

Research Article

Impact of Trade Liberalization on Economic Growth of Nepal

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Abstract

Trade openness has been considered as an important determinant of economic growth. It has been witnessed during the past couple of decades that international trade openness has played a significant role in the growth process of both developed and developing countries. International organizations such as World Trade Organization, International Monetary Fund and World Bank are constantly advising, especially developing countries, to speed up the process of trade liberalization to achieve high economic growth. In this context, this paper aims to analyze the impact of trade liberalization on economic growth of Nepal. For this purpose, all the data regarding gross domestic product, export, import, total trade, trade balance of Nepal from 1980 A.D. to 2013 A.D. published by World Bank (2014) were used. Both descriptive as well as inferential statistics were used to analyze the data. Correlation analysis was used to find the correlation between the selected variables. Multiple linear regression analysis was carried out to analyze the impact of the trade liberalization in economic growth of Nepal. Trade cost does not explain any influence in gross domestic product, export, import, total trade and trade balance. The impact of trade openness is positive for all variables except trade balance. Trade openness has influenced economy significantly; import increased with purchasing power, export also increased but service only. Therefore, there is gap in export and imports.

Key words: Correlation, economic growth, gross domestic product, multiple linear regression, trade balance, trade liberalization

Introduction

Trade liberalization has been a key policy debate in the development literature since the early 1970s. The centerpiece of this debate has placed a particular emphasis on the role of openness on economic growth and productivity as part of development

strategy. The evolution of this debate has also been reinforced by the accumulation of evidence that confirmed positive correlation between export growth and GDP growth in countries with more open trade regime as opposed to those countries, which embraced import substitution and inward looking policies under the wall of tariffs and non-tariff barriers (Edwards, 1998).

In Nepal, trade liberalization has been implemented under the aegis of Breton woods institutions. According to these institutions, the rationale for these reforms is that Nepal's dismal economic performance fundamentally reflects domestic policy inadequacies, and it is precisely these policy inadequacies that need to be re-examined and addressed. In order to realize economic recovery, liberalization of internal and external trade and greater reliance on market forces have been accorded high priority in the policy agenda. These policies have primarily been designed to restore equilibrium, especially in the balance of payments and boosting productivity and exports in both manufacturing and agricultural sectors.

However, the response of exports to the incentive structure built into the trade liberalization program has been unsatisfactory in terms of the values of export earnings and absence of export diversifications. Indeed, the available evidence indicates that the economic performance of Nepalese economy has been rather disappointing. Between 1990 and 2001, the Nepalese economy registered negative current account balance to GDP; however, it was positive during 2002 to 2009. The GDP per capita in constant US\$ rise from \$177 in 1990 to \$269 in 2010 with the slow growth rate of 2.6 percent per annum. Trade to GDP ratio increased from 32 percent in 1990 to 64 percent in 1997 again declined to 46 percent in 2010. Similarly, export to GDP ratio increased from 10 percent in the 1990 to about 27 percent 1997, it started to decline after 1997 and reached to 9.5 percent in 2010. While growth rate of GDP continues to remain under 4 percent over the past two decades except some specific years (World Bank, 2014). The industrial value added has been falling and there are no symptoms of any quick recovery.

Thus, the role of trade and trade policy reforms in Nepal not only remains questionable but it also poses serious questions on development strategy.

Sharma and Bajracharya(1996) carried out a research study on impact of economic liberalization in Nepal by using time series data of 1974/75 to 1994/95. This study has measured the impact of trade liberalization by using three different methods. First, it has measured the impact of economic liberalization in manufacturing and trade sector by comparing average performance indicators for the period 1990/91 to 1993/94 with those for the period 1984/85 to 1989/90. Second, it has used regression equation to examine the supply response of various reform programs to the economy. The regression equation is based on the time series data from 1974/75 to 1992/93. Third, the regression equations have been compared for periods before and after economic liberalization. This study concludes that after the initiation of more liberalized policy, the number of industrial establishments is rising rapidly. The reforms have been also highly instrumental in improving the trade performance. The average annual growth in export almost doubled in the post liberalization period. The study also shows that there was higher growth rate of export than growth rate of import in the post liberalization period. Moreover, this study shows positive relationship between trade liberalization and growth.

Greenaway, Morgan and Wright (2002) evaluated the short run impact and transitory effects of liberalization in a dynamic panel model of growth using data set from 73 countries. Indicators of liberalization from Sachs and Warner (1995), Dean, Desai and Riedel (1994) and World Bank had used as explanatory variable, in addition to investment, population growth, initial per capita GDP, terms of trade and initial human capital. To provide consistent estimates, an instrumental variable following Arellano and Bond (1991) technique was used, with lagged dependent variable as an instrument. The empirical results suggested that liberalization exert positive impact on growth of real GDP per capita.

Dollar and Kraay (2004) examined relationship between decadal changes in the growth rates and changes in the volume of trade within-country rather than cross country which is regarded as an imperfect measure of trade policy. Period dummies were introduced to control for shocks that are common to all countries such as global demand shocks or reductions in transport cost. The data set consisted of 187 observations on growth in the 1990s. The empirical findings reported by the Dollar

and Kraay (2004) found strong and positive relationship between the effect of changes in trade and changes in growth.

Sarkar (2005) examined the relationship between trade liberalization and real growth rates of India and Korea using simple trend analysis as well as Autoregressive Distributive Lag (ARDL) approach to co-integration. In the first stage of simple trend analysis, it is observed that both India and Korea opened up and consequently share of trade (export, import and sum of the two) in their GDPs rose significantly. However, found no positive long-term relationship between trade liberalization and growth rate when ARDL approach is used to co-integration.

Salinas and Aksoy (2006), carried out the empirical study on impact of trade liberalization on growth by using cross country regression analysis of 36 developing countries. They found the significant increase in GDP per capita growth for sample developing countries that are not in transition from socialism, do not have conflicts, and do not depend on a single natural resource. The study concluded different results of trade liberalization in different countries. The impact of trade liberalization is found most significant in the small countries. There is increased growth in Latin America after dismantling of import substitution industrialization. There is also significant positive impact in Sub-Saharan Africa.

Kazungu (2009) explored the role of trade and trade liberalization policies on Tanzanian economy with special focus on the performance of agricultural sector. Parametric and non-parametric tests, ordinary least square (OLS), instrumental variable and cointegration technique are used to evaluate the impact of liberalization on the growth rate of exports, land productivity and economic growth. From the parametric and non-parametric tests, it is found that the contribution of trade liberalization in fostering export growth is rather weak. Second, although the volume of food crops during the post reform period is much higher than before the reforms, there are no symptoms of increased growth overtime. The empirical evidence from econometric analysis found impact of traditional exports negative and significant. The cointegration analysis shows that the share of trade to GDP is negatively correlated with economic growth.

Mannil and Afzal (2012) assessed the impact of trade liberalization on Bangladesh economy between the periods 1980 to 2010. This research analyzed the achievements of the economy in terms of growth, inflation, export and import after trade liberalization. The study used Ordinary Least Square (OLS) technique for empirical analysis. It is found that GDP growth increased consequent to liberalization. Inflation in the economy found unaffected to trade liberalization. The similar result found with quantitative analysis. Both export and imports are found increased with greater openness.

Igweike (2012) examined the impact of trade liberalization on economic growth of Nigeria and examined the separate effects of shocks (Export and Import) on economic growth under trade openness. The study employed the multiple regression analysis to ascertain the appropriateness. The co-efficient of determination, the signs and magnitude of the parameter coefficients are used to access the impact. In the study Vector Autoregressive (VAR) approach is also used to capture shocks, concomitant to economic policies to openness, the impulse-response and variance decomposition analyses. The Granger causality test is used to determine the selective or holistic nature of policy of trade openness. The estimated regression results show that trade openness has not had a positive impact on the Nigerian economy. But the results of the impulse-response analysis and the Granger causality test show that export openness and economic growth are mutually reinforcing, and that economic growth enhances import, which stimulates export.

The emerging theme in the literature is that there is no agreement pertaining to the gains from trade/trade policy and the mechanism through which these gains are accomplished. The intricacy of establishing an empirical link between trade liberalization/openness and growth arises from. The problem is common definition of openness/trade liberalization because there are several different measures of trade liberalization. The most common measures used are: the average import tariff; an average index of non-tariff barriers; an index of effective protection; an index of relative price distortions or exchange rate misalignment, and the average black market exchange rate premium. Difficulty in establishing causality between variables; openness, with populations, land areas, borders and distances between trading

partners because of endogeneity is also tedious. Although recent studies employ System Generalized Method of Moments (SYS-GMM) to overcome the endogeneity problem, they are nevertheless trapped in the first problem.

Inseparable effect of trade liberalization on growth from other complementary policies is another issue of debate. Since trade liberalization is never implemented in isolation, trying to separate its effects from other policies; sound macroeconomic fundamentals, rule of laws, anti-corruption, good institutions, accountability, political stability, transparency, and investment in human capital does not make sense. Unfortunately, however, the current econometric strategies are not well capable in handling those crucial determinants of growth. There are huge cross-country differences in the measurement of many of the variables used in econometric.

Most of the studies have focused on cross-country studies. Its problem is that they suffer from heterogeneity problems prevailing in the countries under investigation. Regarding the trade liberalization, abundant studies have carried out in the global context to test the correlation among the variables. In case of Nepal, some analyses are conducted; however, very few studies based on the tools, in the past are made in this regard. This study justifies the present work by updating data and information so that it becomes an evidence to compare with the finding of previous research. In this context, this study aims to examine the impact of trade liberalization on GDP, import, export, total trade and trade balance of Nepal,

Data and Methods

This study sought the help of descriptive as well as explanatory research design. The series employed are GDP, import, exports and balance of trade of Nepal. Exports include both merchandise and service to estimate its effect on output growth.

Since function of trade liberalization became effective in 80s decade, so all the series are starting from 1980 and ending in 2013. Series are presented in annual frequency and converted from nominal to real terms using the implicit price index and export index (2005=100, *Source: World Bank, 2014*). All the series are measured in million dollars. To assess the impact of concerned variable on GDP the ratio of variables to

GDP are taken as independent variable in most of the time. For the uniformity in the series, all the information used in this study is collected from the World Bank (2014). The methodology used in this work is common method of analyzing ordinary least square (OLS) in time series framework.

To test for the linkage between trade and economic growth in the short-run, in the long-run, and overall, three steps are commonly followed in time series approach studies: (1) test for unit roots and the order of integration, (2) test for co-integration between the series, and (3) causality test. In this study, the econometrics procedure to be used follows these steps mostly taken from Enders (1995). This study has followed these steps to ensure that all variables included in the study are stationary either in levels or in first differences (unit root tests), to look at the possibility of long-run relationships between the integrated variables (co-integration test), and to determine the significance of coefficient to assess the impact of independent variable in dependent variable expect causality test

The model used in this study consists of the variables-real GDP, real exports (X), real imports (M), total trade (TT), trade balance (TB), domestic price and border price. The total trade (X+M) proportion of GDP is used as trade openness index. The trade cost index is calculated using domestic price (fob) and border price (cif). Real exports and imports are obtained by deflating their nominal values by the corresponding consumer price index. Although, the main focus of this study is to examine the effect of trade liberalization on GDP, other variables such as imports, total trade, trade balance, domestic price and border price are included since they also reflect the degree of openness of the countries.

The following procedure of studying the impact of trade liberalization on growth, export, import, total trade and trade balance has been applied by using time series data to fit the multiple linear regression in following set of equations with time trends:

$$GDP = a + b t + c O + d TC + u_1 (t) \dots \dots \dots (1)$$

$$EXP = a + b t + c O + d TC + u_2 (t) \dots \dots \dots (2)$$

$$IMP = a + b t + c O + d TC + u_3 (t) \dots \dots \dots (3)$$

$$TT = a + b t + c O + d TC + u_4 (t) \dots \dots \dots (4)$$

$$TB = a + b t + c O + d TC + u_5 (t) \dots \dots \dots (5)$$

Where, GDP = Gross Domestic Product, EXP = Export, IMP = Import, TT = Total Trade, TB = Trade balance, O = Index of trade openness (total trade percentage of GDP), t = Trend variable, u_i = Error term, and, a, b, and c are the parameters to be estimated. The index of trade cost has been prepared by using the following procedure of Limao and Venables (2001)

$$TC = (cif/fob) - 1$$

Where, TC = Trade cost index, fob = Domestic price export, cif = Border price import. All the assumptions to apply multiple linear regression models are examined and found okay for further analysis.

Results and Discussion

All five series have been increasing over the years. Table 1 represents a summary of the descriptive statistics for the five macroeconomic indicators (GDP, exports, import, total trade, and trade balance) for the period 1980-2013. For the period 1980-2013, the average real GDP was \$6180.202 million with maximum of \$ 11370.38 and minimum \$ 5879.55, the average exports was \$928.34 million, the average imports was found almost \$1871.28 million. Total trade on average was \$2799.62 million during period and the average trade balance was found to be -\$942.937 million with maximum trade deficit of \$3047.86 million and with minimum of US\$191.484 million between 1980 and 2013.

Table 1
Descriptive Statistics of Variables

VARIABLES	GDP	EXPORTS	IMPORTS	TOTAL TRADE	TRADE BALANCE
Mean	6180.202	928.3432	1871.28	2799.623	-942.937
Maximum	11370.38	1626.57	4264.953	5482.042	-191.484

Minimum	2663.095	297.2264	498.8386	806.1935	-3047.86
Std. Dev.	2603.013	442.7722	1067.744	1418.798	811.948
Observations	34	34	34	34	34

Source: WB (2014)

Correlation between Variables

Correlation analysis was done to examine the correlation between the variables. Table 2 presents simple correlation test results between real GDP, real exports, real imports, total trade, and trade balance. The results show strong and positive correlation between the most of variables except trade balance due to its negative volume during the period of analysis. The results suggest that there is negative correlation between TB and other variables. The implication of these correlation figures is that Trade Balance is inversely affecting GDP, Exports etc.

Table 2

Correlation between variables

Correlation	GDP	EXPORTS	IMPORTS	TOTAL TRADE	TRADE BALANCE
GDP	1.000000				
EXPORTS	0.674036	1.000000			
IMPORTS	0.985340	0.715854	1.000000		
TT	0.951887	0.850805	0.975970	1.000000	
TB	-0.928196	-0.396056	-0.924670	-0.819477	1.000000

Source: WB (2014)

Regression Results of Model

Absence of the long run relationship of series with trade cost and openness index indicates that OLS can be conducted with series in first difference. Now the model to be estimated becomes;

$$DGDP = a_1 + b_1t + c_1DTO + d_1TC + u_1(t) \quad (I)$$

$$DEXP = a_2 + b_2t + c_2DTO + d_2TC + u_2(t) \quad (II)$$

$$DIMP = a_3 + b_3t + c_3DTO + d_3TC + u_3(t) \quad (III)$$

$$DTT = a_4 + b_4t + c_4DTO + d_4TC + u_4(t) \quad (IV)$$

$$DTB = a_5 + b_5t + c_5DTO + d_5TC + u_5(t) \quad (V)$$

Here D represents first difference of the series.

OLS Outcome of Model I

Using the first difference of all series in OLS framework, determinants of Gross Domestic Product (DGDP) are expressed by the multiple regression model of DGDP on t, DTO, and TC, which is

$$DGDP = 75.12 + 10.96 t + 1113.98 DTO - 74.45 TC$$

The results on OLS regression show that the Adjusted R^2 is 0.5296. It means that 52.96 percent variation in DGDP is explained by the variation in t, DTO and TC. Further F-statistics and P-value are 13.0084 and 0.001 respectively implies that the overall model is significant at 5 percent level of significance. It is found that t and DTO have significant impact on DGDP but TC does not have any significant impact on DGDP. So, t and DTO are the major determinants of DGDP.

OLS Outcome of Model II

Using the first difference of all series in OLS framework, determinants of Export (DEXP) are expressed by the multiple regression model of DEXP. on t, DTO, and TC, which is

$$DEXP. = 11.30 + 0.04 t + 3201.44 DTO - 37.26 TC$$

The results on OLS regression show that the Adjusted R^2 is 0.73. It means that 73 percent variation in DEXP is explained by the variation in t, DTO and TC. Further F-statistics and P-value are 29.85 and 0.001 respectively implies that the overall model

is significant at 5 percent level of significance. It is found that only DTO has significant impact on DEXP. So, DTO is only the major determinant of DEXP.

OLS Outcome of Model III

Using the first difference of all series in OLS framework, determinants of import (DIMP) are expressed by the multiple regression model of import on t, DTO, and TC, which is

$$\text{DIMP} = -28.42 + 7.14 t + 3675.16 \text{ DTO} + 25.86 \text{ TC}$$

The results on OLS regression show that the Adjusted R^2 is 0.6654. It means that 66.54 percent variation in DIMP is explained by the variation in t, DTO and TC. Further F-statistics and P-value are 22.21 and 0.001 respectively implies that the overall model is significant at 5 percent level of significance. It is found that t and DTO have significant impact on DIMP but TC does not have any significant impact on DIMP. So, t and DTO are the major determinants of import.

OLS Outcome of Model IV

Using the first difference of all series in OLS framework, determinants of total trade (DTT) are expressed by the multiple regression model of DTT on t, DTO, and TC, which is

$$\text{DTT} = -17.21 + 7.18 t + 6876.59 \text{ DTO} - 11.40 \text{ TC}$$

The results on OLS regression show that the Adjusted R^2 is 0.0.8887. It means that 88.87 percent variation in DTT is explained by the variation in t, DTO and TC. Further F-statistics and P-value are 86.16 and 0.001 respectively implies that the overall model is significant at 5 percent level of significance. It is found that t and DTO have significant impact on DTT but TC does not have any significant impact on DTT. So, t and DTO are the major determinants of DTT.

OLS Outcome of Model V

Using the first difference of all series in OLS framework, determinants of Trade Balance (DTB) are expressed by the multiple regression model of DTB on t, DTO, and TC, which is

$$DTB = 39.82 - 7.10 t - 473.72 DTO - 63.11 TC$$

The results on OLS regression show that the Adjusted R^2 is 0.1561. It means that 15.61 percent variation in Trade Balance is explained by the variation in t, DTO and TC. Further F-statistics and P-value are 2.97 and 0.001 respectively implies that the overall model is significant at 5 percent level of significance. It is found that only t has significant impact on DTB but, TC and DTO do not have any significant impact on Trade Balance. So, t is only the major determinant of DTB.

Conclusion

This study is conducted to investigate the contribution of trade openness to explain economic growth in Nepal using a multivariate framework. Two indices viz. level of trade openness and trade related transportation cost were generated to use proxy of trade liberalization. OLS estimation has shown that trade contributed the change in output; however, no meaningful relationship is established with transportation cost of trade.

Trade cost does not explain any influence in any of the dependent variable. The most possible reason behind is tiny size of manufacturing export and there is possibility of influence of trade cost with improved industrial export. On the other hand boarder price (cif) is not under the control of host economy. The impact of trade openness is positive for all variables except trade balance. Since with trade liberalization volume of imports and export especially service exports increased significantly. Openness has influenced economy significantly; import increased with purchasing power, export also increased but service only. Therefore, there is gap in export and imports.

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