6	
	2nd difference	-8.06	-2.6	
OMI	Level	2.17	-2.6	I(1)
	1st difference	-3.01	-2.6	

3.2 Model Specification Error Test

One of the prerequisites of a correct prediction is to have a good model. To ensure that the model is formulated correct to predict certain issue one much ensure that it fulfills these criterias. The criterias involve 1) correct functional form taken 2) relevant variables taken 3) no presence of autocorrelation 4) no presence of heteroscedasticity. It is stated that taking irrelevant variables into the model is much more appropriate than dropping out one or more relevant variables. Thus to check the appropriateness of a good model and in turn good prediction some model specification test is done in this section.

(i) Proposed Model 1:

$Log(Gov\_Revenue) = C + C_1 * log(OMI) + C_2 * log(customs\_Duty) + C_3 * log(Excise\_Duty) + C_4 * log(Export\_Duty) + C_5 * log(VAT\_Import) + C_6 * log(VAT\_Domestic) + C_7 * log(ST\_Import) + C_8 * log(Income\_Tax) + C_9 * log(ST\_Domestic) + C_{10} log * (Corporate\_Tax)$

Specification Text (Ramsey RESET):			
F – statistic output	0.912300	P(F)	0.416263
Log likelihood ratio output	2.788666	P	0.247998
Dependent Variable Name: LOG(GOV_REVENUE)			
LS Estimation			
12/17/17 @ 20:31			
Sample period: 1981 2015			
Included no. of observations: 35			
Variable Names	Coefficient	S.E.	t-Stat	P-value.
C	10.35208	63.03896	0.164217	0.8711
LOG(CORPORATE_TAX)	-0.011250	0.160980	-0.069884	0.9449
LOG(CUSTOMS_DUTY)	-0.320873	7.537029	-0.042573	0.9664
LOG(EXPORT_DUTY)	-0.275554	3.606725	-0.076400	0.9398
LOG(INCOME_TAX)	-0.473170	6.011127	-0.078716	0.9380

LOG(OMI)	0.212941	2.061844	0.103277	0.9187
LOG(ST_DOMESTIC)	0.134377	1.890529	0.071079	0.9440
LOG(ST_IMPORT)	0.050732	0.260564	0.194703	0.8474
LOG(VAT_DOMESTIC)	-0.110817	0.214567	-0.516471	0.6107
LOG(VAT_IMPORT)	-1.262147	14.21098	-0.088815	0.9300
LOG(EXCISE_DUTY)	-0.062036	0.116883	-0.530753	0.6009
FITTED^2	0.181347	2.047330	0.088578	0.9302
FITTED^3	-0.003203	0.066923	-0.047863	0.9623
R^2 Value	0.993428	Mean LOG(GOV_REVENUE)		9.742011
$\bar{R}^2$ Value	0.989844	S.D. LOG(GOV_REVENUE)		1.153878
S.E. of regression	0.116286	A.I.C		-1.186975
Sum squared residuals	0.297494	S.I.C		-0.609274
Log likelihood	33.77206	F-statistic		277.1395
Durbin-Watson statistic	3.004282	P(F)		0.000000

Here N=43,

N1=2, N2=43-13(sample size – new parameter)

N2=30

From the F-distribution with N1 and N2 value at 5% significance level F=3.32. comparing tabulated F value with calculated F value at 5 % significance level we do not reject the null hence the model is mis-specified.

Proposed Model II:

(Gov_Revenue)=C+C_1*(OMI)+C_2*(customs_Duty)+C_3*(Excise_Duty)+C_4*(Export_Duty)+C_5*(VAT_Import)+C_6*(VAT_Domestic)+C_7*(ST_Import)+C_8*(Income_Tax)+C_9*(ST_Domestic)+C_{10}*(Corporate_Tax)

Ramsey Reset Test:

Ramsey RESET Specification Test:				
F-statistic value	4.706733	P(F)		0.016678
Log likelihood ratio	11.73514	P		0.002830
Dependent Variable: GOV_REVENUE				
LS Estimation				
12/17/17 @ 20:58				
Sample: 1973 2015				
Included no. of observations: 43				
Variable Names	Coefficient Values	Std. Error	t-Stat	P.
C	-2300.095	2366.231	-0.972050	0.3388
CORPORATE_TAX	-4.199861	1.700566	-2.469684	0.0194
CUSTOMS_DUTY	2.298210	2.220264	1.035107	0.3089
EXPORT_DUTY	-399.9745	226.6723	-1.764550	0.0878
INCOME_TAX	-1.016296	1.501485	-0.676861	0.5037
OMI	0.066612	0.066838	0.996608	0.3269
ST_DOMESTIC	3.376836	5.686080	0.593878	0.5570
ST_IMPORT	-0.446895	2.406332	-0.185716	0.8539
VAT_DOMESTIC	-1.592405	2.596403	-0.613312	0.5443
VAT_IMPORT	3.385059	1.592363	2.125809	0.0419
EXCISE_DUTY	2.114179	2.946783	0.717453	0.4786
FITTED^2	1.03E-06	5.19E-06	0.197640	0.8447
FITTED^3	2.79E-11	2.55E-11	1.095485	0.2820
R^2 Value	0.994235	Mean GOV_REVENUE		26827.12
$\overline{R}^2$ Value	0.991929	S.D. GOV_REVENUE		38110.35
S.E. of regression	3423.844	A.I.C		19.35956

Sum squared residuals	3.52E+08	S.C	19.89202
Log likelihood	-403.2306	F-stat	431.1368
Durbin-Watson statistic	2.582434	P(F)	0.000000

Here N=43,

N1=2, N2=43-13(sample size – new parameter)

N2=30

From the F distribution table with N1 and N2 value at 5% significance level F=3.32. comparing tabulated F value with calculated F value at 5 % significance level we can reject the null in favour of alternative. That is, the model is not mis-specified.

Since proposed model I is not specified correctly, however proposed model II is correctly specified, so I can further test proposed model II for multicollinearity, heterscedasticity and autocorrelation.

3.3 Heteroscedasticity:

Now that we have calculated our proposed model using OLS technique and estimated our parameters we need to make sure that the model is immune from the problem of heteroscedasticity for making right inference on the statistical significance of the estimated parameters. when the problem of heteroscedasticity prevails in the model though the estimated parameters are still unbiased, the estimators no longer remain BLUE (best linear unbiased estimator). So we tried to identify the presence of the problem of heteroscedasticity in our model employing the following tests

3.3.1 Test for Heterscedasticity:

Heteroskedasticity Test of White without Cross Terms:

F-statistic Value	104.6023	P(F)		0.000000
χ^2	42.45879	$P(\chi^2)$		0.000954

Dependent Variable: RESID^2

LS

12/24/17   @ 10:54

Sample Period: 1973 2015

Included no of observations: 43

Variable Names	Parameters	Std. Error	t-Stat	P.
C	13664879	14170038	0.964350	0.3445
CORPORATE_TAX	17062.16	77830.34	0.219222	0.8283
CORPORATE_TAX^2	-1.322463	7.036456	-0.187944	0.8525
CUSTOMS_DUTY	46303.13	11520.79	4.019093	0.0005
CUSTOMS_DUTY^2	-2.555901	0.717864	-3.560425	0.0016
EXPORT_DUTY	4123541.	1209677.	3.408794	0.0023
EXPORT_DUTY^2	-397119.6	43766.33	-9.073634	0.0000
INCOME_TAX	18141.47	6833.121	2.654931	0.0139
INCOME_TAX^2	-1.615096	0.151955	-10.62880	0.0000
OMI	-281.0062	572.1716	-0.491122	0.6278
OMI^2	0.000463	0.001204	0.384248	0.7042
ST_IMPORT	51980.37	20185.52	2.575131	0.0166
ST_IMPORT^2	-28.03600	7.478852	-3.748704	0.0010
VAT_DOMESTIC	-29814.92	7575.829	-3.935532	0.0006
VAT_DOMESTIC^2	4.890377	0.511397	9.562774	0.0000
VAT_IMPORT	-13433.94	6668.490	-2.014540	0.0553
VAT_IMPORT^2	-0.407251	0.987017	-0.412608	0.6836
EXCISE_DUTY	-55307.99	23407.20	-2.362863	0.0266
EXCISE_DUTY^2	21.51480	12.22894	1.759335	0.0913
R^2 Value	0.987414	Mean RESID^2		15167215

$\overline{R}^2$ Value	0.977974	S.D. RESID^2	53724252
S.E. of regression	7973295.	A.I.C	34.92167
Sum squared residuals	1.53E+15	S.C.	35.69987
Log likelihood	-731.8159	F-stat	104.6023
Durbin-Watson statistic	2.082881	P (F)	0.000000

H_0=Homoscedastic residual

H_1=Heteroscedasticity in the residual

Here $NR^2 \cong \chi^2$

=42.4

$Pr(\chi^2 > 31.19)=0.05$

From the output I get $Pr(\chi^2 > 42.4)=0.000954$

Therefore we can reject null hypothesis and accept alternate hypothesis. That is there is heteroscedasticity in the residuals

3.3.2 REMOVING HETEROSCEDASTICITY

To remove the heteroscedasticity from the residual I have used built in white heteroscedasticity standard error and covariance test to run the new regression on the model.

Dependent Variable: GOV_REVENUE				
OLS(NLS & ARMA)				
12/25/17 @ 01:48				
Sample Period: 1973 2015				
Included no. of observations: 43				
White Heteroskedasticity-Consistent Standard Errors & Covariance				
Variable Names	Coefficient	Std. Error	t-Statistic	Prob.
C	430.6840	1245.786	0.345713	0.7318
CORPORATE_TAX	0.983132	1.429439	0.687775	0.4964

CUSTOMS_DUTY	1.296896	1.491628	0.869450	0.3909
EXPORT_DUTY	141.6042	304.3873	0.465211	0.6448
INCOME_TAX	0.453513	1.617999	0.280293	0.7810
OMI	-0.063665	0.071967	-0.884644	0.3827
ST_IMPORT	1.968204	2.997409	0.656635	0.5160
VAT_DOMESTIC	2.735892	2.606698	1.049562	0.3015
VAT_IMPORT	1.967678	1.410440	1.395081	0.1723
EXCISE_DUTY	1.108042	1.109606	0.998591	0.3253
R^2 Value	0.989308	Mean GOV_REVENUE		26827.12
$\bar{R}^2$ Value	0.986393	S.D. GOV_REVENUE		38110.35
S.E. of regression	4445.598	A.I.C		19.83764
Sum squared residuals	6.52E+08	S.C.		20.24722
Log likelihood	-416.5093	F-stat		339.2845
Durbin-Watson statistic	2.845561	P (F)		0.000000

3.4 Auto-correlation

3.4.1 LM test

Breusch-Godfrey Serial Correlation LM Test:				
F-statistic value	25.52669	P(F)		0.000000
χ^2	26.75448	P(χ^2)		0.000002
Dependent Variable: RESID				
LS Estimation				
12/24/17 @ 11:16				
Variable Names	Coefficient	Std. Error	t-Stat	P.
C	-245.5106	1136.785	-0.215969	0.8304

CORPORATE_TAX	-1.665805	0.866075	-1.923395	0.0637
CUSTOMS_DUTY	-0.765585	0.828689	-0.923851	0.3627
EXPORT_DUTY	-128.6166	154.0713	-0.834786	0.4102
INCOME_TAX	-0.817153	0.986936	-0.827970	0.4140
OMI	0.008160	0.033471	0.243791	0.8090
ST_IMPORT	-1.756788	1.929541	-0.910470	0.3696
VAT_DOMESTIC	0.946680	1.778761	0.532213	0.5984
VAT_IMPORT	1.739512	1.239701	1.403170	0.1705
EXCISE_DUTY	1.554957	1.329416	1.169654	0.2511
RESID(-1)	-0.818190	0.147001	-5.565895	0.0000
RESID(-2)	-1.239939	0.246922	-5.021590	0.0000
R^2 Value	0.622197	Mean RESID		-3.73E-12
$\overline{R}^2$ Value	0.488138	S.D. RESID		3940.601
S.E. of regression	2819.284	A.I.C		18.95728
Sum squared residuals	2.46E+08	S.C		19.44878
Log likelihood	-395.5815	F-stat		4.641217
Durbin-Watson statistic	1.998114	P (F)		0.000352

H_O=there is no auto correlation in the model

H_1=there is auto-correlation in the model

LM test shows that p-value is below 5 % therefore we can reject the null in favor of alternative that is, there is auto correlation in the model

3.4.2. ARCH Test

ARCH Test:

F-statistic	3.289181	P(F)	0.077245
χ^2	3.191227	P(χ^2)	0.074034

Dependent Variable: RESID^2				
OLS(NLS & ARMA)				
12/24/17 @ 11:17				
Sample (adjusted) period: 1974 2015				
Included no. of observations: 42 after adjusting endpoints				
Test of White Heteroskedasticity-Consistent Standard Errors & Covariance				
Variable Names	Coefficient	Std. Error	t-Statistic	Prob.
C	11224329	7700704.	1.457572	0.1528
RESID^2(-1)	0.275679	0.063962	4.310048	0.0001
R^2 Value	0.075982	Mean RESID^2		15504724
$\overline{R}^2$ Value	0.052881	S.D. RESID^2		54329320
S.E. of regression	52873312	A.I.C		38.45114
Sum squared residuals	1.12E+17	S.C		38.53389
Log likelihood	-805.4740	F-stat		3.289181
Durbin-Watson statistic	2.058625	P (F)		0.077245

However the scenario is different in ARCH test the output shows that there is no autocorrelation in the model at significance level of 5%

3.4.3. Remedy:

Since the two tests shows two contradictory results therefore I prefer to stick to the original model and use Newey-West HAC Standard Errors & Covariance (lag truncation=3) test to remove auto-correlation from the model.
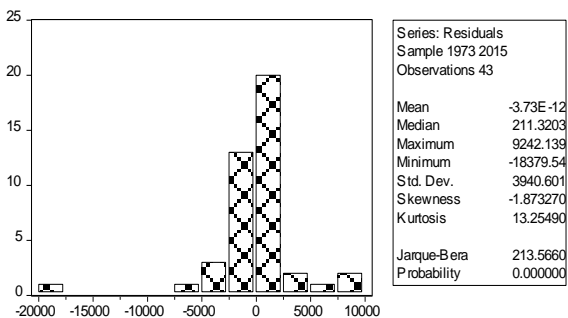
.

Dependent Variable: GOV_REVENUE				
LS Estimation				
01/16/18 @ 20:44				
Sample: 1973 2015				
Included no of observations: 43				
Newey-West HAC Standard Errors & Covariance (lag truncation=3)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	430.6840	873.8733	0.492845	0.6254
CORPORATE_TAX	0.983132	0.716797	1.371563	0.1795
CUSTOMS_DUTY	1.296896	1.630068	0.795608	0.4319
EXPORT_DUTY	141.6042	324.5562	0.436301	0.6655
INCOME_TAX	0.453513	0.964008	0.470446	0.6411
OMI	-0.063665	0.040937	-1.555190	0.1294
ST_IMPORT	1.968204	3.725498	0.528306	0.6008
VAT_DOMESTIC	2.735892	1.581281	1.730175	0.0929
VAT_IMPORT	1.967678	0.928928	2.118224	0.0418
EXCISE_DUTY	1.108042	1.050216	1.055062	0.2991
R^2 Value	0.989308	Mean GOV_REVENUE		26827.12
$\bar{R}^2$ Value	0.986393	S.D. GOV_REVENUE		38110.35
S.E. of regression	4445.598	A.I.C		19.83764
Sum squared residuals	6.52E+08	S.C.		20.24722
Log likelihood	-416.5093	F-stat		339.2845
Durbin-Watson statistic	2.845561	P(F)		0.000000

4. Revised model:

$$(GOV\_REVENUE) = C_1 + C_2(CORPORATE\_TAX) + C_3(CUSTOMS\_DUTY) + C_4(EXPORT\_DUTY) + C_5(INCOME\_TAX) (OMI) + C_6(ST\_IMPORT) + C_7(VAT\_DOMESTIC) + C_8(VAT\_IMPORT) + C_9(EXCISE\_DUTY)$$

4.1. Test of Normality

Since our objective is to estimate our model through Ordinary Least Square technique (OLS) we need to first make sure that our sample data set follows normal distribution. For the test of normality we employed Jarque Bera Normality Test in Eviews and ended up with the following results:

Series: Residuals	
Sample 1973 2015	
Observations 43	
Mean	-3.73E-12
Median	211.3203
Maximum	9242.139
Minimum	-18379.54
Std. Dev.	3940.601
Skewness	-1.873270
Kurtosis	13.25490
Jarque-Bera	213.5660
Probability	0.000000

4.2 Regression analysis of the new model:

Dependent Variable: GOV_REVENUE				
LS Estimation(NLS & ARMA)				
01/16/18 @ 20:44				
Sample: 1973 2015				
Included no of observations: 43				
Newey-West HAC Standard Errors & Covariance (lag truncation=3)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.

C	430.6840	873.8733	0.492845	0.6254
CORPORATE_TAX	0.983132	0.716797	1.371563	0.1795
CUSTOMS_DUTY	1.296896	1.630068	0.795608	0.4319
EXPORT_DUTY	141.6042	324.5562	0.436301	0.6655
INCOME_TAX	0.453513	0.964008	0.470446	0.6411
OMI	-0.063665	0.040937	-1.555190	0.1294
ST_IMPORT	1.968204	3.725498	0.528306	0.6008
VAT_DOMESTIC	2.735892	1.581281	1.730175	0.0929
VAT_IMPORT	1.967678	0.928928	2.118224	0.0418
EXCISE_DUTY	1.108042	1.050216	1.055062	0.2991
R^2 Value	0.989308	Mean GOV_REVENUE		26827.12
$\bar{R}^2$ Value	0.986393	S.D. GOV_REVENUE		38110.35
S.E. of regression	4445.598	A.I.C		19.83764
Sum squared residuals	6.52E+08	S.C		20.24722
Log likelihood	-416.5093	F-stat		339.2845
Durbin-Watson statistic	2.845561	P (F)		0.000000

From the above regression output, we can conclude that all the regressors (explanatory variables) have significant influence on the regressand (explained variable). The nature of influence is either positive or negative. To be more precise on the relationship of regressors and regressand. By looking at the regression output of the above proposed model we can interpret the model as follows:

First and most important thing to see about the model is R^2. From the above model as I can see R^2 is 98.6% which means that 98.9% of the dependent variable is measured by the above stated independent variable. Now I shall look at 5% significance level whether these above stated variables considered in the model are significant or not.

Even if there is no impact of the above-mentioned regressors (independent variables), government Revenue will be at a constant level of 430.6840unit

- 1 unit increase is Excise duty will raise Government revenue of Bangladesh by 1. 1 unit

- 1 unit increase in Corporate tax will lower the government revenue of Bangladesh 0.983132 unit

- 1 unit increase in Income tax raises the government revenue of Bangladesh by 0.453513unit

- 1 unit increase in excise duty raises the government revenue of Bangladesh by 1.108042unit

- 1 unit increase in OMI lower the government revenue of Bangladesh by 0.063665unit

- 1 unit increase in ST import raises the government revenue of Bangladesh by 1.968204unit

- 1 unit increase in VAT domestic raises the government revenue of Bangladesh by 2.735892unit

- 1 unit increase in VAT import raises the government revenue of Bangladesh by 1.967678unit

As the all the p-value of the above independent variables are more than 5% therefore I can conclude that the above dependent variable of the model is well explained by the independent variables.

From the regression model now I can also say that OMI is the variable that causes the decrease in government revenue over the period that means this open market initiative by the government actually decreases the overall revenue earning ability of the government.

Gov_Revenue=C+C_1OMI+C_2Customs_Duty+C_3Excise_Duty+C_4Export_Duty+C_5VAT_Import+C_6VAT_Domestic+C_7ST_Import+C_8Income_Tax+C_9Corporate_Tax

5. GRANGER CAUSALTY TEST

In this part of my thesis I shall look into the causality of the variable. Regression analysis shows the how one variable is dependent on the other which does not necessarily indicate causation. To be precise even if a relationship between variables exit, but also it does not prove causality nor shows tin which direction the influence is. The idea behind Granger causality test is that …time does not run backward. that is, if event A happens before event B, then it is possible then A is causing B. however it is not possible that B is causing A. In other words, event in the past can cause events to happen today. Future events cannot…this idea of Granger causality test has been put into implementation and the output is shown below:

5.1. Pairwise Granger Causality Tests

Pairwise Granger Causality Tests

12/24/17 @ 14:10

Sample: 1973 2015

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Probability
EXPORT_DUTY does not Granger Cause GOV_REVENUE	41	8.48243	0.00096
GOV_REVENUE does not Granger Cause EXPORT_DUTY		4.75677	0.01469

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is export duty is causing government revenue

- From the above analysis I can say that at

5% significance I can reject the null in favor of alternative that is government revenue is causing export duty

EXCISE_DUTY does not Granger Cause GOV_REVENUE	41	0.01625	0.98389
GOV_REVENUE does not Granger Cause EXCISE_DUTY		0.52880	0.59382

- From the above analysis I can say that at 5% significance level I cannot reject null hypothesis that is excise duty is not causing government revenue

- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is government revenue is not causing excise duty

CUSTOMS_DUTY does not Granger Cause GOV_REVENUE	41	0.50168	0.60969
GOV_REVENUE does not Granger Cause CUSTOMS_DUTY		2.47445	0.09842

- From the above analysis I can say that at 5% significance level I cannot reject null hypothesis that is customs duty is not causing government revenue

- From the above analysis I can say that at 5% significance I cannot reject null

hypothesis that is government revenue is not causing customs duty

INCOME_TAX does not Granger Cause GOV_REVENUE	41	5.06115	0.01156
GOV_REVENUE does not Granger Cause INCOME_TAX		10.4749	0.00026

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is income tax is causing government revenue

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is government revenue is causing income tax

ST_IMPORT does not Granger Cause GOV_REVENUE	41	0.34599	0.70984
GOV_REVENUE does not Granger Cause ST_IMPORT		6.83853	0.00304

- From the above analysis I can say that at 5% significance level I cannot reject null hypothesis that is st import is not causing government revenue

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is government revenue is causing st import

VAT_DOMESTIC does not Granger	41	6.23063	0.00475

Cause GOV_REVENUE			
GOV_REVENUE does not Granger Cause VAT_DOMESTIC		6.42264	0.00412

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is VAT domestic is causing government revenue

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is government revenue is causing VAT domestic

VAT_IMPORT does not Granger Cause GOV_REVENUE	41	2.95535	0.06480
GOV_REVENUE does not Granger Cause VAT_IMPORT		3.36472	0.04575

- From the above analysis I can say that at 5% significance level I cannot reject null hypothesis that is VAT import is not causing government revenue

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is government revenue is causing VAT import

CORPORATE_TAX does not Granger Cause GOV_REVENUE	41	16.0623	1.0E-05
GOV_REVENUE does not Granger Cause CORPORATE_TAX		42.5575	3.3E-10

- From the above analysis I can say that at

5% significance I can reject the null in favor of alternative that is corporate tax is causing government revenue

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is government revenue is causing corporate tax

OMI does not Granger Cause GOV_REVENUE	41	21.0469	8.8E-07
GOV_REVENUE does not Granger Cause OMI		6.97917	0.00274

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is OMI is causing government revenue

- From the above analysis I can say that at 5% I can reject the null in favor of alternative that is government revenue is causing OMI

EXCISE_DUTY does not Granger Cause EXPORT_DUTY	41	1.16500	0.32340
EXPORT_DUTY does not Granger Cause EXCISE_DUTY		0.16872	0.84541

- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is excise duty domestic is not causing export duty

- From the above analysis I can say that at

5% significance I cannot reject null
hypothesis that is export duty is not
causing excise duty

CUSTOMS_DUTY does not Granger Cause EXPORT_DUTY	41	5.07351	0.01145
EXPORT_DUTY does not Granger Cause CUSTOMS_DUTY		0.06795	0.93442

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is customs duty is causing export duty

From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is export duty is not causing customs duty

INCOME_TAX does not Granger Cause EXPORT_DUTY	41	11.5822	0.00013
EXPORT_DUTY does not Granger Cause INCOME_TAX		4.10850	0.02471

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is income tax is causing export duty.
- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is export duty is causing income tax

ST_IMPORT does not Granger Cause EXPORT_DUTY	41	3.40872	0.04408

EXPORT_DUTY does not Granger Cause ST_IMPORT		0.74004	0.48421

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is st_import is causing export duty
- From the above analysis I can say that at 5% significance I cannot reject null hypothesis and accept alternate hypothesis that is export duty is not causing st import

VAT_DOMESTIC does not Granger Cause EXPORT_DUTY	41	5.49133	0.00829
EXPORT_DUTY does not Granger Cause VAT_DOMESTIC		1.69849	0.19729

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is VAT_domestic is causing export duty
- From the above analysis I can say that at 5% significance I cannot reject null hypothesis and accept alternate hypothesis that is export duty is not causing VAT domestic

VAT_IMPORT does not Granger Cause EXPORT_DUTY	41	4.18251	0.02327
EXPORT_DUTY does not Granger Cause VAT_IMPORT		0.28684	0.75233

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is VAT_import is causing export duty
- From the above analysis I can say that at 5% significance I cannot reject null hypothesis and accept alternate hypothesis that is export duty is not causing VAT import

CORPORATE_TAX does not Granger Cause EXPORT_DUTY	41	9.60792	0.00045
EXPORT_DUTY does not Granger Cause CORPORATE_TAX		3.51388	0.04036

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is corporate tax is causing export duty
- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is export duty is causing corporate tax

OMI does not Granger Cause EXPORT_DUTY	41	5.89978	0.00608
EXPORT_DUTY does not Granger Cause OMI		1.53908	0.22837

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is OMI is causing export duty

- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is export duty is not causing export duty

CUSTOMS_DUTY does not Granger Cause EXCISE_DUTY	41	0.07969	0.92357
EXCISE_DUTY does not Granger Cause CUSTOMS_DUTY		0.11957	0.88766

- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is export duty is not causing export duty
- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is export duty is not causing export duty

INCOME_TAX does not Granger Cause EXCISE_DUTY	41	0.42906	0.65440
EXCISE_DUTY does not Granger Cause INCOME_TAX		0.63751	0.53447

- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is income tax is not causing excise duty
- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is excise duty is not causing income tax

ST_IMPORT does not Granger Cause EXCISE_DUTY	41	0.10583	0.89985
EXCISE_DUTY does not Granger Cause ST_IMPORT		0.13292	0.87596

- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is st import is not causing export duty
- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is export duty is not causing st import

VAT_DOMESTIC does not Granger Cause EXCISE_DUTY	41	0.32965	0.72132
EXCISE_DUTY does not Granger Cause VAT_DOMESTIC		0.27840	0.75861

- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is VAT domestic is not causing excise duty
- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is excise duty is not causing VAT domestic

VAT_IMPORT does not Granger Cause EXCISE_DUTY	41	0.22926	0.79627
EXCISE_DUTY does not Granger Cause		0.90211	0.41469

VAT_IMPORT

- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is VAT import is not causing excise duty
- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is excise duty is not causing VAT import

CORPORATE_TAX does not Granger Cause EXCISE_DUTY	41	0.11695	0.88997
EXCISE_DUTY does not Granger Cause CORPORATE_TAX		0.25640	0.77524

- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is corporate tax is not causing excise duty
- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is excise duty is not causing corporate tax

OMI does not Granger Cause EXCISE_DUTY	41	0.18902	0.82858
EXCISE_DUTY does not Granger Cause OMI		0.58308	0.56336

- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is OMI is not causing excise duty

- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is excise duty is not causing OMI

INCOME_TAX does not Granger Cause CUSTOMS_DUTY	41	0.57621	0.56712
CUSTOMS_DUTY does not Granger Cause INCOME_TAX F		2.42413	0.10288

- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is Income tax is not causing customs duty
- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is customs duty is not causing income tax

ST_IMPORT does not Granger Cause CUSTOMS_DUTY	41	1.97183	0.15395
CUSTOMS_DUTY does not Granger Cause ST_IMPORT		4.97091	0.01241

- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is st import is not causing customs duty
- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is customs duty is causing st import

VAT_DOMESTIC does not Granger Cause CUSTOMS_DUTY	41	0.97753	0.38600
CUSTOMS_DUTY does not Granger Cause VAT_DOMESTIC		2.85664	0.07055

- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is VAT domestic is not causing customs duty
- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is customs duty is not causing VAT domestic

VAT_IMPORT does not Granger Cause CUSTOMS_DUTY	41	0.87185	0.42682
CUSTOMS_DUTY does not Granger Cause VAT_IMPORT		0.84831	0.43652

- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is VAT import is not causing customs duty
- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is customs duty is not causing VAT import

CORPORATE_TAX does not Granger Cause CUSTOMS_DUTY	41	8.95175	0.00070
CUSTOMS_DUTY does not Granger Cause		1.19841	0.31342

CORPORATE_TAX

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is corporate tax is causing customs duty
- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is customs duty is not causing corporate

OMI does not Granger Cause CUSTOMS_DUTY	41	7.36480	0.00208
CUSTOMS_DUTY does not Granger Cause OMI		6.43027	0.00409

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is OMI is causing customs duty
- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is customs duty is not causing OMI

ST_IMPORT does not Granger Cause INCOME_TAX	41	9.11657	0.00063
INCOME_TAX does not Granger Cause ST_IMPORT		8.07968	0.00126

- From the above analysis I can say that at 5% significance I can reject the null in

favor of alternative that is st import is causing income tax

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is income tax is causing st import

	41	28.2698	4.2E-08
VAT_DOMESTIC does not Granger Cause INCOME_TAX			
INCOME_TAX does not Granger Cause VAT_DOMESTIC		5.14609	0.01082

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative hypothesis that is VAT domestic is causing income tax
- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is income tax is causing VAT domestic

	41	8.43882	0.00099
VAT_IMPORT does not Granger Cause INCOME_TAX			
INCOME_TAX does not Granger Cause VAT_IMPORT		4.18973	0.02313

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative hypothesis that is VAT import is causing income tax
- From the above analysis I can say that at 5% significance I can reject the null in

favor of alternative that is income tax is

causing VAT import

CORPORATE_TAX does not Granger Cause INCOME_TAX	41	16.3059	9.1E-06
INCOME_TAX does not Granger Cause CORPORATE_TAX		122.937	0.00000

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is corporate tax is causing income tax
- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is income tax is causing corporate tax

OMI does not Granger Cause INCOME_TAX	41	12.0969	9.6E-05
INCOME_TAX does not Granger Cause OMI		4.95064	0.01261

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is OMI is causing income tax
- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is income tax is causing OMI

VAT_DOMESTIC does not Granger Cause ST_IMPORT	41	8.76484	0.00079

ST_IMPORT does not Granger Cause VAT_DOMESTIC		14.4202	2.5E-05

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is VAT domestic is causing st import
- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is st import is causing VAT domestic

VAT_IMPORT does not Granger Cause ST_IMPORT	41	13.6491	3.9E-05
ST_IMPORT does not Granger Cause VAT_IMPORT		1.00141	0.37736

- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is VAT import is not causing ST import
- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is VAT import not is causing st import.

CORPORATE_TAX does not Granger Cause ST_IMPORT	41	1.13903	0.33140
ST_IMPORT does not Granger Cause CORPORATE_TAX		2.11247	0.13568

- From the above analysis I can say that at 5% significance I cannot reject null

hypothesis that is corporate tax is not causing st import

- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is st import is not causing corporate tax

OMI does not Granger Cause ST_IMPORT	41	5.86552	0.00624
ST_IMPORT does not Granger Cause OMI		3.56895	0.03855

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is OMI is causing st import
- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is ST import is causing OMI

VAT_IMPORT does not Granger Cause VAT_DOMESTIC	41	9.36506	0.00053
VAT_DOMESTIC does not Granger Cause VAT_IMPORT		0.68685	0.50963

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is VAT import is causing VAT domestic
- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is VAT domestic is not causing VAT import

CORPORATE_TAX does not Granger Cause VAT_DOMESTIC	41	10.1123	0.00033
VAT_DOMESTIC does not Granger Cause CORPORATE_TAX		56.9108	7.1E-12

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is corporate tax is causing VAT domestic
- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is VAT domestic is causing Corporate tax

OMI does not Granger Cause VAT_DOMESTIC	41	7.41758	0.00201
VAT_DOMESTIC does not Granger Cause OMI		0.65287	0.52660

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is OMI is causing VAT domestic
- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is VAT domestic is not causing OMI

CORPORATE_TAX does not Granger Cause VAT_IMPORT	41	3.49421	0.04103
VAT_IMPORT does not Granger Cause CORPORATE_TAX		9.66405	0.00044

From the above analysis I can say that at 5%

significance I can reject the null in favor of alternative that is corporate tax is causing VAT import

From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is VAT import is causing st import

OMI does not Granger Cause VAT_IMPORT	41	0.67833	0.51383
VAT_IMPORT does not Granger Cause OMI		9.97955	0.00036

- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is OMI is not causing VAT import
- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is VAT import is causing OMI

OMI does not Granger Cause CORPORATE_TAX	41	27.1577	6.5E-08
CORPORATE_TAX does not Granger Cause OMI		0.67067	0.51764

- From the above analysis I can say that at 5% significance I can reject the null in favor of alternative that is OMI is causing corporate tax
- From the above analysis I can say that at 5% significance I cannot reject null hypothesis that is corporate tax is not

causing OMI

6. Conclusion:

 As I started with having said that this openness of international trade can be beneficial for the country and also for the government. I advocated the view that Government revenue will increase due to Open market Index and will make positive relationship. My regression model has failed to comply with my belief and ended by showing that OMI actually is negatively related to government revenue. That means relaxing trade barriers will cut down on government revenue even in long run scenario. Further study on the subject matter with Granger causality test enlightened few more areas. OMI does influence government revenue without any doubt. OMI not only influence government revenue (dependent variable of the model) but also the other independent variables of the model such as: export duty, customs duty, income tax, ST import and also corporate tax. Although while incorporating variables in the model some of the variables were merely assumptions about OMI might influence these variables, however granger causality test re-enforced the assumptions with justifications. Therefore I can conclude that this research paper found that Government revenue will decrease as the economy become more open towards outside world. Thus caution should be taken to formulate trade policy when government revenue needs to be increased.