

BETA Journal



**Thoughts
on
Banking and Finance**

**Volume 7 Issue 1
January-June, 2018**



Bangladesh Bank Training Academy
Mirpur-2, Dhaka-1216

BBTA Journal

*T*houghts on *B*anking and *F*inance

Volume-7, Issue-1
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Thoughts on Banking and Finance

(A Journal of Bangladesh Bank Training Academy)

Volume-7, Issue-1
January-June, 2018

Published : August 2020

ISSN - 2517-9918

@Bangladesh Bank Training Academy, Mirpur-2, Dhaka-1216

For all sorts of correspondence :

The Executive Editor

BBTA Journal "Thoughts on Banking and Finance"
Research and Publications Wing

Bangladesh Bank Training Academy (BBTA)

Bangladesh Bank, Head Office, Mirpur-2, Dhaka-1216, Bangladesh

Phone : 880-2-9033955, Fax : 880-2-8032110

E-mail : bbta.respub@bb.org.bd

Price : Inland BDT 200.00

Foreign US\$ 3.00

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Editorial Note

Bangladesh Bank Training Academy (BBTA) continued its publishing the journal 'Thoughts on Banking and Finance' including research articles covering a broad spectrum of macroeconomic and financial issues that are most substantial to policymakers as well as to research and academicians.

Topics included in this issue are: Gravity Model Analysis on Export and Import of Bangladesh with SAARC countries: Panel Data Approach, Market Orientation, Managerial Capability and Small Firm Financial Growth in Bangladesh: Moderating Effect on Government and Private Organization Support, The Debt-Public Investment and Export Relationship in Bangladesh: A VECM Approach, Impact of Government Policies on Economic Development in Bangladesh and Estimating Monetary Policy Reaction Function for Bangladesh: A VAR Model Analysis.

The first paper examines the determinants of export and imports flows to Bangladesh with SAARC member countries using panel data estimation technique and applying with the Gravity Model Approach. Constructing two gravity models separately for exports and imports of Bangladesh's with other SAARC countries, the study was conducted based on a Panel data set comprised of other 7 member countries of SAARC for total 11 (eleven) years from 2006 to 2016. The Gravity Model has been estimated using three techniques of panel data Pooled OLS, fixed effects and random effects. Applying F-test, Brusch-Pagan LM test and Hausman test, the study finds out, fixed effect is suitable for the export model and random effect for the import model. The estimated result shows that the significant determinants of Bangladesh's exports with SAARC member countries are: GDP, Real exchange rate, Distance and Border and except Border all other variables have found significant for imports.

Based on the concept of the theory of 'Resource Based View (RBV)' the second paper examines how the resources like market orientation strategy and managerial capability of owner-manager affect financial growth of small firms operating in Bangladesh. Data was collected through self-administration from 407 owner-manager of small firms operating in three broad divisions of Bangladesh. Using partial least squares analysis, the paper found that both market orientation and managerial capability has strong positive relation with small firm financial growth. The paper also uncovered that government and private organization support do not moderate the relationships between market orientation, managerial capability and small firm financial growth. In fostering small firm growth in future, government and private organization should increase their financial and non-financial support with good number of initiatives.

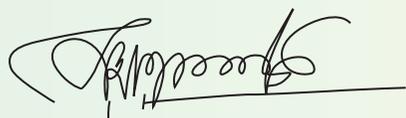
The third paper investigates the dynamic causal relationship between total debt, public investment and export in Bangladesh during the period of 1981 to 2015. The paper specifically discussed the impact of accelerating total debt on public investment and the debt export causality, considering the significance of export performance in Bangladesh.

A Granger causality based Vector Error Correction Model (VECM) is employed to examine the existence of causality among the variables. The results reveal no causality evidence, running from total debt and export to public investment in the long run. However, there exists a uni directional causality both from export and public investment to total debt in the long run. Similar to the long run, total debt and export have no impact on public investment in the short run as well. Therefore, results of the study suggest that total debt has no positive impact on public investment, neither in the short run nor in the long run in Bangladesh.

The fourth paper analyses the impact of government policies on economic development which is very important for further policy decision. This paper attempts to analyse such impact in the context of Bangladesh for the period of 1972-2015. It is observed that the government policies in Bangladesh drastically shifted from socialist to market-oriented economic system in the mid-1970s that emphasised on private sector-led export-oriented industrialisation strategy, instead of public sector-led import substitution industrialisation strategy. Governments provided lots of facilities to the industrial sector including duty free import of industrial raw materials and machinery. As a result, the share of industrial sector in GDP increased largely from 10 per cent in 1973 to 32 per cent in 2015. The GDP growth increased gradually from around 3 per cent in 1973 to above 6 percent in 2015. The inflation rate significantly reduced from around 54 per cent in 1973 to around 6 per cent in 2015.

The fifth (final) paper explores Bangladesh Bank's monetary policy reaction function applying VAR model over the period of 2004m1 to 2017m11. The results show that the call money rate has positive and significant response to a shock to the inflation gap, the exchange rate gap or the lagged call money rate, while it responds negatively to a shock of output gap. Similar results have been found when re-estimated the model using Treasury bill rate. These outcomes suggests that the Taylor rule can be applied and extended using inflation gap, output gap, exchange rate and lagged interest rate in case of Bangladesh. The study has also an important policy implication of choosing the treasury bill rate as the policy instrument in implementing the monetary policy.

Finally, I would like to express my heartfelt thanks to authors, reviewers, the editorial advisory board, and the members of the editorial board of BBTA Journal. Our effort will be worthwhile if the articles published in this issue prove to be useful to readers. We appreciate constructive criticism and feedback for further improvement of the journal in future.



Mohammed Abdul Halim

General Manager &

Executive Editor

BBTA Journal: Thoughts on Banking and Finance

Gravity Model Analysis on Export and Import of Bangladesh with SAARC Countries: Panel data Approach

Saila Sarmin Rapti ¹

Abstract

The purpose of this paper is to investigate the determinants of export and imports flows to Bangladesh with SAARC member countries using panel data estimation technique and applying with the Gravity Model Approach. Constructing two gravity models separately for exports and imports of Bangladesh with other SAARC countries, the study was conducted based on a Panel data set comprised of other 7 member countries of SAARC for total 11(eleven) years from 2006 to 2016. Being the workhorse of empirical international trade and its robustness with versatility makes the Gravity model essential tool to analyze policy issues regarding trade. Due to academic popularity of Gravity model, it has been used in the paper to assess the bilateral trade relation between countries. The Gravity Model has been estimated using three techniques of panel data Pooled OLS, fixed effects and random effects. Fixed effect model is used to find the impact of variables over time and random effect model is used to capture the effect of invariant variables. Applying F-test, Brusch-Pegan LM test and Hausman test, the study finds out, fixed effect is suitable for the export model and random effect for the import model. The estimated result shows that the significant determinants of Bangladesh's exports with SAARC member countries are: GDP, Real exchange rate, Distance and Border and except Border all other variables are found significant for imports.

Key words: Gravity model, Panel data, Bangladesh's export and import

JEL Classification: C12, C23, F10

¹ The author is Assistant Director of Research Department of the Bangladesh Bank (e-mail:rapti01@gmail.com). Views expressed in this article are the author's own and do not necessarily reflect the views of Bangladesh Bank. The author would like to thank Dr. Sayera Younus, Mr. Tarek Aziz and Mr. Ripon Roy for their valuable comments.

Section: 1. Introduction

Since the dawn of globalization regional integration has been prioritized in order to enhance the welfare of the countries by facilitating trade. South Asian Association for Regional Cooperation (SAARC) was established in 1985 with the aim to promote social and economic welfare. After three decades of the formation of SAARC, this region is still lagging behind than other Regional economic community. Historical, religious, geographical inter-country conflicts and distrust among the nations make it harder to bring out any significant outcome from SAARC. To accelerate economic growth and stable economy for this region intra-trade would be beneficial factor. This paper attempts to find out possible determinants of Bangladesh's trade with SAARC countries although these set of factors can be a long list. Government policies, bilateral issues, tariff rate can affect a country's trade flow despite any comparative advantage. The list of determinants is so long, however, empirical analysis showed that simple idea is very successful to show desired result and related economic phenomena. Remarkably, the Gravity model of trade has been so popular method to find out the determinants of trade flow of any nation. Home country's GDP, trade partners GDP and Distances between two countries have been the core determinants of the model. This paper has also added some additional factors and dummy variable for better estimation.

Recent developments in the SAARC region indicate that despite the global uncertainties and other economic downfalls, economic integration can make the progress further. On the basis of historical data, trends of intra-SAARC trade and economic integration in this region have been far below from potential. After the partition of British Indian territories, intra-regional trade was around 46% in 1948. However, it slowed down to only 2 % in 1967. Previous studies revealed that large trade deficit of Bangladesh with India have significant impact on the balance of payments of Bangladesh. Among SAARC countries, India has diversified export capability and receives the facilities regarding duty free access for raw material imports by Bangladesh. In this context, Bangladesh could utilize the idea of finding other neighbors to export its product.

With a view to finding trade scenario in this region Section 2 of this paper shows the previous intuitive and analytical arguments in support of the idea of the subject of this paper. Section 3 analyses the direction of trade flow of the SAARC region and compares among the SAARC member countries on the basis of several economic indicators. Section 4 helps to construct the structure of the model of this paper and illustrates the

data sources. Section 5 interprets the results and empirical analysis of Bangladesh's export and import with other SAARC countries. Section 6 represents the conclusion in which some policy reviews has been suggested and discusses the possible role of the policy makers that can be taken by in this regard. In this section, some shortcomings and limitations have also been taken account of.

Section:2. Literature Review

Indeed the focus of this study to measure the determinants of the export and import flows of Bangladesh with SAARC nations. Since the gravity equation for trade was introduced by Tinbergen in 1962 in his 'Shaping the world economy', the lack of its preliminary analysis of theoretical foundation was improved by later theoretical works by Linnemann (1966), Anderson(1979), Bergstrand (1985), Anderson and Wincoop (2003) and others. Anderson et al (2004) emphasized on importance of trade cost within the framework of gravity model and found significance of trade costs and trade flows.

The Gravity model has been used broadly in empirical literature. Some studies have used gravity model to analyze effect of economic integration on overall trade on certain region, some studies focused on country specific effect.

Zarzoso et al (2003) applied the gravity trade model to assess Mercosur-European Union trade, and trade potential following the agreements reached recently between both trade blocs. The model is tested for a sample of 20 countries, the four formal members of Mercosur plus Chile and the fifteen members of the European Union. This paper showed that exporter and importer income, as expected, have a positive influence on bilateral trade flows. Exporter's population has a large and negative effect in exports showing a positive absorption effect, whereas importer's population has a large and positive effect on exports, indicating that bigger countries import more than small countries. It also investigated that infrastructure variables, income differences and exchange rates are also statistically significant and present the expected sign. Random effect model is preferred than fixed effect model for bilateral trade as proved by Hausman test.

Rahman (2004) estimated the generalized gravity models of trade, export and import. This study shows that Bangladesh's trade is positively determined by the size of the economies, per capita GNP differential of the countries involved and openness of the trading countries. Author found the exchange rate, partner countries' total import demand and openness of the Bangladesh economy are the major determinants of

Bangladesh's exports, affecting the Bangladesh's exports positively. Although the exchange rate has no effect on the Bangladesh's import. Transportation cost is found a significant factor in influencing the Bangladesh's trade negatively which implies Bangladesh would do better if the country trades more with its neighbors. Moreover, Bangladesh's import is found to be influenced to a great extent by the border between India and Bangladesh.

Sohn(2005) applied the gravity model to explain South Korea's bilateral trade flows and to extract practical trade policy applications. Empirical results proved that the gravity model is very effective in explaining Korea's bilateral trade flows. Moreover, this study provided evidence that it is applicable to single country case. The coefficient on the trade structure variable confirmed that Korea's trade pattern follows a Heckscher-Ohlin pattern. The study estimated that Korea's trade flows depend more on factors such as the product of GDP, distance variable, income difference. The significance of the coefficient of GDPs and insignificance of the per capita GDP indicated that Korea's inter-industry trade depends more on the exporting of quantity-based standardized products that are sensitive to overall market size than the exporting of quality based high value-added products that are more sensitive to the trading partner's income level.

Kien (2009) showed determinants of export flows of ASEAN 39 countries through estimations of panel data using gravity model and data for 24 years. Based on two way error component and Hausman-Taylor model, the estimations suggested that GDP, Population and Language can explain export.

Bhattacharyya et al (2006) applied the gravity model on India's bilateral trade with its entire trading partner using panel estimation. They used both traditional and augmented gravity model and contiguous trade partner, common language, colonial, same country in the past are the incorporating variables. They found India's trade responds less than proportionally to size and more than proportionally to distance. Moreover, this paper showed Population size has more determining influence on India's trade and India trades more with developed country than developing country.

Kabir (2010) applied an augmented gravity model to estimate the factors that influence bilateral trade of four founding BIMSTEC countries with their important global partners as well as other BIMSTEC members. The GDP and governance of both importers and exporters positively influence the bilateral trade. Distance elasticity is found negative in

both the specifications. The impact of Real Exchange Rate has also been found positive and significant, however Distance elasticity and Border dummy turned out to be negative.

Gul et al (2011) applied the gravity model of trade to estimate Pakistan's trade potential using Panel data for the period 1981-2005 across 42 countries is employed in the analysis. They found that the volume of trade between Pakistan and other members of the South Asian Association for Regional Cooperation (SAARC) is very low, despite the existence of significant potential. Particularly for India it showed Pakistan's trade is very low, however, this result should be interpreted with caution, taking into consideration the volume of underground trade.

Neogi (2014) explained the effect of economic corridor on the development of countries using data on bilateral trade of five South Asian countries- Bangladesh, India, Nepal, Pakistan and Sri Lanka for 22 years from 1987 to 2008. The paper found GDP and FDI statistically significant while distance is not significant for both export and import. Road infrastructure shows statistically significant positive sign for export and negative sign for import. Moreover, the sign of coefficient of Border is found insignificant and Hausman test showed Random effect model is suitable model for estimation of coefficients.

Elshehawy (2014) shows that Egypt's GDP, importer's GDP, importer's population and the border between Egypt and its trading partner are the main factors affecting Egypt's exports to its main trading partners. All these factors affect Egypt's exports positively. Transportation costs (distance variable) are found to have negative but insignificant effect on Egypt's exports.

Husain (2015) indicated that the bilateral trade flows between Bangladesh & her fifty two trading partners are driven by proxy for the stage of development or level of development (PCGDP), distance. According to the result of the gravity model, per capita GDP of both the exporter & importer countries have positive effects on the trade flows.

This paper compares three estimators of gravity model using panel data, part of them and variables used here have been used in previous studies. However, none of them used these three methods together which have been used in this paper with the group of variables used in the models.

Section: 3. Pattern of trade in South Asia

South Asian region is one of the most important regions in the world in context of the scope of economic development. In order to compare the economic situation and vulnerability among these countries, a table of data has been represented. Table-1 shows that SAARC region contains growing economy like India, Bangladesh, Sri Lanka, Pakistan. Besides, a large amount of youth labor force participation and its emerging demand make this region more crucial topic for developing world. Low external debt as percentage of GDP implies that a country's total production is sufficient to pay the debt. Bhutan has the highest percentage of external debt to GDP while Afghanistan has the lowest. Bangladesh is the second lowest shareholder in this rank and comparatively better than Nepal, Maldives, Pakistan, Sri Lanka and India. Bangladesh has higher National Debt to GDP ratio than Afghanistan, India and Nepal. Afghanistan has the lowest ratio of National Debt to GDP in this context.

A country keeps a part of its foreign exchange reserves to protect themselves from any internal or external risk. Reserves as a percentage to import means how many months can be covered by the total amount of reserves by importing goods and products demanded by that country. Hence, low ratio of reserves to import means country's economy is vulnerable. Maldives could pay for only 1.6 months' imports while the standard threshold level is keeping 3 months import liability in reserve. In this context, Nepal and Afghanistan are at comparatively stable position. Besides, Bangladesh could cover for 8 months import and it indicates good economic condition. A country's inflation rate should be in a stable state because it contributes to achieving high levels of economic activity and employment. In SAARC region, Nepal seems to have highest inflation rate at 9.9% while Maldives has the lowest rate at 0.50% in 2016.

The amount of intra-SAARC trade is very low compared to other regional organization. SAARC has the lowest intra-regional trade share in the world. Intra-SAARC export and import scenario can be seen in chart 1 and 2. In chart 1, India has the largest share of 73.26% within this little amount of export amount, whereas Bangladesh has only 3.30% share.

On the other hand, import scenario seems to be little different. India imports from other SAARC countries at a very low percentage (13%), compared to share percentage of export to the other countries of SAARC. Bangladesh imports 25% of total intra-SAARC imports while Nepal and Sri Lanka imports 22% and 17 % of total regional imports accordingly.

Section: 4. Methodology

Conventional gravity model generally uses cross-section data to analyze the nature of trading flows for a specific time period, e.g. one year. However, cross-section data observed over several time periods which is panel data methodology is more functional than using cross-section data only to explain gravity model. This paper uses three different panel data methods, such as Pooled OLS, Fixed Effect (FE) and Random Effect (RE). To select the appropriate method for the model, the Hausman test, F-test and Breusch-Pagan Lagrange Multiplier (LM) have been used in this paper.

If there is no individual effect (cross-sectional or time specific effect), ordinary least squares may be used as an efficient method. A fixed effect model analyses individual differences in intercept assuming the same slope and constant variance across individual. An error term is correlated with other regressors and individual specific effect is time invariant which is also a part of the intercept. A random effect model examines that individual effect (heterogeneity) is not correlated with any regressor and it also estimates error variance specific to groups or times.

To compare among these above models, at first the F test is examined, which investigate if there are fixed effects in the model. While, the random effects can be tested by Breusch-Pagan Lagrange Multiplier (LM) test. The F-test compares between fixed effect model and Pooled OLS and LM test compares random effect model with Pooled OLS. If the both null hypothesis is rejected then Hausman test can be adopted.

F-test: The null hypothesis of the F-test is that the observed and unobserved fixed effects in the model will be equal to zero, they are equal across all units. If the null hypothesis is rejected, then there is a significant fixed effect in the model i.e. the fixed effect model is better than the pooled OLS.

LM test: The LM test examines if any random effect exists. The null hypothesis is that individual-specific or time-specific variance components will be zero. If the null hypothesis is rejected, then there exists a significant random effect in the model and the data are able to deal with heterogeneity better than Pooled OLS.

Hausman test: The Hausman specification test compares between fixed and random effect model. The null hypothesis is the individual effects are uncorrelated with any regressor in the model. If the null hypothesis is rejected, the individual effects are significantly correlated with at least one regressor in the model and thus the random

effect model is not appropriate anymore. Rather, Fixed effect model is better than random effect model.

Choosing the best model:

In order to determine an appropriate model for panel, some techniques have been adopted using the hypothesis testing. In the Table 2, four possible outcomes have shown. If both null hypotheses of the F-test and B-P LM test are not rejected then the best model is the Pooled OLS.

If the null hypothesis of F-test in FEM is rejected but not rejected in LM test, then Fixed Effect Model will be the right choice. In reverse, Random Effect will be preferred. If hypotheses test of both F-test and LM test are rejected, then Hausman test should be run. If Hausman test is significant, Fixed Effect model will be acceptable, otherwise Random Effect Model will be preferable. Park(2014) showed a suitable table for this model selection process(Table.2).

Section: 4.1. Model Specification and data

The Gravity model is parallel to the Newtonians Physics Law of Gravity. The theory is first proposed by JAN TINBERGEN and AUGUST HECKSCHER in their paper named 'Shaping The World Economy- Suggestions For An International Economic Policy'(1962). They described an economic model explaining international trade flows in which the value of total exports from one country to another is explained by a small number of variables:

- a) The Gross National Product (GNP) of the exporting country;
- b) The GNP of the importing country; and
- c) The distance between the two countries.

The trade flow equation was written as :

$$E_{ij} = \alpha_0 Y_i^{\alpha_1} Y_j^{\alpha_2} D_{ij}^{\alpha_3} \dots\dots\dots(1)$$

Where, E_{ij} = exports of country i to country j

Y_i = GNP of country i

Y_j =GNP of country j

D_{ij} = distance between country i and country j

The main factors which determine the size of the trade flow between two countries as below:

- The supply of the amount of exports of a country depends on its economic mass (or GNP)
- The amount of demand for imports to a particular country depends on size of that country's market (GNP of the importing country)
- The volume of trade will depend on transportation costs (roughly with the geographic distance between the two countries)

Distance in contrast with the other two factors- has a negative influence on trade flows.

Therefore, a bilateral trade model can be described as: the trade flow between two countries is proportional to the product of each country's economic mass, generally measured by GDP, divided by the distance between countries respective economic centers of gravity, generally their capitals (Christie 2002).

The linear form of the model is as follows: $\alpha_0 Y_i^{\alpha_1} Y_j^{\alpha_2} D_{ij}^{-\alpha_3}$

By using natural logarithm,

$$\log E_{ij} = \alpha + \alpha_1 \log Y_i + \alpha_2 \log Y_j + \alpha_3 \log (D_{ij}) \dots\dots\dots(2)$$

Where, $\alpha = \log K$; $\alpha_1, \alpha_2, \alpha_3 =$ parameters

This model has shown stable answers to many questions in previous research that can be studied with gravity model in bilateral trade relationship. However, there are many factors that influence bilateral trade between countries.

Most estimates of the gravity models done previously in different countries included some dummy variables to the stated (2) equation that analyze for individual effects i.e. being a member of organization, trade agreements, sharing a common language, cultural similarities or ethnicity etc. As the main concern of this paper is to study about the eight countries of the SAARC, in addition to core components of Gravity model, the bilateral trade flows into Bangladesh (i) are modeled as a function of ratio of real GDP of home country (i) and trade partners (j) , ratio of per capita GDP of country i and j, ratio of Real

Exchange Rate between home country and trade partners, distance between i (Bangladesh) and j (trading partners of other SAARC countries), and Land Border between country i and j.

The study estimates 2 (two) gravity models for Bangladesh's bilateral trade with other 7 SAARC countries: Afghanistan, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka for the period 2006- 2016:

- a) The gravity model of exports of Bangladesh; and
- b) The gravity model of imports of Bangladesh.

The gravity model of total exports for Bangladesh has the following view:

$$\log(\text{Export}_{ijt}) = \alpha_0 + \alpha_1 \log(\text{GDP}_{ijt}) + \alpha_2 \log(\text{PCGDP}_{ijt}) + \alpha_3 \log(\text{RER}_{ijt}) + \alpha_4 \log(\text{Distance}) + \alpha_5 (\text{Border}) + u_{ijt}$$

Following the gravity model of total imports for Bangladesh is :

$$\log(\text{Import}_{ijt}) = \beta_0 + \beta_1 \log(\text{GDP}_{ijt}) + \beta_2 \log(\text{PCGDP}_{ijt}) + \beta_3 \log(\text{RER}_{ijt}) + \beta_4 \log(\text{Distance}) + \beta_5 (\text{Border}) + u_{ijt}$$

where, i and j denote trade partners,

Export_{ijt} = amount of exports of country i to j

Import_{ijt} = amount of imports of country i from j

GDP_{ijt} = Ratio of Gross Domestic Product of country i (Bangladesh) and Gross Domestic Product of trade partner (j)

PCGDP_{ijt} = Ratio of Per Capita GDP of country I and j

RER_{ijt} = Ratio of Real exchange rate of Home country and trade partners ($\text{RER}_i/\text{RER}_j$).

Where, Real Exchange rate, $\text{RER}_i(d/f) = e.P_f/P_d$, where, e=Nominal exchange rate of home country in terms of dollar, P_f = Consumer price index of the US, P_d = Consumer price index of Home country,i

Distance = Distance between the capital of Bangladesh and capital of trade partners

Border = Dummy variable for countries which share Border with Bangladesh

(Dummy variables indicate an attribute that takes on values of 1 or 0, 1 indicating the presence of that attribute and 0 indicating the absence of that attribute). If there is border then it is 1, If not then 0.

u_{ijt} = Error term, t = time, α & β 's = coefficients for corresponding independent variables

Hypothesis :

1. The larger the GDP of home country is, compared to its partner country's GDP, the more trade will take place between the countries. In other words, an increase in GDP of home country relative to the GDP of her trade partner(j) will increase the trade. Hence, there is positive relationship between trade and GDP. Therefore, we expect α_1 and β_1 will have positive signs for both export and import model.

2. The relationship between trade and ratio of per capita GDP (PCGDP) of the trade partner countries is indecisive. According to the Heckscher-Ohlin theory of trade (1933) by Bertil Ohlin and Eli Heckscher, countries export goods using their abundant factors of production. As capital intensive goods is associated with higher per capita GDP countries compared to labor intensive goods, implying countries with dissimilar per capita GDP will trade more.

This is contradicted by Staffan Linder (1961) where he suggested countries with similar per capita GDP produce and consume similar quality goods. Producer will produce goods according to home country's demand and exports the surplus to the country with a very similar demand patterns. Hence, the more the difference between country's per capita GDP (PCGDP), the less there will be trade.

Frankel (1997) showed, the positive sign of the coefficient of ratio of PCGDP implies country follows H-O theorem, if negative then the country follows Linder's theorem.

In consequence, we predict either positive or negative signs for α_2 and β_2 .

3. It is expected that the effects of ratio of real exchange rate of taka in terms of trade partner's currency on home country's export is positive. The more the real exchange rate index rises compared to the foreign country the more there will be depreciation of the

home currency. Hence, export will rise for the home country and there will be a positive impact on export of Bangladesh. When the ratio of exchange rate of taka in terms of foreign currency declines, export will decrease too. In contrary, if the real exchange rate index declines in comparison to the foreign country (appreciation), import will increase.

Then, we may expect positive sign for α_3 and negative sign for β_3 .

4. Distance variable as a proxy for transportation cost has been taken in this model. It is expected distance will have a negative impact on trade balance. Therefore, the sign of the coefficient will be negative i.e. α_4 and β_4 will be negative. The more there will be distance, the less there will be trade.

5. Border Dummy variable for countries which share Border with Bangladesh implies more trade flow both exports and imports. Therefore, α_5 and β_5 will be positive.

Section: 4.2. Sample Size and data

This paper covers 7 SAARC member trading partners of Bangladesh including Afghanistan. The annual data from year 2006 to 2016 has been considered for this paper. The Bilateral export and import data have been collected from the direction of trade statistics (DOT) database from IMF(International Monetary Fund) website. There were some missing data which were filled in from Publication (Export Receipts and Import Payments) of the Bangladesh Bank website. Real GDP, per capita GDP, Real exchange rate data has been taken from the world Bank Database. Distance from capital to capital cities is collected from website of the CEPII (*Centre d'Etudes Prospectives et d'Informations Internationales*) and measured in Kilo Meter. GDP data are calculated in constant 2010 U.S. dollars and PCGDP data are in current U.S. dollars. The econometric software package STATA has been used for the analysis.

Section: 5. Results and Interpretation

We have assumed that there are heteroscedasticity and autocorrelations problem in our model. We run the hetero-corrected regression test. Fixed effect model has been estimated with autocorrelated error structure and results have been shown in Table 3 and 4. There is no heteroscedasticity test for random effects model, we can only get standard errors robust to heteroscedasticity. After that error corrected model estimation, we can not apply Hausman test. When using the robust variance estimator in the Fixed and Random effects models, the Hausman Statistic no longer has a chi-square distribution.

Hence, Hausman refuses to test. We have taken Hausman test before the error correcting test as referred by Woolridge(2015).

The stated models may still suffer from the endogeneity problem. There are several ways to cope with this problem. One technique is instrumental variable-replacing your concerned variables with proxy with certain variables. In case of $\log\text{GDP}_{jit}$ and $\log\text{PCGDP}_{jit}$ variable, the endogeneity problem has been detected and the instrumental variable approach has been followed in this consequence. Each endogeneous variable used employment rate and tariff revenue of their respective countries as proxy variables. After using instrumental variable we retake the endogeneity test and found variables are exogeneous.

All variables are tested for multicollinearity and result proclaims that there is no multicollinearity problem (Table 5). The VIF is an index which measures how much variance of an estimated regression coefficient is increased because of multicollinearity. If any of the VIF values exceeds 5 or 10, it implies that the associated regression coefficients are poorly estimated because of multicollinearity (Montgomery, 2001).

One of the significant limitations of fixed effect model is that it cannot estimate directly the variables that do not change over time. Such time invariant variable in the paper represented as Border, Distance etc. In other words, they pick up the combined effect of all time invariant variables that differ across groups. This problem can be solved by the method as suggested by Zarzoso and Lehman(2002). Another regression can be run by taking individual effect as dependent variable and time fixed variable as independent variable as distance and border. Regression equation can be described as:

$$IE_{ij} = \beta_0 + \beta_1 \log \text{Distance} + \text{Border} + u_{ij}$$

By estimating the country specific effect (Table 6 and 7), it is found that Maldives has the highest and India has the lowest propensity to Bangladesh's Export. Besides, Pakistan has the lowest propensity to Bangladesh's import and Bhutan has the highest propensity to Bangladesh's import. Time fixed variable is subject to the constant term in this method.

Now, according to the Table 3, results of pooled OLS, fixed effects and random effects for export model has been estimated.

Following by the method of choosing appropriate model, it is found F-tests are significant at 1% level. That confirms that country and time specific heterogeneity exist in the model or in other way, fixed effect is better for this model. LM test is found to be insignificant i.e., we cannot reject the null hypothesis. That concludes there are no random effects in the model. The Hausman test requires when null hypothesis of both F-test and LM-test are rejected. As we have reached at the decision from F-test and LM-test that fixed effect model is suitable method for this model that indicates it is not necessary to take the Hausman test. Even if we test the Hausman test, it gives significant result. That means, null hypothesis can not be rejected. Thus, fixed effects is preferable than random effects model which had been suggested by Hausman test as well.

Now, the coefficients of the ratio of Gross Domestic Product of Bangladesh (i) and trade partner (j) in time t are statistically significant at 1% level for FEM. The GDP variable has expected positive sign and the elasticity of export to GDP is significantly less than 1 which implies that export increases when GDP of Bangladesh relative to GDP of trade partners increases but less than proportionately. That means, small economies have the tendency to export with large economies.(Frankel, 1997).

The elasticity of export to per capita GDP ratio is continued to be insignificant for all three (3) model along with fixed effect model. Although this variable has been kept in paper despite the presence of GDP variable for avoiding any misspecification problem according to Bergstrand (1989).It implies that Bangladesh's export depends on overall economy rather than individual's income level. According to Sohn (2005) per capita GDP variable is not a significant factor in explaining Korea's bilateral trade.

The coefficients from the ratio of real exchange rate of Bangladesh and partner countries for Pooled OLS, FEM and REM are found statistically significant and positively correlated with export. The more the real exchange rate of domestic currency rises in terms of partners' currency, the more depreciation of Taka in terms of other currencies. The elasticity of Positive export with respect to the ratio of real exchange rate is 1.22% implying that if the ratio of real exchange rate increases by 1%, export increases by 1.22% based on FEM.

The coefficients of distance variable provided expected negative sign and statistically significant at 1% level for all model. Elasticity of Import to distance are -1.48% suggesting if the distance between Bangladesh and its partner country increases by 1%,

import volume declines by more than proportionally corresponding to the fixed effect model. Martinez-Zarzos (2002) found the coefficient of the distance term is much higher (in absolute terms) and significantly negative. As stated in Egger and Pfaffermayr(2002), specification country pair fixed effects are required to get unbiased coefficient estimator. Wang et. al. (2010) suggested that the geographical distance in relative endowment has a negative sign and is highly significant which similar to this model.

The Border dummy variable is significant at 1% level with negative coefficient. It reveals that Bangladesh tends to export less with SAARC trade partner with common border. Bangladesh has common border with only India among SAARC nations. In case of exports of Bangladesh in the SAARC region, Border dummy is negatively correlated with exports. Kirkpatrick & Watanabe (2005) found it negative in the context of Sub-Saharan Africa. Feenstra, Markusen & Rose (2001) found negative but insignificant common border effect on exports of differentiated goods of the OECD for cross border. De and Iyengar (2014) found the border coefficient negative and proportionally more than 1(one).The authors explained that if the cost of trade or time of clearance at a border is high, the effect on volume of trade will be negative.

Following the table 4, pooled OLS, fixed effects and random effects model for import has been measured and in consonance with the method of choosing the appropriate model, F-tests are found to be significant at 1% level and LM test is significant at 1% level. Thereby, outcome remarks fixed and random effect model both are fit in the model. The Hausman test requires when both fixed and random effect models are fitted. Hausman test offers non-significant result which rejects null hypothesis. As a result, random effect is preferable than fixed effect model.

In case of import model, the coefficients of the ratio of Gross Domestic Product of Bangladesh (i) and trade partner (j) in time t are positively correlated with import for pooled OLS, fixed effect model and random effect model and all are statistically significant. The elasticity of import to GDP is significantly less than 1 which implies that import increases when GDP of Bangladesh relative to its trade partners increases but less than proportionately 1 in case of random effect model. Fratianni (2007) estimated the bilateral import elasticity with respect to GDP which is between 1.10 to 1.20 i.e. 1% increase in importer's GDP the volume of imports about more than

proportionately which mirrors the result indicating in FEM. As shown in Nguyen(2009), the coefficient of GDP implying 1% increase in country's GDP raises the trade volume by 1.50%. Controlling the heterogeneous effect in the error is likely to increase the estimates of error is likely to increase the estimates of GDP. Another possible reason was also reported by Nguyen(2009) that growth in trade is partially attributed to unobserved factors in errors that seem to be neglected which is Consistent with Chen and Wall (2002) as well.

The coefficient of per capita GDP variable is statistically significant at 1% level with positive sign for random effect model that reflects quite different result than export model. The positive sign of the coefficient indicates that when Bangladesh's GDP increases relative to the trade partner's GDP, import will also increase. Bangladesh tends to trade with higher income countries rather than lower income countries implying that trade flow supports the H-O theorem rather than Linder's theorem. The coefficients from the ratio of real exchange rate of Bangladesh and partner countries for REM are significant however they have positive relationship with import that rejects our hypothesis. The more the real exchange rate of domestic currency rises in terms of partners' currency, the more will be depreciation of Taka. In accordance with hypothesis if real exchange rate of home country increases, it will import less. Such results found to be similar to the result of the Thorbecke (2012), which explained an appreciation of Chinese currency renminbi reduces exports along with imports. The author clarified the reason that many imports into China are used for exports as well. The product using for re-exports has the positive influence on relationship with export and import when currency depreciates. In case of Bangladesh, data showed that the amount of imported raw materials in 2015 from SAARC countries is 1,341,467.02 thousands US Dollar which is 19.69% of total imports from this region(WITS-World integrated Trade Solution). The products are using for re-exports , probably using the imported raw materials.

The coefficients of distance variable present expected negative sign and statistically significant at 1% level for random effects model. Elasticity of Import to distance is -1.91% which refers that if the distance between Bangladesh and its partner country increases by 1%, import volume declines by more than proportionally. The Border dummy variable is negatively correlated and insignificant for random effects model. In view of this negative and insignificant relationship, it implicates that border has no

significant impact on import between Bangladesh and border sharing country. Bangladesh has common border with only India among SAARC nations. In case of imports of Bangladesh in the SAARC region, Border dummy has no positive considerable impact.

Taking into account both export and import model, country specific heterogeneity can be considered for one as well as other. For export model, intercept terms are fixed and slope coefficients are same for all countries. For import model, intercept terms are random and slope coefficients are same for all countries which implies the difference among countries lies in the country specific errors, not in their intercepts as it fits best with random effect model. Elshehawy (2014) explained the situation when fixed and random effect model both acknowledged heterogeneity of countries. The random effect model differs from fixed effect model when REM assumes that the effects are generated by a specific distribution.

Section: 6. Summary and Conclusion

a. Limitations

As Afghanistan and Bhutan have some limitations of data availability, they are not able to provide reliable data for longer period. In consequence, the paper was conducted based on data no longer than 11 years due to data unavailability of the stated countries. As the study covers SAARC region, the paper took consideration of their presence in this study. Traditionally Gravity model is one of the prominent and successful theories and it usually provides robust results using typical estimation methods as OLS, fixed effect and random effect model. Recently some studies are using some developed estimation method as PPML (Poisson Pseudo Maximum Likelihood), FGLS (Feasible Generalized Least Squares), Tobit (simple regression) etc. All these other criteria will be taken up in future study.

b. Policy recommendation

Some researchers of this region suggested that it will be a win-win situation for both traders and consumers if there is no or less trade barriers. Despite several economic constraints, Bangladesh has seen prosperity and if we want to improve the trade volume with other SAARC nations, we should rethink about trade negotiations with these countries as well. As India dominates the export market of this region and Bangladesh

has bilateral trade deficit with this country, policy makers should find out other opportunities to link with other nation. Since some policy makers contradicted with the idea of free trade area since they are concerned that Bangladesh has vulnerable infrastructure and lack of efficiency in manufacturing and industrial sector. This may lead to destruction of domestic industries as they cannot compete with global market. In these consequence, Bangladesh should concentrate on finding dimensions of export area as it is largely dependent on narrow export area with some developed countries. Diversification of export can boost the possibilities of raising export volume by executing incentive and effective policy.

Although this region has lack of homogeneity in terms of economic variables like GDP growth, inflation rate, exchange rate and others so on (according to table.1), still those countries have some similarities in infrastructure, social and cultural patterns. In order to implement economic integration, reducing the trade deficit and demolishing the dominance of big nation like India in the SAARC region would be major issues for policy makers. Geographical Distance measured in Kilo Meter is used in this paper as a proxy of approximate transportation costs. As geographical distance shows negative coefficient for both export and import, reducing the transportation cost could be an efficient way to improve the situation. If Bangladesh wants to find out alternative trade partners, it would be wise to look for the efficient ways to lessen the transport cost ignoring the distance.

c. Conclusion

The idea of this study was to investigate whether gravity model of the trade explains the scenario of export and import flow in perspective of Bangladesh. Applying F-test, Brusch-Pegan LM test and Hausman test, the study finds out, fixed effect is suitable for the export model and random effect for the import model. In the export model, GDP, exchange rate and Distance variable revealed expected result according to the theory of gravity model along with the hypothesis of the model. However, PCGDP has no significant effect suggesting Bangladesh's export depends on overall economy rather than individual's income level. Border exhibits negative relationship with export and considering the findings from De and Iyengar (2014) the reason can be explained as if the higher cost of trade or time of clearance at a border causes the less volume of trade.

On the other side, in the import model, GDP, PCGDP and Distance variable revealed expected result according to the theory of gravity model along with the hypothesis of the

model. Contrarily, exchange rate variable in augmented gravity model is found positively correlated for import model indicating contradiction with the hypothesis. A notable amount of imported raw materials and re-exports are noted to be the prevailing reason. Border variable has negative impact on our trade between SAARC partners which does not support the hypothesis as well. Implementing sufficient measures for reducing cross-border trade cost might have some remarkable implications for our policy makers.

In these circumstances, Bangladesh should concentrate on bilateral trade agreement between other SAARC nations along with India. Research study claims that border variable does not have positive effect on trade, some actions should be taken to increase the export amount. In order to reduce the trade imbalance in this region, reducing cost of trade by reforming the tariff regulations should be emphasized on.

References

- Ali, E., & Talukder, D. K. (2009). Preferential trade among the SAARC countries: prospects and challenges of regional integration in South Asia. *Joaag*, 4(1), 47-59.
- Anderson, J. E., & Van Wincoop, E. (2003). Gravity with gravitas: a solution to the border puzzle. *American economic review*, 93(1), 170-192.
- Bhattacharyya, R., & Banerjee, T. (2006). Does the gravity model explain India's direction of trade? A panel data approach.
- Bhattacharya, S. K. (2004). Does Bangladesh benefit from preferential trade with India? a gravity analysis. *Economic and Political Weekly*, 5152-5162.
- Batra, A. (2006). India's global trade potential: The gravity model approach. *Global Economic Review*, 35(3), 327-361.
- Bussière, M., Fidrmuc, J., & Schnatz, B. (2005). Trade integration of Central and Eastern European countries: Lessons from a gravity model.
- Chen, I. H., and HOWARD J. Wall. Controlling for Heterogeneity in Gravity Models of Trade, Federal Reserve Bank of St. Louis Working Paper 99-010A, 1999.
- Christie, E. (2002). Potential trade in Southeast Europe: a gravity model approach (Vol. 21). Verein "Wiener Institut für Internationale Wirtschaftsvergleiche".
- De, P., & Iyengar, K. (2014). Developing economic corridors in South Asia.
- Elshehawy, M. A., Shen, H., & Ahmed, R. A. (2014). The factors affecting Egypt's exports: Evidence from the gravity model analysis. *Open Journal of Social Sciences*, 2(11), 138.
- Feenstra, R. C., Markusen, J. R., & Rose, A. K. (2001). Using the gravity equation to differentiate among alternative theories of trade. *Canadian Journal of Economics/Revue canadienne d'économique*, 34(2), 430-447.
- Filippini, C., & Molini, V. (2003). The determinants of East Asian trade flows: a gravity equation approach. *Journal of Asian Economics*, 14(5), 695-711.
- Hassan, M. K. (2000). Trade relations with SAARC countries and trade policies of Bangladesh. *Journal of Economic Cooperation*, 21(3), 99-151.
- Hassan, M. K. (2001). Is SAARC a viable economic block? Evidence from gravity model. *Journal of Asian Economics*, 12(2), 263-290.
- Hossain, S. M. (2009). South Asian Free Trade Area: Implications for Bangladesh.
- Husain, S., & Yasmin, S. (2015). Does the Gravity Model Explain Bangladesh's Direction of Trade? A Panel Data Approach. *IOSR Journal of Economics and Finance*, volume 6.
- Kien, N. T. (2009). Gravity model by panel data approach: an empirical application with implications for the ASEAN free trade area. *ASEAN Economic Bulletin*, 26(3), 266-277.
- Kirkpatrick, C., & Watanabe, M. (2005). Regional Trade in Sub-Saharan Africa: An Analysis of East African Trade Cooperation, 1970-2001. *The Manchester School*, 73(2), 141-164.
- Martínez-Zarzoso, I., & Nowak-Lehmann, F. (2003). Augmented Gravity Model: An Empirical Application to Mercosur-European Union Trade Flows. *Journal of applied economics*, 6(2).

- MasudurRahman, M., &ArjumanAra, L. (2010). Bangladesh trade potential: a dynamic gravity approach. *Journal of International Trade Law and Policy*, 9(2), 130-147.
- Montgomery, D., & Design, C. (2001). *Analysis of Experiments*. John Wiley & Sons, Inc.
- Montenegro, C. E., & Soto, R. (1996). How distorted is Cuba's trade? Evidence and predictions from a gravity model. *Journal of International Trade & Economic Development*, 5(1), 45-68.
- Neogi, C. (2014). Infrastructure development, industrial agglomeration and regional trade in South Asia. *ECONOMIC CORRIDORS IN SOUTH ASIA*, 45.
- Park, H. M. (2011). *Practical guides to panel data modeling: A step by step analysis using Stata*. Public Management and Policy Analysis Program, Graduate School of International Relations, International University of Japan.
- Pfaffermayr, M., & Egger, P. (2002). The pure effects of European Integration on intra-EU core and Periphery trade. Wang, C., Wei, Y., & Liu, X. (2010).
- Rahman, M. M. (2003). A panel data analysis of Bangladesh's trade: the gravity model approach. In *Proceedings of the 5th Annual Conference of the European Trade Study Group (ETSG2003)*. European Trade Study Group.
- Rahman, M. M. (2009). Australia's global trade potential: evidence from the gravity model analysis. In *Proceedings of the 2009 Oxford Business and Economics Conference (OBEC 2009)* (pp. 1-41). Oxford University Press.
- Rahman, M., Shadat, W. B., & Das, N. C. (2006). Trade potential in SAFTA: An application of augmented gravity model. *CPD occasional paper series*, 61, 512.
- Rahman, M. M. (2004). The determinants of Bangladesh's trade: evidences from the generalized gravity model. In *Proceedings of the 33rd Australian Conference of Economists (ACE 2004)* (pp. 1-54). Economic Society of Australia.
- Rahman, M. M., & Dutta, D. (2012). The gravity model analysis of Bangladesh's trade: a panel data approach. *Journal of Asia-Pacific Business*, 13(3), 263-286.
- Raihan, S., & Razaque, M. A. (2007). *Welfare Effects of South Asian Free Trade Area (SAFTA), Regional Trading Arrangements (RTAs) in South Asia: Implications for the Bangladesh Economy*. UNDP Regional Centre Colombo, January.
- Raihan, S. (2012). SAFTA and the South Asian countries: Quantitative assessments of potential implications.
- Sohn, C. H. (2005). Does the gravity model explain South Korea's trade flows?. *The Japanese Economic Review*, 56(4), 417-430.
- Tinbergen, J. (1963). Shaping the world economy. *Thunderbird International Business Review*, 5(1), 27-30.
- Van Bergeijk, P. A., & Brakman, S. (Eds.). (2010). *The gravity model in international trade: Advances and applications*. Cambridge University Press.
- Wang, C., Wei, Y., & Liu, X. (2010). Determinants of bilateral trade flows in OECD countries: evidence from gravity panel data models. *The World Economy*, 33(7), 894-915.
- Wooldridge, J. M. (2015). *Introductory econometrics: A modern approach*. Nelson Education.

Appendices

Table. 1 Macroeconomic Vulnerability Indicators comparison of SAARC Countries (in 2016)

Indicators	Afghanistan	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
Growth(%)	2.4	7.1	6.49	8.0	3.9	0.4	4.5	4.4
External Debt as a percentage of GDP	0.27	11.9	118.60	20.2	22.52	17.0	26.59	57.3
Current Account Balance(as % of GDP)	-18.73	0.41	-27.91	-0.53	-24.44	-0.79	-2.54	-2.13
National Debt to GDP (%)	0.27	48.81	121.56	48.1	65.72	27.4	67.61	79.3
Reserves as percentage to Import (in months)	11.77	8.2	9.47	8.43	1.6	10.28	4.62	7.40
Inflation as percentage (12 month average)	-1.54	5.9	3.31	4.9	0.50	9.9	2.86	4.0

Source: Bangladesh Bank website, Official Website of other respective Central Banks and world bank database.

Table. 2 Choosing Appropriate model

Fixed vs Pooled OLS (F-test)	Random Effect vs OLS (Breusch-Pagan LM test)	Chosen Model
H_0 is not rejected (No Fixed Effect)	H_0 is not rejected (No Random Effect)	Pooled OLS
H_0 is rejected (Fixed Effect)	H_0 is not rejected (No Random Effect)	Fixed Effect Model
H_0 is not rejected (No Fixed Effect)	H_0 is rejected (Random Effect)	Random Effect Model
H_0 is rejected (Fixed Effect)	H_0 is rejected (Random Effect)	Fixed effect model if the null hypothesis of Hausman test is rejected; otherwise, will be fitted as a Random effect model.

Table.3 Gravity model on trade balance: Dependent Variable: $\log(\text{Export}_{ijt}) =$ export of country i to j

Independent variables	Pooled OLS		Fixed Effect Model(FEM)		Random Effect Model(REM)	
	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
$\log(\text{GDP}_{ijt})$	0.78***	0.16	0.70***	0.15	0.67**	0.04
$\log(\text{PCGDP}_{ijt})$	0.18	0.14	0.87	0.54	0.22	0.64
$\log(\text{RER}_{ij})$	1.31**	0.39	1.22**	0.35	1.32*	0.30
log Distance	-1.31***	0.18	-1.48***	0.33	-1.35***	0.14
Border	-1.30**	0.47	-1.62*	0.63	-1.50***	0.23
Constant	13.13***	1.38	12.16***	3.55	13.47***	1.16
No of observation	77					
No. of Group	7					
R ²	0.87		0.73		0.87	
F-test	20.99***					
LM test	1.17					
Hausman test	40.07***					

All variables are expressed in natural logarithms. *, **, *** statistical significance at 10%, 5% and 1% level respectively. F-test, LM-test and Hausman test shows chi-square value.

Table.4 Gravity model on trade balance: Dependent Variable: $\log(\text{Import}_{ijt}) =$ Import of country i from j

Independent variables	Pooled OLS		Fixed Effect Model		Random Effect Model	
	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
$\log\text{GDP}_{ijt}$	0.90***	0.15	1.10***	1.25	0.31***	0.10
$\log\text{PCGDP}_{ijt}$	0.53***	0.14	1.14***	0.18	0.38**	0.20
$\log\text{RER}_{ijt}$	1.31**	0.38	1.22***	0.32	1.29***	0.22
logDistance	-1.98***	0.17	-1.88**	0.47	-1.91***	0.41
Border	-0.66*	0.46	-0.57	2.38	-0.57	0.71
Constant	19.05***	1.35	9.91	5.11	18.63***	3.16
No of observation	77					
No. of Group	7					
R ²	0.91		0.71		0.86	
F-test	50.66***					
LM test	64.76***					
Hausman test	1.13					

All variables are expressed in natural logarithms. *, **, *** statistical significance at 1%, 5% and 10% level respectively. F-test, LM-test and Hausman test shows chi-square value.

Table. 5 Multicollinearity test

Variable	VIF	1/VIF
logGDP _{ij}	3.80	0.263167
logPCGDP _{ij}	2.93	0.341454
logRER _{ij}	1.52	0.657727
logDistance	1.52	0.657891
Border	1.07	0.936441
Mean VIF	2.17	

Table. 6 Country specific effect test for export model

logExport _{ij}	Coefficient	Standard Error
Partner		
Bhutan	62.55384	9.851129
India	-67.8587	10.6237
Maldives	68.72117	11.70237
Nepal	2.087513	.3751771
Pakistan	-32.16693	5.178003
Sri Lanka	1.9184	2.477368

Table . 7 Country specific effect test for import model

logImport _{ij}	Coefficient	Standard Error
partner		
Bhutan	13.29523	9.031916
India	-8.600669	9.740242
Maldives	10.99343	10.72921
Nepal	1.747969	0.3439776
Pakistan	-3.065239	4.747404
Sri Lanka	0.8832423	2.271352

Chart : 1. Share (in percentage) in intra-SAARC exports in 2016

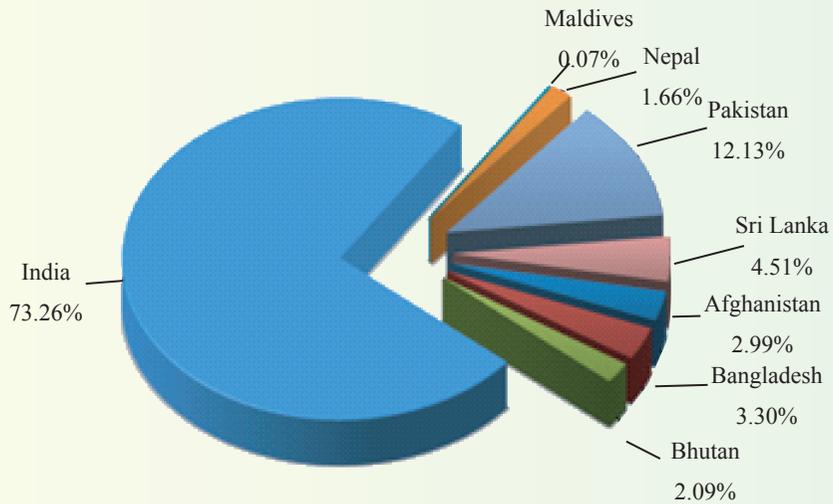
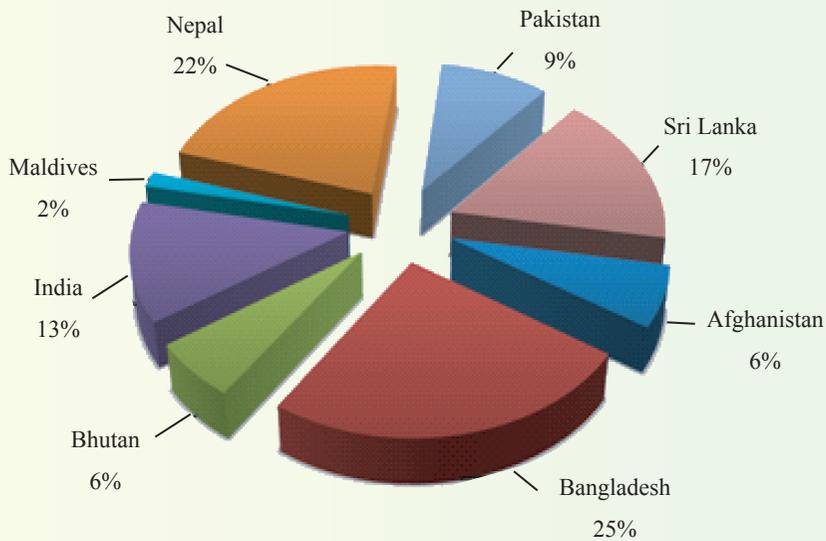


Chart : 2. Share (in percentage) in intra-SAARC Imports in 2016



Market Orientation, Managerial Capability and Small Firm Financial Growth in Bangladesh: Moderating Effect of Government and Private Organization Support

Dr. Md. Mosharref Hossain¹

Abstract

Although different concepts and theories of firm growth have been developed through the workings of diverse group of researchers, there is no single overarching model exists that can explain best about the growth matter of small firms. Therefore, the literature about small firm growth and performance are very fragmented and inconsistent. Based on the concept of the theory of 'Resource Based View (RBV)' current research formulated a research framework in order to examine how the resources like market orientation strategy and managerial capability of owner-manager affect financial growth of small firms operating in Bangladesh. Data was collected through self-administration from 407 owner-manager of small firms operating in three broad divisions of Bangladesh. Using partial least squares analysis, the paper found that both market orientation and managerial capability has strong positive relation with small firm financial growth. The paper also uncovered that government and private organization support do not moderate the relationships between market orientation, managerial capability and small firm financial growth. In fostering small firm growth in future, government and private organization should increase their financial and non-financial support with good number of initiatives.

Keywords: Small firm, growth, Market orientation, Managerial capability, RBV.

¹ The author is an assistant professor of BIBM, views expressed in this article is the author's own and do not necessarily reflect the views of the BIBM.

1. Introduction

Considering the potentialities of small firms towards the economic development, researchers of many developed and developing countries have motivated to work on small firms' growth and its determinants for many years. Different concepts and theories of firm growth have been developed through the workings of diverse group of researchers. However, there is no specific theory to explain small firm growth and the factors constraining or stimulating the growth (Olaore, 2014). Even there is no single overarching model exists that can explain best about the growth matter for small firms (Dobbs & Hamilton, 2007; Omar, Lim, & Basiruddin, 2014). Therefore, the literature about small business growth and performance are very fragmented and inconsistent.

Since firm can grow in different ways, the growth of a firm follows a multidimensional phenomenon and these various forms of growth may have different determinants and effects (Delmar, Davidsson, & Gartner, 2003). Throughout the world many researchers have tried to identify the causes of small business growth and their profound works on this issue outlined multidimensional factors which ultimately affect growth. As small businesses around the world do not have the same characteristics and their growth is multifaceted, it is quite difficult for researchers to conclude with a certain number of factors. Studies in many countries focused on some specific factors and no comprehensive research on this issue is available to draw the conclusion. Based on the concept of the theory of 'Resource Based View (RBV)' the paper intends to examine how the resources affect growth of small firms operating in Bangladesh. According to the concept of the resources, the two important resources, market orientation strategy and managerial capability of owner-manager, have been captured to formulate proposed research framework in order to see their impact on growth of small firms especially in the context of Bangladesh.

Market orientation is an important determinant for small firm growth as the success of any firm largely depends on how successfully firm can sell its products and services according to the needs and wants of customers. It is advantages for small firm to follow the market orientation strategy by which they can find out real needs of customers, can innovate new product as per the needs and desire of customers, can monitor their competitors and can implement the new strategies for gaining the competitive

advantages. However, SME owner-managers have less concerned about marketing and provide less priority. Even, they do not have the research and development department to conduct market research and many of them do not know how to make long-term market planning (Blankson & Stokes, 2002).

The very common challenge faced by SMEs in Bangladesh is the lack of promotional/market oriented activities (Abdin, 2015b, January 15; Moudud-Ul-Huq, Ahammad, & Khan, 2013). In their study, Miah (2006a) and Islam (2009) state that SMEs in Bangladesh lack proper information about market requirements and research & development facilities that hinders them to focus the customers. Zaman and Islam (2011) state that most of the SME entrepreneurs in Bangladesh lack necessary marketing skills to prepare a well-planned marketing strategy as well as sufficient resources including research and development for implementing that strategy. Although some researchers and policy makers are concerned about these issues but no evidence is found on the association of this strategy with growth of small firm in Bangladesh.

The Theory of the Growth of the Firm proposes that the growth of the firm is dependent on the entrepreneurial and managerial knowledge and capabilities configured as resources (Pitelis, 2007). Researchers of many developed and developing countries argue that, the owner-managers of small firm lack proper managerial knowledge and skills (Jayne, 2007; Matlay, Redmond, & Walker, 2008; Walker & Webster, 2006) and it is evident from the literature that small firm owner-managers are more reluctant to attend in formal training on management development than the managers of large firms (Storey, 1994). According to Islam (2009), lack of prior experience and managerial skills hinder proper management of SMEs in Bangladesh. Managerial training concept for SMEs in Bangladesh is almost new and many of the SME entrepreneurs lacking highly in managerial skills to operate their business, Zaman and Islam (2011). Therefore, poor managerial capabilities of the entrepreneurs create many other problems in the small firms Roy and Chakraborty (2014). Research on the impact of managerial capabilities on small firm growth is very limited internationally and almost absent in the context of Bangladesh.

Small enterprises all over the world generally face many problems including managerial skills, access to information, support services, business development support etc. In this regard, to address such problems government and different private organizations nowadays play a very significant role for developing small enterprises sector.

Government of every country has been undertaken different initiatives, policies and programs for supporting small enterprises as this sector has been recognized as the priority sector of the government in almost every nation especially for the developing countries. However, it is quite difficult for the government to provide every kind of supports in order to address their heterogeneous needs. Government and its related departments or agents in many cases are not well equipped with appropriate cost effective solutions for solving the problems of SEs. Therefore, beside the initiatives of government, it is also important for the private organizations to come forward with a good number of supportive services.

In Bangladesh, most of the small businesses either registered or unregistered face several non-financial problems along with high financial constraint. There are many studies (Abdin, 2015b, January 15; Chowdhury, 2007a; Islam, Yousuf, & Rahman, 2014; Islam, 2010; Mamun, Hossain, & Mizan, 2013; Minto, 2006; Roy & Chakraborty, 2014; Uddin & Bose, 2013; Zaman & Islam, 2011) in Bangladesh regarding the problems faced by small enterprises. They identify a large number of factors that hinder small business success and include lack of owner-manager proper education, business knowledge, prior experience, proper business record, marketing support, information, administrative support, adequate infrastructure, etc. In these circumstances, this research expects that government and private organizations can largely address such issues and can help small firm to develop. Therefore, the paper considers government and private organizations support as the moderating variables with the expectation that it will enhance the relationships between market orientation, managerial capability and financial growth of small firms in Bangladesh.

2. Objectives of the study

The paper intends to explore the impact of resources on financial growth of small firms operating in Bangladesh. The specific objectives of the research are to:

- i. Examine the relationship between market orientation, managerial capability of the owner-manager and small firm financial growth.
- ii. Examine whether government and private organizations support enhance the relationships between market orientation, managerial capability of the owner-manager and small firm financial growth.

3. Literature Review

Small firm growth

The concept of firm growth is not new. From the last few decades many empirical researches have been done in this field. There are many evidences on Micro enterprise growth (Clark & Douglas, 2014; Fiala, 2013; Khandker, Samad, & Ali, 2013; Mel, McKenzie, & Woodruff, 2014; Nichter & Goldmark, 2005; Perren, 1999; UNDP, 2012) and SME growth and performances (Beck & Demircuc-Kunt, 2006; Bhaumik & Estrin, 2007; Farouk & Saleh, 2011; Ferrando, Köhler-Ulbrich, & Pál, 2007; Moreno & Casillas, 2007; Neufeld & Earle, 2014; Shah, Nazir, Zaman, & Shabir, 2013; Woldie, Leighton, & Adesua, 2008). However, works on small business growth are very stagnant. Small business all over the world are very heterogeneous in nature and do not grow in the same way. Since, small firms are very heterogeneous in nature and follow many growth patterns (Delmar et al., 2003), there are different types of approaches and conceptual frameworks exist in the literature which has attempted to highlight the growth of small firm. The approaches of the growth of small firms may be categorised into several groups and include stochastic; descriptive; evolutionary; resource-based; learning; and deterministic.

The fundamental characteristic of small firms is the heterogeneity in nature implying that all the firms in different categories and clusters do not grow in the same way and can vary significantly over time. Thus, the growth of small firms is not uni-dimensional rather it is a multidimensional phenomenon. For various groups of small firms, it is advantages to use multiple measures to uncover different empirical relationships. Hence, some prominent researchers' advised composite measures using different indicators (Davidsson, 1989; Delmar, 2006). Therefore, a different form of measure and method for firm growth is important for better understanding of firm growth process (Delmar et al., 2003).

Market orientation and small firm financial growth

Market orientation can be defined as the strategy of a firm by which it discovers and meets the needs and expectations of its customers with the product mix. The foundation of this concept has been developed by the earliest contributions of Drucker (1954) when he argues that the organizations mainly exist in order to fulfil the desire and needs of its customers (Ngansathil, 2001). Accepting his concept, many of the researchers and

policy makers develop this issue from different corner and consider it as one of the important business strategies for the success of any business (for example, Deng & Dart, 1994; Kohli & Jaworski, 1990; Narver & Slater, 1990). Although the concept, market orientation, has been defined and explained by many authors and researchers, the definitions provided by Narver and Slater (1990) and Kohli and Jaworski (1990), are very prominent and most of the researchers conducted various research according to their definitions and measurement scale. Kohli and Jaworski (1990) consider market orientation from the behavioural aspect and state that market orientation involves those activities that direct the firm towards the customer satisfaction. They also argue that the profitability of the firm is the outcome of market orientation. On the other hand, Narver and Slater (1990) explain market orientation from the cultural view point and argue that market orientation is the organisational culture which focuses mostly three broad important components like customer orientation, competitor orientation and inter-functional coordination.

Empirical evidence show that there is a positive association between market orientation and firm performance and firm can achieve better performance through applying the concept of market orientation as market oriented firm can satisfy its customers by fulfilling their needs and preferences (Jaworski & Kohli, 1993). There are many empirical studies on the link of market orientation and firm growth and performance (Chao & Spillan, 2010; Charles, Joel, & Samwel, 2012; Ihinmoyan & Akinyele, 2011; Kumar, Subramanian, & Strandholm, 2011; Kumar, Jones, Venkatesan, & Leone, 2011; Long, 2013; Ozmen & Deniz Eris, 2012; Shehu & Mahmood, 2014; Suliyanto & Rahab, 2012; Udegbe Scholastica & Udegbe Maurice, 2013). Each of the studies suggest that market orientation is one of the important determinants for business performance, mainly due to the fact that market oriented firm identify the needs, wants and preferences of customers, try to provide products and services according to their needs which subsequently enhance the satisfaction levels of the customers and therefore increase firm performance.

The findings of many researches indicate that market orientation has significant impact on customer orientation, firm commitment, the growth of the firm in terms of sales, financial and non-financial performance, return on assets, profitability (Jaworski & Kohli, 1993; Narver & Slater, 1990; Pelham & Wilson, 1995; Siguaw, 1994; Slater & Narver, 1994) as well as long-run financial performance (Ruekert, 1992). Although majority of the studies focus on the large firm, many studies find marketing concept as

one of the critical success factors for SMEs (Baker & Sinkula, 2009; Ghosh & Kwan, 1996; Mahmoud, 2010; Nur, 2014; Pelham, 2000; Shehu & Mahmood, 2014; Suliyanto & Rahab, 2012; Yusuf, 1995). Nur (2014) conduct a research in Indonesia from the sample of printing SMEs and reveal that market orientation and the performance of SMEs are positively correlated. Study in China in the SME sector confirms that market oriented firm achieve higher performance compared to their counterpart (Li, Zhao, Tan, & Liu, 2008). Research on small business enterprises in Nigeria reveals that small firms those are market oriented show substantial progress than others and find a very significant effect of market orientation on small firm performance (Dauda & Akingbade, 2010). Similar research done by Kaya and Patton (2011) in Turkey also finds positive association between market orientation and SMEs innovative performance. Gaur, Vasudevan, and Gaur (2011) conduct a research from the sample of Indian manufacturing SMEs in order to examine the relationship between market orientation and firm performance. Their finding suggests the significant positive relationship between market orientation and the performance of manufacturing SMEs.

Although a vast majority of the studies reveal and confirm the significant positive relationship between market orientation and firm performance in various kinds of firms, there are some empirical evidences that find some partial relationship or no significant relationship. Chao and Spillan (2010) conduct a comparative study for US and Taiwanese SMEs in order to examine the relationship between market orientation strategy and firm performance. They argue that the concept of market orientation has less applicability in the context of US and Taiwanese SMEs. Study of Demirbag, Lenny Koh, Tatoglu, and Zaim (2006) tests the impact of market orientation on the performance of SMEs operating in Turkish textile industry. Their findings reveal no association between market orientation and firm performance. A recent research of Shehu and Mahmood (2014) in the context of Nigeria also reveals that there is no relationship between market orientation and SME performance. Another recent paper of Mokhtar, Yusoff, and Ahmad (2014) in Malaysia reveals different results for the core elements of market orientation. They confirm that the key element of customer focus and market dissemination are positively related with firm performance however market intelligence and responsiveness are negatively related to the firm performance.

Managerial capability of owner-manager and small firm financial growth

Every business organisation either big or small require to have efficient managers with appropriate capabilities in order to operate and manage businesses successfully in the

highly competitive and changing business environment. There are different types of managerial capabilities and over four hundred different competencies exist in the literature (Mitchelmore & Rowley, 2010). Boyatzis (1982) refers managerial competencies as the characteristics of a person who manages a business or a team of workers. He also states that managerial competency has two components; the task and the skills require to perform the task. According to Hellriegel et al. (2004), managerial competencies are "the sets of knowledge, skills, behaviors and attitudes that a person needs in order to be effective in a wide range of managerial jobs and various types of organizations". On the other hand, Adner and Helfat (2003) state that the foundations of managerial capabilities are the knowledge and skills of managers and these should be developed continuously.

The capabilities of the manager or his team will largely determine the future growth and survival of the firm (Pearce, 2009). The owner of the SME who has entrepreneurial spirit and possess a good set of management capabilities can effectively coordinate all kinds of resources to achieve efficient results. However, lack of managerial capabilities mostly hinders the operations of the business and its performance. Study of Capaldo, Iandoli, and Ponsiglione (2004) reveals that the success or failure of the most small and medium enterprises highly affected by the capabilities of the owner-managers. Moreover, poor financial management has been found as one of the deciding factors for the survival of SMEs (Abdullah & Sinha, 2009). Therefore, developing the managerial capabilities is highly necessary for the growth of the firm.

There are many empirical studies that find out the relationship between managerial capabilities and small and medium enterprises growth and performance. Yusof and Aspinwall (2000) confirms that the managerial ability of the owner-managers has the greatest impact on the performance of SMEs. Laguna (2012) demonstrates that the business success of SMEs and managerial competencies (both general and specific) is moderately but significantly correlated. Research done by Nur, Surachman, Salim, and Djumahir (2014) from the sample of printing SMEs in Indonesia find the positive association between management capability and SMEs Performance although the result show very insignificant relationship. On the other hand, Al-Madhoun and Analoui (2003) in Palestine finds that there is a significant relationship between owner-managers skills and small business success. Nurlina (2014) also reveals that the performance of SMEs is significantly and positively influenced by the management capabilities. In a recent research done by Ssekakubo (2014) identify the strong positive association

between managerial competency and financial performance in Uganda using the sample from Savings, Credit and Cooperative Societies.

Government support and small firm financial growth

Small enterprises all over the world deserve more help from the government for their growth and success. Baum and Locke (2004) argue that the success of the entrepreneurship business primarily depends on the role that any government plays for developing the business. According to Lütkenhorst (2006), the success of SME sector is highly linked to how the government provide support to the business through developing policies and programmes and creating conducive environment for the survival of firms. Many studies find the positive relationship between government support and SME growth or performance although some other studies find insignificant relationship between two constructs. Jasra, Khan, Hunjra, Rehman, and Azam (2011) finds some factors including government support have significant association with the success of small and medium enterprises. Uddin and Bose (2013) from the sample of Bangladesh reveal that government support is significantly and positively correlated with the SMEs success. Kamunge (2014) also finds that government policy and the regulations are the serious obstacles that affect the performance of SMEs in Kenya.

Although a large body of literature find the positive relationship between government support and SME growth or performance, many studies reveal insignificant or even negative relationship. Vixathep (2014) and Egena (2014) show that government support in Nigeria has no substantial impact on the performance of SMEs. Similarly, a research of Chen and Parker (2007) on Taiwanese SMEs related to clothing and textiles industry also shows that government support is not useful for improving the performance of SMEs. Man (2014) reveals that SME sector in Malaysia does not depend on government support for their business operations and such support do not play significant role for enhancing the performance of SMEs. Egena (2014) conducts a study on SMEs involving three or more people to find out the impact of institutional support on the performance of SMEs. They concludes that SMEs who receive such financial and non-financial supports perform less compared to their counterpart in terms of employment and turnover.

Private organizations support and small firm financial growth

In general, the growth or performance of micro and small enterprises largely depend on the support they receive from the government and the other private organizations (Islam,

2013). There are many researches on Private organizations support and entrepreneurship business and many researchers advocate the private organizations support for entrepreneurship development (Webb, Kistruck, Ireland, & Ketchen Jr, 2010). Some studies (McWilliams, Siegel, & Wright, 2006; Ravn, 2010; Webb et al., 2010) claim that private organizations support provide benefits both the organizations and entrepreneurs. Entrepreneurs can achieve better success receiving the support services from the market experts with different skills and knowledge and organizations in return get the financial benefits as well as the market reputation. However, research on Private organizations support and small business growth or performance is very scant. Very few researchers of different countries have tried to show its relations from their corner.

Researchers (Massey, 2003; Matlay, Ramsden, & Bennett, 2005) recognize that the support of private sector can be used to improve small business performance. A study of Van (1998) suggests that if small businesses receive support services according to their business needs, they will flourish in future. Zindiye, Chiliya, and Masocha (2012) conduct a survey on the sample of manufacturing SMEs in Zimbabwe to investigate the impact of government and other private organizations support on the performance of SMEs. Their finding reveals that government and private organizations support positively influence the performance of SMEs. Saleh (1995) studied on women owned small enterprises and finds that entrepreneurs who have no formal education and previous experiences became successful in their business regarding sales, employment and profitability by receiving management trainings from the supporting organizations.

Business training enhances the ability of the entrepreneurs to operate the firm which subsequently increase the performance of firm (Du Plessis, Frederick, & Goodwin, 2010). Mashenene and Rumanyika (2014) finds that inadequate business training highly affects the growth of SMEs in Tanzania. Therefore, they recommend that more need based training is required to develop the knowledge, skills and attitude of owner-manager of SMEs for better performance. On the other hand, access to information is the essential tool for the entrepreneurs to make their business successful (Hernandez, Nunn, & Warnecke, 2012). Kamunge (2014) states that access to information and market are the serious obstacles that affect performance of SMEs in Kenya. Therefore, efficient private organizations can enhance the success of small firms through providing adequate and relevant information.

4. Research Model and Hypotheses

The growth of firm largely depends on the internal and external resources used by the firm to operate its business activities. Researchers of different fields focus on the resources according to their interest. Although there are different studies in this field, this sector is suffering from the inconsistent literature. As per the concept of the theory of Resource Based View (Barney, 1991) two important resources, market orientation strategy and managerial capability of owner-manager, are used as the independent variables to find out their impact on financial growth of small firms. Figure 1 shows the propose model. This research focuses on the direct relationship between the constructs and also considers government and private organizations support as the moderating variables with the expectation that it will enhance the relationships between market orientation, managerial capability and small firm growth.

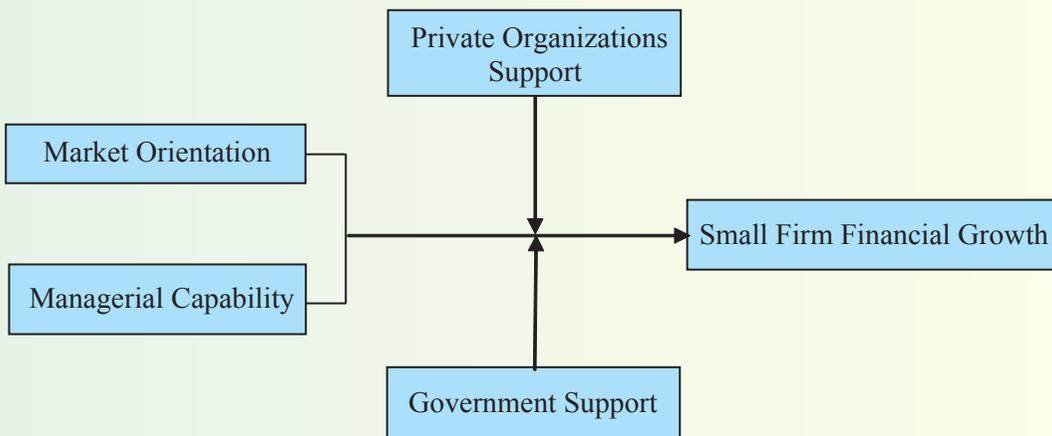


Figure 1: Research Model

The theory of Resource Based View (Barney, 1991) considers the firm as the bundle of resources and argues that the resources firms have directly and indirectly affects firm's performance and growth by generating competitive advantages. Based on the concept of this theory, the paper considers market orientation strategy and managerial capability of owner-manager as the independent variables to test their impact on financial growth of small firm operating in Bangladesh. Many of the previous researchers used such resources to show their impact on firm growth in different context as discussed in literature review chapter and find some diverse relationships.

Market orientation strategy is an important determinant for small firm growth as the success of any firm largely depends on how successfully firm can sale its products and services according to the needs and wants of customers. It is assuming that firm can achieve better performance through applying the concept of market orientation as market oriented firm can satisfy its customers by fulfilling their needs and preferences. In Bangladesh most of the small firms face severe challenges due to the lack of market oriented activities (Abdin, 2015b, January 15). Therefore, in the framework it is included as independent variable in order to see whether any association exists between market orientation strategy and growth of small firm in Bangladesh.

Several studies develop the proposition that market oriented firms can lead the higher performance (Agarwal, Krishna Erramilli, & Dev, 2003; Dwairi, Bhuiyan, & Jurkus, 2007; Green Jr, Inman, Brown, & Hillman Willis, 2005; Low, Chapman, & Sloan, 2007; Slater & Narver, 1994). Mahmoud (2010) argues that although the market orientation concept has applied in different sizes of firms, when it applied in the field of SMEs, it will positively affect the performance of SMEs. Although some study find no significant relation (Chao & Spillan, 2010; Ghani & Mahmood, 2011; Suliyanto & Rahab, 2012) even negative relationship (Mokhtar et al., 2014; Voss & Voss, 2000), a majority of the previous studies confirm the positive relationship between market orientation and SME performance (Chittithaworn, Islam, Keawchana, & Yusuf, 2011; Dauda & Akingbade, 2010; Gaur et al., 2011; Kaya & Patton, 2011; Nur, 2014; Zheng & Cui, 2007). Therefore, the paper expects that if small firms operating in Bangladesh can develop better market orientation strategy, it will enhance their financial growth and recommends the following hypothesis:

H₁: There is a significant positive relationship between market orientation and small firm financial growth in Bangladesh.

Managerial capability is a special type of firm-specific and non-transferable resource, the primary aim of which is to enhance the productivity of other resources. Small firm generally operated by the owner-manager without involving any expert people from outside. Therefore, it is the responsibility of the owner-manager to apply their skills and knowledge in order to ensure the growth of firm and to survive. The growth of firm depends mostly on the efficient managers with appropriate capabilities who carry out all the functional activities. Most of the problems of SMEs that are related to the marketing, finance, operations, production, distribution, personnel management, quality control,

Bookkeeping, etc., are essentially the managerial problems. Therefore, it is expected that by developing the capabilities that are required to enhance managerial effectiveness, owner-managers may enhance the growth of their firms.

The managerial capability of the owner-managers has the greatest impact on the growth or performance of SMEs. Many of the previous researches (Andreou, 2013; Hormiga, Batista-Canino, & Sánchez-Medina, 2011; Nurlina, 2014; Pansiri & Temtime, 2008; Ssekakubo, 2014) show that managerial capability significantly and positively correlated with firm growth or performance. However, researchers argue that, small firm owner-managers in both developed and developing countries lack managerial knowledge and skills (Jayne, 2007; Matlay et al., 2008; Walker & Webster, 2006) that jeopardise their potentiality of growth. Thus, if the owner-manager can gain sufficient amount of skills and knowledge, it will help them to enhance their managerial capabilities which ultimately gear-up their businesses growth or performance. Therefore, the paper proposes the following hypothesis:

H₂: The managerial capability of the owner-manager is significantly positively related to the financial growth of small business.

Due to their characteristics of smallness and larger number, small firms deserve more help from the government sector for developing themselves and subsequently to contribute to the economy. Therefore, in many of the countries either developed or developing, government play a pivotal role for developing the SME sector (Handoko, Smith, & Burvill, 2014). Many previous studies find the positive relationship between government support and SME growth or performance although some other studies find insignificant and negative relationship between two constructs. Studies of Jasra et al. (2011) in Pakistan; Uddin and Bose (2013) in Bangladesh; Lee, Sohn, and Ju (2011) in china; Hansen, Rand, and Tarp (2009) in Vietnam; Bah and Cooper (2012) in Kenya etc. find out the positive relationship between different aspects of government support and SMEs growth or performance. On the other hand, many studies (Chen & Parker, 2007; Man, 2014; Vixathep, 2014) confirm the insignificant relationship and also there is an evidence (Egena, 2014) of negative relationship.

In Bangladesh, government and other stakeholders have undertaken various financial and non-financial support initiatives for the development of small businesses. Although there are some initiatives available for them, unfortunately most of the small businesses especially operating in the semi-urban or rural areas are not aware about these supports

or even they know, many of them do not have the proper access. As a result, they lagged behind the other group who know and get the support from the government and its agencies. It is expected that if the government design good policy initiatives with a package of support, provide infrastructures facilities including access to road, electricity, water, sewerage, etc. and also ensure the regulatory, legal and conducive environment, this variable will enhance the relationship of aforementioned resources and the small firm financial growth. Therefore, the paper hypothesizes following:

H₃: The positive relationship between market orientation and small firm financial growth would be higher when government support is higher.

H₄: The positive relationship between managerial capability and small firm financial growth would be higher when government support is higher.

Some studies claim that private organizations support in the form of business training enhances the ability of the entrepreneurs to operate the firm which subsequently increase their performance (Chandy & Narasimhan, 2011; Du Plessis et al., 2010; Naqvi, 2011). Other studies argue that private organizations support in terms of access to information is one of the important factors for the growth or performance of small firms (Hernandez et al., 2012; Kamunge, 2014). Therefore, from the literature it is evident that for the growth and survival of small enterprises, private organizations play a very significant role. Therefore, it is assumed that if private organizations provide required supports to the small firms with affordable cost and make them aware to participate, these would enhance the relationships between market orientation, managerial capability and small firm financial growth. Thus, the paper expects the following hypotheses:

H₅: The positive relationship between market orientation and small firm financial growth would be higher when private organizations support is higher.

H₆: The positive relationship between managerial capability and small firm financial growth would be higher when private organizations support is higher.

5. Methodology

Sample and data collection

As the research concerns financial growth of small firms, the sample consists of small firms operating in Bangladesh. To collect data, interview was conducted through structured questionnaire among owners or managers where owners are absent from their

businesses operation. To select small firm, the definition of Bangladesh Bank (the central bank of Bangladesh) has been accepted (provided by SME Credit Policies & Programmes Department with circular no-4 in July 2015). The target populations of the study were the small businesses operating in three major divisions (Dhaka, Rajshahi and Chittagong) of Bangladesh. In Bangladesh, there are seven divisions namely, Dhaka, Chittagong, Barisal, Khulna, Rajshahi, Rangpur and Sylhet. The SME Foundation has identified 177 SME Clusters within 7 divisions in 51 districts (out of 64 districts) of Bangladesh. Among 177 SME clusters, most of the small businesses (71 percent) are located in Dhaka (the capital city), Chittagong (the commercial hub) and Rajshahi divisions (Abdin, 2015a, March 5). Thus, current research emphasised on these three broad areas for data collection and both the rural and urban areas were considered to generalize the results.

The paper considered Krejcie and Morgan (1970) table to determine total sample size. According to Economic Census 2013 of Bangladesh Bureau of Statistics there are 859,318 small businesses are operating in Bangladesh (Bangladesh Bureau of Statistics, 2015). Out of the total number, 598,645 small businesses (70 percent) are located in three selected divisions. Hence, based on Krejcie and Morgan table 384 small businesses were selected as the sample size. However, to reduce the sampling error and to minimize the non response rate, the total sample size were multiplied by two (Hair, Wolfinbarger, Ortinau, & Bush, 2008). Therefore, the total 768 questionnaires were administered. As the list of small enterprises including their addresses except the total number was not available in Bangladesh, the probabilistic sampling technique cannot be applied. Hence, non-probabilistic sampling technique is considered to make the survey manageable but within reliable limits.

The whole survey process consisted of two or more visits to the premises of small firms in different locations within the study area. In the first visit, researcher or his team dropping off the survey questionnaires to the small firm owners or managers with a short description of research objective. In the second or next visit, the entire completed questionnaires were collected from the respondents. Hence, the survey instruments have been picked up within one month (September-October, 2015) of dropping off. Out of 768 questionnaires, the researcher received 426 questionnaire within the survey time. From 426 questionnaires researcher found 19 questionnaires unusable and finally used 407 questionnaires for the analysis. The response rate of this survey was 55.47%.

Measures

The paper measures market orientation with 12 items as a uni-dimensional construct which is adapted from the study of Suliyanto and Rahab (2012) that originally rooted from the work of Narver and Slater (1990). Suliyanto and Rahab (2012) used 13 items to measure this variable. However, from the list of 13 items, two items have merged (as per the expert opinion) such as 'Companies always respond to competitor strategies undertaken' and 'the company responded quickly to the actions of competitors'. Current study slightly modifies second item by adding 'any action' in place of action. Thus, if the respondents ask 'The firm responds quickly to any actions of competitors', the statement can capture the strategies also. There are also many evidences (Shah & Dubey, 2013; Shehu & Mahmood, 2014; Wilson, Perepkin, Zhang, & Vachon, 2014) that market orientation has been measured using uni-dimensional approach.

Managerial capability is measured by two dimensions using 18 items that are adapted from the study of Bourne and Franco-Santos (2010). They used 19 items, 5 for managerial knowledge and experience and 14 for managerial skills. From the 19 items used by Bourne and Franco-Santos (2010), one item has been dropped (as per expert suggestion) which is 'I have knowledge to analyse events, perceive trends, anticipate changes and recognize opportunities' as there is another item 'I have knowledge to do my job'. The later item indicates that managers have such knowledge by which they can accomplish all of their duties and activities and the contents attach in the former statement is also the part of managerial activities.

Government generally provides the financial and non-financial support to small business. However, the non-financial supports of the government were considered to measure the government support. Focusing a uni-dimensional measurement, 8 items were used to measure government support that were adapted from the studies of Yusuf (1995); Hansen et al. (2009); Rashid (2012); Abdullah (1999); Hung, Effendi, Talib, and Rani (2011). To measure private organizations support, the paper considered two important dimensions namely the information support and the training support. The first dimension, information support, is measured by 4 items that are adapted from Indarti and Langenberg (2004). The second dimension, training support that constitutes 4 items are adapted from Geringer, Frayne, and Milliman (2002) and Chen (2003).

The dependent variable of this research is small business financial growth which is measured through four growth indicators such as sales, profits, total asset size and

additional capital and adopted from Wickham (2006). Appendix-A presented all the measurement items that have been used to measure the variables.

Respondents were asked to anchor all these variables on a 5-point Likert scale, which ranges from 1=strongly disagree to 5=strongly agree.

6. Results

Respondents profile

The unit of analysis was small firm and the respondents were owners or the managers where owners are absent from their businesses operation. About 70 percent of the total respondents were the owners and the rest 30 percent were managers. Almost all the respondents (96.56 percent) were male except 3.44 percent of female. Around 41 percent of the respondents completed Higher Secondary Certificates (HSC) followed by 31.70 percent in bachelor degree. The level of education for secondary or less was around 20 percent. A small portion (around 6 percent) of respondents completed the postgraduate degree and the respondents having diploma was very negligible (1.72 percent).

The majority of business had low business experience in terms of their age. Around 60 percent of sample firms were less than 10 years old and 40 percent were more than 10 years. The survey results showed that more than half (58.72 percent) of the sample firms were trading concern, 22.36 percent were service oriented firms and only 18.92 percent were manufacturing firms. According to the survey results, the lion portion (around 87 percent) of the sample firms were in between BDT 0.5 million to 10 million in terms of asset without land and building and rest of them has over BDT 10 million. In terms of number of employees, the majority (around 67 percent) of the businesses had less than 10 employees. The majority of the respondents (around 60 percent) were form urban areas, 23.83 percent from the rural areas and only 16.46 percent of them from the semi-urban areas.

Common Method Variance

A cross sectional survey method is used that indicates all kinds of data was collected from a single respondent within a firm which may create the problem of common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The study performed Harman's single factor test to identify the potential problem. For this purpose, an un-rotated factor analysis was conducted for all measurement items that extracted 11 factors

with eigenvalues equal to one. The total 11 factors contribute 75.520 percent of the total variance. The first factor accounted for 15.455 percent of the variance. Therefore, it is concluded that the common method bias is not the major concern for this research.

Measurement model evaluation

According to Hair, Ringle, and Sarstedt (2011), reflective measurement model should be evaluated through interpreting their reliability and validity. Therefore, the measurement model is assessed through convergent and discriminant validity (Chin, 2010). Convergent validity is assessed by using factor loadings, average variance extracted (AVE) and composite reliability (CR) (Hair, Black, Babin, & Anderson, 2010). For items loading, the paper considered minimum loading value of 0.6 as recommended by (Chin, 1998). All the loadings were more than 0.6. The cut-off value for AVE should at least 0.5 and higher that indicates a satisfactory convergent validity (Hair, Hult, Ringle, & Sarstedt, 2014; Henseler, Ringle, & Sinkovics, 2009). The convergent validity in terms of AVE shows the satisfactory result as all the constructs have more that 0.5 of minimum threshold. The study found CR higher than the recommended value of 0.7 (Hair et al., 2014) for all the constructs. Finally, it can be said that the measurement model satisfied all the requirements of convergent validity that is shown in Table 1 and Figure 1.

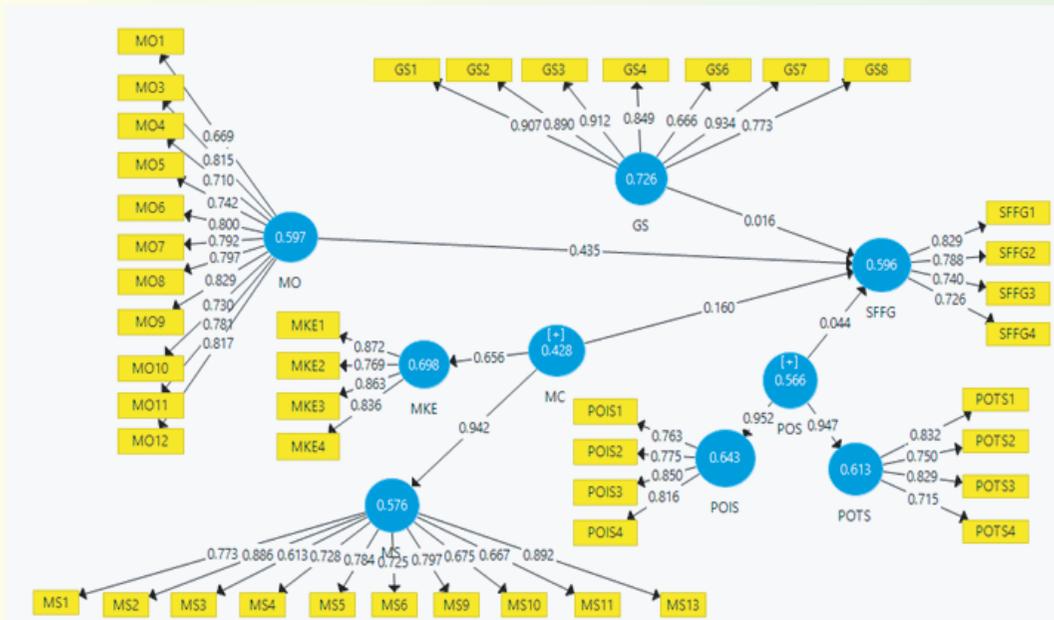


Figure 1: Measurement model

Discriminant validity is estimated to examine the differences between two conceptually different concepts (Henseler et al., 2009). Fornell-Larcker criterion has been put forwarded in order to assess discriminant validity (Hair, Hult, Ringle, & Sarstedt, 2013). According to Fornell and Larcker (1981) criterion, the correlations between constructs should be compared with the square root of the AVE for that constructs and all the diagonal value of the constructs must be greater than the corresponding off-diagonal constructs (Chin, 2010). The results of the discriminant validity which is exhibited in Table 2 revealed that all the diagonal values of the constructs were greater than the corresponding off-diagonal constructs. Therefore, the results signify the adequate discriminant validity of the measurement model.

Table 1: Convergent Validity

First order construct	Higher order constructs	Item type	Items	Loadings	AVE	CR
Market orientation		Reflective	MO1	0.669	0.597	0.942
			MO3	0.815		
			MO4	0.710		
			MO5	0.742		
			MO6	0.800		
			MO7	0.792		
			MO8	0.797		
			MO9	0.829		
			MO10	0.730		
			MO11	0.781		
			MO12	0.817		
			Managerial knowledge and experience			
MKE2	0.769					
MKE3	0.863					
MKE4	0.836					
Managerial skills		Reflective	MS1	0.773	0.576	0.931
			MS2	0.886		
			MS3	0.613		
			MS4	0.728		
			MS5	0.784		
			MS6	0.725		
			MS9	0.797		
			MS10	0.675		
			MS11	0.667		
			MS13	0.892		

	Managerial capability			0.659	0.789	
Government support	Reflective	GS1	0.907	0.726	0.948	
		GS2	0.890			
		GS3	0.912			
		GS4	0.849			
		GS6	0.666			
		GS7	0.934			
		GS8	0.773			
		Private organization information support	Reflective	POIS1	0.763	0.643
POIS2	0.775					
POIS3	0.850					
POIS4	0.816					
Private organization training support	Reflective	POTS1	0.832	0.613	0.863	
		POTS2	0.750			
		POTS2	0.750			
		POTS3	0.829			
		POTS4	0.715			
	Private organization support			0.902	0.948	
Small firm financial growth	Reflective	SFFG1	0.829	0.596	0.855	
		SFFG2	0.788			
		SFFG3	0.740			
		SFFG4	0.726			

Structural model evaluation

The coefficient of determination (R^2), beta as well as the level of significance (t-values) of the path coefficients are the main evaluation criteria for assessing structural model (Hair et al., 2014). The paper used 1000 re-sampling for bootstrapping procedure to estimate the statistical significance of the path coefficient (Hayes, 2009). Beside the basic measures, the paper also reported the predictive relevance (Q^2) and the effect size (f^2) as suggested by Hair et al. (2014) and Soto-Acosta, Popa, and Palacios-Marqués (2015).

Table 2: Discriminant Validity of measurement model

	GS	MC	MO	POS	SFFG
GS	0.852				
MC	-0.018	0.654			
MO	-0.174	-0.033	0.773		
POS	-0.041	-0.007	-0.034	0.752	
SFFG	-0.064	0.145	0.425	0.027	0.772

The R^2 of the financial growth was found 0.207 that is moderate as recommended by (Cohen, 1988). The value of the R^2 indicates that 20.7 percent of the variance in financial growth is explained by the two independent variables (market orientation and managerial capability of owner-manager). The paper found that both market orientation ($\beta = 0.431$, $p < 0.01$) and managerial capability ($\beta = 0.161$, $p < 0.01$) have significant positive relationship with financial growth of small firm. Therefore, hypotheses H_1 and H_2 were supported that summarizes in Table 3.

Table 3: Structural model

Hypothesis	Relationship	Std Beta	Std Error	t-value	Decision	R2	f2	Q2
H_1	MO -> SFFG	0.431	0.043	10.028	Supported		0.234	
H_2	MC -> SFFG	0.161	0.041	3.961	Supported	0.207	0.033	0.112

** $p < 0.01$

MO = Market orientation, MC = managerial capability, SFFG = Small firm financial growth.

This research also assessed effect size (f^2) to show the substantive significance. The statistical significance like a P value can only shows whether an effect exists and does not reveal the size of the effect and thus in reporting and interpreting results, both the substantive significance (effect size) and statistical significance (P value) are essential (Sullivan & Feinn, 2012). Cohen (1988) provided the guideline for measuring the magnitude of the effect size and suggested that 0.02, 0.15 and 0.35 represent small, medium and large effects sizes respectively. According to this guideline, both the relationships showed (Table 3) substantive impact. However, managerial capability showed small effect and market orientation showed moderate effect.

Further, the paper also accessed the predictive relevance (Q2) that regarded as an additional assessment of model fit (Duarte & Raposo, 2010). This assessment is

performed by using the blindfolding procedure. According to Hair et al. (2014), blindfolding procedure should apply only for endogenous constructs that have a reflective measurement. For the Blindfolding setting, omission distance (OD) of 7 is used as suggested by Hair, Sarstedt, Ringle, and Mena (2012). The value of Q2 greater than zero (0) indicates that the model has predictive relevance for a specific endogenous construct whereas the value of Q2 lower than zero denotes lack of predictive relevance (Hair et al., 2014). Thus, the result (Table 3) of Q2 0.112 with financial growth indicates that the model has sufficient predictive relevance.

Moderating effect

For the interaction effect of moderators, the paper used product indicator approach as both the endogenous (small firm financial growth) and moderator variables (Government support and private organization support) are continuous variable. To test the significance of the interaction effect, 1000 bootstrapping re-sampling is used. The overall results showed that the hypotheses for 4 interaction effects of government and private organization support with financial growth were not supported. Table 4 summaries the results of the moderating effects.

Table 4: Moderating effects of government and private organization support

Hypothesis	Interaction effect	Std Beta	Std Error	t-value	Decision
H3	MO*GS -> SFFG	-0.175	0.043	4.111	Not supported
H4	MC*GS -> SFFG	-0.100	0.120	0.834	Not supported
H5	MO*POS -> SFFG	-0.335	0.037	9.100	Not supported
H6	MC*POS-> SFFG	0.211	0.218	0.967	Not supported

MO = Market orientation, MC = managerial capability, GS = Government support, POS = Private organization support, SFFG = Small firm financial growth

The interaction effect of government support with managerial capability and financial growth ($\beta = -0.100$, $t = 0.834$) and private organization support with managerial capability and financial growth ($\beta = 0.211$, $t = 0.967$), were not significant as the t values were below the minimum cut-off value of 1.96. Therefore, the hypotheses of H₄ and H₆ were not supported. Although government support with market orientation and financial growth ($\beta = -0.175$, $t = 4.111$) and private organization support with market orientation and financial growth ($\beta = -0.335$, $t = 9.100$) showed the t values greater than

the minimum cut-off value and statistically significant, the hypotheses of H₃ and H₅ were not supported due to negative beta values. All of the hypotheses assumed that the relationships between independent and dependent variables would be higher when small firms receive government support. However, the results of market orientation with financial growth revealed that government and private organization support reduce their positive relationships which opposed the hypotheses direction.

7. Discussion and Conclusion

The aim of the paper was to explore the impact of market orientation and managerial capability of owner-manager on financial growth of small firm. Besides, based on the previous literature, it is also expected that government and private organizations support supposed to enhance the relationships between these resources and financial growth of small firm. In order to achieve such goals, a quantitative research is conducted to confirm and test the hypothesized relationships using sample from owner-managers of small firms operating in Bangladesh. The results revealed that both market orientation, managerial capability have significant positive relationships with financial growth of small firm.

The financial growth of small firm largely depends on the marketing activities. Similarly, the paper found strong positive relationship between market orientation and small firm financial growth in Bangladesh. The result of this research corresponded with some previous studies conducted by Gaur et al. (2011); Nur (2014); Jaiyeoba (2014); Mahmoud (2010); and Shehu & Mahmood (2014). The finding of the study indicates that small firm those who are market oriented can increase their financial growth. Since the central target of the market orientation is to satisfy the customers with their desired goods or service, a market oriented firm is able to increase their sales and profitability.

Small business in Bangladesh focuses niche market where there are few customers and sometime competes with large group of competitors for the same customers with similar products. As a result, they are gaining advantages by following market orientation strategy to find out the real needs of the customers, innovate new product as per their needs and desire, monitor their competitors to implement the new strategies for achieving sales and profitability. Due to huge population, small firm in Bangladesh are also benefited from different test and preferences. Identifying of those, they can produce new products or services or can modify some existing products or services. In addition

to that, by sharing market information and information related to their competitors among themselves and departments small firm also able to formulate new marketing strategy. With such activities, firm can sales products to existing customers or new customers in new market to generate more sales. When sales increase, firm has to support these expansion or growth through additional investment into some other resources like assets and technology. Therefore, it is clear that market orientation is one of the important driver to facilitate the financial growth of small firm.

In terms of managerial capability, the result of the research revealed that the managerial capability of owner-managers is positively related and statistically significant with financial growth of small firm in Bangladesh. This finding suggests that managerial capability has outstanding influence on the financial growth of small firms. In Bangladesh, most of the small firms are family oriented and operated by its owner or in few cases by manager. Thus, the growth of firm largely depends on owner-manager's insight, their managerial skills and knowledge, proper training, educational level, and also on their background. Although many of the owner-managers are not highly educated and may not familiar with the concept of managerial capability, but inherently or through the societal and business interaction they could able to manage their businesses to ensure its expansion or financial growth. The owner-managers possess a good set of management capabilities to coordinate all kinds of resources effectively to achieve financial growth. With good managerial capabilities, small firm owner or manager can make effective decision, communicate business information effectively, coordinate, motivate and organize his/her team, make connection with outside environment of the business and so fifth which help them to grow and expand their business.

Government and private organization support are used as the moderating variables. All of the interaction effects with market orientation, managerial capability and financial growth were found insignificant. This means that government and private organization support is not able to enhance the relationship between market orientation, managerial capability and small firm financial growth in Bangladesh. Not only for the smallness but also for many other reasons small enterprises all over the world face severe constraints for their growth and success. Again, for the business start-up, small firm requires various supports including capital, licensing and registration formalities, tax exemption and infrastructure facilities, etc. In these consequences, they need some supports from government and other supportive private organizations.

However, in Bangladesh government support is not adequate or inappropriate as per the requirements of small firm. The results found in this research contradict with the standpoint of earlier researchers and scholars. This paper revealed that there is no moderating role of the government support on the hypothesized relationships. Although there are some initiatives available from the government for small firm development in Bangladesh, unfortunately most of the small firms especially operating in the semi-urban or rural areas are not aware about these supports or even they know, many of them do not have proper access. In Bangladesh, there is a cumbersome process for the licensing or registering small firm. In many cases small firms do not get proper tax exemption facilities. In addition to that the infrastructure facilities are not adequate. For example, most of the firms do not get required amount of electricity to ensure smooth operation of their firms. Therefore, due to the lack of adequate government support the paper found no significant interaction effect among the hypothesized relationships.

Like government support, the paper also revealed that private organization support is not useful in Bangladesh to enhance the relationship between market orientation, managerial capability and small firm financial growth. The findings of the study indicate that small firms do not depend on the private organizations for enhancing financial growth rather they utilize their own marketing strategy and managerial capability for achieving financial success. The information and training received from private organizations failed to enhance the sales, profit or asset position of small firms. This is mainly due to the lack of relevant information and useful training programs that may lead the financial growth of firms. Small firms in Bangladesh are struggling to survive with their self-knowledge and skills related to market, trying to get market information by their own efforts and also trained by themselves rather than depending on the private organizations. Small firms require adequate training facilities from the private organizations that may improve their technical and interpersonal abilities. However, they are fully depending on their existing capabilities rather than the private organizations for enhancing financial growth. It is also true that the support services that offered by some private organizations are costlier for small firms to avail. If they want to avail such services, it may negatively affect their profitability.

Theoretical implications

There is no direct theory related to the small firm's growth and the factors affecting their growth. In their research, Dobbs and Hamilton (2007) and Omar et al. (2014) reveal that

there is no unified theory presently available related to small firms' growth and also it is remain in the outside of the reach of scholars. Although there is no unified theory to be contributed, but the theory of 'Resource Based View (RBV) is more relevant in this context. Very few research conducted by employing RBV theory and considered only the manufacturing sector of SME mostly for developed countries. But current study added the literature to the RBV theory conducting the research on manufacturing, trading and service sector with a large sample in the context of developing countries like Bangladesh. The paper supplements the existing literature with the findings that market orientation strategy and managerial capability are the strong predictor of small firm growth in Bangladesh. The study also considered government and private organizations support as the moderators between the resources and small firm growth and end up with the argument that existing government and private organizations support do not play the role between these relationships. However, if government and private organization provide required and relevant support those are more accurate and useful, it may moderate the relationship between market orientation, managerial capability and small firm financial growth.

Practical implications

There are many stakeholders who are actively involved with the sectors for different purposes and be benefited from the current research output. The Government and its related departments those are working for the betterment of the sector can take the lessons for their future course of action. Since there is no such research exists using these resources into a frame with the growth of small business segment, the stakeholders will have at least the idea, from the large sample, about the nature and degree of impact on small business growth as well as how these resources affect growth. The financial institutions or any other lenders who want to lend money in the small business segment can have the idea about the firms' growth and the influence of resources on growth that may help them in their credit appraisal decision. Besides, the practitioners including the researchers and policy makers can easily use the research output for further research as well as for designing policy initiatives. In addition to that from the current research output small business owner/manager will have the lessons those may be adopted for designing their future business plan or may be used as the early warning signal. Moreover, as per the managerial capability is concerned, the government bodies, private organizations providing business development support, policy makers and practitioners will have the idea about the most critical problems which must be addressed before

launching any knowledge and skill development programs to enhance their managerial capability.

Limitations and future research directions

In this research, only two important resources, market orientation strategy and managerial capability are used which cannot generalize the impact of resources on small firm growth. Thus, more resources, both tangible and intangible, may include in a model to study in future. Like government and private organizations, many NGOs also work for small firm development, Therefore, further research can be done by using such variable as moderator. The paper considered only the financial growth of small business although the non-financial growth measure is also important. Hence, further research can be done to see the impact of market orientation and managerial capability on the non-financial growth of small firm.

References

- Abdin, M. J. (2015a, March 5). SME cluster development key to speedy industrial growth, *The Financial Express*.
- Abdin, M. J. (2015b, January 15). Promoting products of small enterprises, *The Financial Express*.
- Abdullah, H., & Sinha, R. (2009). Knowledge management and intellectual capital emerging perspectives. *Critical factors for KM implementation: An LandT, EandC division case study*, 53-71.
- Abdullah, S. H. (1999). *Management in Malaysia: A basic text on general management with local references to management a Malaysian business*. Kuala Lumpur: Malaysian Institute of Management.
- Adner, R., & Helfat, C. E. (2003). Corporate effects and dynamic managerial capabilities. *Strategic Management Journal*, 24(10), 1011-1025.
- Agarwal, S., Krishna Erramilli, M., & Dev, C. S. (2003). Market orientation and performance in service firms: role of innovation. *Journal of services marketing*, 17(1), 68-82.
- Al-Madhoun, M. I., & Analoui, F. (2003). Managerial skills and SMEs' development in Palestine. *Career Development International*, 8(7), 367-379.
- Andreou, P., Ehrlich, D., & Louca, C. (2013). Managerial Ability and Firm Performance: Evidence from the Global Financial Crisis. Retrieved June, 22 http://www.efmaefm.org/0EFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2013-Reading/papers/EFMA2013_0542_fullpaper.pdf
- Bah, E.-h. M., & Cooper, G. (2012). Constraints to the growth of small firms in Northern Myanmar. Retrieved May, 2014 http://mpr.ub.uni-muenchen.de/39819/1/MPRA_paper_39819.pdf
- Baker, W. E., & Sinkula, J. M. (2009). The complementary effects of market orientation and entrepreneurial orientation on profitability in small businesses*. *Journal of Small Business Management*, 47(4), 443-464.
- Bangladesh Bureau of Statistics. (2015). Report on Economic Census 2013 (S. a. I. D. (SID), Trans.). Dhaka, Bangladesh.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Baum, J. R., & Locke, E. A. (2004). The relationship of entrepreneurial traits, skill, and motivation to subsequent venture growth. *Journal of applied psychology*, 89(4), 587-598.
- Beck, T., & Demirguc-Kunt, A. (2006). Small and medium-size enterprises: Access to finance as a growth constraint. *Journal of Banking & Finance*, 30(11), 2931-2943.
- Bhaumik, S. K., & Estrin, S. (2007). How transition paths differ: Enterprise performance in Russia and China. *Journal of Development Economics*, 82(2), 374-392.

- Blankson, C., & Stokes, D. (2002). Marketing practices in the UK small business sector. *Marketing Intelligence & Planning*, 20(1), 49-61.
- Bourne, M., & Franco-Santos, M. (2010). Investors in People, managerial capabilities and performance: the centre for business performance, cranfield school of management.
- Boyatzis, R. E. (1982). *The competent manager: A model for effective performance*. New York: John Wiley & Sons.
- Capaldo, G., Iandoli, L., & Ponsiglione, C. (2004). *Entrepreneurial competencies and training needs of small firms: A methodological approach*. Paper presented at the 14th Annual IntEnt Conference, Napoli.
- Chandy, R., & Narasimhan, O. (2011). How micro-entrepreneurs could change the world. *Business Strategy Review*, 22(1), 52-55.
- Chao, M. C.-H., & Spillan, J. E. (2010). The journey from market orientation to firm performance: A comparative study of US and Taiwanese SMEs. *Management Research Review*, 33(5), 472-483.
- Charles, L., Joel, C., & Samwel, K. C. (2012). Market orientation and firm performance in the manufacturing sector in Kenya. *European Journal of Business and Management*, 4(10), 20-27.
- Chen, H.-C. (2003). *Cross-cultural construct validation of the learning transfer system inventory in Taiwan*. Marshall University.
- Chen, J., & Parker, D. (2007). Taiwan's textile and clothing SME response to globalization. *Journal of Asia-Pacific Business*, 8(2), 89-111.
- Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern methods for business research*, 295(2), 295-336.
- Chin, W. W. (2010). *Handbook of partial least squares (pp. 655-690)*. Berlin: Heidelberg: Springer.
- Chittithaworn, C., Islam, M. A., Keawchana, T., & Yusuf, D. H. M. (2011). Factors affecting business success of small & medium enterprises (SMEs) in Thailand. *Asian Social Science*, 7(5), 180-190.
- Chowdhury, F. (2007a). *Customized form of finance for SMEs*. Paper presented at the Seminar Proceedings, National SME Development Program for OIC Member Countries, FBCCI, Dhaka.
- Clark, D. N., & Douglas, H. (2014). Micro-enterprise growth: Lessons from home-based business in New Zealand. *Small Enterprise Research*, 21(1), 82-98.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. : Hillsdale, NJ: Erlbaum.: Routledge.
- Dauda, Y. A., & Akingbade, W. A. (2010). Employee's market orientation and business performance in Nigeria: Analysis of small business enterprises in Lagos state. *International Journal of Marketing Studies*, 2(2), p134.

- Davidsson, P. (1989). Entrepreneurship and small firm growth. Stockholm: *The Economic Research Institute (diss.)*.
- Delmar, F. (2006). Measuring growth: methodological considerations and empirical results. *Entrepreneurship and the Growth of Firms, 1*, 62-84.
- Delmar, F., Davidsson, P., & Gartner, W. B. (2003). Arriving at the high-growth firm. *Journal of Business Venturing, 18*(2), 189-216.
- Demirbag, M., Lenny Koh, S., Tatoglu, E., & Zaim, S. (2006). TQM and market orientation's impact on SMEs' performance. *Industrial Management & Data Systems, 106*(8), 1206-1228.
- Deng, S., & Dart, J. (1994). Measuring market orientation: a multi-factor, multi-item approach. *Journal of marketing management, 10*(8), 725-742.
- Dobbs, M., & Hamilton, R. (2007). Small business growth: recent evidence and new directions. *International Journal of Entrepreneurial Behavior & Research, 13*(5), 296-322.
- Drucker, P. F. (1954). *The Practice of Management*. New York: HarperCollins Publishers Inc.
- Du Plessis, A., Frederick, H., & Goodwin, J. (2010). *The importance of training and education for New Zealand entrepreneurs: some empirical evidence*. Paper presented at the AGSE 2010: Proceedings of the 7th International Entrepreneurship Research Exchange.
- Duarte, P. A. O., & Raposo, M. L. B. (2010). A PLS model to study brand preference: An application to the mobile phone market *Handbook of partial least squares* (pp. 449-485): Springer.
- Dwairi, M., Bhuian, S. N., & Jurkus, A. (2007). Revisiting the pioneering market orientation model in an emerging economy. *European Journal of Marketing, 41*(7/8), 713-721.
- Egena, O., Ngovenda, W. D., Theresa, E. E. & Bridget, M. N. (2014). Institutional Support for Small and Medium Enterprises in Nigeria: An Empirical Investigation. *International Journal of Economy Management and Social Sciences, 3*(9), 481-489.
- Farouk, A., & Saleh, M. (2011). *An Explanatory Framework for the Growth of Small and Medium Enterprises*. Paper presented at the International Conference of System Dynamics Society.
- Ferrando, A., Köhler-Ulbrich, P., & Pál, R. (2007). Is the growth of Euro area small and medium-sized enterprises constrained by financing barriers? European Commission: Industrial Policy and Economic Reforms Papers, no 6.
- Fiala, N. (2013). Stimulating microenterprise growth: results from a loans, grants and training experiment in Uganda. *Grants and Training Experiment in Uganda (December 4, 2013)*.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 39*-50.
- Gaur, S. S., Vasudevan, H., & Gaur, A. S. (2011). Market orientation and manufacturing performance

of Indian SMEs: Moderating role of firm resources and environmental factors. *European Journal of Marketing*, 45(7/8), 1172-1193.

Geringer, J. M., Frayne, C. A., & Milliman, J. F. (2002). In search of "best practices" in international human resource management: Research design and methodology. *Human Resource Management*, 41(1), 5-30.

Ghani, U., & Mahmood, Z. (2011). Factors influencing performance of Microfinance firms in Pakistan: Focus on market orientation. *International Journal of Academic Research*, 3(5), 125-132.

Ghosh, B., & Kwan, W. (1996). *An analysis of key success factors of SMEs: a comparative study of Singapore/Malaysia and Australia/New Zealand*. Paper presented at the The 41st ICSB World Conference Proceedings I.

Green Jr, K. W., Inman, R. A., Brown, G., & Hillman Willis, T. (2005). Market orientation: relation to structure and performance. *Journal of Business & Industrial Marketing*, 20(6), 276-284.

Hair, J. F., Black, W. C., Babin, B. j., & Anderson, R. E. (2010). *Multivariate data analysis*. Upper Saddle River: NJ: Pearson Printice Hall.

Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2013). *A primer on partial least squares structural equation modeling (PLS-SEM)*. California: Sage Publications, Incorporated.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing theory and Practice*, 19(2), 139-152.

Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science*, 40(3), 414-433.

Hair, J. F., Wolfenbarger, M. F., Ortinau, D. J., & Bush, R. P. (2008). *Essentials of marketing research*: McGraw-Hill/Higher Education.

Hair, J. J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Los Angeles: Sage Publications.

Handoko, F., Smith, A., & Burvill, C. (2014). The role of government, universities, and businesses in advancing technology for SMEs' innovativeness. *Journal of Chinese Economic and Business Studies*, 12(2), 171-180.

Hansen, H., Rand, J., & Tarp, F. (2009). Enterprise growth and survival in Vietnam: does government support matter? *The Journal of Development Studies*, 45(7), 1048-1069.

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication monographs*, 76(4), 408-420.

Hellriegel, D., Jackson, S. E., Slocum, J. W., Staude, G., T, A., Klopper, H. B., . . . Oosthuizen, T. (2004). *Management* (2nd South African ed.). Cape Town: Oxford University Press.

- Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. *Advances in international marketing*, 20(1), 277-319.
- Hernandez, L., Nunn, N., & Warnecke, T. (2012). Female entrepreneurship in China: opportunity-or necessity-based? *International Journal of Entrepreneurship and Small Business*, 15(4), 411-434.
- Hormiga, E., Batista-Canino, R. M., & Sánchez-Medina, A. (2011). The role of intellectual capital in the success of new ventures. *International Entrepreneurship and Management Journal*, 7(1), 71-92.
- Hung, D. K. M., Effendi, A. A., Talib, L. S. A., & Rani, N. A. B. A. (2011). A preliminary study of top SMEs in Malaysia: key success factor vs government support program. *Journal of Global Business and Economics*, 2(1), 48-58.
- Ihinmoyan, T., & Akinyele, S. (2011). Relationship Between Market Orientation, Firm Innovativeness And Innovative Performance. *The Journal Contemporary Management Research*, 5(2), 42-54.
- Indarti, N., & Langenberg, M. (2004). Factors affecting business success among SMEs: Empirical evidences from Indonesia. *The Second Bi-annual European Summer University*.
- Islam, M. A., Yousuf, S., & Rahman, M. I. (2014). SME Financing in Bangladesh: A Comparative Analysis of Conventional and Islamic Banks. *Journal of Islamic Banking and Finance*, 2(1), 79-92.
- Islam, M. S. (2009). Start-up and growth constraints on small-scale trading in Bangladesh. *Journal of Chinese entrepreneurship*, 1(3), 227-239.
- Islam, M. S. (2010). *Role of supporting institutions in the development of entrepreneurship and small enterprises in Bangladesh*. (PhD), Islamic University, Kushtia, Bangladesh.
- Islam, M. S. (2013). Business Development Services and Small Business Growth in Bangladesh. *Universal Journal of Industrial and Business Management*, 1(2), 54-61.
- Jaiyeoba, O. O. (2014). Performance Outcome of Market Orientation Behaviour among Botswana's Small Service Firms. *Journal of Management Research*, 6(6), 52-69.
- Jasra, J. M., Khan, M. A., Hunjra, A. I., Rehman, A. U., & Azam, R. I. (2011). Determinants of business success of small and medium enterprises. *International Journal of Business and Social Science*, 2(20), 274-280.
- Jaworski, B. J., & Kohli, A. K. (1993). Market orientation: antecedents and consequences. *The Journal of Marketing*, 53-70.
- Jayne, V. (2007). Lifting New Zealand performance: why the focus falls on management? *New Zealand Management*, 54(9), 30-36.
- Kamunge, M. S., Njeru, A & Tirimba, O. I. (2014). Factors Affecting the Performance of Small and Micro Enterprises in Limuru Town Market of Kiambu County, Kenya. *International Journal of Scientific and Research Publications*, 4(12), 1-19.

- Kaya, N., & Patton, J. (2011). The effects of knowledge-based resources, market orientation and learning orientation on innovation performance: An empirical study of Turkish firms. *Journal of international development*, 23(2), 204-219.
- Khandker, S. R., Samad, H. A., & Ali, R. (2013). Does access to finance matter in microenterprise growth? evidence from Bangladesh. *Evidence from Bangladesh (January 1, 2013). World Bank Policy Research Working Paper*(6333).
- Kohli, A. K., & Jaworski, B. J. (1990). Market orientation: the construct, research propositions, and managerial implications. *The Journal of Marketing*, 1-18.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*.
- Kumar, K., Subramanian, R., & Strandholm, K. (2011). Market orientation and performance: Does organizational strategy matter? *Journal of Applied Business Research*, 18(1), 37-49.
- Kumar, V., Jones, E., Venkatesan, R., & Leone, R. P. (2011). Is market orientation a source of sustainable competitive advantage or simply the cost of competing? *Journal of Marketing*, 75(1), 16-30.
- Laguna, M., Wiechetek, M., Talik, W. (2012). The competencies of managers and their business success. *Central European Business Review*, 1(3), 7-13.
- Lee, J. H., Sohn, S. Y., & Ju, Y. H. (2011). How effective is government support for Korean women entrepreneurs in small and medium enterprises? *Journal of Small Business Management*, 49(4), 599-616.
- Li, Y., Zhao, Y., Tan, J., & Liu, Y. (2008). Moderating effects of entrepreneurial orientation on market orientation-performance linkage: Evidence from Chinese small firms*. *Journal of small business management*, 46(1), 113-133.
- Lockett, A., & Thompson, S. (2001). The resource-based view and economics. *Journal of Management*, 27(6), 723-754.
- Long, H. C. (2013). The relationship among learning orientation, market orientation, entrepreneurial orientation, and firm performance of Vietnam marketing communications firms. *Philippine Management Review*, 20.
- Low, D. R., Chapman, R. L., & Sloan, T. R. (2007). Inter-relationships between innovation and market orientation in SMEs. *Management Research News*, 30(12), 878-891.
- Lütkenhorst, W. (2006). *Private sector development: The support programmes of the small and medium enterprises branch*: UNIDO.
- Mac an Bhaird, C. (2010). *Resourcing Small and Medium Sized Enterprises: A Financial Growth Life Cycle Approach*: Springer Science & Business Media.
- Mahmoud, M. A. (2010). Market orientation and business performance among SMEs in Ghana.

International Business Research, 4(1), 241-251.

Mamun, A. A., Hossain, M. M., & Mizan, A. N. K. (2013). *SME Financing: Demand Side Problems and Supply Side Responses*. (Research Monograph No 3). BIBM, Dhaka.

Man, M. M. K. (2014). Government Incentives and Export Performance of Malaysian Small and Medium-Sized Enterprises. *Comprehensive Research Journal of Management and Business Studies*, 2(4), 84-91.

Mashenene, R. G., & Rumanyika, J. (2014). Business Constraints and Potential Growth of Small and Medium Enterprises in Tanzania: A Review. *European Journal of Business and Management*, 6(32), 72-79.

Massey, C. (2003). Enterprise assistance: responses from the public and private sectors. *Journal of Small Business and Enterprise Development*, 10(2), 128-135.

Matlay, H., Ramsden, M., & Bennett, R. (2005). The benefits of external support to SMEs: "Hard" versus "soft" outcomes and satisfaction levels. *Journal of Small Business and Enterprise Development*, 12(2), 227-243.

Matlay, H., Redmond, J., & Walker, E. A. (2008). A new approach to small business training: community based education. *Education+ Training*, 50(8/9), 697-712.

McWilliams, A., Siegel, D. S., & Wright, P. M. (2006). Corporate social responsibility: International perspectives. *Available at SSRN 900834*.

Mel, S. d., McKenzie, D., & Woodruff, C. (2014). What generates growth in microenterprises? Experimental evidence on capital, labor and training: Competitive Advantage in the Global Economy (CAGE).

Miah, M. A. (2006a). Key Success Factors for National SME Development Program; Lessons for OIC Member Countries from Bangladesh Experience. *SME Foundation, Dhaka, Bangladesh*.

Mintoo, A. A. (2006). SMEs in Bangladesh. *CACCI Journal*, 1(1), 1-19.

Mitchelmore, S., & Rowley, J. (2010). Entrepreneurial competencies: a literature review and development agenda. *International Journal of Entrepreneurial Behavior & Research*, 16(2), 92-111.

Mokhtar, S. S. M., Yusoff, R. Z., & Ahmad, A. (2014). Key elements of market orientation on Malaysian SMEs performance. *International Journal of Business and Society*, 15(1), 49-64.

Moreno, A. M., & Casillas, J. C. (2007). High-growth SMEs versus non-high-growth SMEs: a discriminant analysis. *Entrepreneurship and Regional Development*, 19(1), 69-88.

Moudud-Ul-Huq, S., Ahammad, I., & Khan, A. G. (2013). Performance Evaluation of SMEs-A Special Focus on Small Size of Businesses at Tangail District in Bangladesh. *Global Journal of Management and Business Research Administration and Management*, 13(8).

- Naqvi, S. W. H. (2011). Critical success and failure factors of entrepreneurial organizations: Study of SMEs in Bahawalpur. *Journal of Public Administration and Governance*, 1(2), 17-23.
- Narver, J. C., & Slater, S. F. (1990). The effect of a market orientation on business profitability. *The Journal of Marketing*, 20-35.
- Neufeld, B. M., & Earle, J. (2014). The Growth of Export-oriented Small and Medium Enterprises in Afghanistan, Kyrgyzstan and Tajikistan: University of Central Asia.
- Ngansathil, W. (2001). *Market orientation and business performance: Empirical evidence from Thailand*. (PhD Thesis), The University of Melbourne.
- Nichter, S., & Goldmark, L. (2005). Understanding micro and small enterprise growth. *Micro Report*(36).
- Nur, N., Surachman, Salim, U., & Djumahir. (2014). Entrepreneurship Orientation, Market Orientation, Business Strategy, Management Capabilities On Business Performance; Study At Small And Medium Enterprise Printing In Kendari. *International Journal of Business and Management Invention*, 3(12), 08-17.
- Nur, N., Surachman, Salim, U. & Djumahir (2014). Entrepreneurship Orientation, Market Orientation, Business Strategy, Management Capabilities on Business Performance: Study at Small and Medium Enterprise Printing in Kendari. *International Journal of Business and Management Invention*, 3(12).
- Nurlina. (2014). The Effect of Management Capabilities and Entrepreneurship Orientation to Innovation and Implication on Business Performance: Study at Embroidery Motifs SMEs in Aceh-Indonesia. *Journal of Economics and Sustainable Development*, 5(26), 1365-1383
- Olaore, R. A. (2014). Challenges In Managing Entrepreneurial Small Firm's Growth And Transition In Nigeria. *Historical Research Letter*, 9, 13-17.
- Omar, R., Lim, K. Y., & Basiruddin, R. (2014). Board of Directors and Small Medium Enterprise's Firm Growth with Firm Culture as Moderating Factor in Malaysia. *Procedia-Social and Behavioral Sciences*, 164, 315-323.
- Ozmen, O. N. T., & Deniz Eris, E. (2012). The effect of market orientation, learning orientation and innovativeness on firm performance: A research from Turkish logistics sector. *International Journal of Economic Sciences and Applied Research*(1), 77-108.
- Pansiri, J., & Temtime, Z. T. (2008). Assessing managerial skills in SMEs for capacity building. *Journal of Management Development*, 27(2), 251-260.
- Pearce, J. A. I., & Robinson, R. B. (2009). *Strategic management: Formulation, implementation, and control* (11 Ed.). Boston: McGraw-Hill.
- Pelham, A. M. (2000). Market orientation and other potential influences on performance in small and medium-sized manufacturing firms. *Journal of Small Business Management*, 38(1), 48-67.

- Pelham, A. M., & Wilson, D. T. (1995). A longitudinal study of the impact of market structure, firm structure, strategy, and market orientation culture on dimensions of small-firm performance. *Journal of the Academy of Marketing Science*, 24(1), 27-43.
- Perren, L. (1999). Factors in the growth of micro-enterprises (part 1): developing a framework. *Journal of Small Business and Enterprise Development*, 6(4), 366-385.
- Pitelis, C. N. (2007). A behavioral resource-based view of the firm: the synergy of Cyert and March (1963) and Penrose (1959). *Organization science*, 18(3), 478-490.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of applied psychology*, 88(5), 879-903.
- Rashid, M. M. (2012). Proposed research direction for sustainable SMEs in Bangladesh. *Bangladesh Research Publication*, 2(2), 1-10.
- Ravn, J. (2010). *Challenges and potentials in launching bop initiatives through bottom-up driven public-private-NGO partnerships*. Paper presented at the DRUID-DIME Academy Winter 2010 PhD Conference, Denmark.
- Roy, A., & Chakraborty, J. (2014). Reasons for Survival and Growth of Small and Medium-Scale Enterprises and Entrepreneurship: An Opinion Survey in Bangladesh. *Applied Economics and Business Review*, 1(1), 9-17.
- Ruekert, R. W. (1992). Developing a market orientation: an organizational strategy perspective. *International Journal of Research in Marketing*, 9(3), 225-245.
- Saleh, A. (1995). A profile of the women entrepreneurship in Bangladesh. *Journal of Business Studies*, 16(1), 159-170.
- Shah, S. F. H., Nazir, T., Zaman, K., & Shabir, M. (2013). Factors affecting the growth of enterprises: A survey of the literature from the perspective of small-and medium-sized enterprises. *Journal of Enterprise Transformation*, 3(2), 53-75.
- Shah, S. N. A., & Dubey, S. (2013). Market orientation and organizational performance of financial institutions in United Arab Emirates. *Journal of Management and Public Policy*, 4(2), 17-26.
- Shehu, A. M., & Mahmood, R. (2014). The Relationship between Market Orientation and Business Performance of Nigerian SMEs: The Role of Organizational Culture. *International Journal of Business and Social Science*, 5(9/1).
- Siguaw, J. A., Brown, G. & Widing, R. E. (1994). The influence of market orientation of the firm on sales force behavior and attribute. *Journal of Marketing Research*, 31, 106-116.
- Slater, S. F., & Narver, J. C. (1994). Does competitive environment moderate the market orientation-performance relationship? *The Journal of Marketing*, 46-55.

- Soto-Acosta, P., Popa, S., & Palacios-Marqués, D. (2015). E-business, organizational innovation and firm performance in manufacturing SMEs: an empirical study in Spain. *Technological and Economic Development of Economy*, 1-20.
- Ssekakubo, J., Ndiwalana, G. & Lwanga, F. (2014). Managerial Competency and the Financial Performance of Savings, Credit and Cooperative Societies in Uganda. *International Research Journal of Arts and social Science*, 3(3), 66-74.
- Steele, J., Bourke, L., Luloff, A., Liao, P.-S., Theodori, G. L., & Krannich, R. S. (2001). The drop-off/pick-up method for household survey research. *Community Development*, 32(2), 238-250.
- Storey, D. J. (1994). *Understanding the Small Business Sector*. London: Routledge.
- Suliyanto, S., & Rahab, R. (2012). The role of market orientation and learning orientation in improving innovativeness and performance of small and medium enterprises. *Asian Social Science*, 8(1), 134-145.
- Sullivan, G. M., & Feinn, R. (2012). Using effect size-or why the P value is not enough. *Journal of graduate medical education*, 4(3), 279-282.
- Uddin, M. R., & Bose, T. K. (2013). Factors Affect the Success of SME in Bangladesh: Evidence from Khulna City. *Journal of Management and Sustainability*, 3(3), 166-172.
- Udegbe Scholastica, E., & Udegbe Maurice, I. (2013). The Relationship between Market Orientation Firm, Innovativeness and Business Performance of Companies in Nigeria. *International Journal of Asian Social Science*, 3(11), 2350-2362.
- UNDP. (2012). Micro-enterprise growth: evidence-based policy implications. Private Sector Brief., Retrieved November 9, 2014, from http://econs.eu/index_htm_files/PS%20Brief%20-%20Micro-enterprise%20growth.pdf
- Van, B. P. (1998). Business support and the importance of business networks. *Small Enterprise Development*, 9(4), 31-40.
- Vixathep, S. (2014). Entrepreneurship, Government Policy and Performance of SMEs in Laos. *GSICS Working Paper Series*, 28.
- Voss, G. B., & Voss, Z. G. (2000). Strategic orientation and firm performance in an artistic environment. *Journal of Marketing*, 64(1), 67-83.
- Walker, E., & Webster, B. (2006). Management competencies of women business owners. *The International Entrepreneurship and Management Journal*, 2(4), 495-508.
- Webb, J. W., Kistruck, G. M., Ireland, R. D., & Ketchen Jr, D. J. (2010). The entrepreneurship process in base of the pyramid markets: The case of multinational enterprise/nongovernment organization alliances. *Entrepreneurship Theory and Practice*, 34(3), 555-581.
- Wickham, P. A. (2006). *Strategic entrepreneurship* (4th ed.): Pearson Education.

Wilson, G. A., Perepkin, J., Zhang, D. D., & Vachon, M. (2014). Market orientation, alliance orientation, and the business performance in the biotechnology in industry. *Journal of Commercial Biotechnology*, 20(2), 32-40.

Woldie, A., Leighton, P., & Adesua, A. (2008). Factors influencing small and medium enterprises (SMEs): an exploratory study of owner/manager and firm characteristics. *Banks and Bank Systems*, 3(3).

Yusof, S. R. M., & Aspinwall, E. M. (2000). Critical success factors in small and medium enterprises: survey results. *Total quality management*, 11(4-6), 448-462.

Yusuf, A. (1995). Critical success factors for small business: perceptions of South Pacific entrepreneurs. *Journal of Small Business Management*, 33, 2-68.

Zaman, A. K. M. H., & Islam, M. J. (2011). Small and medium enterprises development in Bangladesh: Problems and prospects. *ASA University Review*, 5(1), 145-160.

Zheng, X., & Cui, Y. (2007). *Entrepreneurial Orientation, Market Orientation and Firm Performance: the mediator role of Organizational Learning*. Paper presented at the Wireless Communications, Networking and Mobile Computing, 2007. WiCom 2007. International Conference on.

Zindiye, S., Chiliya, N., & Masocha, R. (2012). The impact of Government and other Institutions' support on the Performance of Small and Medium Enterprises in the Manufacturing Sector in Harare, Zimbabwe. *International Journal of Business Management and Economic Research*, 3(6), 655-667.

AppendixA: Items for measuring Variables

Market Orientation

- The firm seeks to create value-added customer product.
- Firm try to understand the needs of customers
- The firm strives to provide customer satisfaction
- There have been attempts by firm to measure customer satisfaction.
- The firm provides after-sales service for customers.
- Sales person sharing of information about the firm's competitors.
- The firm responds quickly to any actions of competitors.
- The firm has a target to create the product competitiveness.
- There is coordination across the inside of the firm.
- Inter department in firm share information.
- There is cooperation between divisions in formulating marketing strategy.
- All parts in the firm participate in the creation of added value for customers.

Managerial Capability: Managerial knowledge and experience

- Required experience to perform activities
- Knowledge to do job
- Ability to understand and learn quickly and easily
- Production of useful ideas for the business

Managerial skills

- Make decisions backed by evidence
- Exhibit consideration and sensitivity in dealing with people
- Communication of business information effectively
- Creation of collaborative behaviours within a team
- Ability to persuade others
- Technical, cognitive and interpersonal skills to coordinate and organise the team
- Participation and business monitoring skill
- Connection with outside environment of the organisation
- Bring out the best in employees and workers
- Inspire people to be committed to the organisation
- Full team support
- Encourage the team to generate and implement their own ideas
- Encourage staff to take responsibility for the team's performance
- Longer term development and progress of the team members

Appendix A: Items for measuring Variables (Continued)

Government support

Adequate infrastructure (access to road, electricity, water, telephone, etc.) to run the business.
License application and registration process.
Tax incentives for small business.
Favorable government policy
Maintain law and order situation
Skill training programs for small business owner-manager
Relevant information/ knowledge that assist small firm
Creation of local business environment that encourages business development

Private organizations support:

Information support

Information for marketing the products
Information on capital sources
Information on technologies
Information on government rules and regulations

Training support

Training support to improve technical abilities.
Training support to improve interpersonal abilities.
Training support to help understanding the business.
Training support to enhance personal productivity.

Small firm financial growth

Sales volume
Profit volume
Total asset size
Capital position

The Debt-Public Investment and Export Relationship in Bangladesh: A VECM Approach

Mamun Chowdhury ¹
Sharif M. Hossain ²

Abstract

We empirically examine the dynamic causal relationship between total debt, public investment and export in Bangladesh during the period of 1981 to 2015. We specifically investigate the impact of accelerating total debt on public investment. Considering the significance of export performance in Bangladesh, we also examine the debt export causality. A Granger causality based Vector Error Correction Model (VECM) is employed to examine the existence of causality among the variables. The results reveal no causality evidence, running from total debt and export to public investment in the long run. However, there exists a uni directional causality both from export and public investment to total debt in the long run. Similar to the long run, total debt and export have no impact on public investment in the short run as well. Therefore, our results suggest that total debt has no positive impact on public investment, neither in the short run nor in the long run in Bangladesh.

Key Words: Debt, Public Investment, Trivariate Causality, Cointegration, VECM

JEL Classification: C22, C87, E22, H63

¹ Assistant Professor, Department of Economics, Jagannath University, Dhaka

² Associate Professor, Department of Economics, Jagannath University, Dhaka.

Views expressed in this paper are author's own and not necessarily reflect the views of Jagannath University.

1. INTRODUCTION

In recent years, the issue of debt oriented development policies in low income countries gained enormous attention, particularly for its hikes contribution to development fund. As the countries primarily look into the growth led economic development, they demand development fund to finance infrastructural development, import of machineries, and technological knowhow. Farhana and Chowdhury, (2014) argued that the capital-scarce developing countries mainly borrow to accelerate their economic growth by relaxing their macroeconomic financial constraint, which allow them to finance for higher investment and higher consumption of education and health services. Moreover, the frequent acceleration of budget deficit in the developing countries is also an important reason to articulate debt demand from both internal and external sources. Therefore, the study relating to the existence of causal relationship of debt to investment, export earnings or economic growth has been subjected by many researchers over the years. However, the existing empirical and theoretical studies examining the contribution of debt to economic growth have provided diverse results. The study by Korokmaz (2015) found a uni-directional causality running from economic growth to debt in Turkey. Analyzing Ethiopian economy, Kassa (2015) found an opposite uni-directional causality from external debt to economic growth. On the other hand, while Presbitero (2006) and Azeezet al., (2015) found a negative relationship between debt and the growth of investment, Ogunmuyiwa (2002) found the relationship to be ambiguous.

After its inception in 1971, the economy of Bangladesh relied heavily on external debt. The present scenario of debt outstanding is no less spectacular and the debt service burden, due to the overwhelming growth of debt inflows, has now become a serious concern, especially in the quest of achieving inclusive economic growth. Theoretically, the capacity of debt service payment, widely known as debt sustainability, literally relies on efficient debt management, as it contributes to accelerate investment and income generating activities over the economy. According to the World Bank (2012), the external debt is not translated into an increased debt burden when the extent of the rate of growth of income and export earnings outpaces the accumulation of new external obligations. For Bangladesh, the question may arises regarding the debt service payment scenario. The official statistics of Economic Relation Division of Bangladesh shows the unprecedented growth of debt service payment in every fiscal year. The rising debt service payment, however, can be explained as the inefficient utilization of debt. This inefficient utilization acted as a barrier to generate sufficient productivity growth, which

would have helped Bangladesh to lower the physical amount of debt and its corresponding interest payment compared to consecutive previous year. Paradoxically, the success of debt, as the relevant literature argue, is not literally significant in the case of developing countries as the countries are marked with poor institutional management, high depreciation of public capital and corruption. For example, in Bangladesh, without any inclusion of development project, the actual figure of debt increase traumatically as the real cost of development project rises due to the bad debt management.

In this backdrop, the study attempts to measure the efficiency of total debt that has been received by Bangladesh from both internal and external sources. In doing so, the paper investigates the causality between total debt and public investment, by incorporating export as a third variable, which might have a serious effect on the causality between debt and public investment in Bangladesh. The question may arise regarding the rationality of selecting the variables like public investment and export to link up with total debt. The answer stands on the importance of these variables that can influence to make changes the total debt in the developing economy like Bangladesh. For instance, the total debt stock in the developing countries theoretically has made up a link to public expenditure, as major portion of debt calculated in a given year has been received by the government. According to the World Bank statistics (2012), the publicly guaranteed stock of debt in the developing countries at the end of 2012 accounts for 54 Percent, whereas 46 percent of their total debt owed to private non-guaranteed borrowers. Siddique et al., (2015) argued that if such inflow of external debt does not raise the income generating and productive activities, that might lower the ability of debtor nation to repay the loan. In this backdrop, the contribution of publicly made investment to the generation of capital and much needed productivity growth should be significant. On the contrary, the trend of public investment in Bangladesh vis-à-vis total debt, as depicted in table-I, does not show any encouraging scenario. Against the steady growth of total debt, public investment has been hovering around 5 to 6 percent since the 1980's.

The paper has intended to find a causal link between total debt and public investment in the context of Bangladesh by investigating whether debt causes public investment or vice versa. Furthermore, the paper includes export as a third variable by considering its importance to the changes of debt volume and its effects on the creation of much vaunted public investment. Theoretically, total debt indirectly causes export as the acceleration of public investment increases the export oriented activities in the country. On the contrary, in the context of Bangladesh, export earnings can be a major source for

debt retirement. Hence, the exports also can immensely affect to the changes of debt volume in Bangladesh. Thus, the omission of export may cause some serious specification bias in the estimation of causal relationship between debt and public investment in Bangladesh.

TABLE-I**TRENDS OF PUBLIC INVESTMENT, EXPORT AND TOTAL DEBT IN BANGLADESH**

Year	Public Investment (% of GDP)	Export (% of GDP)	Total debt (% of GDP)
1981	5.2	4.1	32.17
198	4.5	4.5	37.02
1990	7.2	5.0	40.11
1995	6.7	9.1	51.80
2000	7.4	12.2	50.12
2005	6.2	14.4	51.87
2010	4.67	14.1	40.00
2015	6.90	15.8	35.10
2016	6.66	15.5	34.30
2017	7.41	14.0	30.80

Source: 1) Bangladesh Economy: Recent Macroeconomic Trend, Ministry of Finance
 2) Bangladesh Economic Review (Various Issues), Ministry of Finance
 3) Medium Term Budgetary Framework, 2010-11 to 2012-13, Ministry of Finance
 4) Medium Term Macroeconomic Policy Statement FY 15-16, Ministry of Finance

In light of the discussion above, the main contribution of this study is to find the causal relationship between total debt and public investment in Bangladesh. The study has also employed export as a third variable, as stated above, by considering its importance on the estimation of causality between debt and public investment. It is necessary to mention that although the topic has been empirically analyzed in a large number of studies focusing many other countries, Bangladesh specific studies are very limited. Among these limited studies most of these (Rahman, et al., 2012; Farhana and Chowdhury, 2014; Hasan and Akter, 2013) analyzed the debt-growth relationship in Bangladesh using a bi-variate causality framework.

On the other hand, the present study uses tri-variate causality framework to achieve the objectives. Unit root test is done by using Augmented Dickey Fuller test to examine the time series properties of the variables. The Johansen Juselius cointegration test has been applied to test whether long run equilibrium exist among the considered variables. Finally, the paper adopts Vector Error Correction Model (VECM) to detect both short run and long run dynamics amongst the variables.

The rest of the paper is organized as follows. Following introduction, section 2 provides a brief literature review. Data, methodological aspects and estimation techniques of the study are discussed in section 3. The results of our estimation are discussed in section 4, while section 5 draws the conclusion.

2. LITERATURE REVIEW

Many empirical works have subjected debt to link it to other core macroeconomic variables like economic growth, investment, imports and exports for a number of countries. Most of these empirical studies investigated the debt growth relationship using a bi-variate causality analysis framework. However, the present study methodologically differs from existing literature, as it investigated the relationship among debt, public investment and export in Bangladesh using a trivariate causality analysis framework. This section intends to survey the literature focusing both on Bangladesh and on other countries, by addressing the subject.

In Bangladesh, most of the studies investigated the debt-growth relationship by using a bi-variate causality test. Rahman et al., (2012) examined the debt growth relationship in Bangladesh for the period 1972 to 2010. By using Granger causality test they found bi-directional causality between these two variables. Farhana and Chowdhury (2014) used ARDL bound testing approach to investigate the impact of foreign debt on growth in Bangladesh during 1972 to 2010, and found adverse relationship between debt and growth. Shah and Pervin (2012) investigated the debt growth relationship in Bangladesh and found a strong long run negative effect of public debt service to growth but positive effect of public debt stock to growth. Islam and Faisal (2012) have expressed concerns for the future debt sustainability in Bangladesh without hampering the productivity growth, as too much debt service payment would cost the much needy social sector expenditure. Zaman et al.,(2012), in contrast, eyed differently on the external debt performance as they tried to find relationship of external debt with the military

expenditure in Bangladesh. They found a bi directional causality between debt and growth but unidirectional causality from military expenditure to external debt.

In the same vein, despite a large number of empirical and theoretical researches have subjected debt growth relationship, the studies on debt investment relationship have been found very infrequent in the global perspective as well. Saad (2012) investigated trivariate causality between debt, export and economic growth for Lebanon over the period 1970 to 2010. By using VECM model, the author found bidirectional Granger causality between growth and external debt and unidirectional causality running from external debt to export both in short run and long run. Atique and Malik (2012) examined the impact of debt on economic growth in Pakistan and found that both domestic and external debt is inversely related to economic growth. On the other hand, Azeez et al., (2015), Ogunmuyiwa (2011), Akujuobi and Chima (2012), and Olusegun et al., (2013) examined the performance of debt over the Nigerian economy. Azeez et al., (2015) found that both external debt and FDI is negatively related to economic growth, but the external debt is not significant. By using Johansen cointegration test and Vector Error Correction Model (VECM), Ogunmuyiwa (2011) found no causality between external debt and economic growth in Nigeria. Olusegun et al., (2013) concluded that external debt is mounting the pressure on the various sectors in Nigerian economy; therefore, recommend to be more conscious in taking debt and its appropriate utilization. Ismihan, et al., (2013) studied the cointegration between debt and economic growth in Turkey and found that excessive borrowing and macroeconomic instability are harmful for both financial development and economic growth. On the other hand, Korokmaz (2015) found unidirectional causality running from external debt to economic growth for Turkish economy.

Kassa (2014) used Autoregressive Distributive Lag Model (ARDLM) to explore the relationship between external debt and economic growth for Ethiopia over the period 1970-71 to 2010-11. He revealed that the external debt has negative effect on causing economic growth in Ethiopia. Using data for the period of 1990 to 2010, Kasidi and Said (2013) explored trivariate causality and found that there is no long run relationship between external debt and GDP. In short run, debt stock has a positive impact, while debt service payment has a negative impact on GDP. Pyeman, et al., (2016) found that both FDI and GDP growth are inversely related to the external debt in Malaysian economy.

Ahmed, et al., (2000) used Granger causality three step procedures to find the causality between export, growth and external debt for Asian countries. Under the tri-variate causality framework, they concluded that the regular repayment of external debt services stemmed the growth performance and thus lowered their export revenue. Turner and Spinelli (2013) used panel analysis to estimate the effect of government debt, external debt and their interaction in the interest rate growth differential for OECD countries. The results posit that the interest-rate effect of marginal increases in external debt or government debt is positive and non-linear. On the other hand, Checherita and Rother, 2010 found a non-linear debt growth relationship in twelve euro countries where the government debt GDP ratio has a deleterious impact on long term growth.

3. DATA AND METHODOLOGY

3.1: Data

The study uses annual time series data of Public Investment (PBI), Export (EX) and Total Debt (TD) in Bangladesh for the period of 1981 to 2015. The data set for this research has been taken from Ministry of Finance, Government of the Peoples Republic of Bangladesh¹. All the variables of the study have been converted into the logarithmic form. The data for all the variables has been measured as a percentage of GDP.

3.2: Model Specification

3.2.1: Granger Causality Test

The granger causality test is used to find the direction of causality between the two variables like X and Y. The test is based on the idea that future cannot predict past. Given this context, the granger causality test says that if X causes Y then changes in X should precede changes in Y (Gujrati, 2005). Thus, the test assumes that the variable Y would be explained better by the present and past values of X rather than the past values of Y alone. For the Granger causality test, the paper progresses by the following

¹ Data of Public Investment (PI), Export (EX) and Total Debt (TD) for the period of 1981-2008 has been taken from the Bangladesh Economy: Recent Macroeconomic Trend, Ministry of Finance.

Data of Public Investment (PI), and Export (EX) for the period 2009-2015 has been taken from the Bangladesh Economic Review (Various Issues), Ministry of Finance

Total Debt (TD) Data for the period 2009-2015 has been taken from the Medium Term Budgetary Framework, 2010-11 to 2012-13, Ministry of Finance; and Medium Term Macroeconomic Policy StatementFY16-FY16, Ministry of Finance.

procedure. First, to conduct Granger causality the variables must be cointegrated or there must be long run association between the variables. Second, for such long run dynamism, the variables require for stationary test in which the variables must be non-stationary at level and stationary at their first difference. In this study, the test for the order of integration is done by using Augmented Dickey Fuller (ADF) test statistics while cointegration test of the variables is conducted by Johansen Juselius cointegration test. The bivariate causality between debt and investment can be expresses as following regression:

$$Y_t = \alpha_0 + \sum_{t-i}^m \alpha_i Y_{t-1} + \sum_{t-i}^n b_i X_{t-1} + \eta_{it} \quad (1)$$

$$X_t = \gamma_1 + \sum_{t-i}^m \beta_i X_{t-1} + \sum_{t-i}^n \lambda_i Y_{t-1} + \phi_{it} \quad (2)$$

In the above equations, η and ϕ are the white noise error terms where both are assumed stationary and both m and n specified in the equations are the number of lags. The hypothesis as the Granger causality argues whether Y causes X or X causes Y has been formulated in the above equations. Equation (1) represents the present value of variable Y is related to past values of itself and also the past value of X while in equation (2), the current value of X is related to the past value of itself and the past value of Y .

In the bivariate analysis, to find the outcomes whether X causes Y , the null hypothesis which can be set as X does not Granger cause Y has to be rejected, and the vice versa for Y to X . The calculated F statistic is hereby has to be significant at the conventional level. The F statistics for this bivariate causality can be calculated as follows:

$$F = \frac{RSS_R - RSS_{UR}/m}{RSS_{UR}/(n-k)} \quad (3)$$

The equation follows F distribution with m and $(n-k)$ df where m is the number of lagged M terms and k is number of parameters estimated in unrestricted regression. The restricted residual sum of squares (RSS_R) requires to regress the current X to all lagged X and Y values for X to Y without including the lagged M variables in the regression while for RSS_{UR} the function includes the lagged M terms. However, on the basis of the hypothesis between the computed and calculated F values, the Granger causality can specifies the following cases:

- (i) Unidirectional causality from X to Y . In this case, X causes Y if $H_0: b_i = 0$, is rejected and $H_0: \lambda_i = 0$ is not rejected, where $i=1, \dots, n$

- (ii) Unidirectional causality from Y to X. i.e. Y causes X if $H_0: \lambda_i = 0$ is rejected while $H_0: b_i = 0$ is not rejected, where $i= 1 \dots n$.
- (iii) Bidirectional causality will occur if both (i) and (ii) hold.
- (iv) Independence is another commonly seen case when neither (i) nor (ii) will hold.

Moreover, there are some technical assumptions that need to consider conducting the Granger causality test. First, the Granger causality test assumes that the two variables X and Y are stationary. Stationarity is important because the non-stationarity of the variable would make the OLS estimation biased and inconsistent. Second, the researcher should seriously look into the usage of a number of lagged terms in the test because the direction of causality in the Granger causality test depends largely on the number of lagged terms included in the model. Third, the test assumes that error terms included in the model should be serially uncorrelated. Meanwhile, this study uses the Akaike Information Criteria (AIC) to make choice in the selection of optimal lag length for the model.

3.2.2: Unit Root Test

As the econometric wisdom argues, the variables used in the model should be stationary for both cointegration and causality between the variables. In this backdrop, the unit root test is used to examine the time series properties of the variables. Amongst some, in this study, the test has been done by the widely recognized Augmented Dickey Fuller (ADF) test. The ADF test is hereby consist of estimating the following regression:

$$\Delta Y_t = \beta_1 + \beta_2 t + \rho Y_{t-1} + \alpha_i \sum_{i=1}^m \Delta Y_{t-i} + \varepsilon_t \quad (4)$$

In the regression model, $\Delta Y_t = Y_t - Y_{t-1}$ and Y is number of variable under consideration and ε_t is the white noise error term. The number of lagged difference m is chosen by Schwartz Information Criteria (SIC). In ADF, the null hypothesis is $\rho = 0$, where, the rejection of null hypothesis would imply that the variable has no unit root or the variable is stationary. On the other hand, if the null hypothesis is not rejected at level, the test requires the first difference of the variable to make it stationary.

3.2.3: Cointegration Test and the Error Correction Model

The existence of long run relationship amongst the variables is a precondition for Granger causality test. Hence, by the cointegration test, the paper determines the linear

combination of the variables at the same order, *i.e.*, whether there exists a stable and non-spurious relationship among the variables. Amongst some, the paper uses the widely recognized Johansen-Juselius technique (1988) for the cointegration test.

According to the Johansen-Juselius system based method, two test statistics are used to identify the number of cointegrating vectors like the trace statistics and the Maximum Eigen value test statistic.

$$\lambda_{\text{trace}} = T \sum_{i=r+1}^N \ln(1-\lambda_i) \quad (5)$$

$$\lambda_{\text{max}} = -T \ln(1-\lambda_{r+1}) \quad (6)$$

Here, T is the number of observation and λ_i 's are the N-r smallest canonical correlation. The trace statistics test the null hypothesis that the number of cointegrating vectors is equal or less than r against the alternative hypothesis of N cointegrating vectors. On the other hand, the Maximum Eigen value test checks the null hypothesis of r cointegrating vectors against the alternative hypothesis of r+1 cointegrating vectors. The null hypotheses under these two equations, as shown by the (Johansen-Juselius, 1988) have non-standard distributions and produce approximate critical values for the statistic by Monte Carlo methods.

When cointegration is detected, despite it allows for long run equilibrium among variables, however, in short run, the case may be different. Therefore, by using Vector Error Correction Model (VECM), the paper intends to find out the short run dynamics of the variables within a long run relationship. It also determines the direction of causality. However, an extension of standard Granger test (1969) adjusted with an error correction term can be specified as follows for the trivariate causality test:

$$\Delta Y_t = \beta_{10} + \sum_{i=1}^k \beta_{11i} \Delta Y_{t-i} + \sum_{i=1}^k \beta_{12i} \Delta X_{t-i} + \sum_{i=1}^k \beta_{13i} \Delta Z_{t-i} + \beta_{14} R_{1t-1} + u_{1t} \quad (7)$$

$$\Delta X_t = \beta_{20} + \sum_{i=1}^k \beta_{21i} \Delta X_{t-i} + \sum_{i=1}^k \beta_{22i} \Delta Y_{t-i} + \sum_{i=1}^k \beta_{23i} \Delta Z_{t-i} + \beta_{24} R_{2t-1} + u_{2t} \quad (8)$$

$$\Delta Z_t = \beta_{30} + \sum_{i=1}^k \beta_{31i} \Delta Z_{t-i} + \sum_{i=1}^k \beta_{32i} \Delta Y_{t-i} + \sum_{i=1}^k \beta_{33i} \Delta X_{t-i} + \beta_{34} R_{3t-1} + u_{3t} \quad (9)$$

Here, Y_t , X_t and Z_t represents Public Investment (PBI), Export (EX) and Total Debt (TD) in Bangladesh. β 's and Δ represent parameters and the difference operator while u_{1t} , u_{2t} and u_{3t} are white noise error terms. R_{1t-1} , R_{2t-1} and R_{3t-1} are the error correction term derived from the long run cointegration equation. In this test, the short run causal effects have been determined by Chi-square statistics which is obtained by estimating

the Wald test. On the other hand, long run causality is captured on the basis of the significance of t-statistics on the coefficient of lagged error terms. According to the vector error correction model, in the long run, export and total debt will cause public investment if $\beta_{14}=0$ is rejected when $\beta_{24}=\beta_{34}=0$ is not rejected. Similarly, public investment and total debt will cause export if $\beta_{24}=0$ is rejected and $\beta_{14}=\beta_{34}=0$ is not rejected. Likewise, export and public investment will cause total debt when $\beta_{34}=0$ is rejected and $\beta_{14}=\beta_{24}=0$ is not rejected.

For the short run Granger causality, export and total debt will lead to public investment when all values of β_{12i} 's and β_{13i} 's are not equal to zero. Accordingly, Y_t will cause X_t if all values of β_{22i} 's=0 is rejected and Z_t will cause X_t when all values of β_{23i} 's =0 is rejected. Similarly, when β_{32i} 's and β_{33i} 's =0 is not true, then both export and public investment will cause total debt.

4. EMPIRICAL RESULT

The causality test procedure as theorized in the previous section tells that the time series should be cointegrated. Therefore, the paper uses Johansen-Juselius cointegration test method to detect the cointegration among the variables. It is necessary to mention here that the Johansen-Juselius cointegration technique, as depicted in the previous section, requires that the variables must be non stationary at level and they become stationary after the first difference. Therefore, prior to cointegration test the order of integration of the time series under consideration is important. In this back drop, this section examines the time series and presents their empirical result. At first, the variables are tested whether they have unit root or not on the basis of Augmented Dickey Fuller (ADF) test. The tests have done to original series and also to their first difference.

TABLE - II

UNIT ROOT TEST (ADF) FOR THE TIME PERIOD 1981-2015

With Intercept					
Series at Level			First Difference		
Variables	Test Statistic	Probability	Test Statistics	Probability	
LN PBI	-1.494923 (0) **	0.5241	-4.282775(0) **	0.0019	
LN EX	-1.111152 (0) **	0.7000	-6.075946(0) **	0.0000	
LN TD	-1.367183 (1) **	0.5861	-5.115193(0) **	0.0002	

With Trend and Intercept

Variables	Series at Level		First Difference	
	Test Statistic	Probability	Test Statistics	Probability
LN PBI	-2.106781(1) **	0.5232	-4.215208(0) **	0.0112
LN EX	-1.209083(0) **	0.8926	-6.164683(0) **	0.0001
LN TD	-0.198908(4) **	0.9900	-3.797459(3) **	0.0308

Note: i) ** indicates significance at the 5% level.

ii) Figures in the parentheses represent the optimal lag length

According to the Augmented Dickey Fuller (ADF) test statistics, the null hypothesis of the variables cannot be rejected at levels and at any level of significance. It would also suggest that when we convert the variables into the first difference, the null hypothesis must be rejected which would imply the variables are integrated of order 1. Hence, the variables LN PBI, LN EX and LN TD are non-stationary at levels in the models of both intercept but no trend and with trend and intercept. At the same time, the probability of the test statistics also suggests that the variables have become stationary after their first difference.

The unit root test shows that the variables are stationary at the first difference. Now, the paper would examine whether there exist a long run associationship between the variables. The paper hereby uses the Johansen-Juselius cointegration approach to detect cointegrating vectors among the variables.

TABLE -III
JOHANSEN JUSELIOUS TEST OF COINTEGRATION

Data Vector	Null Hypothesis	λ Trace	Probability	λ Max	Probability
LN PBI,	None	44.08936 **	0.0006	29.96817 **	0.0022
LN EX	At most 1	14.12119	0.0797	12.88234	0.0817
LN TD	At most 2	1.238844	0.2657	1.238844	0.2657

Note - i): Test assumption includes linear deterministic trend in the series

ii): Optimal lag is 5 determined by Akaika Information Criteria (AIC)

ii): ** indicates significant at the 5% level

Table III represents the result of Johansen Juselius cointegration test. In the table, the trace statistics and the maximum Eigen-value statistics are presented to determine the cointegration rank. The results of Trace statistics and maximum Eigen-value statistics reveal that there is one cointegrating vector at 0.05 levels. Hence, the result indicates that there exist a stable long run relationship between total debt, public investment and export in Bangladesh.

TABLE-IV
NOMALIZED COINTGERATING COEFFICIENTS

Co Integrating equations	Cointegrating equation 1	Standard Error	T- Statistics
LN PBI	1.000000		
LNEX	-0.074916	0.03883	-1.92933299
LNTD	-1.103030	0.21242	-5.1926843047

Log Likelihood: 143.4931

As per the table-IV, the results are normalized on PBI. According to the result, both Export (EX) and Total Debt (TD) have expected signs and are statistically significant. As stated by Maggiora and Skerman (2009), the signs are reversed in case of interpretation due to the normalization process. Hence, in the above table, both EX and TD are positively related to PBI. More specifically, 1% increase in each of export and total debt causes 7% and 10% increase in public investment in Bangladesh in the long run.

As all the variables under consideration are cointegrated, now the paper should perform the causality test to detect the nature and the direction of causality among the variables in the tri-variate analysis. The multivariate Granger causality technique has been applied in this regard. Moreover, the paper also performs Vector Error Correction Model (VECM) in order to estimate the short run and long run behavior of the relationship. Under the VECM, the coefficient of the error correction term which is also known as speed of adjustment indicates the long run equilibrium relationship among the cointegrated variables.

TABLE-V
VECTOR ERROR CORRECTION MODEL
LONG RUN CAUSALITY AND SPEED OF ADJUSTMENT

Dependent Variable	Coefficient	ECT _{t-1}	T- Statistics	Probability
Δ LN PBI	0.649965		1.233391	0.2410
Δ LNEX	-0.108226		-2.244400	0.0444
Δ LN TD	-0.815054		-2.872834	0.0140

Table-V shows the coefficients of error correction terms for the dependent variables. The coefficient of error correction terms determines the long run causality and the speed of adjustment of the model toward the long run equilibrium. According to the result, the error correction term when Δ LN PBI is dependent variable, is not significant as the coefficient of error correction term is positive and the probability value of T- statistics is more than 5%. This implies that there is no long run causality running from export and total debt to public investment in Bangladesh. On the other hand, the error correction terms for the dependent variables Δ LNEX and Δ LN TD are significant and confirms the long run causality from public investment and total debt to export and public investment and export to total debt in Bangladesh. The speed of adjustment for these two dependent variables shows about 10% and 81% disequilibrium of previous year is corrected in the current year.

TABLE-VI
THE VECM GRANGER CAUSALITY TEST

Dependent variable: Δ LN PBI

Independent Variable	Chi-Square	df	P value
Δ LNEX	5.280543	5	0.3826
Δ LN TD	1.584208	5	0.9032
Dependent Variable: Δ LNEX			
Δ LN PBI	7.703785	5	0.1733
Δ LN TD	4.184761	5	0.5231
Dependent Variable: Δ LN TD			
Δ LN PBI	20.66426	5	0.0009
Δ LNEX	14.94873	5	0.0106

Table-VI shows the short run causality result which is found by Wald test statistics under the VECM model. According to the result, as like the result of long run causality, export

and total debt have found no causal effects on public investment in the short run as well. On the other hand, the results, as depicted in table, found unidirectional causality running from public investment and export to total debt in the short run.

5. CONCLUSIONS

The objective of this study is to empirically examine whether total debt causes public investment in Bangladesh. Furthermore, the paper extends its work with the incorporation of another important variable export. Since a significant part of total debt owed to private borrowers and also government from public debt contributes to promote export oriented activities, the paper also seeks to find out the debt export causality in Bangladesh. The Granger causality and vector error correction models have been applied to obtain the stochastic properties of the variables. Empirical results show that there is no short run causality running from total debt to public investment and export in Bangladesh. The results are little different in long run. Because, in the long run, although there is no causality running from total debt and export to public investment but there is unidirectional causal flow running from total debt and public investment to export.

The findings, stated above, suggest that debt is not public investment stimulating for Bangladesh. Since debt is insignificantly related to public investment, as the paper tells, it may create debt overhang in the long run. As argued by Islam and Biswas (2005) that high public debt leads to high taxes and puts upward pressure on real interest rates which may crowd out private investment. Hence, in Bangladesh if the debt inflow continues, the burden for accelerated interest payment against the stagnant yield, as the paper concerns, might force the government to increase tax rate in general and reduce the much vaunted government expenditure. In consequences, the outcomes of poor investment and low expenditure on social sector as a whole might impede the general productivity growth and thereby might halt the pace of economic development.

Given this context, with the prudent debt policies, efficient debt management and high sense of accountability, the paper suggests that the government should work immensely on the issue of corruption and nepotism. However, in short, the paper suggests government to lower debt and pay concentration in the creation of efficient human capital and technological knowhow. Because, as the variables have long run association ship, the acceleration of public investment and export, however, would lower the dependency of Bangladesh on the foreign counterparts in the long run.

References

- Ahmed, D. Y. A., Saeed, S. T., and Saed, S. J. H. (2015). "The Impact of External Debt on Economic Growth: Empirical Evidence from Iraq", *International Journal of Science and Research*, vol. 4, no. 8, pp. 1506-1516.
- Ahmed, Q.M., Butt, M.S., and Alam, S. (2000). "Economic Growth, Export, and External Debt Causality: The Case of Asian Countries", *The Pakistan Development Review*, vol. 39, no. 4, part II, pp. 591-608.
- Akujuobi, D.A.B.C., and Chima, D.C.C. (2012). "External Debt and Economic Growth: An Empirical Analysis of Nigeria's Economy", *International Journal of Exclusive Management Research*, vol.2, no.11, pp. 1-11.
- Atique, R., and Malik, K. (2012). "Impact of Domestic and External Debt on the Economic Growth of Pakistan." *World Applied Science Journal*, vol. 20, no. 1, pp. 120-129.
- Azeez, B., Oladapo, F., and Aliko, O. A. (2015). "External Debt or Foreign Direct Investment: Which has Greater Significant Impact on Nigeria?" *European Scientific Journal*, Vol.11 No.19, 2015, pp. 185-195.
- Bangladesh Economic Review (2010 - 2016). Yearly issues from 2010 - 2016, Ministry of Finance, Government of the People's Republic of Bangladesh.
- Bangladesh Economy: Recent Macroeconomic Trend, Ministry of Finance, Government of the People's Republic of Bangladesh, available: <https://mof.portal.gov.bd/site/page/0a064da3-b9bb-4ce5-95e2-f8c9fb8bd3da>, accessed: December 17, 2017.
- Checherita, C., and Rother, P. (2010). "The Impact of High and Growing Government Debt on Economic Growth: An Empirical Investigation for the Euro Area", *Working Paper Series no. 1237*, European Central Bank.
- Economic Relation Division (2015). "Selected Economic Indicators", Government of the Peoples Republic of Bangladesh, available: https://erd.portal.gov.bd/sites/default/files/files/erd.portal.gov.bd/page/9d765e3d_3750_4746_a536_3c50755b7450/Tbl-14.0.pdf, accessed: May 15, 2018.
- Engle, R. F., and Granger, C. W. J. (1987). "Cointegration and Error-Correction: Representation, Estimation and Testing", *Econometrica*, vol. 55, no. 2, pp. 251-256.
- Farhana, P., and Chowdhury, M.N.M. (2014). "Impact of Foreign Debt on Growth in Bangladesh: An Econometrics Analysis." *International Journal of Developing and Emerging Economics*, vol. 2, no. 4, pp. 1-24.
- Granger, C. W. F. (1969). "Investigating Causal Relations by Econometric Methods and Gross Spectral Methods", *Econometrica*, vol.37, pp. 424-438.

Gujarati, D. N. (2003). *Basic Econometrics*, New York: McGraw Hill.

Hansen, H. (2002). "The Impact of Aid and external Debt on Growth and Investment: Insights from Cross-Country Regression Analysis", *CREDIT Research Paper no. 02/26*, Centre for Research in Economic Development and International Trade, University of Nottingham.

Islam, A., and Faisal, F. (2012). "External Debt of Bangladesh: Sustainability and Future Concerns." *Elixir Finance Management*, vol. 49, pp. 9893-9897.

Islam, M.E., and Biswas, B.P. (2005). "Public Debt Management and Debt Sustainability in Bangladesh", *The Bangladesh Development Studies*, vol. 31, no. 1&2, pp. 79-102.

Ismihan, M., Dincergok, B., and Cilasun, S. M. (2013). "Finance, Instability and Growth: The Turkish Case, 1980-2010", paper prepared for the EY International Congress on Economics I: Europe and Global Economic Rebalancing, October 24-25, Turkey, Paper ID No. 271.

Johansen, S. (1988). "Statistical Analysis of Cointegrating Vectors", *Journal of Economic Dynamics and Control*, vol. 12, pp. 231-254.

Kasidi, F., and Said, A.M. (2013). "Impact of External Debt on Economic Growth: A Case Study of Tanzania", *Advances in Management and Applied Economics*, vol.3, no. 4, pp. 59-82.

Kassa, W. (2014). "Does External Debt Cause Economic Growth? The Case of Ethiopia", Unpublished Master's Thesis, Department of Economics, Addis Ababa University, Ethiopia.

Korokmaz, S. (2015). "The Relationship between External Debt and Economic Growth in Turkey". *Proceedings of the Second European Academic Research Conference on Global Business, Economics, Finance and Banking (EAR15Swiss Conference) Zurich-Switzerland*, Paper ID: Z581.

Maggiore, D.D., and Skerman, R. (2009). "Johansen Cointegration Analysis of American and European Stock Market Indices: An Empirical Study", Unpublished Master's Thesis, School of Economics and Management, Lund University.

Medium Term Budgetary Framework 2010-11 to 2012-13. Ministry of Finance, Government of the Peoples Republic of Bangladesh.

Medium Term Macroeconomic Policy Statement FY16-FY18. Ministry of Finance, Government of the Peoples Republic of Bangladesh.

Ogunmuyiwa, M. S. (2011). "Does External Debt Promote Economic Growth in Nigeria?" *Current Research Journal of Economic Theory*, vol. 3, no. 1, pp. 29-35.

Olusegun, A.K., Somod, O.D., Adeodu, S.A., and Okechi, O.B. (2013). "The Nexus between External Debt and Economic Growth in Nigeria (1981-2009)." *IOSR Journal of Economic and Finance*, vol.2, no. 1, pp. 19-27.

Presbitero, D.A. F. (2006). "The debt-Growth Nexus: A Dynamic Panel Data Estimation."

Rivista Italiana Degli Economisti, vol. 9, no. 3, pp. 415-459.

Pyeman, J., Noor, N.H.H.M., Mohamad, W.M.F.W., and Yaha, A.A. (2016), "Factors Affecting External Debt in Malaysia: An Empirical Investigation", Proceedings of the 1st AAGBS International Conference on Business Management 2014.

Rahman, M.M., Bashar, M.A., and Dey, S.(2012). "External Debt and Gross Domestic Product in Bangladesh: A Co-Integration Analysis." *Management Research and Practice*, vol. 4, no.4, pp.28-36.

Saad, W. (2012). "Causality between Economic Growth, Export, and External Debt Servicing: The Case of Lebanon". *International Journal of Economics and Finance*, vol. 4, no.11, pp. 134-143.

Shah, M.H., and Pervin, S. (2010). "External Public Debt and Economic Growth: Empirical Evidence from Bangladesh, 1974 to 2010." *Academic Research International*, vol. 3, no.2, pp. 508-515.

Siddique, A., Selvanathan, E. A. and Selvanathan, S. (2015)."The Impact of External Debt on Economic Growth: Empirical Evidence from Highly Indebted Poor countries" *Discussion Paper 15.10*, The University of Western Australia.

Turner, D. and Spinelli, F. (2013). "The Effect of Government Debt, External Debt and their Interaction on OECD Interest Rates", OECD *Economics Department Working Papers*, No. 1103, OECD, Paris: OECD Publishing..

World Bank (2012). *Global Development Finance: External Debt of Developing Countries*. Washington D.C.: The World Bank.

Zaman, K., Mahmood, Q.S., Khan, M.M., Rashid,A., and Ahmad,M. (2012). "An Empirical Investigation of External Debt - Military Expenditure Nexus in Bangladesh" *Economia.Seria Management*, vol. 15, no.1, pp. 173-188.

Appendices

VECTOR ERROR CORRECTION MODEL WITH ALL COEFFICIENTS AND LAGS

Independent Variable	Coefficient	Standard Error	T -Statistics
CointEq1	0.649965	0.52697	1.23339
D(Δ LN PBI(-1))	-0.542358	0.65859	-0.82352
D(Δ LN PBI(-2))	-0.610916	0.64107	-0.82352
D(Δ LN PBI(-3))	-0.446219	0.59565	-0.74913
D(Δ LN PBI(-4))	-0.835488	0.48710	-1.71524
D(Δ LN PBI(-5))	-0.310244	0.40831	-0.75983
D(Δ LN EX(-1))	-0.040086	0.19014	-0.21082
D(Δ LN EX(-2))	-0.300048	0.189619	-1.58180
D(Δ LN EX(-3))	-0.298394	0.20576	-1.45022
D(Δ LN EX(-4))	-0.094999	-0.094999	-0.34635
D(Δ LN EX(-5))	0.309214	0.32657	-0.94686
D(Δ LN TD(-1))	0.092568	0.29980	0.30877
D(Δ LN TD(-2))	0.133385	0.29743	0.44847
D(Δ LN TD(-3))	-0.059812	0.37941	-0.15765
D(Δ LN TD(-4))	0.221899	0.34644	0.64052
D(Δ LN TD(-5))	-0.374562	0.34333	-1.09098

Impact of Government Policies on Economic Development in Bangladesh

Mohammad Monirul Islam Sarker¹
Mahmud Salahuddin Naser²
Mohammed Abdul Halim³
Md. Sakhawat Hossain⁴

Abstract

An analysis of the impact of government policies on economic development is very important for further policy decision. This paper attempts to analyse such impact in the context of Bangladesh for the period of 1972-2015. It is observed that the government policies in Bangladesh drastically shifted from socialist to market-oriented economic system in the mid-1970s that emphasised on private sector-led export-oriented industrialisation strategy, instead of public sector-led import substitution industrialisation strategy. Governments provided lots of facilities to the industrial sector including duty free import of industrial raw materials and machinery. As a result, the share of industrial sector in GDP increased largely from 10 percent in 1973 to 32 percent in 2015. The GDP growth increased gradually from around 3 percent in 1973 to above 6 percent in 2015. The inflation rate significantly reduced from around 54 percent in 1973 to around 6 percent in 2015.

Keywords: Government Policies, Import Substitution Industrialisation, Export-oriented Industrialisation, Privatisation, Trade Liberalisation, Economic Development.

JEL Code: E6

¹ Deputy General Manager, Monetary Policy Department, Bangladesh Bank.

² Deputy General Manager, Chief Economist's Unit, Bangladesh Bank.

³ General Manager (Research) Bangladesh Bank Training Academy.

⁴ Deputy General Manager (Research) Bangladesh Bank Training Academy.

Views expressed in this paper are author's own and not necessarily reflect the views of Bangladesh Bank.

1. Introduction

The economy of Bangladesh was largely dependent on agriculture, immediate after the Independence of the country in 1971 and the share of agricultural sector in Gross Domestic Product (GDP) was 55 percent in 1973. But the agricultural sector of Bangladesh was highly dependent on natural processes and affected by the natural disasters like floods, cyclonic storms, tornados, river erosions, landslides etc. As a result, GDP growth was very low (3.3 percent in 1973) and the inflation rate was very high (54.2 percent in 1973) in the initial years after Independence. During that period, the country was highly dependent on imported goods mostly financed by foreign aid, as the export base was narrow and workers' remittances were insignificant.

The economy has significantly improved over the years in terms of GDP growth, inflation and external balance. Since the mid-2000s, GDP growth has generally been above 6 percent and above 7 percent from 2016, while average annual inflation has been below 6 percent from 2016. Import coverage of exports has been increased and the dependence on foreign aid has been reduced over the years. Thus, exports' share in total trade increased from 34.5 percent in 1973 to 41.8 percent in 2015. Trade openness, which is usually measured by trade-GDP ratio, increased from 13.2 percent in 1973 to 41.3 percent in 2015. Foreign aid (loans plus grants) as percent of GDP reduced from 6.9 percent in 1973 to 1.8 percent in 2015. Bangladesh graduated from lower income group to lower-middle income group in 2015 and will overcome Least Developed Country (LDC) status by 2024 if the current status of Gross National Income (GNI) per capita, Human Assets Index (HAI) and the Economic Vulnerability Index (EVI) prevail for the next six years.

The economic condition of Bangladesh has improved over the years due to the expansion of both industry and service sectors for which the role of government policies were very significant. Therefore, it is very important to analyse the government policies and their impact on Bangladesh economy which would be helpful for further policy decision. But there are relatively few studies that have rigorously analysed this issue. This paper aims to fill this gap by analysing the economic policies and their impact on different sectors of Bangladesh economy during different political regimes in between 1972 and 2015.

2. Government Policies during Different Political Regimes

Policies of successive governments in Bangladesh have reflected the ideological orientation and political interests of the ruling party as well as demands of the prevailing environment. Thus, the Awami League under the leadership of Sheikh Mujibur Rahman (1972-1975) shaped its policies to conform to the principles of nationalism, democracy, secularism and socialism, while the two military turned pseudo-political regimes headed by Major General Ziaur Rahman (1976-1981) and Lieutenant General Hussain Muhammad Ershad (1982-1990) freely tampered with these principles and made significant constitutional changes to suit their own political designs. The latest democratically-elected governments (1991 to date) have been following a hybrid approach in their policy strategy.

2.1 Policy Measures of the Mujib Government (1972-1975)

The Awami League (AL) formed the first government in independent Bangladesh in 1972 under the leadership of Sheikh Mujibur Rahman. The government of that period faced serious challenges, which included the rehabilitation of millions of people displaced during the liberation war, organising the supply of food, health care and other necessities. According to World Bank's estimation published in Time (1972), about 6 million homes were destroyed and nearly 1.4 million farm families were left without tools or animals to work their lands during the liberation war. Due to that war, the peaceful pursuit of agriculture was seriously disturbed, workshop and factories were made unserviceable, trade links both internal and external were disconnected, the public treasury was almost empty, transportation and communications systems were totally disrupted, roads and bridges were damaged and inland waterways were blocked. As a result, the country's GDP was very low and the prices of daily necessary goods were very high, which in turn boosted corruption and smuggling (Chakravarty, 1995). The situation with regard to the external sector was particularly difficult. Bangladesh had to deal with a shallow export base but high import demand, insignificant amounts of foreign remittances and low foreign investment. Thus, the foreign exchange reserve was very low and the balance of payments was extremely adverse.

To improve that situation, the Mujib government proclaimed socialism as fundamental state policy and nationalised almost all large enterprises including banks, life and general insurance companies, major industries like jute, textile and sugar, shipping and a major portion of international trade under the country's first Industrial Policy 1973. As a

consequence, the share of the state-owned industrial sector increased from 34 percent in 1970 to 92 percent in 1972 (Rahman, 2006). The government distributed surplus agricultural lands (above land ceiling limits) among landless farmers and abolished land taxes on holdings of up to 8.3 acres (Hossain & Chowdhury, 1994). The government adopted a public sector-led import substituting industrialisation strategy. It undertook some protective measures in the form of quantitative restrictions, restricted import licensing, differentiated and high rates of nominal tariffs, and subsidised loans to traded goods. These protectionist measures were not dictated only for the purposes of the industrialisation strategy but to rein in the worsening balance-of-payments situation. However, they were associated with overvaluation of the domestic currency.

In 1972, Bangladesh joined various international organisations, including the IMF and the World Bank. Sheikh Mujib travelled to the United States, the United Kingdom and other European nations to obtain humanitarian and developmental assistance for Bangladesh. He signed a treaty of friendship with India, which pledged extensive economic and humanitarian assistance. Bangladesh received the first Imports Programme Credit (IPC)-I from the World Bank in 1973. Based on such support, Sheikh Mujib outlined some state programmes to expand primary education, sanitation, water and electricity supply across the country. A five-year plan released in 1973 focused state investment on agriculture, rural infrastructure and cottage industries.

In spite of several initiatives, the situation did not improve in terms of the growth of GDP, the stability of the price level and the external sector balance. During the Mujib regime, the country faced a great famine in 1974 in which 70,000 people reportedly died (Rahman, 2012). However, the government realised the seriousness of the problems of inflation, current account deficits, corruption and black markets. In response, Mujib increased his power by forming Bangladesh Krishak Sramik Awami League, the only legally reorganised party of Bangladesh on June 7, 1975, and banned all opposition parties. He brought in several economic measures that were successful in mopping up excess liquidity and reducing the pressure on inflation. He adopted the New Industrial Investment Policy 1974 that encouraged the private sector activities in manufacturing and tried to reduce the dominancy of public sector through disinvestment. But, paradoxically, in spite of better economic prospects, the stage was set for political change with the assassination of Mujib on August 15, 1975 (Hossain & Chowdhury, 1994).

2.2 Policy Measures of the Zia Government (1976-1981)

After a sudden and shocking end of the Mujib regime, the Zia government inherited a collapsing economy (Maniruzzaman, 1980). To bring economic stability, the Zia government distanced itself from the earlier socialist approach and started a policy of economic reform and liberalisation by privatising a number of public sector enterprises. Zia announced a '19-point programme' of economic emancipation which emphasised self-reliance, rural development, decentralisation, free markets and population control.

The Zia government revised the industrial policy of Mujib government in 1975 and emphasised the role of private sector in all spheres of economic activities, including industry and trade (Alam, 1994). In 1976, the government allowed public-private partnership in public sector enterprises and decided to encourage foreign direct investment in most of the erstwhile reserved sectors (Rahman et al., 2012). In 1977, the government revised the industrial policy again to reduce the role of public sector and allowed the private sector to operate in most industries, except large scale industries like jute, textile and sugar industries reserved for the public sector (Alam, 1994).

In order to encourage private investment, the government adopted some important policy measures, including: (i) raising the private investment ceiling from BDT30 million to BDT100 million in 1975 and completely withdrawing the investment ceiling in 1978, (ii) initiating the development of a capital market by reactivating the Dhaka Stock Exchange Ltd., (iii) allowing the use of unutilised private funds for new industries or for the purchase of public enterprises without any questioning by the government, and (iv) extending the tax holiday period for new investment from 5 years to 7 years in the developed areas, and 7 years to 9 years in the less developed areas. Consequently, the private investment climate improved considerably and a large number of small and medium scale industrial units were set up with the help of credit from industrial and agricultural banks.

The Zia government boosted private foreign trade through a number of policy measures. Some of them were: (i) reducing import duty on capital machinery from 20.0 percent to 2.5 percent in respect of less developed areas, (ii) widening the range of imports under the Wage Earner Schemes and Export Performance Licenses (XPL), (iii) introducing the Ordinary General License for the import of industrial raw materials, (iv) establishment of Export Promotion Bureau in 1977, (v) introducing the Export Credit Guarantee Scheme, and (vi) introducing the Duty Drawback and the Special Bonded Warehouse

schemes. In addition, a number of fiscal incentives such as rebates on income taxes and concessionary duties on imported capital machinery were provided by the Zia government for export development (Rahman, Shadat & Raihan, 2010).

The Zia government emphasised rural development. A massive programme of manual digging and excavation of canals was launched, a large rural credit programme was adopted, and the 'Swanirbhar (self-help) movement' was boosted during that period. As with Mujib, the Zia government continued large scale agricultural subsidies and ensured high product prices especially for food items, in order to boost agricultural production. Despite the focus of development strategy on agriculture, the Zia government avoided any move toward effective land reforms, as adopted by Mujib government, so as to solidify rural elite support for the government. The Zia government adopted the second five-year plan (after a two-year hiatus, over July 1980-June 1985) that emphasised higher productivity in agriculture and manufacturing.

In order to achieve economic development, Zia developed close relations with the United States, Western Europe, Africa and the Middle East, moved to harmonise ties with Saudi Arabia, China and North Korea, and to normalise relations with Pakistan. In 1980, he proposed an organisation for the seven nations of South Asia (Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka) to bolster economic and political co-operation at a regional level which succeeded in 1983 through establishing the South Asian Association for Regional Co-operation (SAARC). In 1980, the government signed an agreement with the International Monetary Fund (IMF) for support from the Extended Fund Facility (EFF).

The economic policies of Ziaur Rahman were successful particularly for low inflation. However, he was seriously criticised for his ruthless treatment to the army opposition and the rehabilitation of some controversial persons like Ghulam Azam, a Bangladeshi politician convicted of war crimes. Thus, Zia was assassinated by the group of army officers on May 30, 1981.

2.3 Policy Measures of the Ershad Government (1982-1990)

After the assassination of Zia, the then vice president Justice Abdus Sattar came to the power as President through a general election. But he was overthrown within a short period by the army chief Lieutenant General Hossain Muhammad Ershad. Thus Ershad came to the power on March 24, 1982 as Chief Martial Law Administrator, though he

became President of the country later. After taking power, Ershad faced many challenges particularly the economic development of the country. The economic policies of the Ershad government were almost similar to those of the Zia government, but eventually they were heavily influenced by the Structural Adjustment Programmes (SAPs).

Bangladesh was one of the very first countries to receive structural adjustment assistance under the Extended Fund Facility of the IMF in December 1980, the last fiscal year of Zia regime. But the loan contract was revoked after six months due to failure of maintaining the domestic credit ceiling (Matin, 1986). It was reinstated after the Ershad government assumed power. The Ershad government received IPC-XI of the World Bank in 1982, and the Structural Adjustment Facility (SAF) and the Extended Structural Adjustment Facility (ESAF) of the IMF in 1986 and in 1990 respectively on condition of policy reform in the trade and industrial sectors. The government also received the World Bank's long term Structural Adjustment Loans and Sectoral Adjustment Loans in 1987 for the development of industry, energy, export and financial sector of the country (Bhattacharya & Titumir, 2001).

Bangladesh carried out a number of important policy reforms under SAPs. Privatisation of the state-owned enterprises, including financial institutions, was the prime focus. The new industrial policy of 1982, adopted by the Ershad government, enabled the privatisation of large state-owned enterprises, encouraged private investment in heavy industries, and sought to attract foreign companies to invest in the industrial sector. To encourage private investment, the government established the Board of Investment (BOI) in 1989, which provided incentives to private entrepreneurs in the form of credit facility with easy terms and low interest rates. Thus a new class of entrepreneurs was created and they bought substantial chunks of state-owned enterprises.

To boost exports, the Ershad government continued various fiscal incentives of Zia government like rebates on income taxes, and concessionary duties on imported raw materials and capital machinery (Rahman, Shadat & Raihan, 2010). To boost the export of non-traditional items, the Ershad government introduced Interest Subsidy Scheme (ISS) in 1983 under which the exporters enjoyed concessional interest on loans from the commercial banks, which were refinanced by the Bangladesh Bank. The ISS existed up to 1989, before the creation of the Export Development Fund (EDF). The Ershad government implemented the BEPZA Act 1980 by establishing the first Export

Processing Zone (EPZ) in Chittagong in 1983, which became very important for the export sector's development. In 1987, a back-to-back LC system was introduced to enable the exporters to import raw materials on a deferred payment basis.

In spite of rigorous policy measures under the structural adjustment programme, the economic performance of the Ershad government was not satisfactory in terms of growth, inflation and external sector balance. As a result, the political situation which was quite unstable became more vulnerable in 1990 and Ershad offered his resignation on December 6, 1990.

2.3 Policy Measures of the Democratic Governments (1991-2015)

After the resignation of President Ershad, the elected civilian government came to the power in Bangladesh in 1991 and the system have been continued till today. Therefore, the governments of Bangladesh during 1991 to 2015 may call democratic, though there were political conflicts between the ruling and opposition parties. But, there were no major conflicts with the armed forces, except the military coup on January 11, 2007. Therefore, economic development was the main challenge for the governments during 1991-2015. The democratic governments significantly extended the reform process that was started in the mid-1970s and followed by the Zia and Ershad governments (Rahman, 2006). The areas of major policy reforms during that period were: financial sector reform, fiscal sector reform, industrial sector reform, service sector reform and external sector reform.

Financial Sector Reform

The financial sector of Bangladesh, which was dominated by the banking industries, provided credit to the state-owned enterprises and the priority private sectors like agriculture, export, and small-cottage industries as per the directives of Bangladesh Bank until the end of the 1980s. During that period, Bangladesh Bank controlled bank credit and administered the interest rate directly. The government adopted a Financial Sector Reform Programme (FSRP) under the Financial Sector Adjustment Credit of IDA for the period of FY1990-FY1996, with the aim of making the banking system market-oriented and competitive (Bangladesh Bank, 1991). Under FSRP, Bangladesh Bank withdrew the control on bank credit and deregulated the interest rate structure gradually (Moral, 2012). Bangladesh Bank started to use indirect monetary policy instruments instead of direct credit control since 1993. In this regard, Bangladesh Bank introduced repo, reverse repo, BB Bill and foreign exchange sale/purchase as an instrument of monetary policy. It also started to use cash reserve requirement, statutory

liquidity ratio, bank rate, demand loans and refinance facility as an instruments of monetary policy. On the interest rate front, the policy was liberalised and the banks were free to fix their own deposit and lending rates on the basis of market forces, except for export credit. Now, Bangladesh Bank controls the interest rate indirectly by changing the Repo and reverse repo rates, which are also called the policy rates.

Fiscal Sector Reform

The fiscal balance in Bangladesh was negative and thus the government was heavily dependent on foreign sources for deficit financing during the 1970s and 1980s. Therefore, the fiscal reform emphasised the revenue collection and borrowing from the domestic sources. In this regard, the government introduced the system of Value Added Tax (VAT) and Supplementary Duty (SD) on July 1, 1991. The VAT and SD were imposed on almost all taxable goods and services (domestic plus imports) as substitutes for sales tax (100 percent) and excise duty (90 percent). In context of domestic borrowing, particularly from non-banking system, the government introduced several savings instruments including Family Savings Certificate, Savings Certificate with 3-Monthly Interest and Pensioners Saving Certificate. The government emphasised on non-bank borrowing due to create earning opportunities for a particular group of people like women and retired persons. But, interest rates on government savings certificates were higher than bank credit.

Industrial Sector Reform

Successive governments of Bangladesh formulated 10 industrial policies up to 2015, of which the 6th-10th industrial policies were formulated during the democratic regime. While these were broadly similar to previous industrial policies adopted by the Zia and Ershad governments, some important features were: (i) continuation of the privatisation of public enterprises, (ii) infrastructure development through public private partnerships, (iii) expansion of EPZs, (iv) fiscal and other incentives to priority sectors like agro-based food processing and labour-intensive industries, and (v) initiatives to develop the jute industry by producing diversified jute goods.

Service Sector Reform

To develop transport services, the governments emphasised the construction of road, rail, and water ways, bridges and flyovers, and airports. Government allowed and encourage private transports in the railway and airway. The government also extended

the bus and rail services across the border.

The government brought a dramatic change in the field of communications by allowing private radio and television channels from the early 1990s. The government also liberalised its telecommunication system by issuing licenses to the private operators in 1989, for providing mobile phone services. 3G mobile services were introduced by the state-owned Teletalk in October 2012, and have also been extended to all 64 districts by the three giant private mobile operators, namely Grameenphone, Banglalink and Robi.

The government encouraged private investment in the housing sector and provided easy loan with low interest rate. Bangladesh House Building Finance Corporation, a specialised public financial institution, finances for the construction and renovation of houses and purchasing residential apartments in all over Bangladesh. Commercial banks also provided housing loans sometimes as per government direction. As a consequence, the real estate business increased tremendously over the years.

External Sector Reform

The liberalised trade policy, which had been pursued since the mid-1970s, gathered momentum during the democratic regime. The government reduced both tariff and non-tariff barriers significantly and rationalised the tariff slabs in line with the reduction of tariff rates. According to World Bank (1999), Bangladesh is the fastest liberalised country in the developing world after Cambodia, even though the status of least developed country allows for some relaxation of the rules of General Agreement on Tariffs and Trade or World Trade Organisation. Usually, the liberalised import policies are followed for three reasons: the interests of domestic consumers, interests of domestic exporters who need to import industrial raw materials and capital machinery, and the norms of regional trade agreements like South Asian Free Trade Area. Among them, the interest of domestic exporters is dominant for Bangladesh. In order to develop the export sector, the democratic government adopted some policy measures including: (i) extend the Export Development Fund, (ii) provide bank loans to the exporter at lower interest rate, (iii) ensure uninterrupted supply of electricity, gas and water for all export-oriented industries, (iv) develop the infrastructure for backward and forward linkage industries of export goods, (v) support for improving product quality by using modern and environment-friendly technology, (vi) support for sending marketing missions abroad to participate in the international trade fairs, (vii) support for foreign training on product development and marketing, (viii) assist to set up sales and display centres as well as

warehouses in abroad, (ix) initiate to achieve duty-free market access to the developed and developing countries, and (x) initiate to diversify the export market, particularly to the Asian countries.

In order to develop the foreign exchange market, the government unified the exchange rate system by abolishing the secondary exchange market on January 1, 1992. On July 26, 1993, Bangladesh Bank imposed restrictions on domestic authorised dealer banks to use only US dollar and the currencies of the members of Asian Clearing Union (ACU) in dealing with Bangladesh Bank. Authorised dealer banks were free to set their own buying and selling rates for the US dollar and the rates for other currencies were determined on the basis of cross rates. In April 1994, the government accepted the Article VIII obligations of the IMF that constituted a commitment to current account convertibility in Bangladesh. The development of an inter-bank foreign exchange market was another commitment of that obligation. From January 1, 1996, Bangladesh Bank ceased to deal with the currencies of other ACU members and allowed the authorised dealer banks to deal only in US dollars, and for other currencies on the basis of cross rates. This process was continued up to May 30, 2003. On May 31, 2003, Bangladesh Bank introduced the floating exchange rate system, under which the exchange rate is determined on the basis of demand and supply of the respective currencies. Under this system, authorised dealer banks are free to set their own rates for interbank and customer transactions. However, in order to achieve monetary policy goals and to avoid undue volatility in the foreign exchange market, Bangladesh Bank remains vigilant in its role in the foreign exchange market by closely monitoring the exchange rate movement, and the buying and selling of foreign currencies for stabilising the market (Government of Bangladesh, 2014).

3. Impact of Government Policies

The impact of government policies on economic development seems to be positive during the last four decades of independent Bangladesh. This section analyses such impact on major macroeconomic variables separately to explore the real scenario.

3.1 Movement of Economic Variables in the Real Sector

In Bangladesh, GDP growth was highly volatile during the 1970s and followed an increasing trend thereafter (Figure 1). It was volatile due to large share of agriculture (Figure 2), highly influenced by the natural processes. The GDP growth in FY1975 was

negative due to a big decline in agricultural output (18.7 percent) resulting from the catastrophic flood in 1974.

Figure 1: GDP Growth in Bangladesh (%)

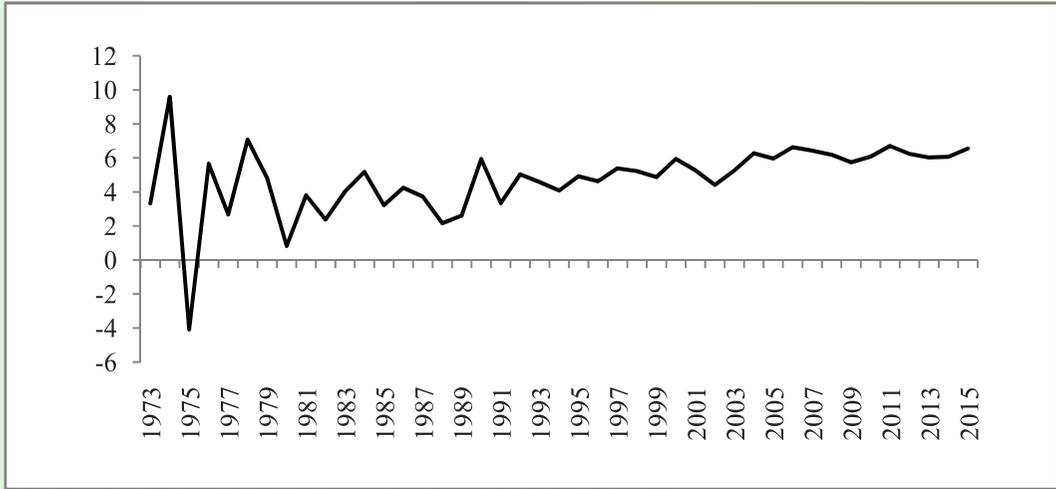
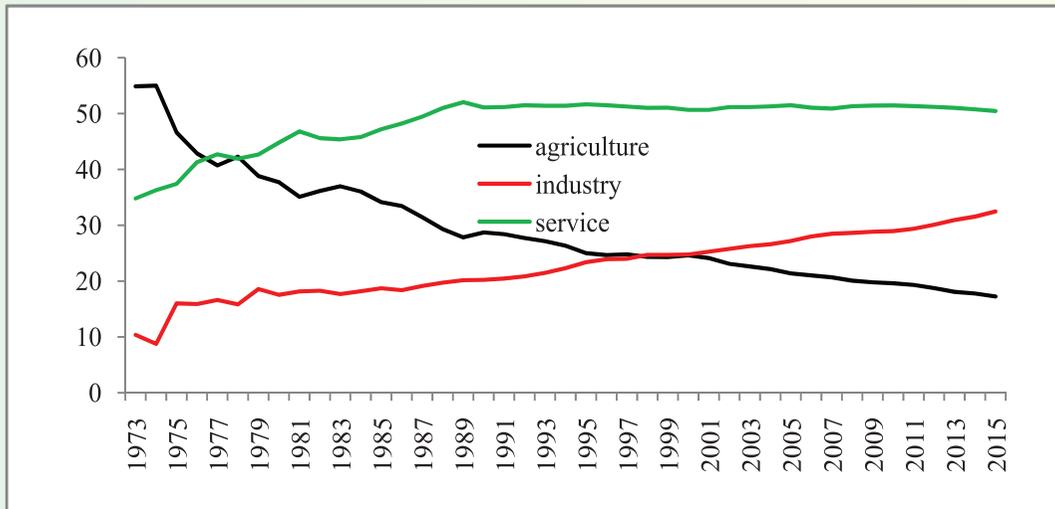


Figure 2: Sectoral Share in GDP (%)



From 1990, GDP growth increased due to better performance of industrial and service

sectors. As Figure 2 shows, the share of industry and service sectors increased and that of agricultural sector decreased over the years. Among the industrial and service sectors, the performance of the former was better than that of the later.

Several economic and non-economic factors expedited GDP growth. Among them, the most important factor was the rate of investment, which increased gradually over the years and reached a significant level in 2015 (Figure 3). This was largely due to the government's policy of encouraging and supporting private investment in the export-oriented manufacturing industries from the mid-1970s, as well as the increase of both domestic and national savings rates (Figure 3).

Figure 3: Savings and Investments (% of GDP)

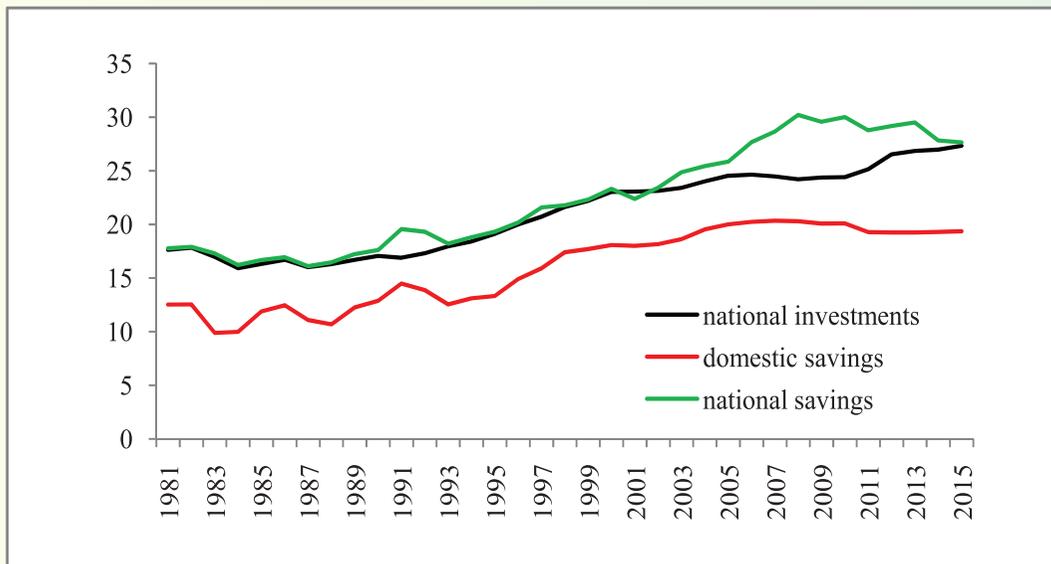
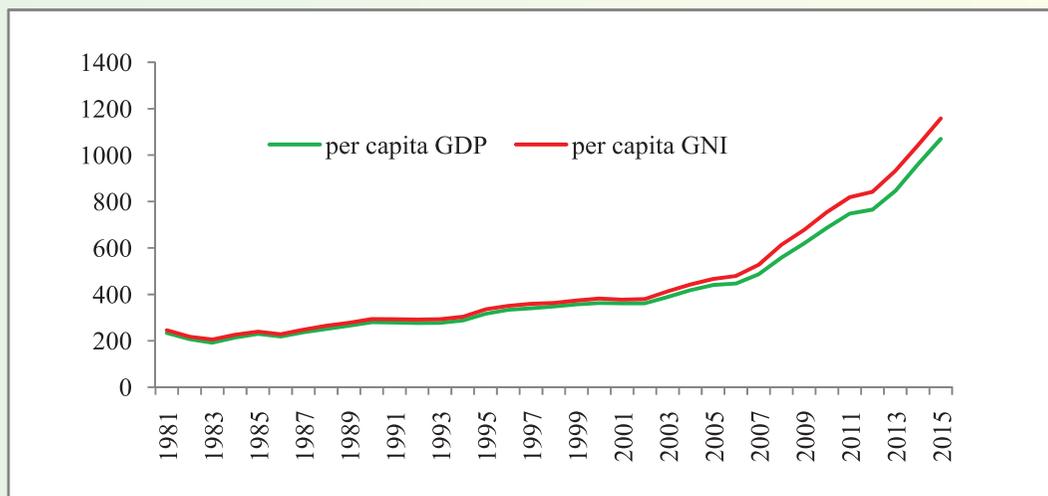


Figure 4 shows that per capita GNI was always higher than per capita GDP and the gap between them increased, mainly due to the inflows of workers' remittances. Consequently, the national savings rate was always higher than the domestic savings rate, and the gap between them was very high during the last 15 years.

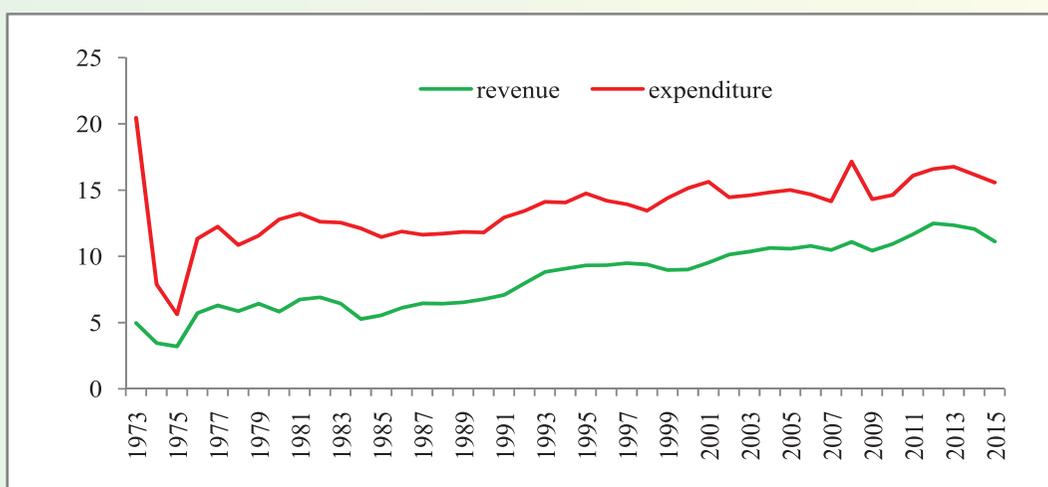
Figure 4: Per Capita Income in Bangladesh (USD)



Export demand and workers' remittances also added to the rising trend of GDP growth in Bangladesh. Export demand, particularly for readymade garments, raised the contribution of the industrial sector to GDP significantly. Inflows of workers' remittances influenced consumption and investment demand in the economy.

3.2 Movement of Economic Variables in the Fiscal Sector

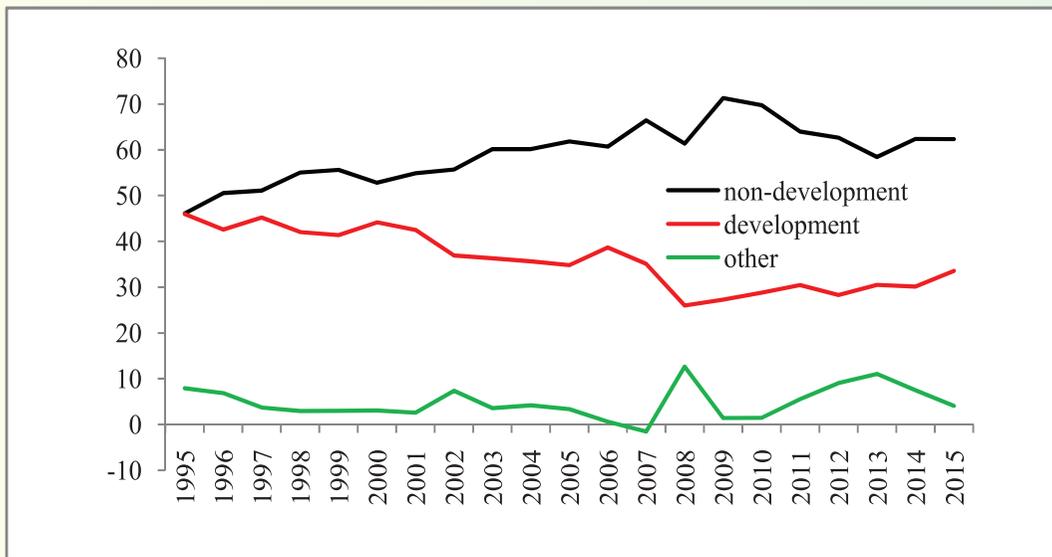
Figure 5: Government Revenue and Expenditure (% of GDP)



The fiscal deficit was very high in 1973, immediately after Independence (Figure 5), as

government spending was required to reactivate a war-damaged derailed economy. But the famine of 1974 was associated with a squeeze on government expenditure. However, government expenditure and revenues (% of GDP) increased from 1976. The government expenditure was always higher than the revenue collection and thus the fiscal balance was negative until 2015.

Figure 6: Share of the Components in Government Expenditure (%)



The share of government expenditure on development activities was larger than that of non-development activities in the earlier period. But the scenario changed from 1995 (Figure 6), mainly because of rising interest payments and transfer payments. Interest payments increased as the government borrowing shifted from foreign to domestic sources, particularly towards the non-banking sources. The interest rate on domestic borrowing was always higher than that on foreign borrowing; and the interest rate on non-bank borrowing was higher than that on bank borrowing. Transfer payments increased due to government programmes such as old age allowance, freedom fighters' allowance, employment generation programmes, programmes to cope with natural disasters and other shocks, incentives provided to parents for their children's education and incentives provided to families to improve their health status. Subsidies and incentives schemes for the export sector's development were also important in this regard.

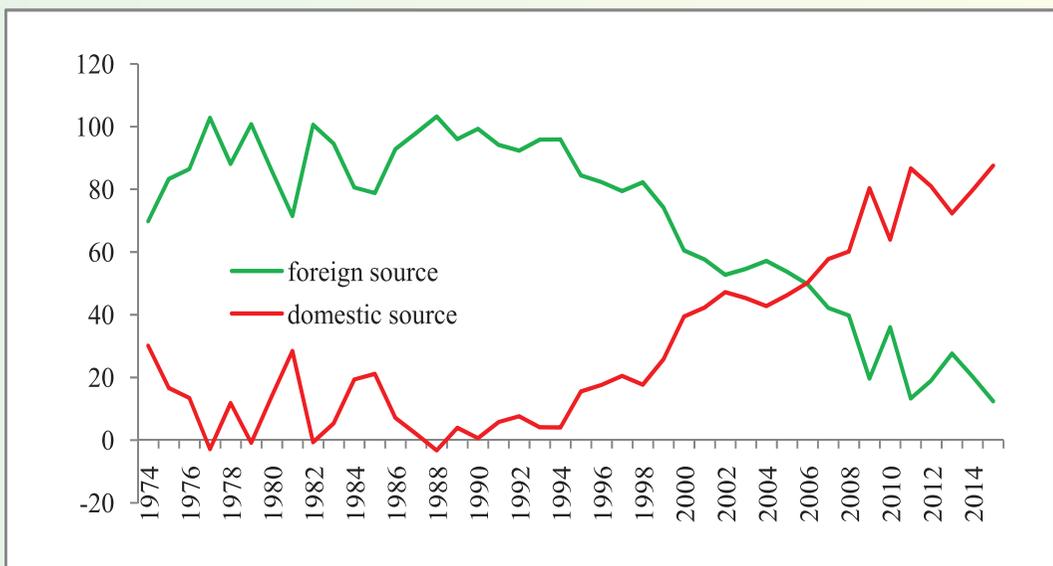
Table 1: Sources of Government Revenue (%)

Components	1973	1992	2015
Income tax	4.9	13.6	32.5
Custom duty	33.1	28.9	10.5
Excise duty	28.0	14.7	0.7
Sales tax	9.9	Nil	Nil
VAT and SD	Nil	18.8	48.6
Other*	24.1	24.0	7.6

Note: VAT = Value Added Tax, SD = Supplementary Duty. *Includes other tax and all non-tax revenues.

Sources: Bangladesh Bank and Bangladesh Economic Review.

With regard to revenue collection, income tax and value added tax (including supplementary duty) were the main components for the increasing trend of total revenue as percent of GDP (Table 1). Customs duty, which was the largest component of total government revenue, declined drastically due to the liberalised import policy. Sales taxes were completely and excise duties were partially integrated with value added tax and supplementary duty.

Figure 7: Sources of Deficit Financing (%)

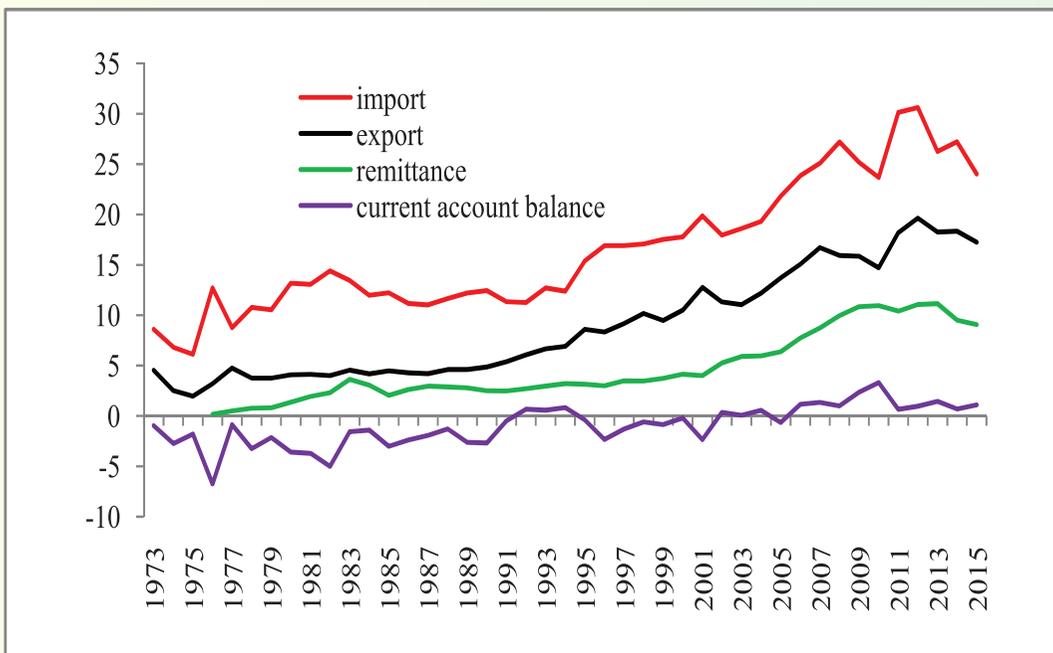
Source: Bangladesh Bank.

With regard to deficit financing, the share of foreign financing was very large compared to domestic financing during the 1970s and 1980s (Figure 7). The share of domestic sources started to increase and that of foreign sources started to decrease from the early 1990s, as the government became largely dependent on both bank and non-bank sources for deficit financing, specifically after 2006.

3.3 Movement of Economic Variables in the External Sector

The Current Account Balance (CAB) consists of net trade in goods (exports minus imports), net trade in services, net income from abroad and net current transfers. Among them, net trade in goods, net trade in services and net income were always negative and current transfers, which constituted mostly by workers' remittances, were always positive. Figure 8 shows the movement of CAB and its major components (% of GDP) for the period 1973-2015.

Figure 8: CAB and its Major Components (% of GDP)



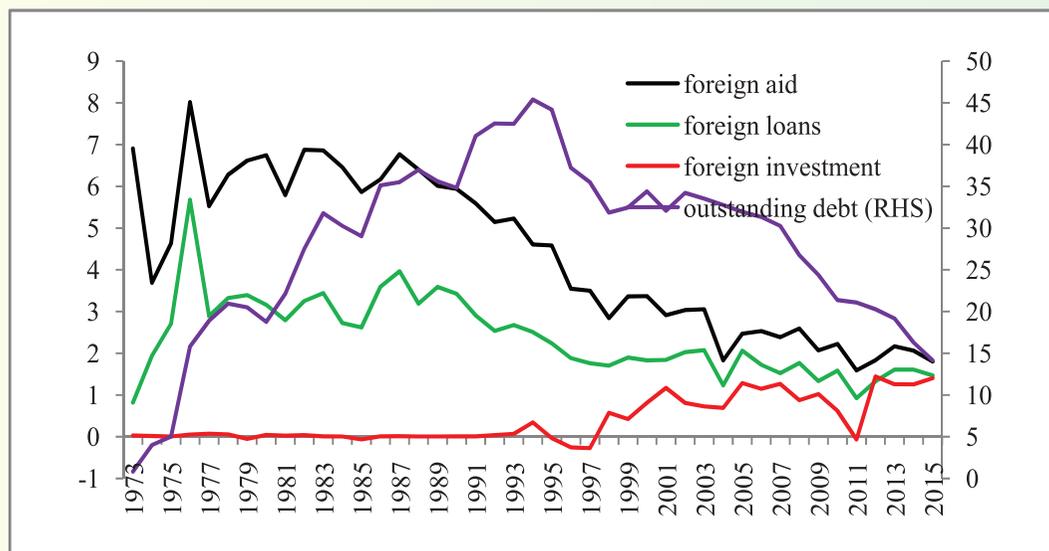
Source: Bangladesh Bank.

The current account balance turned positive in 1992 for the first time and continued up to 1995. It was positive again in 2002 and continued up to 2015, except 2005. The contribution of exports and remittances was very significant to make current account balance positive. The expansion of exports was mainly due to government policy that emphasised private sector led export-oriented industrialisation and therefore liberalised imports particularly for imports of industrial raw materials and capital machinery.

People from what is now Bangladesh had been migrating to the UK and the USA from the colonial period, mostly with the motive of settling themselves permanently or semi-permanently in those countries. After Independence, Bangladeshi nationals migrated to the Middle Eastern countries after the first oil price hike in 1973, mostly so as to save money to send home remittances. However, such remittances increased over the years due to migration of more nationals not only to the Middle East but also to other Asian countries like Malaysia, Singapore, Japan and South Korea. Migration to the USA, the UK, Italy and Germany was also significant.

The capital account balance remains importance, as Bangladesh still depends on foreign aid and also expects more foreign investment. As Figure 9 shows, the foreign aid (loans plus grants) as percent of GDP was very high during the 1970s and 1980s, but it showed a steep declining trend after 1987. On the other hand, the foreign investment (direct plus portfolio) as percent of GDP was very low up to 1993, but it increased thereafter.

Foreign aid was very essential for Bangladesh during the first two decades of independent Bangladesh to overcome two critical economic gaps-the domestic savings-investment gap and the export-import gap (Dornbusch & Edwards, 1990). The situation improved over the years due to the increase of export earnings and workers' remittances. Besides, the domestic savings rate also increased due to the improvement of per capita income. As a result, foreign aid as percent of GDP decreased sharply over the years. Among the components of foreign aid, the grants-GDP ratio decreased more compared to the loans-GDP ratio (Figure 9).

Figure 9: Foreign Aid, Foreign Investment and Outstanding Debt (% of GDP)

Note: The difference between black line and the green line measures grants (% of GDP).

Sources: BB, WDI, BER and ERD.

Although the foreign aid as percent of GDP and even outstanding debt as percent of GDP decreased over the years (Figure 9), the trend of their absolute value was increasing until 2015. Besides, the government of Bangladesh still pursues foreign aid particularly for the development of infrastructure like roads and highways, railways, bridges, flyovers and electric power. Currently, foreign aid in the form of project aid is very high compared to food aid and commodity aid. The most foreign aid has been from international agencies.

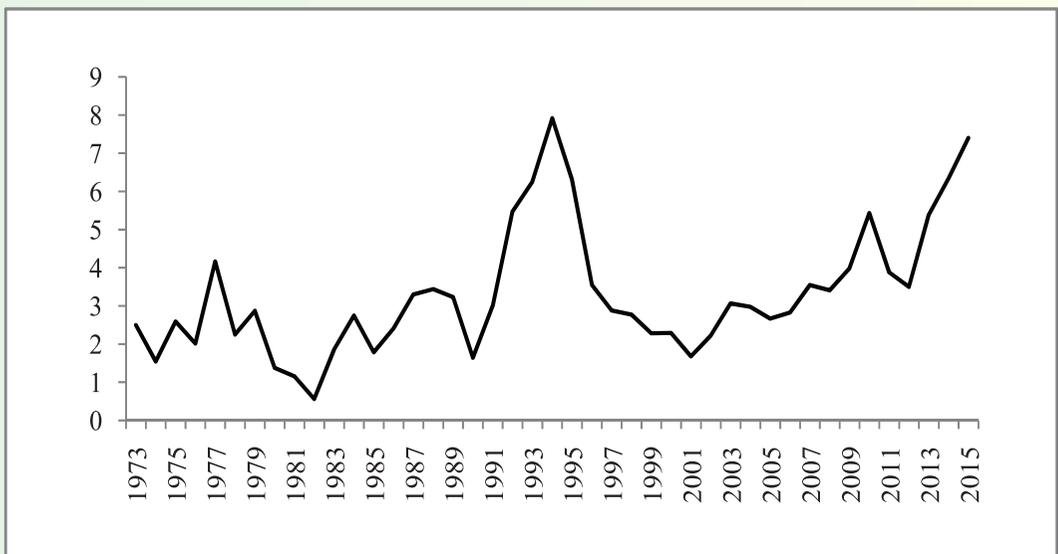
Foreign investment registered an increasing trend from the early 1990s due to government's initiatives, particularly the expansion of EPZs. The government opened almost all manufacturing and service sectors for foreign investors either independently or through joint ventures with local public and private enterprises. Non-discriminatory treatment between foreign and local investors was insured with respect to loan facilities, tax exemption and technical assistances; non-expropriation of foreign investment by the state; repatriation of proceeds from sale of shares and profit; and the opportunity of unlimited equity participation. Considering the favourable environment, many foreign investors from different countries invested in different projects. Asian countries were the largest investors out of the 53 countries that invested in Bangladesh during 2006-2015.

They invested mostly in telecommunications, followed by health services.

Among the components of foreign investment, only direct investment was visible in Bangladesh. Portfolio investment faced averse sentiment and turned total foreign investment negative during the stock market crashes of 1996 and 2011. However, foreign direct investment as percent of GDP was very low in Bangladesh (1.4) compared to many developing countries including India (2.1), Vietnam (6.1), Myanmar (6.8) and Cambodia (9.4) in 2015.

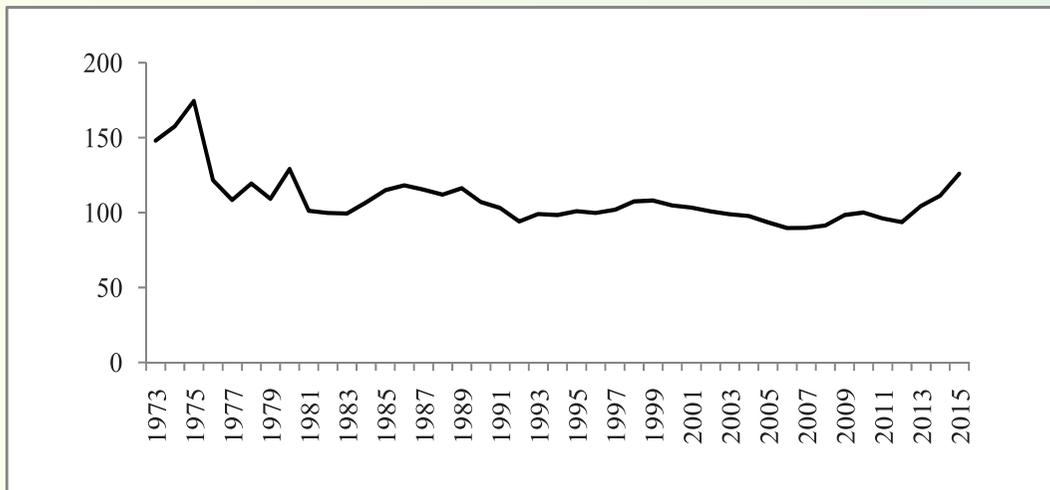
Foreign exchange reserves, which indicate the strength of the external sector, increased significantly over the years, mainly due to the good performance of export earnings and the inflow of workers' remittances. The inflows of other current transfers, foreign aid and foreign investment were also important. Import coverage of forex reserves increased significantly over the years and stood at 7.4 months of import payment in 2015 (Figure 10). Import coverage in the mid-1990s was also very high largely due to low import growth (3.0 percent) compared to export growth (9.8 percent) and remittance growth (15.3 percent). Besides, the large inflow of portfolio investment was important in that period.

Figure 10: Import Coverage of Forex Reserves (Months)



The Real Effective Exchange Rate (REER) was mostly stable with mild fluctuations particularly after 1976, though the nominal exchange rate depreciated remarkably over the year (Figure 11). The nominal exchange rate of BDT stood at USD1 = BDT77.67 in 2015, while it was USD1 = BDT7.88 in 1973. However, there were some real appreciations of BDT against partners' currencies, due to the upward movement of domestic prices. BB's intervention on foreign exchange market was also significant as it controlled the nominal exchange rate directly up to May 30, 2003 and indirectly thereafter. From May 31, 2003, Bangladesh Bank declared floating exchange rate strategy, but intervened sometimes when necessary. In this regard, Bangladesh Bank sells or purchases foreign exchange to the commercial banks in order to control the exchange rate indirectly.

Figure 11: Movement of REER Index (Base: 2010 = 100)



Note: The upward movement of REER index indicates real appreciation and vice versa.

Source: Bangladesh Bank.

4. Concluding Remarks

The fundamental change in the economic policies of Bangladesh occurred after the mid-1970s when the government decided to make the economy more market-oriented and competitive to the international markets. The main objectives of the policy change were higher economic growth, and the reduction of inflation and unemployment. To fulfil these objectives, the governments emphasised private investment particularly in the export-oriented industries and adopted liberalised economic policies especially in the

field of import, bank credit and foreign exchange transactions.

According to the findings of this study, the government policies were associated with higher GDP growth and lower inflation. The dependence of the economy on the agricultural sector reduced and reliance on industrial sector increased over the years. The share of agriculture in GDP reduced from 55 percent in 1973 to 17 percent in 2015, while that of industry increased from 10 percent in 1973 to 32 percent in 2015. Domestic savings as percent of GDP increased from less than 1 percent in 1974 to 19 percent in 2015, while the investment as percent of GDP increased from 6 percent in 1974 to 27 percent in 2015. Though the fiscal deficit as proportion of GDP did not reduce over the years, government revenue and expenditure as proportion of GDP increased significantly. Among the components of revenue, the share of income tax reached 33 percent in 2015, from only 5 percent in 1973. The introduction of VAT and SD was very significant in the field of revenue collection and their contribution to total revenue stood at 49 percent in 2015.

On the expenditure-side, the allocation for the infrastructure development increased over the years. As a result, the transport and communication, local government and rural development, education and information technology, and the energy sector of Bangladesh improved significantly over the years. With regard to deficit financing, the dependence on foreign sources reduced and the reliance on domestic sources increased significantly over the years. The share of foreign sources reduced from 83 percent in 1975 to 12 percent in 2015.

With regard to external sector, both exports and imports as percent of GDP increased substantially over the years and the export growth was slightly better than that of import. But the trade deficit as percent of GDP did not decrease much. The export-GDP ratio increased from 5 percent in 1973 to 17 percent in 2015, and the import-GDP ratio increased from 9 percent in 1973 to 24 percent in 2015. The linear trend growth of export during 1976-2015 was 11 percent, while that of import was 9 percent. Workers' remittances as percent of GDP significantly increased over the years and stood at 9 percent in 2015, from only 0.2 percent in 1976. The current account balance depicted positive values for the last couple of years due to mainly the positive effects of export earnings and workers' remittances.

This enabled a reduction in dependence on foreign aid over the years, which was earlier

needed largely to maintain overall balance of payments (current account plus capital account). The foreign aid-GDP ratio reduced from 7 percent in 1973 to 2 percent in 2015. However, the government pursued some foreign aid till 2015, which was used mainly for the infrastructure development. Foreign direct investment increased over the years due to government initiative, though it was very low compared to other Asian developing countries. Finally, the foreign exchange reserves increased much over the years and its import coverage stood at 7.4 months of import payments in 2015, up from 2.5 percent in 1973.

The contribution of the external sector, particularly the export earnings and the workers' remittances, were very important behind the success story of Bangladesh economy. Despite this success, Bangladesh is still included in the LDC bloc and its per capita GDP is low compared to other countries in the region, including India, Sri Lanka and even Pakistan. However, Bangladesh is going to overcome LDC status by 2024 if the current trend of economic growth continues in the next six years.

References

- Alam, A. M. Q., Strategies of Industrialisation, In H. Zafrullah, M. A. Taslim & A. Choudhury, Policy Issues in Bangladesh, South Asian Publishers, New Delhi, 1994, pp. 137-162.
- Bangladesh Bank, Financial Sector Reform Programme, In Annual Report (Chapter 3), Bangladesh Bank, Dhaka, 1991.
- Bhattacharya, D. & Titumir, R. A. M., Bangladesh Experience with Structural Adjustment: Learning from a Participatory Exercise, Second National Forum of SAPRI Bangladesh, Dhaka, 2001.
- Chakravarty, S. R., Bangladesh under Mujib, Zia and Ershad: Dilemma of a New Nation, Har-Anand Publications, New Delhi, 1995.
- Dornbusch, R. & Edwards, S., Macroeconomic Populism. Journal of Development Economics, Vol. 32(2), 1990, pp. 247-277.
- Government of Bangladesh, External Sector, Bangladesh Economic Review (Chapter 6), Finance Division, Dhaka, 2014.
- Hossain, A. & Chowdhury, A., Fiscal Policy, In H. Zafrullah, M. A. Taslim & A. Choudhury, Policy Issues in Bangladesh, South Asian Publishers, New Delhi, 1994, pp. 38-67.
- Maniruzzaman, T., The Bangladesh Revolution and Its Aftermath, The University Press Limited, Dhaka, 1980.
- Matin, K. M., Bangladesh and the IMF: An Exploratory Study. Bangladesh Institute of Development Study, Dhaka, 1986.
- Moral, L. H., Banking Sector Reforms in Bangladesh: Measures and Economic Outcomes, In Bangladesh Economic Association Biennial Conference. Dhaka, 2012.
- Rahman, M., Ahamad, M. G., Islam, A. K. M. N. & Amin, M. A., Agricultural Trade between Bangladesh and India: An Analysis of Trends, Trading Patterns and Determinants (Working Paper No. 3), CPD (Dhaka) and CMI (Bergen), 2012.
- Rahman, M., Shadat, W. B. & Raihan, S., Trade Liberalization in Bangladesh: Phases, Pace and Sequence, In Trade Liberalization, Manufacturing Growth and Employment in Bangladesh, Academic Foundation, New Delhi, 2010, pp. 41-79.
- Rahman, N. N., Policy Reforms and Trade Liberalization in Bangladesh, UNCTAD, Geneva, 2006.
- Rahman, S., They Failed to Honour the Father of the Nation, Amardesh, Dhaka, March 21, 2012.
- Time, Bangladesh: Mujib's Road from Prison to Power, The Time Magazine, USA, January 1972.
- World Bank, Bangladesh Trade Liberalization: Its Pace and Impacts, South Asia Region, World Bank, 1999.

Estimating Monetary Policy Reaction Function for Bangladesh: AVAR Model Analysis

LuthfeAra Begum¹
Nasrin Sultana²
Rubana Hassan³
Omar Faruk⁴

Abstract

Monetary policy maker adjusts its policy instruments to reach the policy objectives under the guideline of a monetary policy rule. In this context, monetary policy rule could be better described by monetary policy reaction function. The purpose of this study is to examine Bangladesh Bank's monetary policy reaction function applying VAR model over the period of 2004m1 to 2017m11. The results show that the call money rate has positive and significant response to a shock to the inflation gap, the exchange rate gap or the lagged call money rate, while it responds negatively to a shock of output gap. Similar results have been found when we re-estimate the model using Treasury bill rate. These outcomes suggests that we can apply and extend the Taylor rule using inflation gap, output gap, exchange rate and lagged interest rate in case of Bangladesh. The study has also an important policy implication of choosing the treasury bill rate as the policy instrument in implementing the monetary policy.

Keywords: Monetary Policy Reaction Function, Taylor Rule, VAR model, Impulse Response Function, Variance Decomposition.

JEL Classification: E4, E5.

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- ¹ General Manager, Research Department, Bangladesh Bank.
² Joint Director, Monetary Policy Department, Bangladesh Bank.
³ Joint Director, Monetary Policy Department, Bangladesh Bank.
⁴ Assistant Director, Monetary Policy Department, Bangladesh Bank.

Views expressed in this paper are author's own and not necessarily reflect the views of Bangladesh Bank.

Introduction:

The analysis of monetary authority's reaction in response to economic development and the impact of their actions on the economy are the key area of discussions in the monetary economics. In the Aftermath of the globalization and financial liberalization monetary policy has started focusing on output stabilization instead of promoting economic growth, hence, rule-based monetary policy are getting popular over discretionary monetary policy. Purely discretionary policy setting leads to higher inflation, while, rule based monetary policy may be the best strategy to reduce inflation and minimizing the output and inflation variability. Under rule-based regime, central bank set explicit values as intermediate target which are strongly related to output and inflation stabilization.

Bangladesh does not follow inflation targeting or any rule-guided monetary policy strategy rather it follows the monetary policy framework with substantial discretion which is time-inconsistent (Islam and Uddin, 2011). Monetary policy reaction function which critically examines the behavior of monetary policy in response to the deviation of output and inflation is considered as very important for Bangladesh, as Bangladesh with its evolving monetary regimes is on the path of modernizing its monetary policy framework and considering to move away from monetary targeting to inflation targeting policy strategy. Under the monetary targeting framework Bangladesh bank's policy actions changes reserve money, which also changes broad money and ultimately the final objective, price stability is achieved. Though monetary targeting enables a central bank to adjust its monetary policy to cope with domestic consideration, controlling inflation is subject to long and uncertain lags and also money demand function may not be stable in monetary targeting; while, inflation targeting is better than monetary targeting to control inflation. Before going to inflation targeting it is crucial to examine how interest rate works to stabilize output and inflation and what is the relationship between interest rate and the macroeconomic variables.

Many argue that Inflation targeting is implemented through the Taylor rule in which interest rates are adjusted to the stabilization of inflation and output. Therefore, the paper attempts to examine Bangladesh Bank's monetary policy reaction based on Taylor rule. For this aim the Central Bank's monetary policy reaction function have been estimated to measure the performance of monetary policy and evaluate the relationship between monetary policy and macroeconomic variables. VAR model is employed in this

paper taking into consideration of possible simultaneous relationships among the variables and to avoid the simultaneity bias problem. The impulse response function and variance decomposition of the interest rate are estimated to determine how interest rate responds to the shock of inflation gap, output gap and exchange rate and to determine the factors that explain the variance of the interest rate. In this case, we have used both the call money rate and the treasury bill rate as the interest rate to examine which one more pronouncedly responds to the shock of endogenous variables that will also help us in choosing the appropriate policy instrument which works better to stabilize inflation in case of Bangladesh. The paper consists of six sections; section 2 describes theoretical aspects of Taylor rule and Section 3 presents review of literature. Section 4 analyses theoretical model, section 5 documents empirical result sand section 6 concludes.

Taylor Rule:

The Taylor rule can be described as the special reaction function where interest rate acts as a function of current inflation, output gap and the difference between current inflation and targeted inflation. Taylor rule is a linear algebraic rule described by the following equation:

$$i_t = r^* + \pi_t + a_\pi (\pi_t - \pi^*) + a_y (y_t - y_t^p)$$

Where

i_t = Central Bank Policy rate (nominal interest rate)

r^* = equilibrium real interest rate

π_t = Average inflation rate

π^* = Inflation target of the central bank

y_t = logarithm of real GDP

y_t^p = logarithm of potential output

$(y_t - y_t^p)$ = Output Gap

According to Taylor rule, central bank raises its policy rate when actual output is greater than potential output which signifies that an economy is operating beyond the potential level and it is required to back to its potential level by accelerating policy rate. The coefficient of inflation gap is positive when actual inflation is above the targeted level,

then it is suggested that central bank should raise its policy rate to back its inflation to its potential path.

Taylor couldn't estimate the equation econometrically. Taylor assumed that the weights central bank (Federal Reserve Bank) gave to deviation of inflation and output were both equal to 0.5; thus, for example, if inflation were 1 percentage point above its target, the central bank would set the real fund rate 50 basis point above its equilibrium value (Redebusch,1998)

Review of Literature

Fed's monetary policy reaction function indicates how Fed alters its monetary policy in response to economic development. Mehra (1999) has estimated a forward looking monetary policy reaction function that exhibits how policy responds to the long term inflationary expectations as reflected by the behavior of the bond rate. The GMM estimates of the two short-run monetary policy reaction function for the two sample periods of 1960Q2 to 1979Q2 and 1979Q3 to 1998Q2 indicates that the fund rate rises if actual inflation rises, if future inflation is expected to increase, if output is expected to be above trend, or if current bond rate moves relative to expected future inflation rate. The study finds that real funds rate target was very responsive to inflation in the post-1979 period (Volcker-Greenspan period) than in the pre-1979 period. The study has recommended that there was macroeconomic stability in the U.S. economy because interest rate policy pursued in Volcker-Greenspan period was very responsive to expected inflation and the real fund rate increased in response to inflation in this period.

Galbraith et. al (2007) have used VAR model for the American economy which also aims to investigate whether Fed responds to inflation signals during the period of 1983-2003. The study finds only one causal variable, term structure which indicates the importance of term structure as an economic indicator. The finding of the paper is that term structure is influenced by unemployment and is not affected by inflation. Using simple but powerful dummy regression the author wants to show the behavior of central bank in response to the deviation of inflation and unemployment from the target through Taylor's rule for the two distinct periods of 1969-1883 and 1984-2006 where monetary policy stance has been represented by yield curve. The study also finds that term structure of interest rate doesn't respond to inflation after 1983 unless unemployment is giving the same signal as inflation. Earnings inequality in manufacturing sector has been found to be responsive to term structure in Federal Reserve System. Therefore, the study

has recommended that Fed's policy influences the inequality and more specifically, the term structure of interest rate prevailing in the Federal Reserve System contains the information regarding the measure of inequality in earnings besides information on inflation and unemployment.

Using annual data for the period of 1973-2008 Malik, W. and Ahmed, A. have estimated Taylor- type reaction function and its slight modified version defined over inflation and real GDP growth in order to see whether or not Central Bank of Pakistan(SBP) has been focusing on two objectives: price stability along with output stabilization. Conducting recursive estimation of reaction function the study has found SBP's policy inconsistency in response to inflation and output deviation from their respective targets, while policy consistency improved after the year of 2002. The study has recommended that SBP has got autonomy in setting monetary policy instrument due to financial sector reform.

Employing both backward and forward looking policy rules Rotich, H. Kathanje, M and Manna, I (2007) have examined whether central bank of Kenya reacts to changes in inflation, GDP growth and the exchange rate in a consistent and predictable fashion as predicted by standard Taylor rule. CBK has responded in reducing money supply when inflation is high and output is positive. The study has concluded that CBK would respond by increasing repo rate during the period of high inflation. Including lagged inflation to the baseline reaction function the study has also found that a backward looking specification is important for Kenya and CBK takes into account past inflation in implementing monetary policy.

Muhammad et al.(2012) have investigated the monetary policy reaction function in Pakistan to identify the importance of the goals of monetary policy for central bank of Pakistan (CBP). In order to find out the main objective of monetary policy, rolling window technique has been employed and the study has found that after 2002 main focus of monetary policy for central bank of Pakistan was inflation. The findings of the paper is that the regression coefficient of inflation and exchange rate is insignificant because in case of Pakistan there was cost push inflation which could not be controlled by monetary policy and uncertainty and risk factor coefficient was also found insignificant in case of Pakistan. The study has recommended that State Bank of Pakistan did not strictly follow Taylor's rule and its monetary policy was discretionary.

Emir et al.(2000) have estimated monetary policy reaction for measuring the

performance of monetary policy and evaluating the relationship between monetary policy and macroeconomic variables. Estimation has been conducted for two sub-periods, in the pre-crisis period (1990-1993) low degree of sterilization, offset and neutralization co-efficient suggest that central bank of turkey (CBRT) implemented a relatively accommodative policy to fiscal policy by expanding domestic credit to finance budget deficit. On the other hand, in the post crisis period (1995-1999) high level of sterilization, CBRT implemented more active policy by sterilizing most of foreign assets increase and neutralizing the expansion of government credit by reducing banking sector credit. The link between high sterilization and low inflation was not observed in the post-crisis period since the pricing behavior of economic agents in the goods and factor market was dramatically changed in the post crisis period which also changed the inflationary process.

Rigobon and Sack (2001) have used identification technique based on the heteroskedasticity of stock market returns to effectively measure the magnitude of monetary policy reaction function to stock prices in USA, even though stock market is endogenously reacting to interest rate at the same time. The study found that the significant and positive reaction of monetary policy to stock market and, therefore, interest rate changes with the same direction of changes in stock prices. The finding of the paper is consistent with Alan Greenspan's view which states that policymaker should respond to the stock prices according to their influence on the outlook of output and inflation.

Fung (2010) has estimated a simple Taylor-type monetary policy reaction function for the Dominican Republic (DR) for the period of 1970-98 by using vector autoregressions in order to assess the effects of the actions of monetary authorities. Following Judd and Rudebusch, the author has estimated modified version of Taylor's rule where monetary base reacts to $Erdiff$ (differential between black market exchange rate and official exchange rate), $ygap$ (output gap) or both. The estimation has also been conducted for the two distinct-periods, during the period of 1970-84; authorities followed an accommodative policy and did not give importance in using the differential between the official exchange rate and the black market exchange rate as one of the main policy targets. In this paper, the implicit reaction of monetary authorities was more systematic in the period of 1985-98 than the period of 1970-84 which might be explained by the determination of monetary authorities to 'implicitly' follow the feedback rules in monetary policy making rather than extreme discretion.

Salgado et al. (2005) have estimated the reaction function for central bank of Brazil for the period of August, 1994 to December 2000. In order to empirically show whether central bank of Brazil follows non-linear monetary policy reaction function they have used threshold autoregressive model (TAR) with exogenous variable that contemplate the changes in dynamics of nominal interest rate between the period of tranquil and crises. In order to verify whether Brazilian nominal interest rate would follow the modified Taylor rule, a linear model was estimated. Except constant and output gap, all the co-efficient are statistically significant and have expected signs, still the linear model is not correctly specified, as ARCH effect is present and the hypothesis of normally distributed residual is strongly rejected. In order to show the dynamics of Brazilian nominal interest rate during the two periods-the crisis period and tranquil period, a TAR model proposed by Tsay in 1989. Comparing the linear model with the TAR, there are significant advantages of the TAR approach. In fact, there is no evidence of misspecification in the TAR approach, whereas, misspecification presents in the linear model. SBIC is smaller in the TAR model, which represents improvement to fit when considering the two regimes. Therefore, TAR model is more appropriate to represent the monetary policy reaction function in Brazil for the period of August, 1994 to December 2000.

Chang (2005) has estimated the monetary policy reaction function for Taiwan by extending the Taylor rule and considering whether central bank of Taiwan reacts in response to exchange rate gap and stock price gap in addition to inflation gap and output gap. The impulse response function and variance decomposition model for the interest rate have been estimated to find the possible responses of discount rate and collateral loan rate to a shock of one of the endogenous variables and to identify the explanatory power of each of variables on the variance of interest rate. The study has found that discount rate and collateral loan rate respond positively and significantly to a shock to inflation gap, stock price gap or the lagged interest rate, but doesn't respond significantly to a shock to the output gap or exchange rate gap.

Inoue T. and Hamori S. (2009) have estimated India's monetary policy reaction function by applying the simple Taylor rule and also have augmented the simple Taylor rule by including exchange rates. The analyses uses monthly data for the period of April 1998 to December 2007. They have employed the dynamic OLS method instead of ordinary least squares and found that output gap coefficient was statistically significant and the

sign of its coefficient was rational with the theory; however, inflation coefficient had been found insignificant. Including exchange rate in the base line, coefficient of output gap and exchange rate gap had the statistical significance with the expected signs, while, inflation coefficient still remained insignificant. The result of the study indicates that short-term interest rate is not effective instrument to control inflation in India. Based on empirical results the study concludes that inflation doesn't play significant role in conducting monetary policy in India and, therefore, India should not follow inflation targeting policy framework.

The Model

The Taylor rule linearly maps inflation gap and output gap with targeted interest rate. The Taylor's equation presents a simple relationship, yet it is found to be a very powerful rule in analyzing monetary policy. Apart from equating inflation gap and output gap in interest rate modeling, it was felt necessary to include other economic variables that are likely influence interest rate. Ball (1999) found that adding the exchange rate to the benchmark policy rule could improve macroeconomic performance in a small open economy model. The exchange rate was included to the policy rule in two ways in Ball's analysis. First the central bank uses a monetary conditions index in place of the interest rate as its instrument. Second, the lagged exchange rate is added as a variable to the policy rule. The net effect of these two changes is to add the current and lagged exchange rate to the right hand side of the policy rule. Ball found that, for the same amount of inflation variability, output variability could be reduced by 17 percent by adding the exchange rate to the policy rule in this way.

Taylor rule is developed for closed economy where central banks can concentrate on the interest rate only. In real world this phenomenon is absent in monetary policy. In closed economy condition Taylor rule may provide an efficient result in measurement of short term interest rate but in open economy Taylor rule should be modified or extended.

We want to estimate monetary policy reaction function for Bangladesh where we have extended the Taylor rule using exchange rate. In implementing monetary policy we consider exchange rate as a policy variable because it affects both international trade as well as economic growth. Our empirical model is specified as follows.

Original Taylor rule:

$$i = f(\text{YGAP}, \text{PGAP})$$

Where,

i = short term interest rate

YGAP = the output gap ($Y - Y^*$)

PGAP = inflation gap ($\pi - \pi^*$)

Extended Taylor rule includes exchange rate

$$i = f(\text{YGAP}, \text{PGAP}, E)$$

where,

E = exchange rate in term of BDT

Replacing short term interest rate with Call Money Rate (CMR), the equation can be estimated by the following VAR (Vector Auto Regression) model,

$$X_t = \beta_1 X_{t-1} + \dots + \beta_m X_{t-m} + \theta Z_t + \varepsilon_t$$

Where,

X_t = Vector of the endogenous variables (CMR, YGAP, PGAP, E)

Z_t = Vector of exogenous variable

β and θ = Parameter matrices

ε_t = White noise error term

As the Taylor rule indicates that short term interest rate (CMR) would response positively to a shock to YGAP or PGAP. But now at extended Taylor rule we also expect that exchange rate and short term interest rate (CMR) are positively related that is when BDT becomes stronger or the exchange rate rises, central bank of Bangladesh (Bangladesh Bank) would attempt to stabilize weak BDT by conducting tight monetary policy or raising the short term interest rate (CMR) so that demand of BDT would increase. So in our analysis we included exchange rate data as an explanatory variable in determining BB's policy rate.

The data set:

To use the extended Taylor rule the data set must be prepared first. The sample consists of monthly data for the period of 2004m1 to 2017m11. Industrial production index has

been taken as proxy variable of real output. Industrial production index (Y), the CPI, the call money rate and the exchange rates have been taken from the International Financial Statistics published by IMF; while, the 91-day treasury bill rates have been taken from Monetary Policy Department. Inflation rate is derived from the CPI. Potential output is estimated based on the Hodrick-Prescott filtering process. Output gap (ygap), is calculated based on difference between real GDP and its Hodrick-Prescott filtered values. Inflation gap is measured calculating the gap between the actual inflation and the target value of inflation. Target value of inflation has taken from the various publications of annual reports and monetary policy statements (MPS).

Empirical Results:

The empirical analysis of monetary policy reaction function for Bangladesh based extended Taylor rule and using the VAR model over the period of 2004m1 to 2017m11 have been shown in this section. In the VAR estimation, based on final prediction error(FPE) and Akaike information criteria (AIC) optimum lag order has been selected at 3. Augmented Dickey-Fuller(ADF) tests are conducted to test for the presence of unit roots in levels, ygap, pgap, exr and cmr. The test statistics and the critical values are given in table-1.

Table-1. Unit root test:

Variable	ADF Test Statistics	99% Critical Value	Conclusion
cmr	-1.505	-2.57	unit root at level
exr	-1.659	-3.47	unit root at level
ygap	-2.93	-3.47	unit root at level
pgap	-2.78	-3.47	unit root at level
tbill	-1.66	-3.47	unit root at level
Δ cmr	-11.934	-2.58	Stationary at 1
Δ exr	-11.01	-3.47	Stationary at 1
Δ pgap	-11.21	-3.47	Stationary at 1
Δ ygap	-7.54	-3.47	Stationary at 1
Δ tbill	-8.696	-3.47	Stationary at 1

The test statistics for the stationary of the levels of y_{gap} , $pgap$, exr and cmr indicate the presence of a unit root for 1% level of significance. The test statistics for the first differences of all those variables at 1% level lead to rejection of null hypothesis of a unit root indicating all of the variables are integrated of order 1.

Whether the variables are co-integrated or not has been tested by Johansen co-integration test (table- 2). Comparison of the likelihood ratio test statistics with the 95% critical values indicate that cointegration hypothesis is rejected at 5% level and hypothesis of at most 3 cointegrating vector cannot be rejected at 5% level. Therefore, it is concluded that there is a long run stable relationship among the variables.

Table-2. Johansen Cointegration test:

Eigen Value	Trace statistics	95% critical value	Hypothesized number of CE's
0.398075	119.4260	47.85613	None *
0.142763	39.72928	29.79707	At most 1 *
0.082170	15.54482	15.49471	At most 2 *
0.013181	2.083125	3.841466	At most 3

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

Graph 1 (in appendix) presents the impulse response function of the call money rate (cmr) with a 95% confidence interval. Call money rate (cmr) responds positively to a shock to the inflation gap, the exchange rate and the lagged call money rate during some period of months, while cmr responds negatively with the output gap. These findings suggest that Bangladesh Bank (BB) pursues tight monetary policy and raises its policy instrument when inflation gap widens and exchange rate gets depreciated. When exchange rate rises meaning that taka becomes weaker against the dollar, in response to this phenomena BB pursues tight monetary policy, therefore, interest rate increases and demand for domestic currency rises which contributes exchange rate to decrease.

However, Call money rate (cmr) negatively responds with the output gap which is not unusual in case of Bangladesh, as Bangladesh Bank doesn't put emphasis on growth stabilization rather it works on promoting economic growth. Another interesting finding is that the exchange rate (Taka-dollar exchange rate) responds positively to shock to the

output gap. It suggests that when actual output is above the potential level partly due to rise in export or FDI inflows, then Bangladeshi Taka becomes stronger against the dollar. From the above analysis it can be said that call money rate could be used as policy instrument to stabilize inflation, as it is positively responds to inflation gap. Similar result has been found from the analysis of variance decomposition of the call money rate. From table-1 (in appendix), it can be said that lagged call money rate is the most influential variable in explaining the variation of call money rate for all of the period. However, inflation gap is the second most influential variable, as it explains up to 12.55% variation of call money rate.

We re-estimated the VAR model using treasury bill rate (tbill-rate) instead of using call money rate (cmr) to show the response of tbill rate because the weighted average call money rate sometimes does not reflect the actual market interest rate due to outlier effects in the transaction value as well as in the rates. Like before, from graph-2 (in appendix), it can be said that tbill-rate responds positively to a shock to inflation gap and the response is more pronounced in case of tbill-rate than that of call money rate (cmr). However, the response of treasury bill rate to the shock of output gap is very negligible, though most of the period it reacts negatively which suggests that interest rate doesn't work to stabilize output. From the variance decomposition (table-2 in appendix) of treasury bill rate it can be said that up to 98.08% and 26.43% variation in treasury bill rate can be attributed to the lagged treasury bill rate and inflation gap which indicate that lagged treasury bill rate and inflation gap are the determining factors in explaining the variation of treasury bill rate. The findings suggests that interest rate works as an instrument to stabilize inflation in Bangladesh, indicating that Bangladesh Bank (BB) may take inflation targeting monetary policy strategy if the necessary pre-conditions of inflation targeting policy strategy are full-filled.

Conclusion:

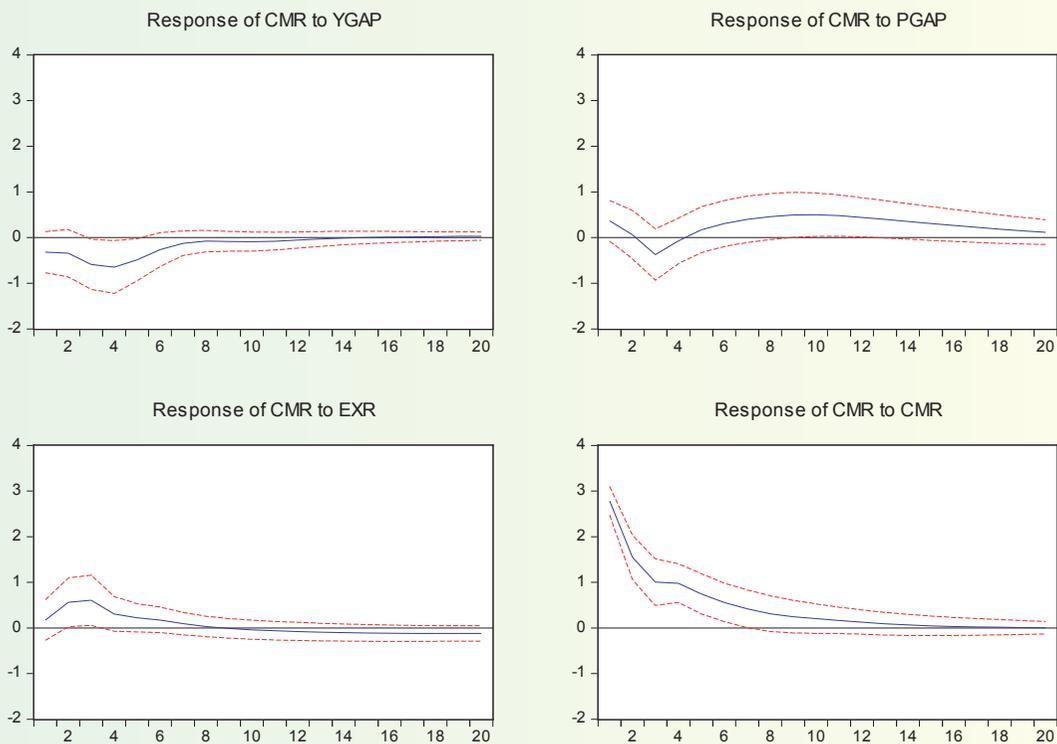
In this study, we have estimated monetary policy reaction function for Bangladesh Bank by extending the Taylor rule and applying the VAR model. Finding of the paper is that both call money rate and Treasury bill rate respond positively to a shock of the inflation gap, exchange rate gap and the lagged interest rate (call money rate and Treasury bill rate). Another interesting finding is that Treasury bill rate responds positively and more pronouncedly in response to inflation gap than the response of call money rate. On the other hand, both call money rate and Treasury bill rate responds negatively to a shock of

output gap and the response is very much small for most of the months. There are several policy implications which are also worth mentioning. Finding of the paper suggests that the Taylor rule can be applied in case of Bangladesh and can be extended by adding exchange rate and using lagged interest rate. The lagged call money rate is the most contributing factor in explaining the variation of call money rate when we have estimated the model using call money rate. Similarly, in case of using treasury bill rate, the lagged treasury bill rate is the most important factor to explain the variation of treasury bill rate, since up to 98.02% variation of treasury bill rate can be attributed to the lagged treasury bill rate. From the analysis it can be said that whether we take call money rate or Treasury bill rate as the policy rate, we should include lagged interest rate in the Taylor Rule, otherwise, an omission of the lagged interest rate would cause specification error. Similarly, both call money rate and Treasury bill rate responds positively and significantly to exchange rate for some periods indicating that interest rate works to stabilize the currency, therefore, Taylor rule can be applied and extended using exchange rate. Interest rate negatively responds with the output gap as Bangladesh Bank does not put emphasis on output stabilization. Since the Treasury bill rate responds significantly and highly with the inflation gap it should be regarded as the more appropriate policy instrument to control inflation, therefore, it is better to use Treasury bill rate as an interest rate in developing monetary policy reaction function applying Taylor rule in case of Bangladesh.

Appendices

Graph:1

Response to Cholesky One S.D. Innovations ± 2 S.E.



Graph:2

Response to Cholesky One S.D. Innovations ± 2 S.E.

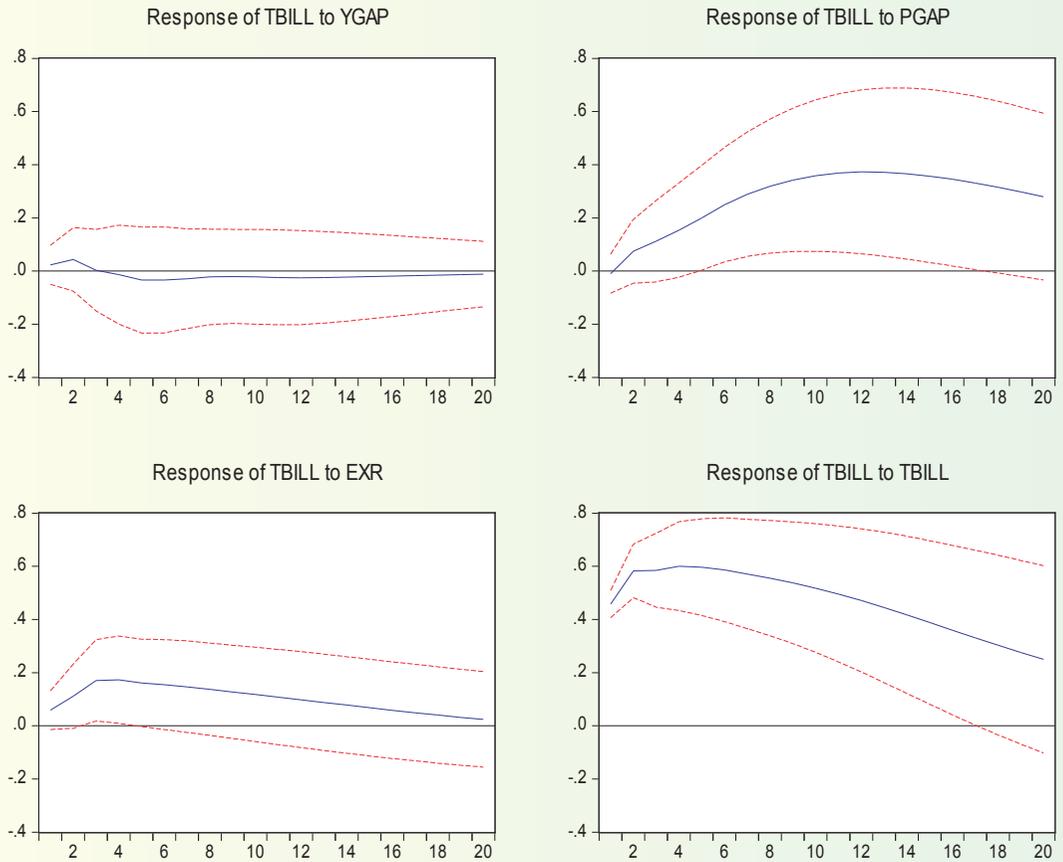


Table : 1

Variance Decomposition of CMR					
Period	S.E.	YGAP	PGAP	EXR	CMR
1	2.833816	1.282530	1.668238	0.370498	96.67873
2	3.295214	2.040174	1.265145	3.165733	93.52895
3	3.566275	4.474152	2.179708	5.586712	87.75943
4	3.767363	6.953310	1.990815	5.663075	85.39280
5	3.881254	8.132523	2.066381	5.656173	84.14492
6	3.945378	8.316903	2.607174	5.664178	83.41174
7	3.990370	8.229642	3.545805	5.590030	82.63452
8	4.029628	8.108308	4.777207	5.487030	81.62745
9	4.068202	7.999401	6.163657	5.384300	80.45264
10	4.105112	7.904668	7.542629	5.298033	79.25467
11	4.137476	7.818570	8.769898	5.238332	78.17320
12	4.164006	7.737289	9.785454	5.208155	77.26910
13	4.185067	7.665315	10.58841	5.205762	76.54051
14	4.201634	7.605844	11.20564	5.226868	75.96165
15	4.214595	7.559136	11.66791	5.266376	75.50658
16	4.224650	7.523664	12.00383	5.319460	75.15305
17	4.232366	7.497623	12.23856	5.382024	74.88179
18	4.238248	7.479347	12.39475	5.450786	74.67512
19	4.242746	7.467305	12.49229	5.523167	74.51724
20	4.246239	7.460098	12.54793	5.597154	74.39482

Table : 2

Variance Decomposition of TBILL					
Period	S.E.	YGAP	PGAP	EXR	TBILL
1	0.462254	0.256352	0.043323	1.620467	98.07986
2	0.756712	0.420545	0.976865	2.758206	95.84438
3	0.977962	0.252602	1.902403	4.691311	93.15368
4	1.170730	0.190720	3.053899	5.453399	91.30198
5	1.339316	0.210532	4.562800	5.611184	89.61548
6	1.491717	0.221210	6.476191	5.598187	87.70441
7	1.629948	0.217784	8.558183	5.497931	85.72610
8	1.756827	0.203400	10.66752	5.338185	83.79090
9	1.873228	0.191324	12.72176	5.154970	81.93195
10	1.979923	0.183590	14.67306	4.967066	80.17628
11	2.076990	0.180578	16.48579	4.783176	78.55046
12	2.164553	0.179753	18.14572	4.608385	77.06615
13	2.242708	0.179399	19.64954	4.446123	75.72493
14	2.311794	0.178512	21.00155	4.297689	74.52225
15	2.372315	0.177180	22.20949	4.163263	73.45007
16	2.424908	0.175644	23.28304	4.042487	72.49883
17	2.470248	0.174109	24.23205	3.934858	71.65898
18	2.509021	0.172603	25.06613	3.839800	70.92146
19	2.541893	0.171099	25.79452	3.756719	70.27767
20	2.569518	0.169573	26.42615	3.684979	69.71930

Cholesky Ordering: YGAP PGAP EXR TBILL

References

- Chang, H.S. (2005). Estimating the Monetary Policy Reaction Function for Taiwan: A VAR model. *International Journal of Applied Economics*, 2(1), 50-61.
- Emir, Y. C., Karasoy, A., & Kunter, K. (2000). Monetary Policy Reaction Function In Turkey. *Banking, Financial Markets and The Economies of the Middle East and North Africa, conference paper*.
- Galbraith, J. K., Giovannoni, O., & Russo, A. J. (2007). The Fed's Real Reaction Function: Monetary Policy, Inflation, Unemployment, Inequality-and Presidential Politics. University of Texas. *Inequality Project, Working Paper 42*.
- Hsing, Y., & H.Lee, S. (2004). Estimating the Bank of Korea's Monetary Policy Reaction Function: New Evidence and Implications. *The Journal of the Korean Economy*, 5(1), 1-16.
- Iklaga, F.(2009). Estimating a monetary policy reaction function for the central bank of Nigeria. <http://www.africametrics.org/documents/conference08/day2/iklaga.pdf>
- Inoue, T., & Hamori, S. (2009). An Empirical Analysis of the Monetary Policy Reaction Function in India. *The Institute of Developing Economies, Discussion Paper 200*.
- Iqbal, N. (2009). The Estimation and Evaluation of Monetary Reaction Function: An Empirical Study for Pakistan. *International Review of Business Research Papers*, 5(5), 325-345.
- Islam, M. & Uddin, M. (2011). Inflation Targeting as the Monetary Policy Framework: Bangladesh Perspective. *Economia. Seria Management*. 14. 106-119.
- Malik, S.W. (2007). Monetary Policy Objectives in Pakistan: An Empirical Investigation. *Pakistan Institute of Development Economics, Working Paper 35*.
- Mehra, Yash P. (1999). A Forward-Looking Monetary Policy Reaction Function. *Economic Quarterly*. Federal Reserve Bank of Richmond, 33-53.
- Nguyen, T. (2013). Estimating India's Fiscal Reaction Function. ASARC, *Working Paper 2013/05*.
- Rigobon, R., & Sack, B. (2001). Measuring the Reaction of Monetary Policy to the Stock Market. *National Bureau of Economic Research, Working Paper 8350*.
- Rotich, H., Kathanje, M., & Maana, I. (2008). A Monetary Policy Reaction Function in Kenya. *Annual African Econometric Society, Conference paper*.
- Shanchez-Fung, J.(2000). *Estimating a Taylor Type Monetary Policy Reaction Function for the Case of a Small Developing Economy*. University of Kent. Canterbury.
- Singh, K., & Kalirajan, K. (2006). Monetary Policy in India: Objectives, Reaction Function and Policy Effectiveness. *Review of Applied Economics*, 2(2), 181-199.
- Wasim, S. M., & Ahmed, M.A. (2008). Monetary Policy Reaction Function in Pakistan. <http://www.pide.org.pk/psde24/pdf/30.pdf>

Call for Research Papers

BBTA Journal

Thoughts on Banking and Finance

Thoughts on Banking and Finance is a half-yearly peer reviewed journal of Bangladesh Bank Training Academy devoted to the examination and critical analysis of economic, banking and financial issues. The journal publishes original empirical, methodological, policy and theoretical papers, contemporary and historical case studies, conference reports, and book reviews that address the topical issues of the relevant areas. The journal seeks to serve a broad range of economists, banking and finance professional in academia and industries. While the journal welcomes divergent views on economic, banking and financial topics, the journal also publishes views from research scholars on other disciplines such as law, management studies, public policy, ethics, information science, environmental and societal challenges concerning sustainable development and sustainable future.

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Guidelines for the Paper Contributors

BBTA Journal Thoughts on Banking and Finance is published twice in a year by Bangladesh Bank Training Academy (BBTA), Mirpur, Dhaka. It is a referred journal and publishes articles in the areas of economics, central banking, commercial banking and

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1. Articles should be typed in double space on one side of A4 size paper with generous margin and should not usually exceed 6000 words (including footnotes, tables and graphs). Each article should have an abstract within approximately 150 words. The hardcopy of article should be sent in duplicate, along with a soft copy in MS word.
2. The author should not mention his name and address on the text of the paper. A separate sheet bearing his full name, affiliation, mailing address and telephone number should be sent along with the main paper.
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New books (on economics, central banking, commercial banking and finance and as well as recent economic development) will be reviewed in the journal on request. Authors/publishers may send two copies of each book to the editor for the purpose of review.

All communications should be addressed to the following:

Executive Editor

Thoughts on Banking and Finance

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Research and Publications Wing

Bangladesh Bank Training Academy

Mirpur-2, Dhaka-1216

Telephone: 9033955, 01746614781, Fax: 8032110

E-mail: bbta.respub@bb.org.bd

Introduction to Bangladesh Bank Training Academy (BBTA)

Bangladesh Bank Training Academy (BBTA) is a training wing of central bank of Bangladesh, Bangladesh Bank pursues tasks of capacity building and human capital development in order to prepare skilled human resources in central bank as well as for commercial banks. BBTA organizes different training courses, training workshops, conferences, seminars and other related activities on main topics of economics, banking and finance, financial sector development, human resources development and macroeconomic management. It was established in 1977.

BBTA's Mandate

The purpose of the Academy is to undertake training activities for enabling the officials of central bank and the banking sector to perform their jobs efficiently well-equipped with the latest knowledge of economic, financial and banking developments. To this end, BBTA extends its all-out efforts to facilitate training to personnel engaged in the financial sector. It also works to modernize its library and information center to collect, systematize and disseminate information in the financial arena. Recently, a plan has been adapted to reorganize BBTA library as a **Knowledge Management Centre (KMC)**. This new role puts more weight on BBTA for knowledge creation and application. Since information is important to create new knowledge for educating staff and professionals, we hope that it would contribute to the creation of knowledge and disseminate knowledge for use by others.

BBTA's Strategic Objectives

Bangladesh Bank has adopted its 5-year Strategic Plan 2015-2019 and bestowed responsibilities upon BBTA (Strategic Goal # 8) to adopt all-out efforts to enhance professional excellence and grooming of the officers of Bangladesh Bank. To fulfill the target of the plan document, BBTA has been employing its full capacity to provide need-based training to the officials both from central bank and commercial banks; continuously striving to diversify the contents of its courses in order to ensure their consistency with evolving training needs; facilitating the practical application aspects of knowledge of economics, banking and finance; and developing training as a scientific discipline.

In order to achieve the above mentioned strategic objectives, BBTA has introduced the following initiatives.

1. Building and enhancing training capacities of the trainers;
2. Improving quality, efficiency, impact and cost-effectiveness of training programs;
3. Linking training with real-world cases and experiences;
4. Building training partnership programs with the public and private sector domestic and overseas training institutions;
5. Building and maintaining the BBTA financial institutions information system,
6. Utilization of the Internet for dissemination of the Academy's biannual Journal 'Thoughts on Banking and Finance';
7. Building a database on trainers and training institutions in the field of banking and finance; as well as
8. Facilitating the digitization of BBTA documents.

Organization

The Executive Director is the head of the Academy. There are seven wings to look after the administration, training and research programs of the Academy.

Location

The Academy is located in Mirpur-2, Dhaka-1216, Bangladesh.

Mailing Address

Bangladesh Bank Training Academy (BBTA)

Mirpur-2, Dhaka-1216, Bangladesh

Telephone: 88-02-9033955

Fax: 88-02-8032110

Web: www.bb.org.bd

ISSN - 2517-9918

Published by G.M. Abul Kalam Azad, General Manager, Department of Communications and Publications, Bangladesh Bank, Head Office, Motijheel, Dhaka-1000, Bangladesh website : www.bb.org.bd, Printed by Al-Kawser Printers, 167 Motijheel C/A, Dhaka-1000
DCP-09-2020-300