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# Globalization and Economic Growth: The Case of Bangladesh

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**Abstract:**
*Like many other countries Bangladesh also integrated its economy with the rest of the world through liberalization of its economy. This paper explores the effect of globalization on economic growth of Bangladesh in econometric approach where degree of openness and exchange rate are used as indices of globalization. The estimated results based on Autoregressive model shows that there is positive relationship between degree of openness and economic growth and the relationship between growth and exchange rate is negative. Though Bangladesh has liberalized its economy substantially but still balance of trade is in deficit because of our export sector is not strong. Estimated results also show employment has significant positive relationship to growth. So with the global world consistently further liberalization should be undertaken.*

**Keywords:** Globalization, Economic Growth, Degree of Openness, Exchange Rate, Export Policy, Import Policy, Auto Regressive Model.

## 1. Introduction:

Globalization means the integration of economies by cross country flows of information, ideas, skills, goods, services, investment, finance and people. Globalization is not a new phenomenon but in course of time it is changing with new moods. Because of globalization the economies of the world are getting more and more new ways and views for trade and development. Now the countries of the world are more connected than they did in past. The extent of liberalization is reflected in the fact that the mean tariff rate for all products declined to 22 percent in 1999 from 114 percent in 1989. Moreover, the decline was sharp for Bangladesh compared to other South Asian countries (Razzaque et al., 2003).

Empirically, a huge study of in this field indicates that globalization reinforces economic growth reduces poverty and creates employment opportunities

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(Cuadros et al., 2004; Greenway and others, 2002). But globalization affects economic growth in different nations in different ways because of their respective government policies, different rate of population growth and the different institutional factors existing in the countries. Globalization includes four types of changes. First, it involves a spreading of social, political and economic activities across regions and continents. Second, it is explained by the growing magnitude of inter-dependency and flows of trade, investment, finance, migration, culture, etc. Third, it can accelerate global interactions and processes. And fourth, the effects of distant events can be highly influential elsewhere and local developments can have global consequences. (Rahman, 2005). Globalization has its roots during the period of Industrial Revolution in 1789. Industrialization is normally portrayed as an example of European and British exceptionalism. O'Rourke and Williamson (2000), O' Rourke (2001), Maddison (2001) and Williamson (2002) identify the period of globalization (1870-2000) into four distinct phases: the first wave of globalization 1870–1913, the deglobalization period of 1913-1950, the golden age of 1950-1973 and the second wave of globalization of 1973 onward.Globalization has several indices such as Degree of openness, Import liberalization, Anti-export bias reduction, Exchange rate, Financial Development, Integration in world market (FDI/GDP) etc. There are some crucial dimensions by which the world is globalized quickly; they are Foreign Direct Investment (FDI), Foreign Portfolio Investment (FPI), Information and Communication Technology (ICT), Migration, removal of trade restriction (such as tariff, quota), liberalization of capital markets etc. It is true that these are not same for all countries. So, a meaningful integration with greater participation of the nations can generate a lot of benefits.

### 1.2. Objectives of the Study

The key objectives of the study are as follows:

- To find out the effect of trade liberalization on growth of GDP in Bangladesh.
- To highlight the impact of Labor (employment) and Capital (investment) on growth of Bangladesh.
- To evaluate whether Hortal (as political stability) has any significant influence on growth of Bangladesh.
- To show the impact of import liberalization and exchange rate on growth.
- To evaluate overall effects of globalization on Bangladesh as a least developed country.
- To suggest policy measures for the improvement of trade policy.

### 1.3. Review of Literature

Hoque (2005) explaines the effects of tariff reduction on macroeconomic indicators and sectoral output in Bangladesh using a computable general equilibrium (CGE) approach. He found, in the short-run a 100% broad-based tariff cut simulation is carried out. The simulation results indicate that a reduction in tariffs expands GDP and generates employment, which suggests that trade liberalization, has a short-run influential effect on economic growth. The industries that have the greatest positive effects on their output are the export-oriented industries. There are also positive effects on the suppliers to these industries. By using econometric analysis based on the ARDL and the ARDL cointegration techniques Hossain and Alauddin (2005) found trade liberalization has had a positive impact on the growth, that is, both anti-export bias reduction and import-GDP ratio have significantly impacted on exports in the long run. Hossain and Karunaratne (2002) tested the relationship between expansion of exports and trade liberalization as proxied by the trade policy bias (TPB) or anti-export bias, in an underdeveloped economy (Bangladesh). They applied cointegration and vector error correction modeling in order to estimate the export supply equations. Their findings lent support to the general contention that both total- and manufacturing exports of Bangladesh have responded positively to anti-export bias reduction and greater openness.

Kohpaiboon (2003) highlights the effect of trade policy regimes in conditioning the impact of foreign direct investment (FDI) on growth in host country in Thailand. It is found that the impact of FDI on growth will be greater if the host country implements an export oriented policy comparing to an import substitution policy. Romalis (2005) suggests that trade liberalization carried out by large trading partners' leads to trade expansion in other countries inducing by providing the greater market access. This claim was supported by an empirical analysis using tariff barriers of the USA as an instrument of developing countries' openness.Seema, Safia, Roohi, and Nooreen (2007) investigated the impact of globalization, liberalization on growth, poverty and income inequality in Pakistan. The variables are GDP, poverty, openness to trade and income inequality. The empirical results show that thereexists a long-run relationship between all these variables. Therefore, globalization can be used as an effective means through which the issue of poverty can be addressed.

In this paper two indices of globalization such as degree of openness and exchange rate are included and Autoregressive Distributed Lagged model is applied to test the significance of globalization on economic growth of Bangladesh.

### 1.4. Methodology and Data:

To explain the influence of globalization and other factor on GDP or growth of Bangladesh we use "Autoregressive Model". The sample period for investigation is "1972/73 to 2007/08". The empirical study will employ annual secondary data collected from different sources and they are time series data. For all types study reliability of data is a crucial issue. The statistical database system is not strong in our country as a developing country. Careful attention was given while compiling data. All the secondary data collected from printed materials of the BOI, different government institutions, concerned ministries and concerned corporate offices, research journals, ADB data and statistics, websites and all other sources. All these sources of data are recognized and accepted by all and the provided information have been used widely in the country, so data and information of these sources incorporated in this article are reliable.

An Autoregressive Distributed Lagged (ADL) model can be estimated by Ordinary least Square (OLS) method but there exists the problem of multicollinearity because they take lagged values of explanatory variable and may give misleading result but in this study we take only lagged value of dependent variable, so initially multicollinearity problem cannot arise.

## 2. Globalization and Bangladeshi Economy-An Overview

After independence in 1971 Bangladesh was not a globalized country and also was a restricted country. The economy was restricted by high tariffs and non tariff barriers to trade and an over valued exchange rate system supported by the import-substitution industrialization strategy of the government. This policy was taken with the objectives of improving the balance of payment position of the economy and generating a protected own market for manufacturing industries (Bhuyan & Rashid, 1993).

To achieve potential growth and to keep pace with the world economy Bangladesh has been taking several policies. In 1982 Bangladesh took New Industrial Policy (NIP). Revised Industrial Policy (RIP) was taken in 1985/86 and in 1991 further reform was taken. Globalization took place with pace after 1990/91. There are many theories on trade and economic growth where a number of empirical studies have tried to test those theories under different perspectives. However both theoretical and empirical studies related to globalization or trade liberalization and growth in the context of most of the developing countries do not have a clear conclusion that globalization increases growth.

## 3. Import Policy Reform

During the 1980s, moderate import liberalization took place. In 1984 a significant change was made in the import policy regime as the licensing system was eliminated. Then imports were permitted against letters of credit (LC). From 1986 significant changes were made in the import procedures and IPOs with regard to their contents and structure where prior to 1989 IPOs contained a lengthy positive list of importable goods. In 1986 it was replaced by two lists: (1) The negative list which is for banned items and (2) The restricted list which is for importable items by fulfillment of certain conditions. These changes can be considered as significant moves towards import liberalization. With the aim of increasing the elements of stability and certainty of trade policy, IPOs with relatively longer periods replaced the previous practice of framing annual import policies. In 1990 the negative and restricted list of importable items were consolidated into one list (Ahmed, 2001; Raihan, 2008).

**Table: 1**

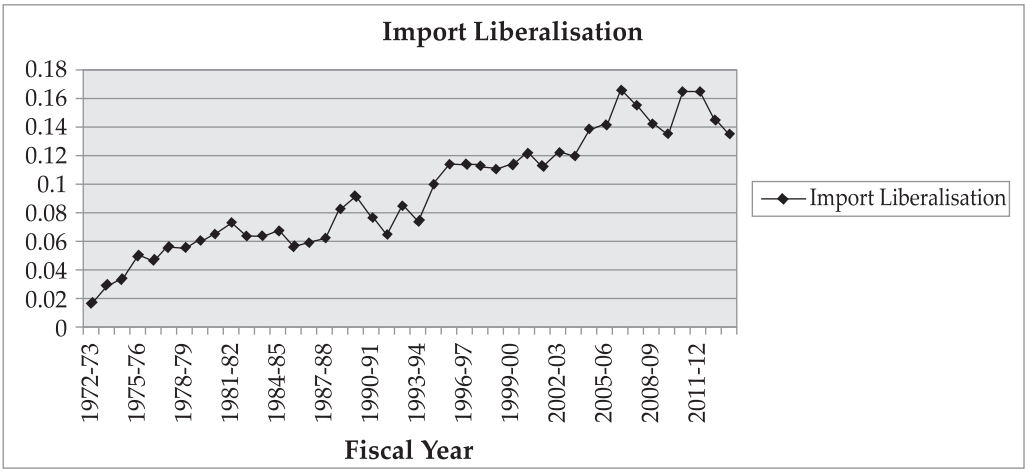
| Years | Total | Restricted for trade reasons | | | Restricted for non-trade reasons |
|---|---|---|---|---|---|
| | | Banned | Restricted | Mixed | |
| 1985-1986 | 478 | 275 | 138 | 16 | 49 |
| 1986-1987 | 550 | 252 | 151 | 86 | 61 |
| 1987-1988 | 529 | 257 | 133 | 79 | 60 |
| 1988-1989 | 433 | 165 | 89 | 101 | 78 |
| 1989-1990 | 315 | 135 | 66 | 52 | 62 |
| 1990-1991 | 239 | 93 | 47 | 39 | 60 |
| 1991-1992 | 193 | 78 | 34 | 25 | 56 |
| 1992-1993 | 93 | 13 | 12 | 14 | 54 |
| 1993-1994 | 109 | 7 | 19 | 14 | 69 |
| 1994-1995 | 114 | 5 | 6 | 12 | 92 |
| 1995-1997 | 120 | 5 | 6 | 16 | 93 |
| 1997-2002 | 122 | 5 | 6 | 16 | 95 |
| 2003-2006 | 63 | 5 | 8 | 10 | 40 |
| 2006-2009 | 24 | 3 | 4 | 8 | 9 |

Bangladesh has been pursuing a liberal policy order (2006-2009) in line with the agreements, signed with WTO and also in conformity with the polices and objectives of market economy. So the import policy of Bangladesh is getting simpler and easier. The important objectives of present import policy are as follows:

- To simplify the procedures for import of capital machinery and industrial raw materials with a view to promoting export and enhancing competitiveness and skills.
- To provide facilities for introducing technological innovation to cope with widely expanding modern technology.
- To make a strong base of indigenous exports by giving facility backward linkages for export-oriented local industries.
- To ensure supply of qualitative and hygienic commodities to the consumers at right price.
- To allow import of essential commodities on emergency basis for ensuring the supply of essential commodities in national interest.

Consistent with the principles of the open market economy and the trade liberalization process, import restrictions have been imposed on a few commodities on religious, environmental, health and security grounds.The new Import Policy Order 2009-12 has similar objectives and adds the aim of making a strong base for indigenous exports by facilitating backward linkages for export-oriented local industries. The new IPO also provides for the import of essential food items, garment accessories and capital machinery without a letter of credit, and also for the import of machinery and parts used in industries established under 100% foreign ownership.

**Figure: 1 Trend of import liberalization of Bangladesh.**




From the figure-1 we can see that there is a upward trend of import liberalization with some fluctuations. The trend got pace after the globalization has taken place that is after 90's. The trend got peak at 2006-07 then it fell at 2009-10 but again the trend went up.

From the table 1, it is clear that in the beginning import was not liberalized but by the 1980/81 import regime was liberalized at a high speed and in 1990/91 import liberalization got further momentum. We can see it from the trend (series 1 shows the trend of import liberalization) given below.

Begum and Shamsuddin (1998) investigated the effect of export growth in Bangladesh from '1961 to 1992'. The authors concluded that export growth had a positive and significant impact on economic growth by an increase in the total factor productivity of the economy. But it considered only the short run impact of export growth. On the other hand using updated and revised data of exports on economic growth Razzaque and others (2003) found no evidence of a long term relationship between export and economic growth in the context of the Bangladeshi economy.

## 4. Export Policy Reform

The reform of Export Policy is to bring dynamism to the economic activities of Bangladesh and to make these activities outward-looking so as to enable the country to keep pace with the rapidly changing and competitive world trading system.

A structured and planned effort has been underway only after 1986 and the main policy interventions are; (Hossain and Alauddin (2005)

- Reduction of tariff levels.
- To provide duty free access to imported inputs and duty drawbacks on inputs.
- Tax reduction from export income and concessionary duties on imported capital.
- Withdrawal of dual exchange rates and convertibility of taka on account.

The main objectives and strategies of Export Policy-'2003-2006' and Export Policy-'2006-2009' are as follows;

- Diversifying the export products.
- Restriction of EPB for development of institutional capacity and capacity building of the trade bodies including customs department, sea and land port authority, BSTI, Tea board etc.
- Developing the quality of the products and improvement in design and production of high price goods.

- Providing assistance to the manufactures for using modern technology in design and production.
- Promoting export development by broadening the institutional facilities including trading house and export house.
- Adoption of new strategy to extend markets of exportable items through computerization, use of modern technology including e-commerce.
- Building up skilled manpower in trade sector.

**Figure 2: Export liberalization**

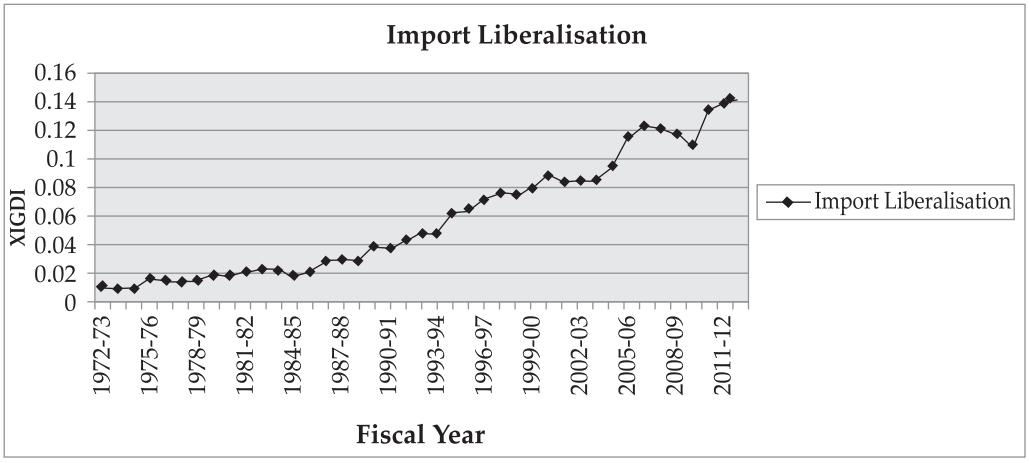



Figure 2 shows the export liberalization of Bangladesh from 1972 to 2013 where it can be seen that before 1990/91 the liberalization was slow, then it got pace. The trend is going up with some fluctuations. In 2013-14 the trend got a peak. In between 1990-91 and 2007-08 the rate of liberalization increased approximately 4 percent to 13 percent then it got down to about 11 percent, after that it got upward trend. The Export Policy 2009-12 underscores the need for expanding exports, increasing the productivity of export-oriented industries and facilitating the overall development of the export sector through capacity-building. In particular, this calls for the increasing involvement of women in trade-expansion activities.

## 5. Exchange Rate Policy Reform

After independence in 1971, the exchange rate regime of Bangladesh was not like current regime. In January 1972, the exchange rate of the Taka which replaced the Rupee as the currency of the newly independent Bangladesh was fixed against the pound sterling at 18.967 to the pound and that time; Taka- Dollar average exchange rate was 7.30.

Until 1979 Bangladesh followed the fixed exchange rate system. In late 1979 (August, 1979) Bangladesh shifted to the managed floating exchange rate regime. And this system continued till mid 2003. Under this system taka was pegged to the currencies of major trading partners of Bangladesh. Hossain and Alauddin (2005) quoted from Bayes et al (1995) and Rahman (1995) that the main objectives of the changes of exchange rate were:

- To promote international competitiveness.
- To encourage export diversification and faster growth of exports.
- To lessen subsidies from exports sector.
- To discourage import growth without taking resources to quantitative restrictions.
- To redistribute resources in export oriented and import substituting sector.

However in May, 2003 Bangladesh shifted to a kind of clean floating exchange rate regime when the foreign exchange rate is determined on the basis of the demand and supply of currency. If it is needed, then Bangladesh Bank sells or buys foreign exchange to maintain the stability of exchange rate.

**Figure 3: Trend of Exchange rate (TK/US$)**

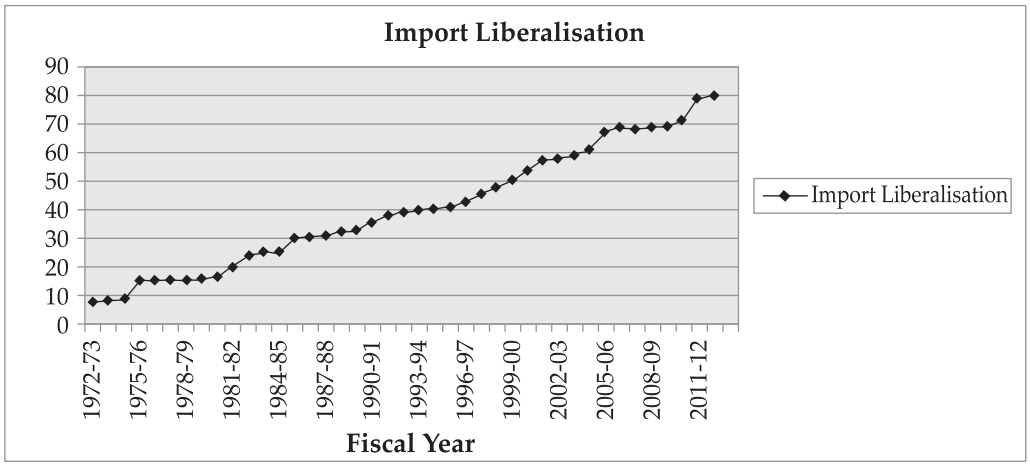



Figure 3 shows the trend of nominal exchange rate of Taka against US dollar which has an upward trend. However, in order to maintain organized market condition, Bangladesh Bank remains vigilant over the developments in the foreign exchange market. Bangladesh witnessed overall 9.28 percent depreciation against US dollar in FY 2011-12 due to higher import demand for enhanced domestic investment activities and increase in fuel price. The weighted weighted average interbank rate stood at Tk. 81.87 per US dollar in June, 2012 against 74.23 as on 30 June 2011.

**Table 2: Average Exchange Rate (Tk. per US$)**

| Year | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|
| Average exchange rate | 57.90 | 58.94 | 61.39 | 67.08 | 69.03 | 68.60 | 68.80 | 69.18 | 71.17 | 79.09 |

Bangladesh Bank remained vigilant in the foreign exchange market in line with its monetary policy goal to ensure stability in the foreign exchange market. Taka- Dollar exchange rates during FY 2011-12 (monthly) are shown in Table.

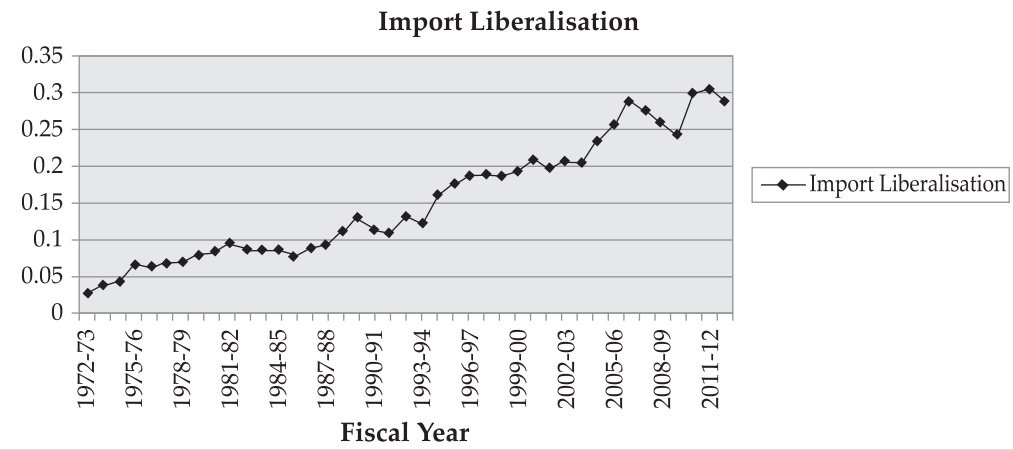
## 6. Trade Openness in Bangladesh

Applying one of the standard criteria for judging the degree of openness the relative share of merchandise trade in GDP in two decades. The South Asian economies have significantly opened up to international competition. The transformation in trade of Bangladesh is remarkable which has shown in Table 3. The policy of openness is not only simply limited to trade in goods but also diversified among services, technology, foreign investment and capital flows.

**Table 3: Progress in openness of South-Asian Economies.**

| Countries | Exports | | Imports | | Exports+Imports | | Average Tariffs | |
|---|---|---|---|---|---|---|---|---|
| | 1970 | 1992 | 1970 | 1992 | 1970 | 1992 | 1991 | 1994 |
| Bangladesh | 3.5 | 13.7 | 5.3 | 19.0 | 8.8 | 32.7 | 85 | 26 |
| India | 3.8 | 9.2 | 4.0 | 10.5 | 7.8 | 19.7 | 128 | 53 |
| Nepal | 5.6 | 13.4 | 30.0 | 24.9 | 15.7 | 38.3 | 21 | - |
| Pakistan | 7.9 | 17.3 | 20.0 | 22.3 | 20.8 | 39.6 | 66 | 30 |
| Srilanka | 15.3 | 28.4 | 17.5 | 39.6 | 32.8 | 68.0 | 25 | 20 |

**Figure 4: Trend line of Trade openness of Bangladesh.**



Where the trend of trade openness shows an increasing trend and from 1993/94 it got a pace. From 2003/04 it raised sharply up to 2007/08. From 2003-04 the trend has upward trend and in 2006-07 it got a peak but after that it fall to below 25% at the end of the 2010. In the fiscal year 2011-12 the trend goes at 30% which is a plateau.

## 7. The Model:

The study explains the effect of globalization and other influencing factor on growth of Bangladesh. In this model the explanatory variables are Labor (L), Capital (K), Political Stability (PS), Degree of Openness (DOP), Exchange Rate (EXR) and the lagged value of GDP ($Y_{t-1}$). The dependent variable is GDP. It is known that globalization has many indices (other than DOP and EXR) such as Import liberalization, Anti-export bias reduction, financial development etc. but lack of data , avoiding multicollinearity problem and simplicity of the model these variables are not included in the model. The model can be shown as follows:

$$Y_t = \beta_1 + \beta_2 L_t + \beta_3 K_t + \beta_4 PS_t + \beta_5 DOP_t + \beta_6 EXR_t + \beta_7 Y_{t-1} + U_t \ldots\ldots\ldots (4.1)$$

The log-linear form of the model (4.1) will be used for empirically estimated and the form is:

$$Ln(Y_t) = Ln\beta_1 + \beta_2 Ln(L_t) + \beta_3 Ln(K_t) + \beta_4 PS_t + \beta_5 Ln(DOP_t) + \beta_6 LN(EXR_t) + \beta_7 LN(Y_{t-1}) + U_t \ldots\ldots\ldots\ldots (4.2)$$

igure 2 shows the export liberalization of Bangladesh from 1972 to 2013 where it can be seen that before 1990/91 the liberalization was slow, then it got pace. The trend is going up with some fluctuations. In 2013-14 the trend got a peak. In between 1990-91 and 2007-08 the rate of liberalization increased approximately 4 percent to 13 percent then it got down to about 11 percent, after that it got upward trend. The Export Policy 2009-12 underscores the need for expanding exports, increasing the productivity of export-oriented industries and facilitating the overall development of the export sector through capacity-building. In particular, this calls for the increasing involvement of women in trade-expansion activities.

## 8. Expected sign of the Estimated Coefficients

- $\beta_2 > 0$ ; because employment stimulates growth, that is the more employment the more GDP.

- $\beta_3 > 0$ ; since capital increases growth i.e. the relationship between investment and growth is positive.
- $\beta_4 < 0$ ; because hortal makes the economy slow that is why the relationship between hortal (political stability) and growth is expected to be negative.
- $\beta_5 > 0$ ; it is said that openness increases growth, so positive relationship between DOP and GDP is expected.
- $\beta_6 < 0$ ; if exchange rate increases GDP decreases and vice versa, so this negative sign expected here.
- $\beta_7 > 0$ ; though current GDP and previous GDP are positively related that is why positive sign is expected.

## 9. Empirical Analysis

SPSS (Version 10.0 and 12.0) is used to compute the numerical results of estimated coefficients, hypothesis testing, heteroscedasticity test, autocorrelation test and multicollinearity test. Because of this study uses the time series data, so Unit Root test and Co-integration test should be checked out. But the sample size is not large enough to test co-integration as well as unit root test. However one of the explanatory variables of the model is very much random which Political Stability ($PS_t$). That is why Unit Root test and co-integration test are not considered in this study.

## 10. The F' Test:

The null and alternative hypothesis are ,

$H_0 : \beta_2 = \ldots\ldots\ldots\ldots\ldots\ldots = \beta_7 = 0$

$Ha : \beta_2 = \ldots\ldots\ldots\ldots\ldots\ldots = \beta_7 \neq 0$

The calculated F-statistic is 144.188 (Table-5.4). But the critical values for $\mathbf{F}_{6,\ 28}$ are 2.45 at 5% and 3.563 at 1% level of significance. As a result the null hypothesis cannot be accepted. It means all slope coefficients are significantly different from zero and indicates the stability of the model.

## 11. DiagnosticTests

The diagnostic tests confirm the validity of the inference. In the presence of Multicollinearity, Autocorrelation or Heteroscedasticity the estimators and their standard errors can be sensitive to small changes in the data.

**Descriptive Statistics**

| | N | Mean | | Std. Deviation | Variance | Skewness | | Kurtosis | |
|---|---|---|---|---|---|---|---|---|---|
| | Statistic | Statistic | Std. Error | Statistic | Statistic | Statistic | Std. Error | Statistic | Std. Error |
| YT | 36 | 10.719 | .003958 | .237 | .005641 | 1.860 | .393 | 3.033 | .768 |
| Lt | 36 | 3.460 | .004455 | .267 | .007144 | -.120 | .393 | -.882 | .768 |
| KT | 36 | 8.204 | .188 | 1.128 | 1.272 | -.295 | .393 | -1.092 | .768 |
| PST | 36 | 18.97 | 3.67 | 22.01 | 484.485 | 1.397 | .393 | 1.233 | .768 |
| DOPT | 36 | -2.156 | .009609 | .577 | .332 | -.424 | .393 | -.237 | .768 |
| EXRT | 36 | 3.414 | .103 | .618 | .382 | -.682 | .393 | -.374 | .768 |
| Yt-1 | 36 | 10.72 | .00407 | .24 | .005803 | 1.852 | .398 | 2.920 | .778 |

**Regression results: Coefficients**

| Model | Estimated Coefficient | Std. Error | t | Sig. |
|---|---|---|---|---|
| (Constant) | 6.211 | .931 | 6.668 | .000 |
| Lt | 1.727 | .216 | 7.988 | .000 |
| KT | 0.0013 | .032 | .395 | .696 |
| PST | 0.000069 | .000 | 1.564 | .129 |
| DOPT | .78 | .065 | 2.711 | .011 |
| EXRT | -1.131 | .108 | -10.492 | .000 |
| Yt-1 | .247 | .070 | 3.516 | .002 |

From the table it can be seen that, the second column of this table shows estimated coefficients of all major variables. It is found all the favorable coefficients have the expected signs except PSt (political stability) which has a positive sign. In fact, 'Number days of Hartals per year' is taken as a proxy of Political Stability which is a random factor. Negative sign is expected because if number of days of hartals increases GDP ($Y_t$) is expected to decrease and vice versa. The explanation may be that in order to overcome the loses most of the private companies (particularly RMGs & other export related companies) do work on holydays or work overtime. That is why this sign may get positive. However the coefficient of this variable is almost zero which is '0.000069' and the t' value of the variable is '1.564' which is not statistically significant.

$Ln(Y_t)$= 6.211+1.72Ln ($L_t$) +0.0013 Ln ($K_t$) + 0.000069$PS_t$ + 0.17 Ln ($DOP_t$)
(.931) (.216) (.032) (.0001) (.065)
– 1.313Ln ($EXR_t$) + 0.247 Ln ($Y_{t-1}$)
(.108) (.070)

According to the table the coefficient of labour (Lt) is '1.727' implying that a one percent increase in employment increases GDP (Yt) by about '1.73' percent. The t value of the coefficient is 7.988 (column-4) which is significant, that is clear that if employment increases GDP also increases. Similarly the estimated coefficient of capital (investment) is 0.0013 and the t value of this variable is 0.395 which is not statistically significant. The coefficient of Exchange rate (EXRt) is '-1.131' implying a one percent increase in Exchange Rate causes GDP (Yt) to decrease by '1.13' percent. The t-value of this coefficient is '-10.492' which is highly significant. The coefficient of Degree of Openness (DOPt) is '0.178' showing a one percent increase on degree of openness increases GDP by about 0.18 percent. The t value of this coefficient is '2.711' which is statistically significant. So it can be said that Degree of Openness increases growth. Similarly coefficient of 'Yt-1' (Lagged value of GDP) is 0.247 and the t-value of this coefficient is 3.516 which is significant implying there is positive relationship between present GDP and previous GDP.

**Model Summary**

| R | R-Squared | Adjusted R Squared | Std. Error of the Estimate | Durbin-Watson Statistic |
|---|---|---|---|---|
| .984 | .969 | .962 | 0.004156 | 1.081 |

**ANOVA**

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 1.493 | 6 | .249 | 144.188 | .000 |
| Residual | 0.00483 | 28 | 0.0001726 | | |
| Total | 1.542 | 34 | | | |

From the table it can be observed that the fitted line is reasonably good where the goodness of fit or the $R^2$ value is 0.969. That is almost 97 percent of the variation in the GDP in Bangladesh is explained by capital, log of labors, political stability, log of degree of openness, log of exchange rate and the lagged value of GDP. The adjusted $R^2$ is 0.962 (< $R^2$). According to Table 5.4 the value of the F-statistic is 144.188 which indicates that $R^2$ is statistically significant.

## 12. Test for Multicollinearity

It is known that in time series data multicollinearity problem can occur. The value of $R^2$ in this model is high, $R^2 = 0.969'$ which is grater than adjusted $R^2$ (= 0.962). F-test is highly significant because the slope coefficients are not simultaneously equal to zero. Again most of the t ratios that have been statistically significant. That is why it might be said initially that there is no significant multicollinearity problem in this model.
Variance Inflation Factor (VIF) and Tolerance, Zero-order, Part and Partial correlation, Eigen value and Condition Index are utilized to detect multicolliniarity and some extent of multicolliniarity is found.

## 13. Test for Autocorrelation

The Durbin-Watson d statistic may not be used to detect serial correlation (autocorrelation) in an autoregressive models because of the computed d value in such models generally tend toward **2** which is the value of d expected in a truly random sequence. So we use **Durbin-h** test to detect autocorrelation described as follows:

$$h = (1- d)\sqrt{\left\langle \frac{n}{1 - n\left(\text{var}(\hat{\beta}_7)\right)} \right\rangle} \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

h is asymptotically normally (AN) distributed with zero mean and unit variance. The test procedure is as follows:

Ho : $\rho = 0$ (No autocorrelation).
Ha : $\rho \neq 0$ (Autocorrelation).

For this model, d = 1.081, n = 36, var ( $\hat{\beta}_7$ ) = 0.0058. By putting these value into equation (1) we obtained h = 3.01. Since "h > 1.96" shows positive first order autocorrelation, we can not accept the hypothesis at the **5** percent level that there is no autocorrelation. To reduce the autocorrelation problem we can use "The Cochrane- Orcutt two-step procedure" as follows:

The original model at time t' is
$Y_t = \beta_1+\beta_2 L_t +\beta_3 K_t + \beta_4 PS_t+ \beta_5 DOP_t + \beta_6 EXR_t + \beta_7 Y_{t-1} + U_t$
Assume that Ut is generated by the AR (1) scheme, '$U_t = \rho U_t$ + et'So in step one we obtain estimated Ut and run the regression,

$$\hat{U}t = \hat{\rho}\hat{U}t + Vt$$

And from this first iteration we get . In step two we construct generalized difference equation by using and we found,

$(Y_t - \hat{\rho}\, Y_{t-1}) = \beta_1 (1 - \hat{\rho}\,) + \beta_2 (L_t - \hat{\rho}\, L_{t-1}) + \beta_3 (K_t - \hat{\rho}\, K_{t-1}) + \beta_4 (PS_t - \hat{\rho}\, PS_{t-1}) + \beta_5 (DOP_t - \hat{\rho}\, DOP_{t-1}) + \beta_6 (EXR_t - \hat{\rho}\, EXR_{t-1}) + \beta_7 (Y_{t-1} - \hat{\rho}\, Y_{t-2}) + (U_t - \hat{\rho}\, U_{t-1})$

The estimated ϱ is 0.42 and by using SPSS software from above equation we got the parameters of Labor, Capital, Political Stability, DOPt, EXRt and Yt-1 are **0.872, 1.837, -0.104, 0.203, -3.271** and **0.316** respectively which are different from those in the original model. So it can be concluded that autocorrelation problem may not arise.

## 14. Test for Specification Error

For testing functional form and omitted variables 'Ramsey's **RESET** – test can be used.

Firstly the original equation,

$$\text{Ln}(Y_t) = \text{Ln}\beta_1 + \beta_2 \text{Ln}(L_t) + \beta_3 \text{Ln}(K_t) + \beta_4 PS_t + \beta_5 \text{Ln}(DOP_t) + \beta_6 \text{LN}(EXR_t) + \beta_7 \text{LN}(Y_{t-1}) + U_t \ldots\ldots\ldots\ldots (1)$$

should be run and from the estimated equation fitted values of Ln(Yt), that is $\text{Ln}(\hat{Y}t)$ is to be obtained. And then the following regression is run;

$$\text{Ln}(Y_t) = \text{Ln}\beta_1 + \beta_2 \text{Ln}(L_t) + \beta_3 \text{Ln}(K_t) + \beta_4 PS_t + \beta_5 \text{Ln}(DOP_t) + \beta_6 \text{LN}(EXR_t) + \beta_7 \text{LN}(Y_{t-1}) + \gamma_1 \text{Ln}(\hat{Y}_t)^2 + \gamma_2 \text{Ln}(\hat{Y}_t)^3 + V_t \ldots\ldots (2)$$

$$F = \frac{(R^2 new - R^2 old)/no \cdot of \cdot new \cdot regressors}{(1 - R^2 new)/(n - no.of \cdot parameters\ in\ the\ new\ \text{mod}el)}$$

$R^2$ new = 0.970 (for model- **2**) and $R^2$ old = 0.969 (for model-1), by putting all the values we got F = 0.385 which is not statistically significant at both 5% and 1% level of significance. So one can not reject the null hypothesis. That is the model is correctly specified.

## 15. Policy implications and Conclusions:

During the 1990s it was seen that most of the developed countries enjoyed the benefits of globalization because of their industrial sector and technological progress. Few developing and least developed countries are getting positive benefits from globalization. The economic aggregations of the developing

countries still represent only a small amount in the world economy where information technology etc. has not yet fully developed. So there is enough scope to be globalized and get potential growth as well as development.

Globalization has both good and bad effects. Somehow it may worsen the economies of the developing and least developed countries because of lack of skill, less progress in industrial sector, lack of technological changes etc. But there are positive impacts of globalization also. Trade liberalization of Bangladesh has generated employment in the major export-oriented industries whereas major import-substituting industries such as textile and paper products have suffered (Raihan, 2008).

This paper examines the effect of globalization on Bangladesh economy. Empirically it is found that the degree of openness is positively related to the growth. Exchange rate is negatively related and it is highly significant. Employment has a significant effect on growth and the effect of investment is not found significant. Political stability proxied by Hartals has no significant effect on growth because of the coefficient is close to zero. It should be noted that hartal is harmful to our economy. From chapter 3 we know that liberalization still does not bring any positive benefit to the balance of payment of Bangladesh.

Based on above findings it can be suggested that export sector should be strengthened and necessary steps should be taken. Political stability is also important for foreign trade especially for FDI. Other policy reforms such as infrastructure, education, needed to ensure success. However, there are essentially no cases of sustained growth without trade expansion. In the field of information and communication technology (ICT) of Bangladesh is not yet developed. So this sector should be given priority. A central problem for many developing countries and the least developed countries (LDCs) is that they suffer from inadequate domestic policy environments. Domestic policy reform is essential in many developing countries if they are to participate more fullyin the global economy. So we should be concerned about the bad effects of globalization and should give priority on agriculture, gas, electricity to gain positive result from Global world. In addition, complementary policies are needed to ensure that larger shares ofthe welfare gains which least developed countries can expect from trade liberalization are allocated totackling poverty as well as to get development.

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