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Terms of Trade and Its Implications: Bangladesh Perspective

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Terms of Trade and Its Implications: Bangladesh Perspective

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Terms of Trade and Its Implications: Bangladesh Perspective

Abstract

This paper explores the key reasons behind the movements in the terms of trade and the real net gain and loss from trade in the long run. Like some selected Asian countries (Vietnam, China and South Korea) except India, the terms of trade of Bangladesh has been in falling almost continuously. Bangladesh's trade performance has improved and gaining momentum despite the TOT deterioration. Bangladesh is also experiencing a net welfare gain from trade due to its increasing market share in terms of export volume and gains in productivity, especially in the dominant garment sector.

1. Introduction

The terms of trade is an important indicator in the external sector of any economy. Conventionally it used to be considered as the barometer of the dynamics of the welfare gain or loss of a country from international trade. An upward (downward) movement in a nation's terms of trade (i.e. the increase in the relative price of a country's export to import) is good (bad) for that country in the sense that it is to pay less (more) for its imports compared to what it is receiving from exports. Therefore, a declining trend in the terms of trade indicates a possible deterioration in the country's balance of trade. Without any other flows like remittances or foreign direct investment, the deterioration in the trade balance may lead to deterioration in the current account balance and in the overall balance of payments. Such a shock in external sector may hamper the growth of an economy.

In the case of Bangladesh, the terms of trade has been almost continuously falling since 1992-93. Except India, most of the selected Asian countries are also experiencing similar trends. These East Asian countries have performed remarkably in terms of most economic and social sector indicators despite the TOT deterioration. As a result, it is important for us to understand whether the deterioration of TOT has necessarily been a bad thing for Bangladesh in terms of its growth and macroeconomic stability.

This paper tries to decompose the export price index and import price index of Bangladesh in order to find out the most dominant items driving the price developments in both the baskets of export and import price indices. It also attempts to analyze the performance of terms of trade for Bangladesh in comparison with Vietnam, India, China and South Korea with respect to relative values of export and import i.e. export-import ratio. To check whether Bangladesh is a net loser or gainer from trade, the paper adopts total factor productivity analysis (using Cobb-Douglas production function) in the export sector, especially in the readymade garments (RMG) sector which accounts for the highest share in Bangladesh's total exports. An econometric analysis using the Granger Causality test and Cointegration

test to check the long term relationship of the TOT and the balance of trade is also carried out with some macroeconomic variables like RMG productivity, export-import ratio, real effective exchange rate (REER), GDP and other internal and external shocks.

After reviewing the literature in the second section, we discuss the trends in the TOT of selected countries along with decomposition of export and import price indices of Bangladesh in the third section. In the fourth section we will analyze trade performance by the export/import ratio and types of exportable goods in selected countries along with productivity of exportable items especially of the RMG in Bangladesh. In the fifth section, relationship of terms of trade with Current Account Balance (CAB), Balance of Trade (BOT) and Real Effective Exchange Rate (REER) will be discussed. In the sixth and seventh sections we will explain the methodology and model specification and the analysis of empirical findings, respectively. The concluding observations and some policy recommendations are presented in the final section.

2. Literature Review

There is wide variety of literature on the terms of trade and its implications. The literature also has different dimensions with regard to the concepts of terms of trade and its impact on the economy. The main points of a few important studies are stated below.

Amano and Norden show that the real exchange rate is co-integrated with the terms-of-trade variable, and that causality runs from the terms of trade to the exchange rate. They constructed a simple exchange rate equation. The results suggest that much of the variation in the real exchange rate is attributable to movements in the terms of trade and that the influence of monetary factors is secondary.

Funke et al (2008) identify factors that contribute to a fast recovery in growth after persistent negative terms of trade shocks, using a sample of 159 countries for 1970–2006. The results suggest that policies matter. Fast recoveries are fairly robustly related to real exchange rate depreciation and improvements in government stability and the institutional environment. A timely increase in aid may also support recovery.

Kent, Christopher and Cashin, Paul (2003) show that as the world is moving toward a global village, the complexity and labyrinth of the mutual interactive trade operations are getting intensified: there are tremendous number of analyses regarding the terms of trade, current account balance, productivity, economic growth, government stability and numerous multifarious evolving factors. It is seen that the greater (lesser) the persistence of the terms of trade shock, the more the investment effect dominates the consumption-smoothing effect on saving as a result the current account balance moves in the opposite (same) direction compared to that of the terms of trade shock.

Norbert, Granziera and Imam, Patrick, (2008) show that growth recoveries after negative terms of trade shocks are robustly related to real exchange rate depreciation and improvements in government stability

and institutions. A real depreciation of exchange rate is possibly the most important determinant and particularly critical immediately after a persistent negative terms of trade shock.

Mendoza (1995) examines the relationship between terms of trade and business cycles using a three-sector inter-temporal equilibrium model and a large multi-country database. Results show that terms-of-trade shocks account for nearly 1/2 of actual GDP variability. The model explains weak correlations between net exports and terms of trade (the Harberger, Laursen, and Metzler effect), and produces large and weakly correlated deviations from purchasing power parity and real interest rate parity. Terms-of-trades shocks cause real appreciations and positive interest differentials, although productivity shocks have the opposite effects. The puzzle that welfare gains of international asset trading are negligible is left unresolved.

Svensson and Razin (1983) examine the effect of terms-of-trade changes on a small country's spending and current account, assuming optimizing behaviour in an inter-temporal framework with perfect international capital mobility. A temporary (future) terms-of-trade deterioration implies deterioration (improvement) of the trade balance, whereas a permanent terms-of-trade deterioration has an ambiguous effect, depending on the rate of time preference.

Edward D. Mansfield and Eric Reinhardt (2008), using a multivariate analysis using data on 103 countries for the years 1978-2002 show that trade agreements reduce terms of trade volatility above and beyond the reduction in volatility attributable to export diversification alone. They also find no evidence that endogeneity bias drives the association: countries that join trade agreements do not have lower terms of trade volatility in the first place.

Michael A. Kouparitsas (1997) show that terms of trade fluctuations of industrial countries are heavily influenced by movements in the relative price of manufactured exports and commodity imports. This means that improvements in the terms of trade of developing countries, where the terms of trade are essentially the relative prices of commodity exports and manufactured imports, imply a worsening in the terms of trade of industrial countries, and vice versa.

According to the study by Toye (2003), the Prebisch-Singer thesis is generally taken to be the proposition that the net barter terms of trade between primary products (raw materials) and manufactures have been subject to a long-run downward trend. Prebisch and Singer identified two types of negative effects on primary producers' terms of trade. One effect occurs because of systematically different institutional features of product and factor markets, such as cost-plus pricing and the unionization of labour in industry. Another negative influence is that of technical progress, both from the asymmetric distribution of its fruits, but also from its asymmetric impact on future demand, favourable to that of industry while unfavourable to that of agriculture. But in case of Bangladesh it is not the typical manufacturing verses primary export scenario raised by Prebisch-Singer as Bangladesh itself is a predominantly manufacturing exporter.

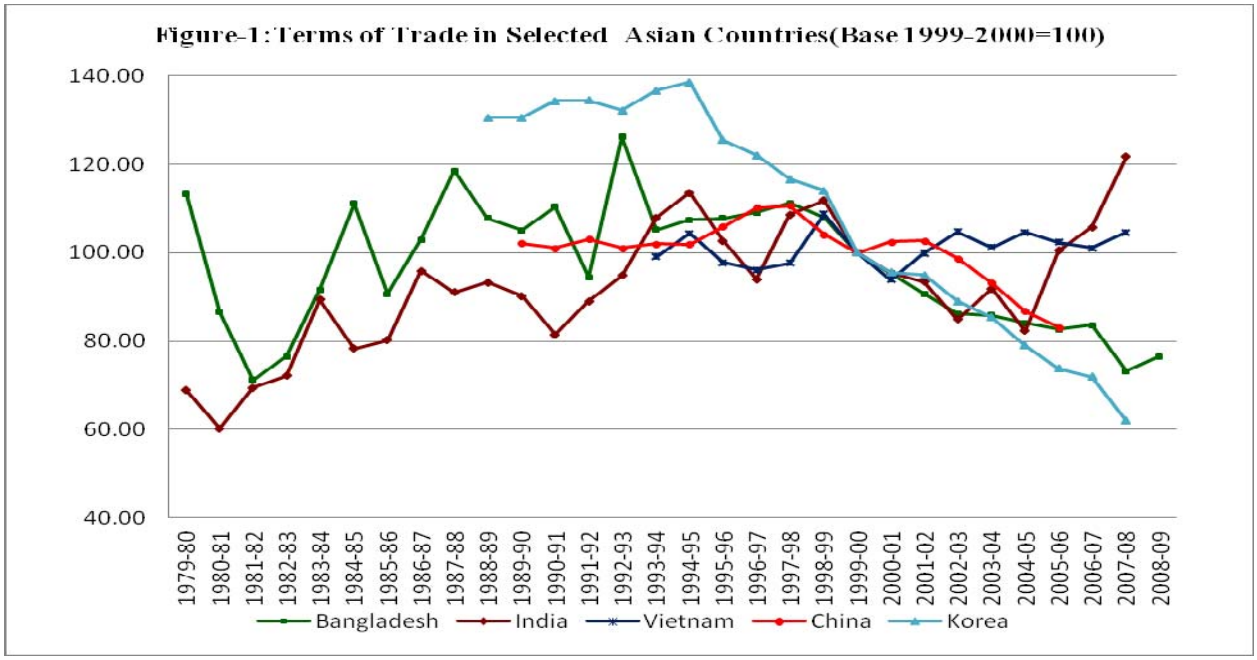
In all of the aforementioned studies, it is viewed that the terms of trade affects the net exports, current account balance, real effective exchange rate, productivity, GDP and many other external and internal shocks. From Bangladesh perspective, we will try to see the relationship of terms of trade and the balance of trade with focus on productivity, relative value of export and import, the real effective exchange rate, GDP, and with several shocks empirically.

3. Trends in Terms of Trade

The terms of trade vary from country to country depending on the commodities traded in the international market. As prices are determined in the international market, no country can influence the trend in terms of trade. However, commodity prices in the international market are affected by their types, productivity and global economic situation.

3.1 Terms of Trade in selected countries

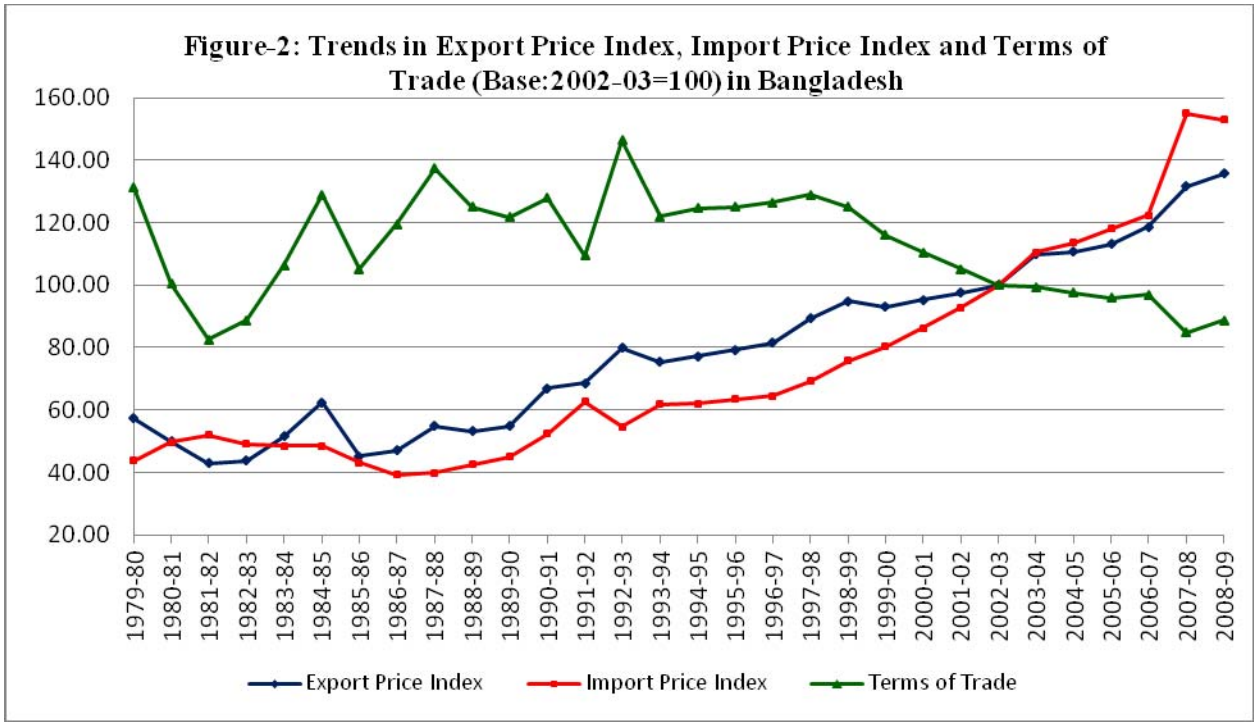
The terms of trade of trade of Bangladesh has been falling in recent years. If we compare Bangladesh's trend with the trends in other Asian countries like India, Vietnam, China and Korea (figure-1), we see similar trends with a little bit of exception for India. From figure-1, it is observed that before the Asian Economic Crises during 1996-98 the trends in terms of trade in all the selected countries are increasing, thereafter the trends started to decrease except for India where the trend improved during 2005-08 and Vietnam where the trend remained almost static during 2001-08. The different trends in the terms of trade of different countries can play key roles on the gains or losses of the countries from international trade.



3.2 Trends in Terms of Trade in Bangladesh

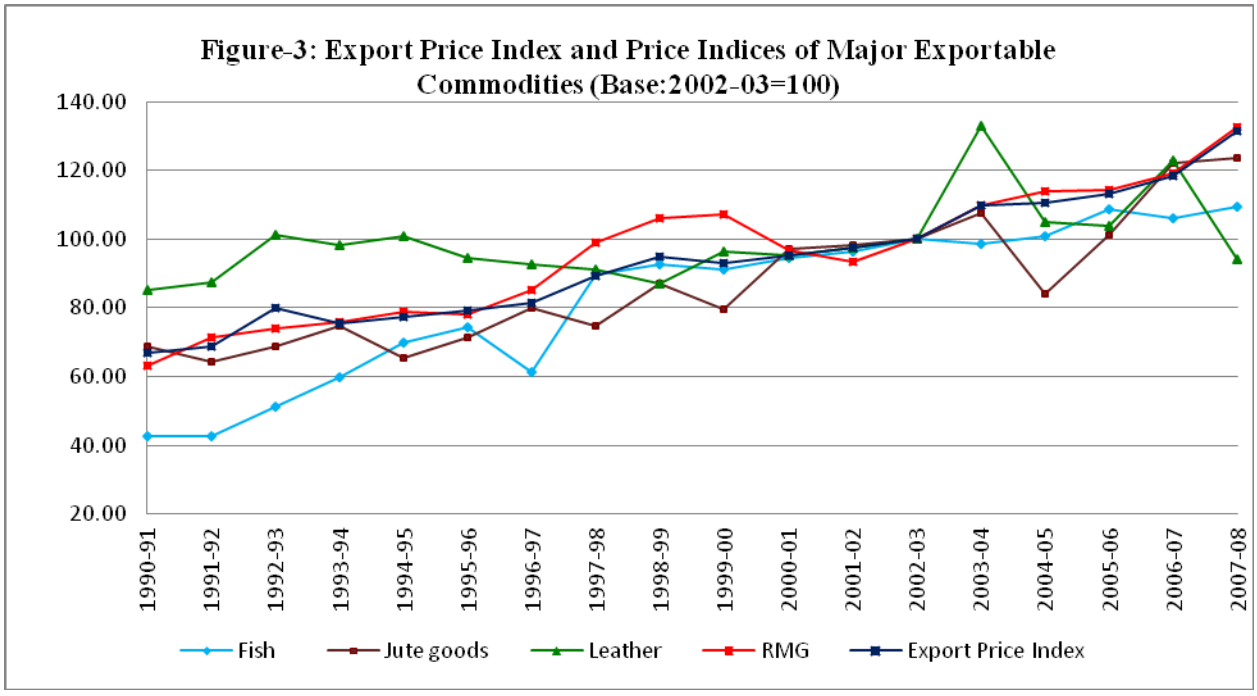
The terms of trade of Bangladesh can be characterized by three episodes of falling trends without any significantly large shocks. The first episode happened during 1979-80 which might have been a result of the second oil price shock globally that occurred in the wake of the Iranian Revolution in 1979 which was intensified by the Iraqi invasion of Iran in the following year. At that time the prices of exportables like jute goods, tea and leather declined while those of importables increased (figure-2). The second episode was during 1989-92 which might have been an impact of the 1st Gulf war. During the period, a remarkable diversification of exports took place with the dominance of readymade garments (RMG), the price of which contributed to the increase in export price index. Instead, the prices of importables had increased more than those of exportables. The recent episode of secular deterioration of terms of trade was observed during 1999-2008. This might have been the impact of the Asian economic crisis and 9/11.

During this period RMG was a deterministic factor for the movements in export price index whilst many commodities influenced the trend in import price index. However, the prices of exportable commodities increased steadily while those of importable commodities like cereals, edible oil, petroleum products, cement clinker, fertilizer and iron & steel increased more sharply. The movements of price indices of export and import thus contributed to the TOT deterioration.



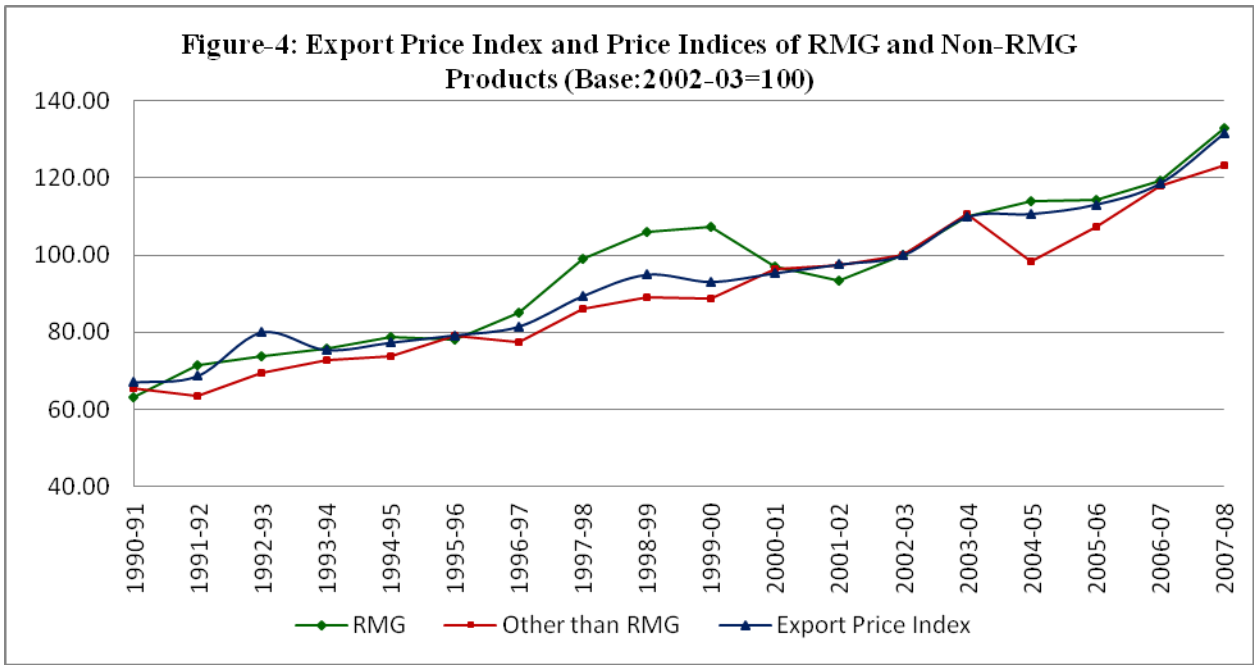
3.3 Export price index and its break-up

The export price index[1] was influenced by prices of fish, jute goods, leather and RMG among which RMG price was determinant (figure-3). From figure-3, it is observed that on an average, the prices of all major exportable commodities (except leather) doubled during 1990-2008. The price of leather increased by 10% only, whereas prices of fish, RMG and jute goods increased by 157%, 111% and 80%, respectively. However, the price of RMG increased smoothly without any large fluctuation, while the prices of other exportable commodities increased with sharp fluctuations during several years, which induced a slowdown in the rise in the export price index.



It is clearer from figure-4 that whenever the increase in the prices of exportable commodities other than RMG does not cope with the increase in the price of RMG, the increase in export price index becomes slower.

[1] There are two base years - FY1988-89 and FY2005-06. In base year FY 1988-89 jute & jute goods, fish & prawn and leather and hides were the most influential factors in export price index commodity basket and their contribution was 63.33% whereas the contribution of readymade garments was only 27.46%. In base year FY 2002-03 jute & jute goods, fish & prawn and leather and hides were the minor factors in export price index commodity basket and their contribution was only 16.29% whereas the contribution of readymade garments (RMG) was as big as 78.60%.

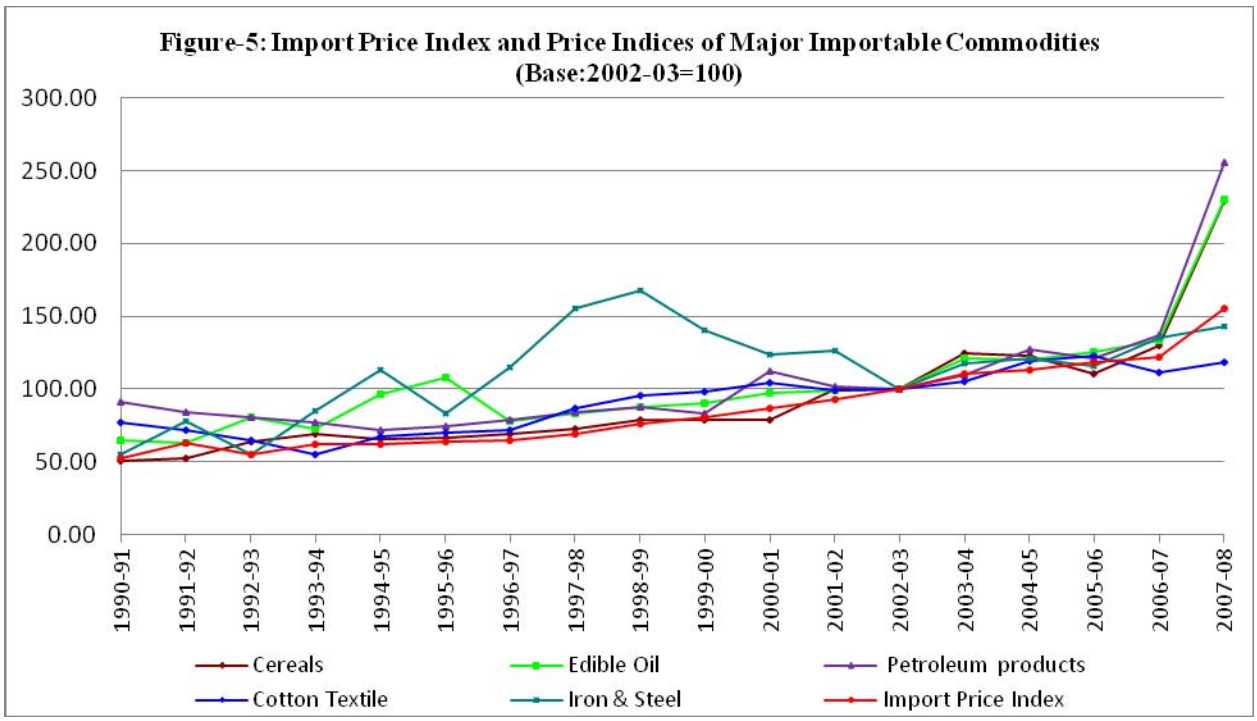


For example, in FY92 and FY05 the price of readymade garments increased but the prices of other exportable commodities, especially jute goods declined, which contributed to a moderate increase in export price index. In the following year, there was a sharp increase in export price index as the prices of all major exportable commodities went up. On the other hand, in FY2000, there was a slight decline in export price index mainly due to a decrease in the prices of commodities other than RMG (basically jute goods) in spite of the increase in the prices of RMG. In contrast, quite different influential factors were found when decomposing the import price index.

3.4 Import price index and its break-ups

The importable commodities are quite diversified, and as a result the movements in the prices of different importable commodities played influential roles on the trends in import price index[2]. Figure-5 represents the movements in import price index and the price indices of major importable commodities during 1990-2008.

[2] Like export price index, the weights of major importable commodities are also considered as key factors while constructing import price index. There are above hundred major commodities in import price index basket. In the base year FY89 cereals, edible oil, petroleum products, cotton textile and iron & steel were the major commodities in import price index basket and their contribution was 55.15% whereas in the base year FY03 their weights reduced to 36.07% only.



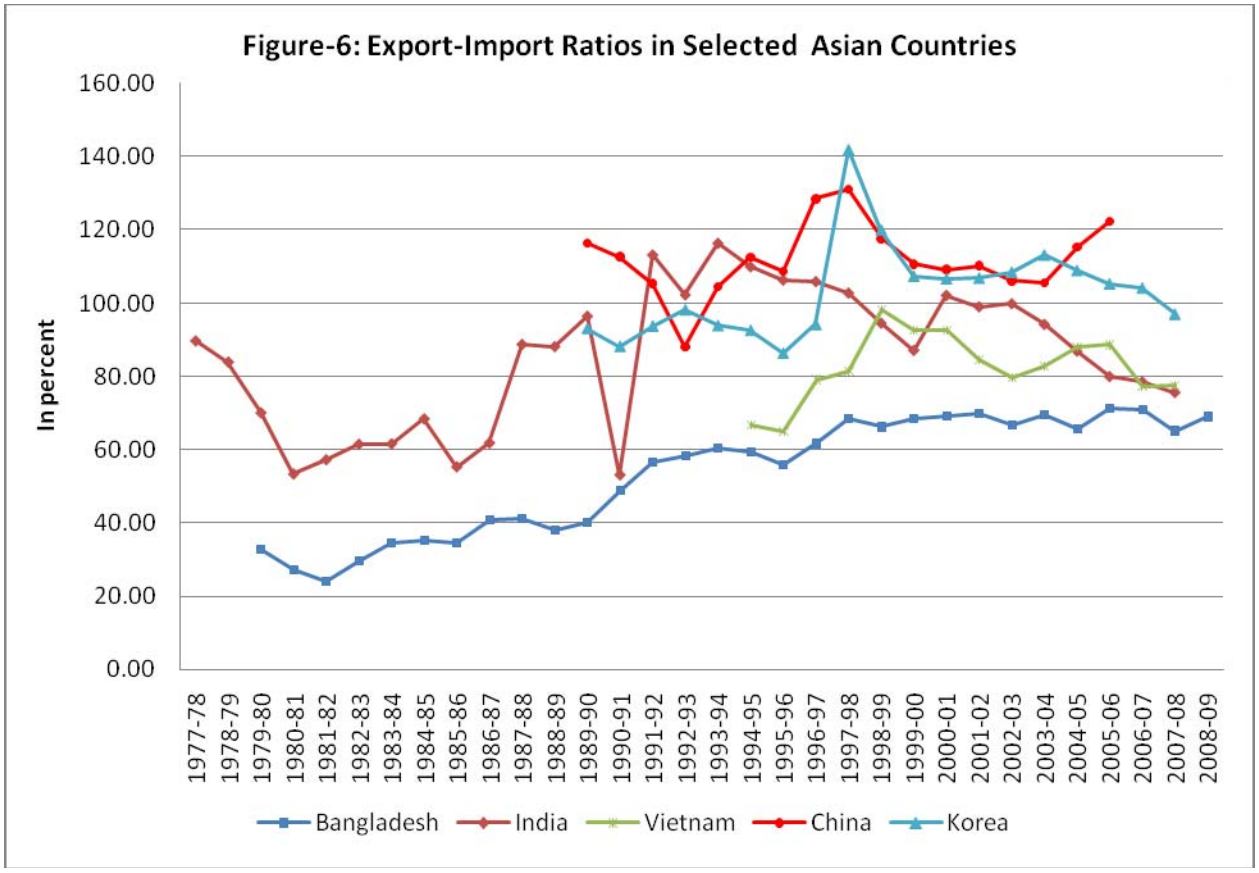
From figure-5, it is observed that on an average, the prices of all major importable commodities except cotton textiles almost tripled, some even quadrupled during 1990-2008. The price of cotton textiles increased by 50% only, whereas the prices of cereals, edible oil, petroleum products and iron & steel increased by 350%, 256%, 180% and 158% respectively. During this period the import price index increased except in FY93, having been influenced by different importable commodities. In FY93, the import price index declined due to the decrease in the prices of petroleum products, cotton textiles and iron & steel despite the increase in prices of cereals and edible oil. On the other hand, in FY94, the import price index increased due to the large increase in prices of cereals and iron & steel, despite the decrease in the prices of petroleum products, edible oil and cotton textiles. Similarly, in FY2000 and FY06, the import price index increased due to the increase in prices of edible oil and cotton textiles despite the decrease in the prices of cereals, petroleum products and iron & steel. Therefore, unlike the export price index, the trend in import price index was influenced by the prices of different importable commodities in different ways.

4. Terms of Trade and Trade Performance

Though the falling trend of terms of trade in a country implies that foreign exchange will be lost while trading with countries prevailing with increasing trends in terms of trade, it is not the only indicator to judge the trading performance of that country. In addition to terms of trade, relative values of exports and imports i.e. export-import ratio can also be regarded as an indication of trading performance. Moreover, productivity of exportable commodities can be considered a helpful indicator of trading performance.

4.1 Export/Import Ratios in Selected Countries

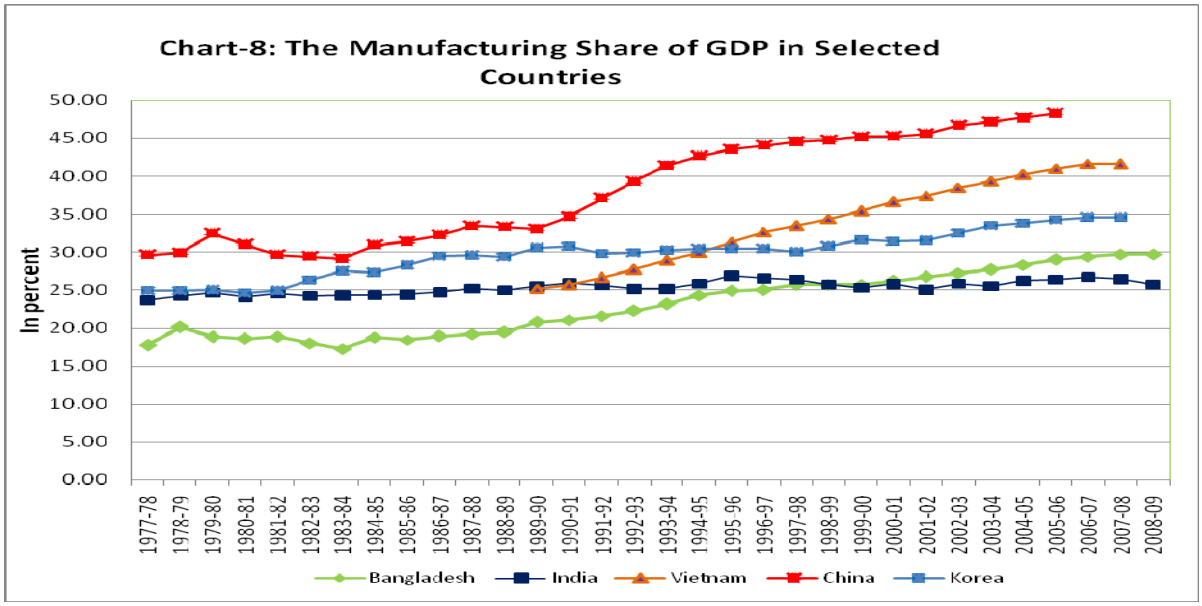
We have seen earlier that the relative prices of exports and imports, i.e. terms of trade in all selected countries are falling in recent years except India. However, the trends in relative values of exports and imports are quite different (figure-6). From figure-6, it is observed that the trends in export-import ratios in selected Asian countries are falling, except for Bangladesh where the trend is improving gradually over the years, and China where the trend is increasing since 2004. It is noticeable that in both Bangladesh and China, the recent trends in the terms of trade are falling but export-import ratios are improving. In contrast, in India the recent trends in terms of trade is increasing but export-import ratios is declining. The increasing trend in Bangladesh's export-import ratio indicates the growth in the volume of exports is higher than that of imports. The higher growth in the volume of exports was motivated by the steady increase in the prices of our exportable products, although the slower growth in prices of exportables deteriorated the terms of trade. In addition, a steady increase in the prices and higher growth in the volume of exportable commodities can also be regarded as an improvement of Bangladesh's competitiveness in the international market. However, the types and productivity of the exportable commodities contribute to the steady increase in export price index and massive growth in the volumes of exports.



4.2 Types of Exportable Goods in Selected countries

In all selected countries, manufacturing goods occupy the larger share in total exports (figure-7). The larger the growth in export of manufacturing goods, the greater their share in total export.

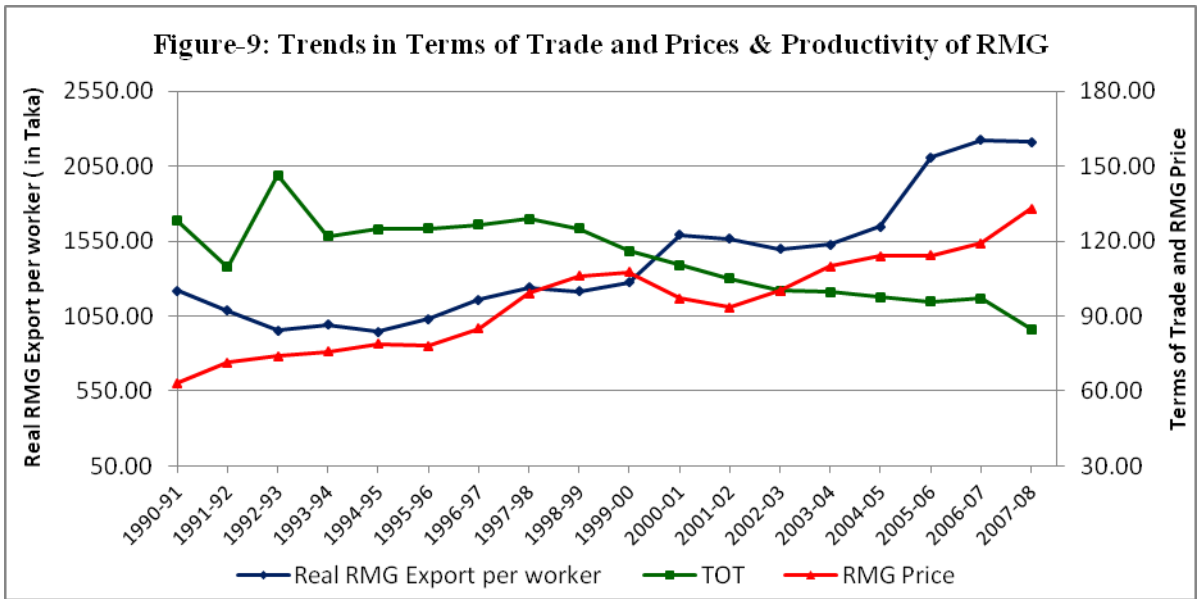
It is observed from the figure-7 that in Bangladesh and China the share of manufacturing goods in total export were increasing faster than that of India and Vietnam. Therefore, the growth in the volume of exports in Bangladesh and China was a result of the growth in productivity of manufacturing goods in these countries. An increase in the productivity in manufacturing goods indicates that their share in gross domestic product (GDP) will also rise (Figure-8).



From the above figure it is clear that the manufacturing share of GDP in all selected countries increased over the years. However, China's manufacturing share in GDP is the highest followed by Vietnam, South Korea, Bangladesh and India. It is mentionable that due to the higher growth in the export of manufacturing goods, Bangladesh's manufacturing share in GDP increased steadily since 1990, which indicates that productivity of our manufacturing goods, especially of the exportables has been increasing.

4.3 Terms of Trade and Productivity of Exportable Commodities in Bangladesh

Among exportable commodities, jute goods and readymade garments are major exportable manufacturing commodities in Bangladesh. An increase in the production of these commodities partially compensated the sharp rise of their prices in the international market. In such a situation of improved productivity, the prices of exportable commodities increase in a slower way in the export market while the terms of trade seems to have deteriorated due to the comparatively higher prices of the importable commodities. Since the readymade garment is the most important product in the export basket of Bangladesh, the real export per worker could be a measure for its productivity in the sense that almost all RMG production is going to be exported. The movements of the terms of trade, real export of readymade garments per worker and the prices of RMG during FY91 to FY08 are shown in Figure-9.



From the above figure, it is observed that in spite of an initial drop, the overall trends in the real export per worker of readymade garments has been improving over the years, though the trend in the terms of trade was declining. It is also noticeable that the real RMG export per worker increased steadily given the slower increase in RMG price.

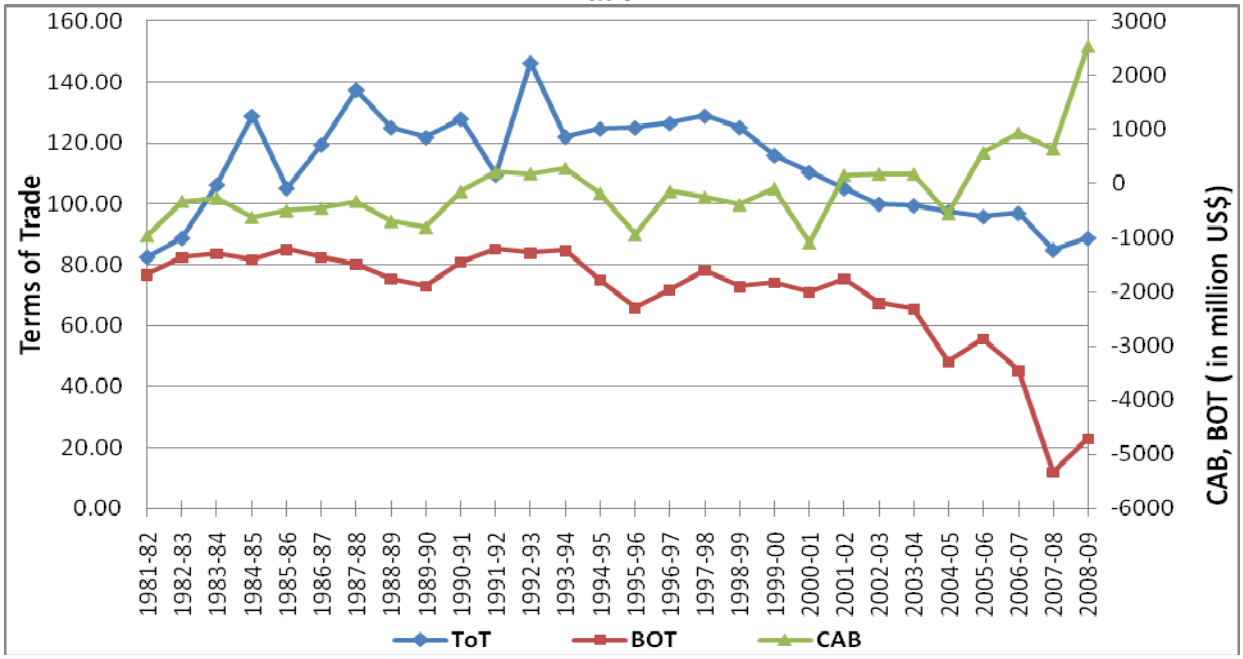
5. Terms of trade and Macroeconomic Variables

We have seen that in Bangladesh, the recent trend in terms of trade was falling but due to the improved productivity of major exportable commodities there was no loss on the export receipts. Export growth was robust because of comparatively lower prices of exportable commodities supported by the gains in export productivity. Despite higher payments associated with higher import prices, Bangladesh's balance of payments strengthened due to better performance in exports and other current account receipts like remittances. Below we examine whether and how the negative trend in the of terms of trade had influenced some macroeconomic variables like balance of trade or current account balance, real effective exchange rate, etc.

5.1 Terms of Trade and Current Account Balance or Balance of Trade

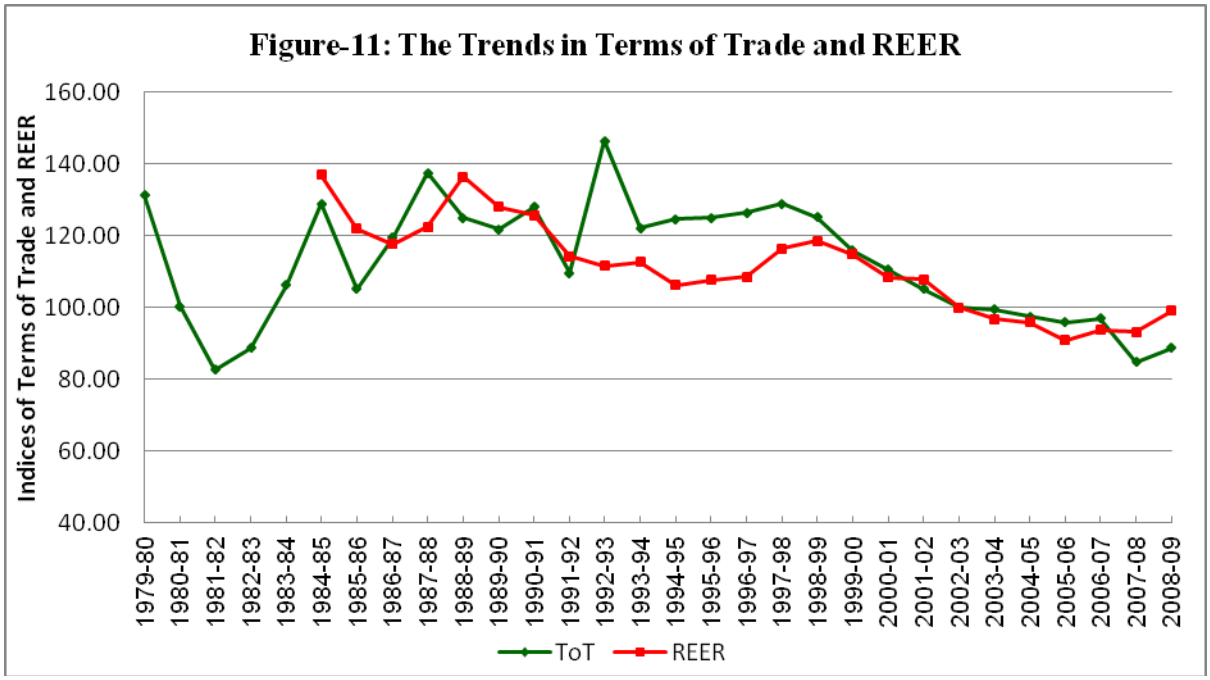
In Bangladesh, it is observed that regardless of the ups and downs, the long term path of balance of trade (Boot) and terms of trade moved almost in the same direction indicating that imports became more expensive than export earnings. However, the long term path of current account balance moves in the opposite direction as that of the terms of trade. The most important contributing factor in this fascinating performance of current account balance is the continuous increase in remittances together with the robust export growth despite the acceleration of import payments. The movements in the terms of trade, current account balance and balance of trade are shown in figure-10.

Figure -10: Movements in Terms of Trade, Current Account Balance and Balance of Trade



5.2 Terms of Trade and Real Effective Exchange Rate (REER)

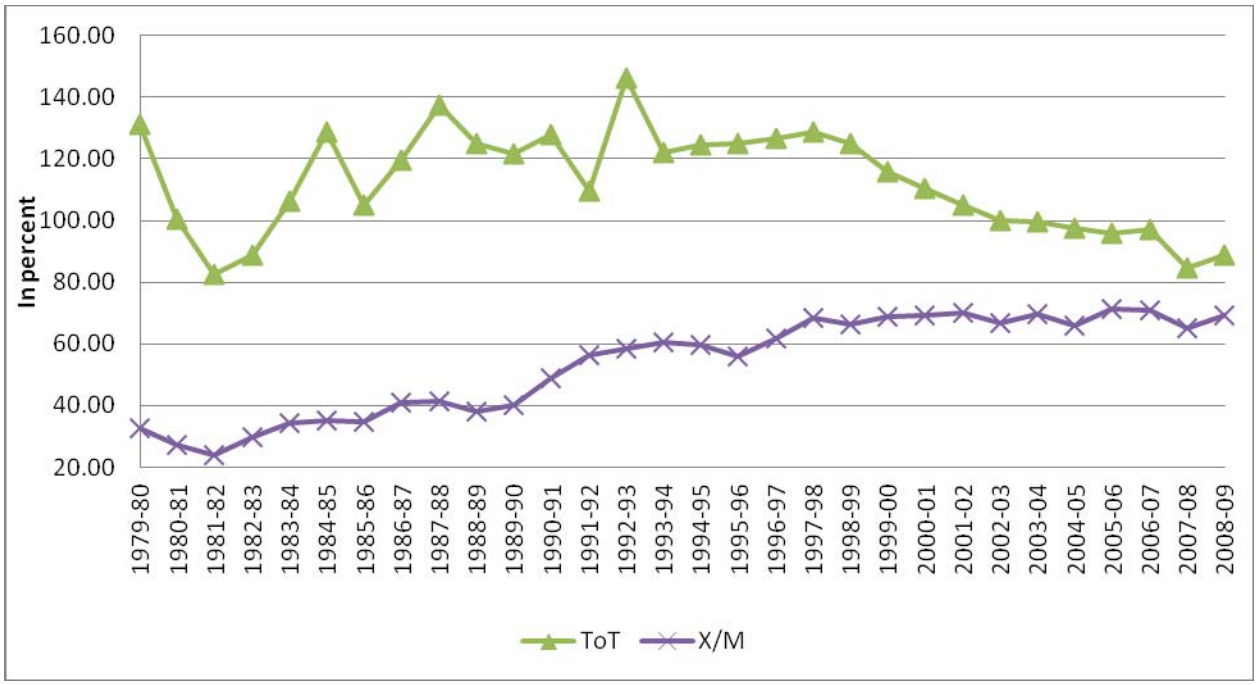
Movements in the index of real effective exchange rate (REER) of a country are often linked to the corresponding movements or trends in the terms of trade of the country. Therefore deterioration in the terms of trade may also lead to a depreciation of the index of real effective exchange rate. In Bangladesh apart from some fluctuations before FY93, the REER and the terms of trade had similar pattern of movements. In other words, both of the movements in the terms of trade and real effective exchange rate were falling. A decrease in the index of REER indicates real depreciations of Bangladesh's Taka against the currencies of its partners' countries. The trends in the terms of trade and REER are shown in figure-11.



5.3 Terms of Trade and Export-Import Ratio

An increase in the relative volume of export to import indicates the export grows more than imports. Therefore, it induces the exporters to increase the volume of exports in the coming year by offering competitive prices. In such consideration, the price of exportable increases less than that of imports and the terms of trade declines. From figure-12, it is observed that during FY80-FY97 the relationship between terms of trade and export-import ratio was somewhat positive. But from FY98 to FY09 this relationship reversed, indicating that in recent years our exportable commodities especially RMG became more completive in international market due to increase in productivity. Therefore, the growth of export was more than that of import.

Figure-12: The Trends in Terms of Trade and Export-Import Ratio



6. Methodology and Model Specification

The terms of trade in Bangladesh is falling, and it is sustainable because of the impacts from RMG Productivity gain (since about 80% of our total export consists of RMG), real effective exchange rate, export-import ratio and different internal and external shocks. Therefore it is important to empirically assess the relationship of terms of trade with RMG Productivity, real effective exchange rate, export-import ratio and with other shocks. ***Here all of the variables without the dummy variables are in natural log form.***

6.1 Total Factor Productivity (TFP)

To see whether the continuous fall in ToT was compensated by increased productivity or not, we can measure the total factor productivity especially in the RMG sector. The measurement of total factor productivity requires the estimation of a production function from which we derive the total factor productivity measure. To keep the analysis simple, we use a Cobb-Douglas type production function. The production function can be expressed as follows:

$Y = A\,K^a\,L^b$, $0 < a < 1$ and $0 < b < 1$,

Where Y equals real GDP, K equals capital, L equals labour, a equals the contribution of capital to output, b equals the contribution of labour, and A equals an index of total factor productivity.

TFP is derived in the following manner:

$$A = \frac{Y}{K^a\,L^b}$$

After taking logs, TFP is represented by

$$lnA = lnY - a\ lnK - b\ lnL$$

In estimation, the residual can be considered the proxy for productivity in the RMG sector, whereas Y stands for real RMG export in million taka, K stands for credit to the industrial sector in million taka, and L stands for number of workers in million in the RMG sector.

6.2 Causality Tests

To explain the Granger test, we consider the often asked question: Is it X that "causes" the variable *Y* (X→ *Y*) or is it the variable *Y* that causes X (*Y*→X), where the arrow points to the direction of causality. The Granger causality test assumes that the information relevant to the prediction of the respective variables, X and *Y*, is contained solely in the time series data on these variables. The test involves estimating many of the pair of regressions like the following one:

$$TOT_t = \sum_{i=1}^{n} \alpha_i \,\mathrm{Pr}oductivity_{t-i} + \sum_{j=1}^{n} \beta_j TOT_{t-j} + u1_t$$

$$\mathrm{Pr}oductivity_t = \sum_{i=1}^{n} \lambda_i \,\mathrm{Pr}oductivity_{t-i} + \sum_{j=1}^{n} \delta_j TOT_{t-j} + u2_t$$

Here it is assumed that the disturbances $u1_t$ and $u2_t$ are uncorrelated. In passing, note that, since we have two variables, we are dealing with bilateral causality.

6.3 Co-integration Tests

In the face of repeated internal and external shocks markets and entrepreneurs in Bangladesh faced uncertainty in many cases, so in this regard, to see the effect of these shocks on terms of trade and balance of trade we considered some dummy variables along with other real variables. We considered ***democracy*** for impact of transition to democracy in 1990 in Bangladesh which indicates massive trade liberalization; ***eacrisis*** for impact of East Asian crisis in 1997; ***flood*** for impact of severe flooding in 1998 when 66% of the landmass was submerged, 1000 deaths occurred, 26000 livestock lost and 16000 km roads were damaged; ***calamity*** for impact of severe floods in 2003 when 36% of the country got flooded and 36 million people were affected and ***mfa*** for impact of Multi Fibre Arrangement which phasing out from January 2005.

So we considered

democracy = 1 when year>=1990
= 0 otherwise

eacrisis = 1 if year>=1997
= 0 otherwise

flood = 1 when year>=1998
= 0 otherwise

Calamity = 1 when year>=2003
= 0 otherwise

Mfa = 1 when year<=2005
= 0 otherwise

To see the relationship of TOT and BOT among other variables we constructed the following equations for Co-integration test:

i) TOT=a RMG_Productivity+bREER+cXMRATIO+u

where Tot is terms of trade index, RMG Productivity is the Real RMG Export/employment in RMG sector, REER is real effective exchange rate index, XMRATIO is total export and total import ratio of our country.

ii) TOT=a1 RMGProductivity+b1REER+c1XMRATIO+d1 MFA+e1EACRISIS+u1

iii) BOT=a2 TOT+b2DEMOCRACY+c2EACRISIS+d2 MFA+e2CALAMITY+u2

iv) BOT=a3 TOT+b3GDP +c3DEMOCRACY+d3EACRISIS+e3 MFA+f3CALAMITY+u3

The methodology employed in this paper uses Augmented Dickey-Fuller test for unit root to check the stationarity of the time series variables. We have conducted here the Engle-Granger Co-integration and Engle-Granger Error Correction Mechanism to see the long run and short run relationship among the variables. The data are time series in nature and are taken from secondary sources like BBS, MOF, EPB, BGMEA, Bangladesh Bank, International Financial Statistic (IFS) and various websites.

7. Analysis of Empirical Findings

Using econometric application, we got empirical results of our model specified in the earlier section. The results have some important implications which lead us to draw conclusions and recommendations.

7.1 The result of Total Factor Productivity (TFP)

From table 7.1 in the decomposition of total factor production function using Cobb-Douglas Production function we found there is an increasing returns to scale in the RMG sector, where Y=ln(real RMG export in million taka), K=ln(credit to the industrial sector in million taka), and L=ln(number of workers in million in RMG sector).

Table 7.1 Cobb Douglas Production Function

Dependent Variable: Y
Method: Least Squares
Date: 11/02/11 Time: 11:48
Sample (adjusted): 1984 2009
Included observations: 26 after adjustments

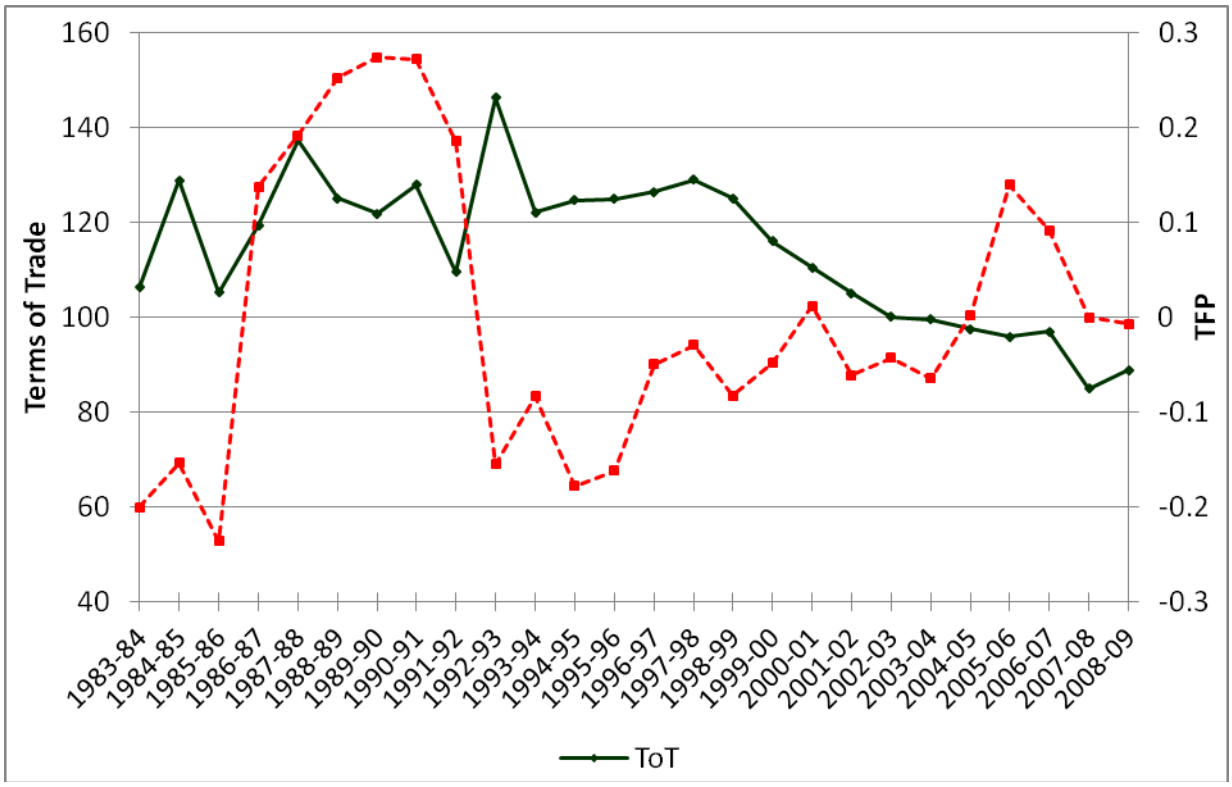
Variable	Coefficient	Std. Error	t-Statistic	Prob.
K	0.431891	0.102488	4.214076	0.0003
L	1.071676	0.087616	12.23151	0.0000
C	2.109443	1.190367	1.772094	0.0896
Serial Correlation	8.977817 (0.001522)			
Functional Form	12.15222 (0.002093)			
Normality	1.577039 (0.454517)			
Heteroscedasticity	11.65787 (0.000038)			

R-squared	0.990660	Mean dependent var	6.855892
Adjusted R-squared	0.989848	S.D. dependent var	1.551266
S.E. of regression	0.156300	Akaike info criterion	-0.765911
Sum squared resid	0.561883	Schwarz criterion	-0.620746
Log likelihood	12.95684	F-statistic	1219.800
Durbin-Watson stat	0.631091	Prob(F-statistic)	0.000000

Notes: (i) Figures in bold numbered and in parentheses are respectively F-statistic and Prob(F-statistic)
(ii) For diagnostics, Godfrey's(1978a, 1978b) LM test for serial correlation, Ramsey's (1969, 1970) RESET test for functional form, White's(1980) general heteroscedasticity test for heteroscedastcity and for normality, Jarque-Bera (1980) and Bera-Jarque tests have been performed.

From the above estimated equation we get total factor productivity (TFP) index and it is shown in the figure-13 along with terms of trade.

Figure -13: Movements in Terms of Trade and Total Factor Productivity



From figure-13 it is observed that from FY86 to FY93, TFP remained boom and bust situation after that period. It is on an average increasing continually up to FY06 with some fluctuations and thereafter it is falling. TFP is affected by the quality of our economic, social, and political institutions.

7.2 The results of Granger Causality Tests:

From table 7.2 we see from the Granger Causality test that there is an unidirectional causality from RMG Productivity (Productivity variable) to terms of trade (Tot variable) in 1% level of significance in the first lag and terms of trade (Tot) Granger causes real effective exchange rate (REER) in 5% level of significance in one year lag. We also see that the export import ratio (XMRatio) Granger causes terms of trade (Tot) in the 5% level of significance in two year lags.

Table 7.2 Granger Causality Test

Pair wise Granger Causality Tests
Date: 11/02/11 Time: 12:15
Sample: 1980 2009
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Probability
RMGPRODUCTIVITY does not Granger Cause TOT	**25**	**8.75276**	**0.00726**
TOT does not Granger Cause RMGPRODUCTIVITY		0.45500	0.50699

Null Hypothesis:	Obs	F-Statistic	Probability
REER does not Granger Cause TOT	24	0.68637	0.41672
TOT does not Granger Cause REER		**5.16271**	**0.03371**

Lags: 1

Null Hypothesis:	Obs	F-Statistic	Probability
XMRATIO does not Granger Cause TOT	29	0.15613	0.69597
TOT does not Granger Cause XMRATIO		0.28988	0.59487

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Probability
XMRATIO does not Granger Cause TOT	**28**	**4.72002**	**0.01916**
TOT does not Granger Cause XMRATIO		0.13979	0.87027

Table 7.2.1 Granger Causality Test

Pair wise Granger Causality Tests

Date: 11/02/11 Time: 12:27

Sample: 1980 2009

Lags: 1

Null Hypothesis:	Obs	F-Statistic	Probability
TOT does not Granger Cause BOT	29	0.14832	0.70328
BOT does not Granger Cause TOT		2.29688	0.14170

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Probability
TOT does not Granger Cause BOT	28	0.60959	0.55212
BOT does not Granger Cause TOT		**2.79973**	**0.08161**

Lags: 1

Null Hypothesis:	Obs	F-Statistic	Probability
GDP does not Granger Cause BOT	29	0.10692	0.74629
BOT does not Granger Cause GDP		**10.9009**	**0.00280**

From table 7.2.1 we see that balance of trade (BOT) Granger causes terms of trade (Tot variable) in 10% level of significance in one year lag and balance of trade (BOT) Granger causes terms of trade (Tot variable) in 10% level of significance in two year lags. It is also evident from table 7.2.1 that balance of trade (BOT) Granger causes GDP in 1% level of significance in one year lag.

7.3 The results of Cointegration Tests

We see that with ToT, RMG Productivity, REER, XM Ratio and BOT none of which is stationary in the level form and all of the variables are stationary in the first difference form.

In table 7.3, results of the unit root tests have been reported. The tests for stationarity show that in the level form Tot, RMG Productivity, REER, XMRatio and BOT are not stationary based on ADF and PP tests, where the absolute values of ADF and PP statistics are lower than those of 5-percent critical values. Only the variable GDP is stationary in the level form based on the PP test statistics as the absolute value of the statistic is higher than critical value in both of without and trend case.

Table 7.3: Unit root Tests with ADF and PP

	ADF		PP	
Variables	Without Trend	With Trend	Without Trend	With Trend
TOT	-1.552(-2.992)	-1.787(-3.588)	-2.469(-2.989)	-2.548(-3.584)
RMG_Productivity	-0.064 (-3.000)	-1.948(-3.600)	0.095(-3.000)	-1.739(-3.600)
REER	-1.229(-3.000)	-3.249(-3.600)	-1.990(-3.000)	-2.910(-3.600)
XM_Ratio	-1.486(-2.992)	-1.747(-3.588)	-0.953(-2.989)	-1.937(-3.584)
BOT	-2.384(-2.992)	-1.926(-3.588)	-2.064(-2.989)	-1.920(-3.584)
GDP	2.208 (-2.992)	2.548 (-3.588)	13.428(-2.989)	11.711(-3.584)

Notes: 1. ADF and PP tests have been performed using STATA 10 Package.

2. The values within the parentheses i.e. ( ) are critical values in the 5% level of significance.

In Table7.4, the results of the unit root tests have been reported. The tests for stationarity show that the ToT, RMG Productivity, REER, XM Ratio and BOT are stationary in difference form based on ADF and PP tests where the absolute values of ADF and PP statistics are higher than those of 5-percent critical values. GDP is not stationary in difference form based on ADF and PP tests as the absolute values of ADF and PP statistics are lower than those of 5-percent critical values.

Table 7.4: Unit root Tests with ADF and PP				
	ADF		PP	
Variables	Without Trend	With Trend	Without Trend	With Trend
TOT.dif	-5.719(-2.994)	-6.426(-3.592)	-7.579(-2.992)	-7.767(-3.588)
RMG_Productivity.dif	-3.428 (-3.000)	-3.396(-3.600)	-4.137(-3.000)	-4.104(-3.600)
REER.dif	-3.604(-3.000)	-3.507(-3.600)	-4.578(-3.000)	-4.422(-3.600)
XM_Ratio.dif	-5.321(-2.994)	-5.770(-3.592)	-5.257(-2.992)	-5.369(-3.588)
BOT.dif	-4.975(-2.994)	-5.963(-3.592)	-5.370(-2.992)	-5.601(-3.588)
GDP.dif	1.261(-2.994)	-0.193(-3.592)	2.108(-2.992)	-0.016(-3.588)

Notes: 1. ADF and PP tests have been performed using STATA 10 Package.

2. The values within the parentheses i.e. ( ) are critical values in the 5% level of significance.

We see from table 7.5 that In the long run, ToT is affected negatively by RMG Productivity in the 5% level of significance and positively by REER and XM Ratio in 1% and 5% level of significance respectively. We see that 1% increase in RMG Productivity causes 0.12% decrease in ToT.

However, the standard practice to find a valid long-run estimate requires co-integration tests of residuals of estimated TOT equation. The results of the co-integration tests of the residuals are reported in Table 7.6, which again confirms the rejection of the null hypothesis of no co-integration, i.e. a long-run relationship exists between TOT and RMG Productivity, REER and XM Ratio in Bangladesh.

Table 7.5: Estimation of the TOT Model

Dependent Variable: LTOT

Method: Least Squares

Date: 10/26/11 Time: 14:21

Sample (adjusted): 1985 2009

Included observations: 25 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LRMGPRODUCTIVITY	-0.117261	0.047545	-2.466308	0.0223
LREER1	0.935288	0.291940	3.203697	0.0043
LXMRATIO	39.98446	17.00240	2.351694	0.0285
C	-183.1653	78.93005	-2.320603	0.0305
Serial Correlation	0.800790 (0.463558)			
Functional Form	3.118160 (0.092687)			
Normality	0.156216 (0.924865)			
Heteroscedasticity	3.328165 (0.025130)			

R-squared	0.620093	Mean dependent var	5.366817
Adjusted R-squared	0.565820	S.D. dependent var	0.074238
S.E. of regression	0.048917	Akaike info criterion	-3.051727
Sum squared resid	0.050251	Schwarz criterion	-2.856706
Log likelihood	42.14658	F-statistic	11.42556
Durbin-Watson stat	1.431453	Prob(F-statistic)	0.000118

Notes: (i) Figures in bold numbered and in parentheses are respectively F-statistic and Prob(F-statistic)
(ii) For diagnostics, Godfrey's(1978a, 1978b) LM test for serial correlation, Ramsey's (1969,1970) RESET test for functional form, White's(1980) general heteroscedasticity test for heteroscedastcity and for normality, Jarque-Bera (1980) and Bera-Jarque tests have been performed.

Table 7.6: Unit Root Tests with ADF and PP

	ADF		PP	
	Without Trend	With Trend	Without Trend	With Trend
Error term	-3.326(-3.000)	-4.042(-3.600)	-3.693 (-3.000)	-3.790(-3.600)

Notes: 1. ADF and PP tests have been performed using STATA 10 Package.

2. The values within the parentheses i.e. ( ) are critical values in the 5% level of significance.

The second stage of cointegration, the Engle-Granger procedure comprises of the estimation of the error correction mechanism (ECM). Sargan (1984) uses the error correction mechanism, which has later been popularized by Engle and Granger, who corrected for disequilibrium in the short run and long run. The ECM has several advantages: first, the ECM incorporates both the short-run and long-run effects assuming that the variables are co-integrated. The second one is that assuming co-integration; all the terms in the model are stationary so that standard regression techniques are valid (Harris, 1995). The estimated coefficients of the error correction term (long-run effects) and the lagged values of the time series (short-run effects) are presented in table 7.7.

From table 7.7 we see that the short run equilibrium error is significant which indicates yearly disequilibrium is adjusted by 93 %. We also see in the short run, deviations of REER and export-import ratio from their previous period values, have significant positive effects on Tot deviation from its previous period value respectively in 1% and 5% level of significance. While short run deviations of RMG Productivity from its previous period values have significant negative effects on Tot deviation from its previous period value in 11% level of significance.

Table 7.7: The Error Correction Model

Dependent Variable: LTOTDIF

Method: Least Squares

Date: 10/26/11 Time: 16:40

Sample (adjusted): 1986 2009

Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LRMGPRODUCTIVITYDIF	-0.149098	0.089546	-1.665046	0.1123
LREER1DIF	1.422416	0.427493	3.327346	0.0035
LXMRATIODIF	66.36757	26.40342	2.513597	0.0211
ERRORL1	-0.931563	0.256325	-3.634304	0.0018
C	0.004216	0.011559	0.364717	0.7194
Serial Correlation	0.231589 (0.795734)			
Functional Form	0.160562 (0.693356)			
Normality	1.053551 (0.590506)			
Heteroscedasticity	2.922585 (0.035014)			

R-squared	0.484945	Mean dependent var	-0.008029
Adjusted R-squared	0.376513	S.D. dependent var	0.058217
S.E. of regression	0.045968	Akaike info criterion	-3.138671
Sum squared resid	0.040149	Schwarz criterion	-2.893243
Log likelihood	42.66405	F-statistic	4.472324
Durbin-Watson stat	1.963426	Prob(F-statistic)	0.010264

Notes: (i) Figures in bold numbered and in parentheses are respectively F-statistic and Prob(F-statistic)

(ii) For diagnostics, Godfrey's(1978a, 1978b) LM test for serial correlation, Ramsey's (1969,1970) RESET test for functional form, White's(1980) general heteroscedasticity test for heteroscedastcity and for normality, Jarque-Bera (1980) and Bera-Jarque tests have been performed.

To consider the effects of different shocks along with other real variables when we regress Tot on RMG Productivity, REER, XM Ratio, MFA and EACRISIS we see from table 7.8 in the long run, Tot is affected negatively by East Asian crisis in the 5% level of significance, and positively by REER and XM Ratio in 1% and 5% level of significance respectively. We also see that the effect of phasing out of MFA is insignificant on Tot movement.

However, the standard practice to find a valid long-run estimate requires co-integration tests of the residuals of an estimated Tot equation. The results of the co-integration tests of the residuals are reported in Table 7.9, which again confirms the rejection of the null hypothesis of no co-integration i.e. a long-run relationship exists between Tot, RMG Productivity, REER, XM Ratio, MFA and EACRISIS in Bangladesh.

Table 7.8: Estimation of the TOT Model

Dependent Variable: LTOT
Method: Least Squares
Date: 10/26/11 Time: 15:16
Sample (adjusted): 1985 2009
Included observations: 25 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LRMGPRODUCTIVITY	-0.055414	0.055706	-0.994774	0.3323
LREER1	0.867464	0.300603	2.885753	0.0095
LXMRATIO	49.85479	20.36863	2.447626	0.0243
MFA	0.034725	0.038267	0.907450	0.3755
EACRISIS	-0.076339	0.033326	-2.290638	0.0336
C	-228.7474	94.61608	-2.417637	0.0258
Serial Correlation	0.016463 (0.983687)			
Functional Form	0.116625 (0.736678)			
Normality	0.637697 (0.726986)			
Heteroscedasticity	1.180538 (0.364072)			

R-squared	0.714790	Mean dependent var	5.366817
Adjusted R-squared	0.639735	S.D. dependent var	0.074238
S.E. of regression	0.044559	Akaike info criterion	-3.178429
Sum squared resid	0.037725	Schwarz criterion	-2.885898
Log likelihood	45.73036	F-statistic	9.523528
Durbin-Watson stat	2.005746	Prob(F-statistic)	0.000113

Notes: (i) Figures in bold numbered and in parentheses are respectively F-statistic and Prob(F-statistic)
(ii) For diagnostics, Godfrey's(1978a, 1978b) LM test for serial correlation, Ramsey's (1969, 1970) RESET test for functional form, White's(1980) general heteroscedasticity test for heteroscedastcity and for normality, Jarque-Bera (1980) and Bera-Jarque tests have been performed.

Table 7.9: Unit Root Tests with ADF and PP

	ADF		PP	
	Without Trend	With Trend	Without Trend	With Trend
Error term	-3.525 (-3.000)	-3.567 (-3.600)	-4.735(-3.000)	-4.656 (-3.600)

Notes: 1. ADF and PP tests have been performed using STATA 10 Package.
2. The values within the parentheses i.e. ( ) are critical values in the 5% level of significance.

From table 7.10 we see that the short run equilibrium error is significant which indicates yearly disequilibrium is adjusted by 152%. We also see that in the short run deviations of REER and export-import ratio from their previous period values have significant positive effects on TOT deviation from its previous period value in 1% level of significances, and short run deviations of MFA and EACRISIS from the previous period values don't have significant effects on TOT deviation from its previous period value.

Table 7.10: The Error Correction Model

Dependent Variable: LTOTDIF
Method: Least Squares
Date: 10/26/11 Time: 16:57
Sample (adjusted): 1986 2009
Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LRMGPRODUCTIVITYDIF	-0.054347	0.066203	-0.820909	0.4231
LREER1DIF	1.906292	0.326709	5.834834	0.0000
LXMRATIODIF	59.40301	19.35287	3.069468	0.0069
MFADIF	-0.009925	0.036162	-0.274448	0.7870
EACRISISDIF	0.002054	0.035540	0.057799	0.9546
ERRORDUMMYL1	-1.516141	0.225530	-6.722565	0.0000
C	0.002216	0.008221	0.269524	0.7908
Serial Correlation	0.532994 (0.597556)			
Functional Form	0.021760 (0.884570)			
Normality	0.157464 (0.726986)			
Heteroscedasticity	1.180538 (0.924287)			

R-squared	0.761451	Mean dependent var	-0.008029
Adjusted R-squared	0.677257	S.D. dependent var	0.058217
S.E. of regression	0.033073	Akaike info criterion	-3.741700
Sum squared resid	0.018595	Schwarz criterion	-3.398101
Log likelihood	51.90040	F-statistic	9.044008
Durbin-Watson stat	2.142595	Prob(F-statistic)	0.000158

Notes: (i) Figures in bold numbered and in parentheses are respectively F-statistic and Prob(F-statistic)
(ii) For diagnostics, Godfrey's(1978a, 1978b) LM test for serial correlation, Ramsey's (1969, 1970) RESET test for functional form, White's(1980) general heteroscedasticity test for heteroscedastcity and for normality, Jarque-Bera (1980) and Bera-Jarque tests have been performed.

In Bangladesh we observe that irrespective of the ups and downs both of BOT and ToT move almost in the same path, so to see how much of the BOT worsening is due to ToT and other internal and external shocks we regress BOT on ToT, DEMOCRACY, EACRISIS, MFA and CALAMITY, and so we can see in table 7.11 in the long run, that BOT is positively affected by TOT and DEMOCRACY variables in 5% level of significance. We also see that the effect of EACRISIS, CALAMITY and phasing out of MFA is insignificant on BOT movement. We find from the estimated regression, that due to 1% increase in ToT, BOT increases by 0.10%.

However, the standard practice to find a valid long-run estimate requires co-integration tests of residuals of estimated BOT equation. The results of the co-integration tests of the residuals are reported in Table 7.12, which again confirms the rejection of the null hypothesis of no co-integration i.e. a long-run relationship exists between BOT and TOT, DEMOCRACY, EACRISIS, MFA and CALAMITY in Bangladesh.

Table 7.11: Estimation of the BOT Model

Dependent Variable: LBOT
Method: Least Squares
Date: 10/27/11 Time: 16:14
Sample: 1980 2009
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTOT	0.103743	0.033492	3.097530	0.0049
DEMOCRACY	0.017991	0.005563	3.233823	0.0035
EACRISIS	0.005428	0.005926	0.915869	0.3688
MFA	0.010491	0.008120	1.291967	0.2087
CALAMITY	0.002252	0.008057	0.279509	0.7822
C	3.952776	0.178302	22.16897	0.0000
Serial Correlation	0.422302 (0.660738)			
Functional Form	4.547409 (0.043867)			
Normality	0.758491 (0.684378)			
Heteroscedasticity	1.625858 (0.185174)			

R-squared	0.660250	Mean dependent var	4.532427
Adjusted R-squared	0.589469	S.D. dependent var	0.016386
S.E. of regression	0.010499	Akaike info criterion	-6.098168
Sum squared resid	0.002646	Schwarz criterion	-5.817929
Log likelihood	97.47252	F-statistic	9.328029
Durbin-Watson stat	1.634320	Prob(F-statistic)	0.000049

Notes: (i) Figures in bold numbered and in parentheses are respectively F-statistic and Prob(F-statistic)
(ii) For diagnostics, Godfrey's(1978a, 1978b) LM test for serial correlation, Ramsey's (1969, 1970) RESET test for functional form, White's(1980) general heteroscedasticity test for heteroscedastcity and for normality, Jarque-Bera (1980) and Bera-Jarque tests have been performed.

Table 7.12: Unit Root Tests with ADF and PP

	ADF		PP	
	Without Trend	With Trend	Without Trend	With Trend
Error term	-3.628 (-2.992)	-3.520(-3.588)	-4.742 (-2.989)	-4.640 (-3.584)

Notes: 1. ADF and PP tests have been performed using STATA 10 Package.
2. The values within the parentheses i.e. ( ) are critical values in the 5% level of significance.

From table 7.13 we see that the short run, equilibrium error is significant, which indicates yearly disequilibrium is adjusted by 85%. We also see in the short run deviations of Tot from its previous period values have significant positive effects on BOT deviation from its previous period value in 1% level of significance and short run deviations of DEMOCRACY, EACRISIS, CALAMITY and MFA from the previous period values don't have significant effects on BOT deviation from its previous period value.

Table 7.13: The Error Correction Model

Dependent Variable: LBOTDIF
Method: Least Squares
Date: 11/02/11 Time: 16:06
Sample (adjusted): 1981 2009
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTOTDIF	0.100423	0.031530	3.185056	0.0043
DEMOCRACYDIF	0.002742	0.009907	0.276771	0.7845
EACRISISDIF	-0.003427	0.010723	-0.319560	0.7523
CALAMITYDIF	0.000758	0.010200	0.074269	0.9415
MFADIF	0.001367	0.010185	0.134204	0.8945
ERRORBOTL1	-0.854910	0.244327	-3.499043	0.0020
C	0.000952	0.001963	0.485089	0.6324
Serial Correlation	0.082163 (0.921431)			
Functional Form	1.672003 (0.210035)			
Normality	0.113762 (0.944707)			
Heteroscedasticity	1.504265 (0.217602)			

R-squared	0.444992	Mean dependent var	0.000270
Adjusted R-squared	0.293626	S.D. dependent var	0.011552
S.E. of regression	0.009709	Akaike info criterion	-6.225055
Sum squared resid	0.002074	Schwarz criterion	-5.895018
Log likelihood	97.26330	F-statistic	2.939843
Durbin-Watson stat	2.013544	Prob(F-statistic)	0.029189

Notes: (i) Figures in bold numbered and in parentheses are respectively F-statistic and Prob(F-statistic)
(ii) For diagnostics, Godfrey's(1978a, 1978b) LM test for serial correlation, Ramsey's (1969, 1970) RESET test for functional form, White's(1980) general heteroscedasticity test for heteroscedastcity and for normality, Jarque-Bera (1980) and Bera-Jarque tests have been performed.

As it is well rationale that the national income has greater impact on import demand, we regressed BOT on ToT, GDP, DEMOCRACY, EACRISIS, MFA and CALAMITY to see the effect of Tot and GDP along with other relevant internal and external shocks. We see in table 7.14 in the long run, BOT is positively affected by Tot, GDP and MFA variables in respectively 5%, 10% and 5% level of significance. We also see that the effect of DEMOCRACY, EACRISIS, and CALAMITY is insignificant on BOT movement.

However, the standard practice to find a valid long-run estimate requires co-integration tests of residuals of estimated BOT equation. The results of the co-integration tests of the residuals are reported in Table 7.15, which again confirms the rejection of the null hypothesis of no cointegration i.e. a long-run relationship exists between BOT and TOT, GDP, DEMOCRACY, EACRISIS, MFA and CALAMITY in Bangladesh.

Table 7.14: Estimation of the BOT Model

Dependent Variable: LBOT
Method: Least Squares
Date: 10/27/11 Time: 16:49
Sample: 1980 2009
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTOT	0.089168	0.032876	2.712253	0.0124
LGDP	0.016333	0.008826	1.850578	0.0771
DEMOCRACY	0.005685	0.008505	0.668478	0.5105
EACRISIS	-0.003679	0.007491	-0.491157	0.6280
CALAMITY	-0.005291	0.008693	-0.608668	0.5487
MFA	0.017716	0.008668	2.043918	0.0526
C	3.918673	0.170921	22.92675	0.0000
Serial Correlation	0.721308 (0.497773)			
Functional Form	5.135393 (0.033625)			
Normality	0.115130 (0.944060)			
Heteroscedasticity	1.589755 (0.187460)			

R-squared	0.704282	Mean dependent var	4.532427
Adjusted R-squared	0.627138	S.D. dependent var	0.016386
S.E. of regression	0.010006	Akaike info criterion	-6.170304
Sum squared resid	0.002303	Schwarz criterion	-5.843358
Log likelihood	99.55456	F-statistic	9.129447
Durbin-Watson stat	1.853678	Prob(F-statistic)	0.000037

Notes: (i) Figures in bold numbered and in parentheses are respectively F-statistic and Prob(F-statistic)
(ii) For diagnostics, Godfrey's(1978a, 1978b) LM test for serial correlation, Ramsey's (1969, 1970) RESET test for functional form, White's(1980) general heteroscedasticity test for heteroscedastcity and for normality, Jarque-Bera (1980) and Bera-Jarque tests have been performed.

Table 7.15: Unit Root Tests with ADF and PP

	ADF		PP	
	Without Trend	With Trend	Without Trend	With Trend
Error term	-3.893(-2.992)	-3.801(-3.588)	-4.737(-2.989)	-4.652(-3.584)

Notes: 1. ADF and PP tests have been performed using STATA 10 Package.
2. The values within the parentheses i.e. ( ) are critical values in the 5% level of significance.

From table 7.16 we see that the short run equilibrium error is insignificant in the estimated model. We also see that in the short run deviations of Tot, GDP, DEMOCRACY, EACRISIS, CALAMITY and MFA from the previous period values don't have significant effects on BOT deviation from its previous period value.

Table 7.16: The Error Correction Model

Dependent Variable: LBOTDIF
Method: Least Squares
Date: 11/02/11 Time: 16:49
Sample (adjusted): 1986 2009
Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTOTDIF	0.000227	0.052398	0.004328	0.9966
LGDPDIF	-0.093749	0.120684	-0.776812	0.4486
DEMOCRACYDIF	0.003036	0.012761	0.237898	0.8150
EACRISISDIF	0.010512	0.012855	0.817712	0.4255
CALAMITYDIF	-0.008181	0.013355	-0.612563	0.5488
MFADIF	-0.009028	0.012828	-0.703793	0.4917
ERRORDUMMYL1	-0.000147	0.078304	-0.001872	0.9985
C	0.008235	0.011493	0.716550	0.4840
Serial Correlation	0.769285 (0.481969)			
Functional Form	2.083431 (0.169464)			
Normality	0.328368 (0.848586)			
Heteroscedasticity	0.860831 (0.586834)			

R-squared	0.126016	Mean dependent var	6.33E-05
Adjusted R-squared	-0.256352	S.D. dependent var	0.010977
S.E. of regression	0.012304	Akaike info criterion	-5.696610
Sum squared resid	0.002422	Schwarz criterion	-5.303925
Log likelihood	76.35931	F-statistic	0.329567
Durbin-Watson stat	2.050685	Prob(F-statistic)	0.929019

Notes: (i) Figures in bold numbered and in parentheses are respectively F-statistic and Prob(F-statistic)
(ii) For diagnostics, Godfrey's(1978a, 1978b) LM test for serial correlation, Ramsey's (1969, 1970) RESET test for functional form, White's(1980) general heteroscedasticity test for heteroscedastcity and for normality, Jarque-Bera (1980) and Bera-Jarque tests have been performed.

8 Conclusion and Recommendations

The objective of the study was to find the factors behind the falling trend of terms of trade of Bangladesh and to identify the impacts on the economy.

Based on empirical findings presented in the paper, it is well evident that our terms of trade has been affected by RMG Productivity, relative value of export and import, real effective exchange rate and by the East Asian crisis in 1996 but it is not impacted by the phasing out of Multi Fibre Arrangement (MFA). On the other hand, we see that the balance of trade in Bangladesh is well affected by terms of trade volatility, GDP and MFA phasing out.

As experienced in Bangladesh, though the trend of terms of trade is almost continuously falling from FY98, it had somewhat widened the deficit in balance of trade, but did not significantly worsened the CAB because of massive inflow of remittances. However, in Bangladesh, prices of major exportable commodities increased less than those of major importable commodities and that process could be sustained due to the increase in the productivity of exportable commodities.

If the productivity of these exportable products keeps on increasing, it is expected that the volume of export will be expanded despite modest rise in the prices of exportable products which may narrow the deficit in balance of trade in future. Nonetheless, some measures could be taken for safeguarding the external sector of the country:

- Export market could be diversified. Currently the destination of our major exportable goods i.e. RMG is USA and European Union. For RMG we have to search new market in Asia preferably in China, India, Japan, South Korea and the Middle East.
- Export basket could be diversified. At present, our export basket is consisted of mainly RMG. Over 75% of our export earning comes from RMG. Therefore, a sudden decline in export of RMG can widen the deficit in balance of trade. The exports of leather products, jute goods, ship building, etc. could be prosperous items in the export basket.
- Since productivity of RMG workers is improving, a rise in the wage of RMG workers is well-advised until and unless it threatens the margin of price competitiveness through lower export prices.
- The export of manpower could be increased because the growth in the inflow of remittance will continue to compensate for the deficit in balance of trade. For this we need to invigorate our economic diplomacy in the Middle Eastern countries and in new markets in East Asia and Europe.
- The inflow of FDI could be increased as a guard against future balance of payment crisis. Like Vietnam, Bangladesh should follow similar polices to encourage FDI. In Vietnam, the huge deficit in balance of trade is compensated by massive inflows of FDI.

- Stability in the economic and political situations could enhance the productivity of exportable products.
- Development of infrastructure could play a vital role in the expansion of export sector and its productivity as well.
- Adequate power supply may reduce production costs and will enable us to offer the best competitive price in the export market.
- To find out the prospect of high value added exportable products for narrowing the trade deficit. Emergence of industries like ship building is a very welcome development in this regard.
- While importing commodities from a traditional source/country at higher prices, it is better to search for similar commodities from other countries at lower costs and save foreign exchange.
- Strengthen the regional and sub-regional trade cooperation and integration through forums like SAFTA, BIMSTEC, etc.

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