DOES TRADE LIBERALIZATION AFFECT ECONOMIC GROWTH: EVIDENCE FROM BRICS

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ABSTRACT

The recent Trade War between the Global Economic giants like USA, China and India has rekindled the interest to examine the impact of Trade openness on Economic Growth. This study is based on panel data using data for five emerging countries known as BRICS for the period of 1990 to 2017. Along with the Trade openness as a variable of interest we controlled the regression for certain Demographic and Macroeconomic variables. Using random effect model based on Hausman Test, the results are indicative of the negative results of Trade openness. Further, the inclusion of Macro Economic variables does seem to affect the significance of Trade openness of these countries. For the countries like BRICS both Foreign Investments and Domestic Capital formation are significant determinants of Economic performance.

Keywords: Trade Openness; Economic Growth; BRICS, Panel Regression, Macroeconomic Factors.

1. INTRODUCTION

The recent phase of Trade War between the Global Economic giants has rekindled the interest in analyzing the implications of openness on the Economic performance of the Developing Countries. Earlier the failure of Doha Round of the WTO to motivate USA and European Countries to reduce or eliminate the agricultural subsidies casts doubt on the benefits of Trade openness especially with respect to developing countries. The theory predicts positive benefits of Trade openness through importation of technical know-how; other intermediate goods that embody new technology and enlarge the effective size of market Wacziarg (2001). However, the empirical studies fail to reach a conclusive end. The inconclusive findings of different studies have kept the debate of impact of openness on economic performance still open and unresolved. The debate is not new; it dates back to 16th century when Adam Smith emphasized trade as a vent for surplus production and a means of market enlargement.

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The current phase of Globalization is characterized by the increasing participation of developing countries. After the remarkable success achieved by the East Asian Tigers, developing countries especially India and China have increasingly pursued the outward-oriented Trade Policy. The share of exports from developing countries has reached to a half (47%) of the global exports in 2011 (WTO, 2013).

The thrust to enlarge market access can be partly exemplified by the rise of the Regional Trade Agreements and Mega Trade Partnerships throughout the Globe. Trade is envisaged to be an engine of sustained economic growth and development keeping in view the fiscal constraints faced by the various countries across the globe. Therefore any discussion of economic growth and development which fails to recognize the dynamics of trade openness is incomplete and inconsistent.

Despite the voluminous literature available on this issue, it is easy to be skeptical of their results for at least two reasons. First, the varied set of methodologies, dizzying array of proxies of openness and different sample sets have been used in the earlier studies. Most literature has focused on cross- sectional and time series data to examine the implications of trade openness on economic growth. This approach fails to consider the country-specific differences and thereby biasing the results. In this paper we use panel data which pools both cross-section and time-series data for a set of five countries known as BRICS.

BRICS an acronym for five emerging giants of **Brazil, Russia, China, India and South Africa** forms a heterogeneous alliance. Their economic and political influence differs. They are distinguished by the outstanding size of their economies; strong growth rates and demand for stronger voice in the international governance and world economies. It is evident that BRICS have opened up their economies more than any other emerging economies. What is not clear to observers is the extent to which international trade has contributed to the economies of these countries. The study therefore, seeks to analyze the causal relationship between trade liberalization and economic growth among BRICS. The study proceeds with section 2 reviving a few of the existing studies; section 3 presenting the source of data and discusses the variables; section 4 provides empirical specification of the model; section 6 is dedicated to the results and discussion and section 6 sums up the study with some policy recommendations.

2.   REVIEW OF LITERATURE

Harrison (1994) attempted to analyze the impact and the diversity in the results of growth regression by using multiple measures of openness. The study used seven different measures of openness in a penal data set of developing countries and found strong positive statistical

relationship between openness and growth. However on controlling for certain macro-economic variables like inflation and terms of trade, the results turned insignificant for most of the measures of openness. Further the results are not robust for the interaction term between the human capital and trade openness. On the causality issue, the study concludes that the debate is still unresolved because the study finds two way causality between openness and growth.

Edwards (1997) moved a step ahead to examine if the growth generated by opening borders for foreign goods is actually transmitted to lower sections of the society. The study attempts to answer two questions that; **a)** if distribution of income in more tilted upwards in outward-oriented developing nations or closed ones? **b)** Does liberalization of trade policies increase income inequality? The results indicate that the countries with high initial distortions experienced increase in unevenness of distribution of income. Trade liberalization is not significantly associated with changes in inequality. However, the openness has differential effect on developed countries LDCs given their difference in factor endowments.

Frankel and Romer (1999) empirically investigated the impact of Trade openness on the standard of living. The authors argued that despite great efforts have been devoted to study this issue, there is a little evidence that the growth is actually caused by the trade openness. This is particularly for the reason of endogeneity that free trade policy is often associated by other policies like stable fiscal and monetary policies which too have influence on the standard of living. The paper proposed an alternative instrument to tackle the endogeneity problem. The instrument is based on the geographic characteristics like size of a country, distance between the trading partners, common language, land lockedness and others that are not affected by the income or government policies. The study concludes that there is a significant relationship between Trade openness and income. This relationship is understated by the OLS.

Dar &Amirkhalkhali (2003) examined the implications of Trade openness on the total factor productivity for 19 OECD countries for the period of 1971-1999. In a panel setting, using generalized growth accounting model, the study assumes that productivity of factors is dependent on the rate of expansion of exports. Overall, the results show positive and significant impact of trade openness on labor and total factor productivity but share a negative relationship between capital productivity. The sample is divided in three groups based on their level of openness to access the robustness of the results. However, on sensitivity analysis, the significance of the impact of export expansion reduces for less open countries and investment impact turns to be significant.

Hammouda et al (2010) examined the link between the economic growth, productivity and diversification in Africa. The main argument put forth in the study is that not just mere export of goods but how diversified the exports are, is what determines the economic growth. Diversification raises the productivity of other factors of production and thereby enhances economic performance. The results are indicative of the link between the diversification and total factor productivity of other determinants in Africa. However, the significance of the link cannot be gainsaid. Growth can be stimulated trough raising the productivity by pursuing pro diversification policies.

Haq and luqman (2014) studied the contribution of International Trade to economic growth through the accumulation of human capital in nine Asian countries for the period of 1972-2012. Human capital is said to be accumulated through transfer of technical knowledge embodied in the imports, learning through travelling other countries especially for business purposes, learning by doing and learning by exporting. To achieve this objective they developed a hybrid version of neo-classical growth model and endogenous growth theory. The results indicated that the growth of GDP per worker is influenced by the human capital accumulation either gained through formal education or through foreign interactions.

Were (2015) examined the differential effects of Trade openness on economic growth and investment on a cross country data. The empirical investigation is based on 85 countries categorized into developed, developing and least developed countries for the period of 20 years. The results shows that trade have a significant positive impact on economic growth while aggregating all the countries. However, the impact differs on the disaggregation of countries in terms of their development. LDCs are the least beneficiaries of the trade openness.

Javed and Munir (2016) analyzed the impact of composition of outflow of goods on economic growth in South Asian countries from 1990-2013. The diversification is categorized as vertical which represents increasing existing export commodities through innovation of existing and horizontal representing addition of new commodities to the existing export basket. Horizontal diversification reduces the volatility in export earnings. The study used augmented Cobb-Douglas production function and found diversification and economic growth has positive association. Composition of exports shares inverted U shaped relationship with economic growth. Vertical diversification stimulates economic growth through learning by doing while horizontal expansion (learning by exporting) negatively influenced the economic performance.

3. THE DATA AND VARIABLE DESCRIPTION

The data for all the variables is taken from online database of World Bank. Data from 1990 was readily available for all countries except Russia. The data for Russia was available from 1994 which was extrapolated to balance the panel. The selection of variables is based on the literature. Only those variables were selected that have been significant in determining the economic growth. The economic growth is measured by GDP growth rate over the sample period. Trade openness is indicated by the volume of trade relative to the overall economic activity of an economy. The trade intensity ratio (exports + imports / GDP) measures the trade openness. Further, various studies emphasize to control the growth regression for certain macroeconomic variables to untangle the impact of trade openness from other policy implementations. Levine and Renelt (1992) found seven such variables to test the sensitivity of results. For that purpose, we have included rate of inflation and foreign investments in our model. Inflation to a certain extent is welcomed by the economists because it encourages producers to raise their investments keeping in view the higher returns. However, beyond certain threshold inflations unnecessarily eats up the resources thereby brings downward pressure on growth rate. In this study the rate of inflation is measured by the changes in Consumer Price Index (CPI) over the selected time period. Foreign investments play a very crucial role in the development of countries like BRICS which are relatively capital scarce. Along with the transfer of much needed foreign currency, foreign investments especially green field investments brings with them the technical know-how vital for technological up gradation of such countries. We have used simple Cubb Douglas Production Function where growth is a function of labor and capital and other variables augmenting their productivity. The two demographic variables namely labor and capital included in the model are measured by total labor force and gross capital formation respectively calculated by World Bank online database.

4. EMPIRICAL SPECIFICATION OF MODEL

As mentioned earlier the objective of this study is to explore the link between Trade openness and economic growth in five emerging countries. The adoption of panel data regression framework was mandated to understand the relationship between trade openness and economic growth. The model is expressed as:

$$Y_{it} = \beta X_{it} + u_i + \varepsilon_{it} \quad (1)$$

Where Y is the rate of growth of GDP of ith country at time t. X_{it} is a (1 x k) vector of explanatory variables, u_i is the country specific unobserved effect and ε_{it} is the error term.

In a panel data model the initial problem is to decide the appropriate estimation technique (fixed or random effect) Masood (2014). The limitation with the fixed effect model is the exclusion of time invariant country specific variables. The alternative available to include time invariant variables is the application of random effect model. However, it assumes the non-collinearity explanatory variables and unobserved country specific effects. Failure in holding this assumption can bias the results. To unearth the truth about which preposition should be applied, the empirically Hausman test can be applied. The ultimate estimate specification is;

$$lGDP_{it} = llab_{it} + lk_{it} + lFDI_{it} + CPI_{it} + TO_{it} + \varepsilon_{it} \quad (2)$$

Where lGDP is the log of GDP representing growth rate over the years, llab, lFDI is the log of labor and log of FDI showing the changes in the labor force and foreign investments over the time period. CPI proxies for the rate of inflation and TO represents trade openness measured by trade intensity ratio. Both these variables were not log transformed for being already in ratio form.

5. RESULTS AND DISCUSSION

5.1 Summery statistics

The summery statistics of all the included variables is given in **Table 1**. The range of FDI, Inflation and Trade openness shows large variability as shown by the minimum and maximum. The large variability between these variables shows that some countries are not performing well with their inflow of FDI. It also shows that Inflation is severe in some countries and Trade openness unevenly benefits the selected countries. All the variables are already defined above. Further, N is total number of observations, n is the number of countries and t is the time period which is 28 years starting from 1990.

Table 1: Summery statistics

Variable		Mean	Std. Dev.	Min	Max	Observations	
lGDP	overall	27.79	0.89	26.10	29.95	N =	140
	between		0.86	26.44	28.78	n =	5
	within		0.45	26.46	28.97	T =	28
lLab	overall	18.66	1.35	16.34	20.49	N =	140
	between		1.49	16.67	20.42	n =	5
	within		0.13	18.33	18.91	T =	28
lnk	overall	25.98	1.32	23.66	29.31	N =	140
	between		1.11	24.38	27.51	n =	5
	within		0.86	24.02	27.77	T =	28
lnFDI	overall	23.02	2.03	15.03	26.40	N =	139
	between		1.45	21.02	24.96	n =	5
	within		1.56	17.02	25.20	T =	28

CPI	overall	74.11	41.26	-0.88	168.17	N =	140
	between		8.84	61.39	85.78	n =	5
	within		40.49	2.63	180.89	T =	28
T O	overall	0.29	0.17	-0.03	0.65	N =	140
	between		0.09	0.14	0.38	n =	5
	within		0.15	-0.06	0.60	T =	28

Source: Authors' own calculation

Table 2 provides the correlation between the various variables. Looking at the table, it shoes that gross capital formation or investment rate is strongly correlated with the economic growth. FDI also shares strong correlation with economic performance. However, the variable of interest that is trade openness is not strongly correlated with the growth rate.

Table 2: Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) lGDP	1.000					
(2) lLab	0.728	1.000				
(3) lK	0.933	0.745	1.000			
(4) lFDI	0.822	0.535	0.825	1.000		
(5) CPI	0.390	0.161	0.534	0.610	1.000	
(6) TO	0.151	-0.030	0.403	0.390	0.677	1.000

Source: Authors' own calculation

5.2 REGRESSION RESULTS

The prime objective of this study is to explore the implications of Trade openness on economic performance of the five emerging countries. Keeping in mind the heterogeneity among the countries, random effect model has been used. Further, it was also suggested by the Hausman test. The results of Hausman test are not reported here. **Table 3** provides the model estimates.

Table 3 Regression estimation

lGDP	Coef.	St.Err	t-value	p-value	Sig.
LLab	-0.103	0.023	-4.56	0.000	***
Lk	0.692	0.033	20.95	0.000	***
lFDI	0.095	0.016	5.92	0.000	***
CPI	-0.001	0.001	-1.82	0.068	*
TO	-1.628	0.146	-11.14	0.000	***
_cons	10.105	0.408	24.75	0.000	***

Mean dependent var	27.806	SD dependent var	0.884
Overall r-squared	0.952	Number of obs	139.000
Chi-square	2656.981	Prob> chi2	0.000
R-squared within	0.859	R-squared between	0.990

*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' own calculation

Table 3 provides the estimates of random effect model using log GDP as dependent variable (proxy for economic growth). As maintained earlier the economic performance in developing countries is largely driven by the rate of investment. In our results also gross capital formation shares a statistically significant relationship with economic performance. For every one percent rise in the capital formation, the overall economy gains around seven percentage pointsceteris paribus. The coefficient of capital is statistically very significant at less than 1 percent level. In a similar manner foreign inflow of funds also play a significant role in developing such economies.

Since FDI especially the green field investments compliments the domestic investment, it effectively drives the economic growth. The coefficient of FDI is positive and ceteris paribus augments economic growth by nearly equal margin as its own growth rate. However, the coefficient is also strongly significant at less than 1 percent level. The coefficient of labor is negative and significant at less than 1 percent level. This finding might seem surprising however, it is not. There are multiple reasons for the negative relation between economic growth and labor.

First, it might be due to the abundance of labor force and less per capita capital per worker. These countries are labor abundant and capital scarce countries which impairs their economies to grow at faster pace.

Second, being heavily populated countries, the labor force is largely unskilled which again becomes the troublesome in technologically developing world.

Third, we have taken the overall labor force in our data set which does not necessarily indicate that all the labor force is fully absorbed by the economy. There is a fair amount of people who either stay voluntarily out of employment or did not find the job. For any of the above reason the relationship might have turned negative. The rate of inflation shares a negative relationship with the economic growth. This finding is as per the expectations. All these countries are grappling with a worrisome rate of inflation. Prices have risen at a very fast pace in these countries.

Table 1 shows that the variation between the lowest and highest value is mountain high with values ranging from -0.88 to 168. The minus sigh indicates that from stagflation or even deflation, the prices have sharply increased in these countries. However, looking at the coefficient of the inflation in regression estimates, it doesnot seem to be much growth retarding. The rate of inflation has a minimal effect with every one percent increase in inflation, the growth rate decreases decimally. The low effect of inflation is again attributed to heavily populous. The heavy demand for consumption goods keeps oiling the wheels of

growth despite raising prices. The results of Trade openness are surprising and contrary to the long held view of the economists. Balassa (1978) argued that developing countries should open up their borders for foreign trade to breaks the shackles of underdevelopment. Similarly others like Grossman and Helpman (1990); Dollar (1992) and Bourange et al (2018) to name a few have found positive implications of trade openness. However, our results show that trade openness does not determine the economic growth.The coefficient is quite large with strong statistical significance at below 1 percent.There are few reasons for such a relationship. These include the:

a) Composition of trade; since these countries are developing ones and mostly trade in primary commodities with exception of China. The price inelastic nature of primary commodities or 'commodity curse' as reported by Birdsall and Hamoudi (2002) may distort their growth.

b) Again with the exception of China, these countries are grappling with mounting trade deficits. The unfavorable position of balance of payments consumes the resources meant for productive investments to reduce the trade deficits. This again has a negative effect on growth.

c) The inclusion of macroeconomic variables in regression analysis reduces the significances of trade or even it may disappear Levine and Renelt (1992). This is because trade policy is always accompanied by other macroeconomic adjustments. Ignoring such variables may bias the results by increasing the coefficient of trade openness. Since we included two such variables, the above effect might come into the picture. The strong significance of FDI probably points towards such effect. Our results support their findings.

Overall our model is fit and R square is 95 percent. This indicates that among the total variation caused by various factors to the economic growth, our model left only an insignificant portion of 5 percent to capture.

6. CONCLUDING REMARKS

Trade and growth has been a fierce debate in the history of economic literature. Though the theory has succeeded to link the trade openness to economic performance, the empirical evidences are yet to mend ways. This inconclusiveness of empirical findings along with the some current and historical incidents like failure of Doha round of WTO to reach the consensus at multilateral level in doing away with agricultural subsidies motivated us to look at the issue once again despite voluminous literature already available. We attempted to explore the relationship between trade openness and economic growth in five emerging nations known as BRICS. Contrary to the belief, the variable of interest shows negative

relationship with the economic growth. All other explanatory variables are as per the expectation except the labor.

The Policy recommendation for this heterogeneous group of countries is that they should focus on investment-led growth rather than export-led growth. Further, green fields investments from foreign nationals should be encouraged strategically. The diversification of exports especially horizontally should be the policy focus to do away with primary exports. Inclusion of new products especially the manufactured goods to the export basket will not only stabilize the export earnings but also reduces the chances of getting in 'specialization trap'. The skill development by imparting industry specific knowledge is another area need to be focused upon. Industry specific knowledge in labor force will not only help in human capital accumulation vital to reap the benefits of trade openness but also helps in absorbing technical know-how embodied in technologically sophisticated imports.

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