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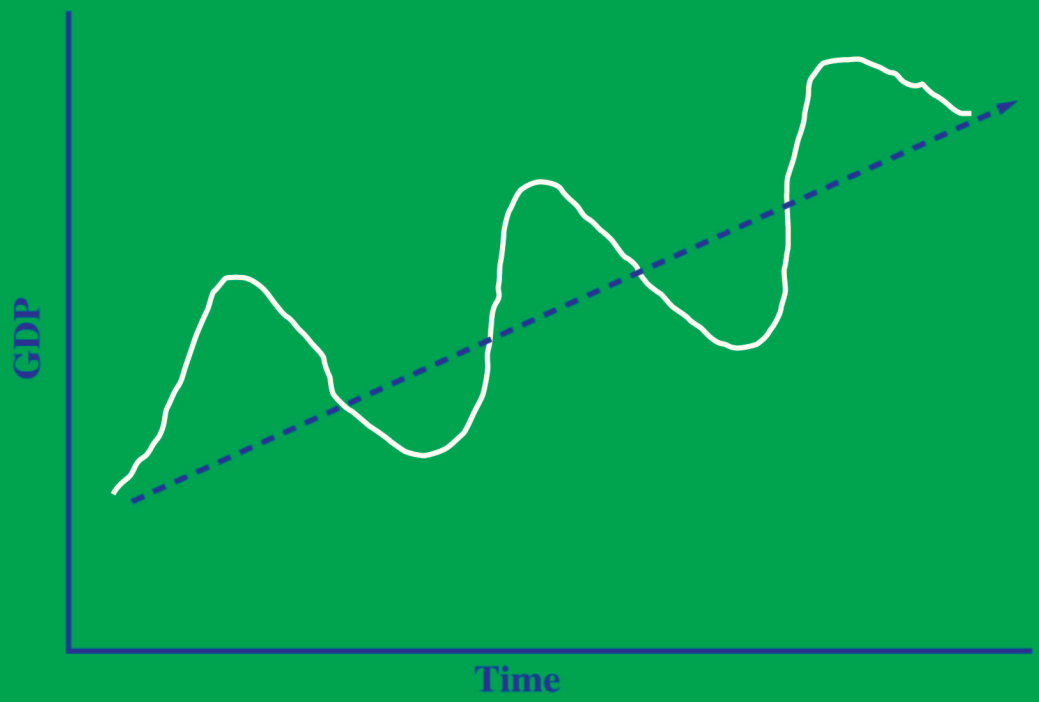

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A Time Series Econometric Analysis of Trade Liberalization, Financial Development and Economic Growth: Evidence from Bangladesh

Md. Al-Amin Parvez*

Abstract*: This study has been carried out to observe the impact of financial development and trade openness on GDP growth in Bangladesh by using annual data over the period 1976-2015. The analysis is based on the bound testing approach of co-integration advanced by Pesaran et al (2001). The empirical results confirmed the validity of trade led growth and financial led growth hypothesis in Bangladesh. A co-integrated relationship between economic growth, trade openness and financial development was noticed in both the long-run and short-runs. The analysis also showed the relationship between trade openness and financial development through Granger causality test for causal relationships in the period of study.*

1. Introduction

Economic theory suggests that the primary impact of trade liberalization will be on the overall level of trade, with a roughly parallel increase in exports and imports as a percentage of GDP. This is likely to require a modest depreciation of the real exchange rate in order to ensure that exports increase as much as imports, and leave the balance of trade unchanged. The export increase is likely to be concentrated in a relatively narrow range of products, products which use intensively the country's abundant factor of production (unskilled labor in the case of Bangladesh), while the import growth is expected to be much more diversified and more capital intensive. Some import-substituting industries are likely to find themselves squeezed, but others will respond to the competitive challenge by modernization. The net effect will be to increase the growth rate, through various channels, including concentration on industries in which the country has a comparative advantage, possibly increasing returns to scale in some of the export industries, the exposure of import-competing industries to competition from imports, improved technology when the price of imported capital goods declines and the country can afford to import more, and the chance to use imported intermediate goods when these are more suitable than domestic inputs.

Financial development and trade openness policies reduce inefficiency in the production process and positively influence economic growth. This argument is strengthened by the fact that growth rates in countries with trade openness and financial policies outperform those with restrictive financial and trade policies.

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It has been asserted that financial development and trade openness policies reduce the distortions in the production process and positively influence GDP growth. This argument is empirically proved because the countries with highly developed financial sector and open trade policies have shown greater GDP growth rate as compared to the countries who have restrictive financial and trade policies.

This study reviews the short and long-run relationship which is based on a further inclusive sample period than that used in existing studies to consent a more convincing conclusion with the aid of autoregressive distributed lag (ARDL) model, or bounds testing approach, proposed by Pesaran et al. (2001).

The paper is organized as follows. Section 2 states the objectives of the study. Section 3 provides a comprehensive literature review. Section 4 focuses on the history and nature of trade liberalization in Bangladesh. Section 5 provides the procedure of econometric estimation with the data. Section 6 and 7 focus on results and findings. Section 8 concludes the paper with some suggestions.

2. Objectives of the Study

The above discussion confirms the strong linkages between trade openness, financial development and economic growth. The objective of this paper is to examine the role of trade liberalization and financial development on economic growth of Bangladesh by using time series data from 1976-2010. This article adds three main contributions to the existing literature on growth, trade and finance.

1) It studies the mutual impact of trade openness and financial sector development on GDP growth in Bangladesh.
2) It uses financial development index as an alternative to State Bank of Bangladesh's monetary policy to measure the impact on GDP growth.
3) It employs recent econometric techniques of ARDL to estimate the relationship. This tool makes the estimation possible whether the explanatory variables are I (0), or I (1).

3. Literature Review

The correlation between trade openness, financial development and growth has been well documented in literature. Several studies have been conducted in order to finding out the effectiveness of trade liberalizations which have a positive impact on economic growth. While Bhagwati (1988), Lee (1993); Krueger (1998) and Fry (1995, 1997) conclude that the trade liberalization and financial development both have significant and positive relationship with growth. Financial development and international trade are identified as macroeconomic variables as being highly correlated with economic growth performance across

countries in the empirical growth literature (Beck, 2002). There are also empirical studies in the literature searching the channels through which both financial development and trade openness affect economic growth. Kletzer and Bardhan (1987) incorporate financial sector into the Heckscher-Ohlin trade model and show that financial sector development gives countries a comparative advantage in industries that rely more on external financing.

Trade liberalization in Bangladesh has generated employment in the major export-oriented industries whereas major import-substituting industries such as textile and paper products have suffered. However, for most of the sectors, there are insignificant associations between trade liberalization and employment generation (Raihan, Selim, 2008). In economic literature, there has been voluminous work, which highlights the causality between trade openness and GDP growth. Jin (2000) asserted that the elimination of trade barriers assist to stabilize the economic growth rate by improving efficiency and return economies. Moreover, trade liberalizations can improve indigenous technology which will lead to more efficient production function, and hence productivity will rise. Levine and Renelt (1992) described the relationship between GDP growth and trade openness by emphasizing that the trade liberalizations may offer a greater access to capital goods. Sukar and Ramakrishna (2002) stated that external sector openness reduces the hindrances to international trade and such countries can experience competitively higher GDP growth rate. It is commonly believed that an open trade regime is imperative for economic development.

The empirical evidence regarding the joint effect of financial development and trade openness variables on GDP growth is underdeveloped. However, several studies describe the joint effect of both variables on GDP growth underlined the significance of both financial development as well as trade openness in GDP growth of the country.

In reviewing the preceding studies, the empirical reliability of the trade liberalization, financial development and economic growth appeared to be varied and imprecise for the case of Bangladesh. These sets of incoherent findings could be due to different sample periods and the diverse sets of econometric methodologies used such as single equation (OLS), vector autogression (VAR) model etc. There are shortcomings to these techniques. The OLS is not adequate in studying causality or a cointegration relationship, while the other methodologies bring about the underlying time series to have the same order of integration. Thus, the Bangladesh case study of the trade liberalization, financial development and economic growth needs to be re-examined.

4. History of Trade Liberalization in Bangladesh

Over the last three decades, Bangladesh's economic and policy orientation has evolved considerably, from a highly interventionist regime with widespread control on trade, the exchange rate and investment, to a substantially liberalized economic regime. At independence in 1971, Bangladesh faced the daunting challenge of rehabilitating its economy, which had suffered serious dislocation and devastation during a bloody war. The situation with regard to the external sector was particularly difficult. Faced with very low foreign exchange reserves, a shallow export base and rising import prices, the Government resorted to severe import controls, ranging from extensive use of non-tariff barriers (NTBs) to high and even prohibitive import duties. These protectionist measures were not dictated by a deliberate industrialization strategy aimed at influencing inter-sectoral or inter-industry resource allocation. Instead, these policies reflected desperate attempts to rein in a worsening balance-of-payments situation.

The principal underlying causes of external sector difficulties were a combination of a large and growing domestic deficit and an expansionary monetary policy, leading to an overvaluation of the real exchange rate. The policy-makers responded by treating the symptoms rather than addressing the root causes. It was perhaps difficult for the immediate post-independence government, which proclaimed socialism as a fundamental State policy, to abruptly change course. A case in point relates to public sector enterprises, which occupied a dominant position in the manufacturing and services sectors of the economy. Most of them had come under public ownership as part of the Government's declared socialist economic program. Thus, while the State-owned 34 per cent of fixed assets of the industrial sector in 1970, its share rose to 92 per cent in 1972 as the result of a spate of nationalization.

For Bangladesh the situation has been developed as follows; first, export growth has been concentrated in a few industrial sectors. Textiles and clothing constitute the main exports, as this country has not been subject to quota restrictions under the WTO Agreement on Textiles and Clothing (ATC). The sector accounts for over 80 per cent of Bangladesh's total merchandise exports. Secondly, export markets are also highly concentrated by virtue of preferential treatment. Nearly 75per cent of Bangladesh's exports in 2002 went to developed-country markets (43 per cent to the EU, and 29 per cent to the North American Free Trade Area (NAFTA)).[1]

Collectively, these enterprises became a major drain on the budget, yet the policy orientation of the regime, coupled with the vested interests created by

[1] Author's compilation from various IMF Reports.

nationalization, prevented policy-makers from undertaking any serious reforms to improve efficiency or privatize.

4.1. Nature of Trade Liberalization in Bangladesh

Trade liberalization policies pursued by Bangladesh have passed through three phases. The first phase (1982-86) was undertaken as Bangladesh came under the purview of the policy based lending of the World Bank; the second phase (1987-91) began with the initiation of the three year IMF structural adjustment facility (SAF) in 1986; and finally, the third phase since 1992, was preceded by the IMF sponsored Enhanced Structural Adjustment Facility (ESAF) (BIDS, 2003). These reform measures led to a significant decline in quantitative restrictions, opening up of trade in many restricted items, rationalization and diminution of import tariffs, and liberalization of foreign exchange regime.

5. Data Source and Methodological Framework

The data were taken from the IFS (International Financial Statistics), the WDI (World Development Indicators) and the Economic Survey of Bangladesh for the period 1976-2015. All variables are in natural logarithm form and are in current USD. The GDP ratios of all these variables were taken for estimation purposes. An indicator that has received scant attention from economic theorists is the degree of openness (Harrison 1996). For trade openness of an economy, we use (Import + Export) as a share of GDP. Financial liberalization indicates Broad Money as percentage of GDP (M1/GDP).

5.1. Bound Testing Approach

The use of the bounds technique is based on three validations. First, Pesaran et al. (2001) advocated the use of the ARDL model for the estimation of level relationships because the model suggests that once the order of the ARDL has been recognized, the relationship can be estimated by OLS. Second, the bounds test allows a mixture of I(1) and I(0) variables as regressors, that is, the order of integration of appropriate variables may not necessarily be the same. Therefore, the ARDL technique has the advantage of not requiring a specific identification of the order of the underlying data. Third, this technique is suitable for small or finite sample size (Pesaran et al., 2001).

Following Pesaran et al. (2001), we assemble the vector autoregression (VAR) of order p, denoted VAR (p), for the following growth function:

$$Z_t = \mu + \sum_{i=1}^{p} \beta_i z_{t-i} + \varepsilon_t$$

where z_t is the vector of both x_t and y_t, where y_t is the dependent variable defined as economic growth (GDP), x_t is the vector matrix which represents a set of explanatory variables i.e., trade openness (TOP), financial development (M2) and *t* is a time or trend variable. According to Pesaran *et al*. (2001), y_t must be I(1) variable, but the regressor x_t can be either I(0) or I(1). We further developed a vector error correction model (VECM) as follows:

$$\Delta z_t = \mu + \alpha t + \lambda z_{t-1} + \sum_{i=1}^{p-i} \gamma_t \Delta y_{t-i} + \sum_{i=1}^{p-1} \gamma_t \Delta x_{t-i} + \varepsilon_t \qquad (2)$$

where Δz_t is the first-difference operator. The long-run multiplier matrix λ as:

$$\lambda = \begin{bmatrix} \lambda_{YY} \lambda_{YX} \\ \lambda_{XY} \lambda_{XX} \end{bmatrix}$$

The diagonal elements of the matrix are unrestricted, so the selected series can be either I(0) or I(1). If $\lambda_{YY} = 0$, then *Y* is I(1). In contrast, if $\lambda_{YY} < 0$, then *Y* is I(0).

The VECM procedures described above are imperative in the testing of at most one cointegrating vector between dependent variable y_t and a set of regressors x_t. To derive model, we followed the postulations made by Pesaran *et al*. (2001) in Case III, that is, unrestricted intercepts and no trends. After imposing the restrictions $\lambda_{YY} = 0, \mu \neq 0$ and $\alpha = 0$, the GIIE hypothesis function can be stated as the following unrestricted error correction model (UECM):

$$\Delta(GDP)_t = \beta_0 + \beta_1 (GDP)_{t-1} + \beta_2 (TOP)_{t-1} + \beta_3 (M2)_{t-1} + \sum_{i=1}^{p} \beta_4 \Delta(GDP)_{t-i} + \sum_{i=0}^{q} \beta_5 \Delta(TOP)_{t-i}$$

$$+ \sum_{i=0}^{r} \beta_7 \Delta(M2)_{t-i} + \upsilon \text{ ---------- (3)}$$

Where $\Delta(\text{GDP})_t$ is the first-difference operator and υis a white-noise disturbance term.

GDP= Gross Domestic Product;

TOP = Trade Openness (X+M/GDP);

M2 = Broad Money Supply as percentage of GDP.

Equation (3) also can be viewed as an ARDL of order (p, *q*, *r*). Equation (3) indicates that economic growth tends to be influenced and explained by its past values. The structural lags are established by using minimum Akaike's information criteria (AIC). From the estimation of UECMs, the long-run elasticities are the coefficient of one lagged explanatory variable (multiplied by a

negative sign) divided by the coefficient of one lagged dependent variable (Bardsen, 1989). For example, in equation (3), the long-run inequality, investment and growth elasticities are (β_2 / β_1) and (β_3 / β_1) respectively. The short-run effects are captured by the coefficients of the first-differenced variables in equation (3).

After regression of Equation (3), the Wald test (*F*-statistic) was computed to differentiate the long-run relationship between the concerned variables. The Wald test can be carried out by imposing restrictions on the estimated long-run coefficients of economic growth, inequality, investment and public expenditure. The null and alternative hypotheses are as follows:

$H_0 = \beta_1 = \beta_2 = \beta_3 = 0$ (no long-run relationship)

Against the alternative hypothesis

$H_0 \neq \beta_1 \neq \beta_2 \neq \beta_3 \neq 0$ (a long-run relationship exists)

The computed *F*-statistic value will be evaluated with the critical values tabulated in Table CI (iii) of Pesaran *et al.* (2001). According to these authors, the lower bound critical values assumed that the explanatory variables x_t are integrated of order zero, or I(0), while the upper bound critical values assumed that x_t are integrated of order one, or I(1). Therefore, if the computed *F*-statistic is smaller than the lower bound value, then the null hypothesis is not rejected and we conclude that there is no long-run relationship between poverty and its determinants. Conversely, if the computed *F*-statistic is greater than the upper bound value, then agriculture expenditure and its determinants share a long-run level relationship. On the other hand, if the computed *F*-statistic falls between the lower and upper bound values, then the results are inconclusive.

6. Results and Discussions

The standard Augmented Dickey-Fuller (ADF) unit root test was employed to check the order of integration of these variables. The results obtained are reported in Table 1. Based on the ADF test statistic, it was initiated that out of three variables, 2 have unit root i.e., GDP and TOP, while M2 is I(0) variable. Noticeably, the mixture of both I(0) and I(1) variables would not be possible under the Johansen procedure. This gives a good justification for using the bounds test approach, or ARDL model, which was proposed by Pesaran *et al*. (2001).

Table 1: Unit Root Estimation

Level			1st Difference	
Variables	Constant	Constant and Trend	Constant	Constant and Trend
GDP	5.420 (0)	-0.412 (1)	-3.806*(0)	-5.673*(0)
TOP	-1.958 (0)	-3.012 (0)	-7.162*(1)	-7.352*(1)
M2	-0.843 (1)	-5.696*(2)	-9.700*(0)	-9.599*(0)

Note: The null hypothesis is that the series is non-stationary, or contains a unit root. The rejection of the null hypothesis is based on MacKinnon (1996) critical values. The lag length are selected based on SIC criteria, this ranges from lag zero to lag two. *, ** and *** indicate the rejection of the null hypothesis of non-stationary at 1%, 5% and 10% significant level, respectively.

The estimation of Equation (3) using the ARDL model is reported in Table 2. Using Hendry's general-to-specific method, the goodness of fit of the specification, that is, *R*-squared and adjusted *R*-squared, is 0.765 and 0.601 respectively. The robustness of the model has been definite by several diagnostic tests such as Breusch- Godfrey serial correlation LM test, ARCH test, Jacque-Bera normality test and Ramsey RESET specification test. All the tests implied that the model has the aspiration econometric properties, it has a correct functional form and the model's residuals are serially uncorrelated, normally distributed and homoskedastic. Therefore, the outcomes reported are serially uncorrelated, normally distributed and homoskedastic. Hence, the results are reasonably valid for reliable interpretation.

Table 2: Estimated Model Based on Equation (3)

Dependent Variable: Log (GDP)

Variable	Coefficient	Std. Error	t-Statistic
LOG(GDP(-1))	-0.245906*	0.078044	-3.061186
LOG(TOP(-1))	0.111175***	0.060599	1.834619
LOG(M2(-1))	0.406560*	0.139110	2.922574
C	0.704499*	0.154773	4.551836
DLOG(GDP)	-1.133327*	0.208327	-5.440139

Variable	Coefficient	Std. Error	t-Statistic
DLOG(GDP(-1))	0.522234***	0.294159	1.775349
DLOG(TOP)	-0.140778	0.303321	-0.464124
DLOG(TOP(-1))	0.166467	0.377205	1.501750
DLOG(M2)	0.054890**	0.022988	2.348621
DLOG(M2(-1))	0.672255*	0.233782	2.875561
MA(1)	-0.997429*	0.167932	-5.939474

Model criteria / Goodness of Fit:

R-square = 0.765; Adjusted R-square = 0.601; Wald F-statistic = 5.508 [0.017] *

Diagnostic Checking:

JB = 6.272 [0.1334]; LM-1 = 1.154 [0.3117]; LM-2 = 0.450 [0.503]; LM-3 = 0.491 [0.691]; ARCH (1) = 0.128 [0.542]; ARCH-2 = 1.044 [0.124]; ARCH-3 = 0.699 [0.562]; White Heteroskedasticity = 0.304 [0.971]; Ramsey RESET = 1.009 [0.155]

RESET stand for Jarque-Bera Normality Test and Ramsey Regression Specification Error Test, respectively.

In Table 3 the results of the bounds co-integration test demonstrate that the null hypothesis of against its alternative is easily rejected at the 1% significance level. The computed *F*-statistic of 5.508 is greater than the lower critical bound value of 3.74, thus indicating the existence of a steady-state long-run relationship among GDP, TOP and M2.

Table 3: Bounds Test for Cointegration Analysis

Critical value	Lower Bound Value	Upper Bound Value
1%	3.74	5.06
5%	2.86	4.01
10%	2.45	3.52
Note: Computed F-statistic: 5.508 (Significant at 0.05 marginal values). Critical Values are cited from Pesaran et al. (2001), Table CI (iii), Case 111: Unrestricted intercept and no trend.		

The estimated coefficients of the long-run relationship between GDP, TOP and M2 are expected to be significant, that is:

$$D\log(GDP)_t = 0.704^{*} + 0.453^{***}\log(TOP)_t + 1.657^{*}\log(M2)_t \quad \text{.....(4)}$$

Equation (4) and Table 4 indicate that both trade openness and financial liberalisation have a positive impact on economic growth. If there is one percent increase in trade liberalisation, economic growth increases by 0.453 percent and 1.657 percent respectively. This analysis demonstrates that, in the long-run, trade and financial led growth hypothesis does hold in Bangladesh, as both variables are positive and have significant effect on economic growth over a period.

Table 4: Long-Run Elasticities and Short-Run Elasticities of Economic Growth in Bangladesh: Based on Equation (3)

1. Long-Run Estimated Coefficient

Variable	Coefficient
TOP	0.453***
M2	1.657*

2. Short-run Causality Test (Wald Test F-statistic):

ΔTOP	$\Delta M2$
2.750***	8.268*
(0.075)	(0.000)

* and *** denote significant at 1% and 10% level. Figures in brackets refer to marginal significance values.

The dynamic short-run causality among the relevant variables is shown in Table 4, Panel 2. The causality effect can be acquired by restricting the coefficient of the variables with its lags equal to zero (using Wald test). If the null hypothesis of no causality is rejected, then we wrap up that a relevant variable Granger-caused economic growth. From this test, we initiate that both variables i.e., trade openness and M2/GDP are statistically significant to Granger-caused economic growth at 10 and 1 percent significance level. To sum up the findings of the short-run causality test, we conclude that causality running from trade openness to economic growth and M2 to economic growth respectively.

7. Findings

The analysis demonstrates that in the long-run, trade openness and financial development both increase economic growth by almost 0.453% and 1.657% respectively. While in the short-run, the results indicate directional causality between trade openness (TOP) to Granger-caused economic growth (GDP) and M2 Granger-caused GDP.

The main findings of the paper can be summarized as follows: ***First***, the results show one-way causality from Trade Openness to real GDP growth in Bangladesh. ***Second***, the results do not provide sufficient evidence of a long-run causal relationship between economic growth and financial development as scaled by money supply and domestic credits, and between openness and economic growth. ***Third***, Granger Causality test results reveal that Trade Openness causes changes in the money supply in the short run whereas the causality is unidirectional.

8. Concluding Remarks

The quantitative analysis undertaken in this study suggests that greater openness has a favorable effect on economic growth of Bangladesh. Both real export and imports have increased with greater openness. Hence, we conclude that liberalization policy certainly improves export of the country which eventually led to higher economic growth after 1990s. One of the major issues is the capital financing requirements in the presence of trade deficits in the short and medium run for developing economies. Globalization has made both developing and developed countries highly interdependent. If developing countries were to catch up with developed countries in their per capita income, enormous help for developing countries may be needed from developed countries by way of capital financing.

This paper has attempted to estimate the impact of trade openness and financial development on economic growth of Bangladesh by using time series data from 1976-2010 by employing Bound Testing approach. It is manifest that economic growth is sensitive to changes for both trade and financial liberalisation policies. Therefore, the government should realise effective macro-economic policies along with momentous improvements in the structure and functioning systems of governance for stabilising economic growth along with trade and financial liberalisation reforms.

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Labor Migration from Farm to Non-farm Activities: A Case Study of Bogra District in Bangladesh

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Abstract: *The present study was conducted to analyze various socio-economic aspects of labor migration from farm to non-farm activities, such as factors influencing labor migration and its impact on the livelihood patterns of the migrant households. This study was conducted in two upazilas of Bogra district namely Bogra sadar and Shahjahanpur. A sample of 60 respondents was chosen randomly. For collecting the data, a structured questionnaire was administered through face-to face interviews. Data were analyzed with a combination of descriptive statistics (i.e., sum, average, percentage, ratios etc.), and econometric analysis (factor analysis). Findings showed that relatively young and educated persons were largely migrating to the non-farm activities. About 52 percent of the respondents completed their secondary education whereas 25.0 percent had primary and only 1.7 percent completed graduation. Average family size was 4.7 persons per household. Thirty three percent of the migrant household heads were engaged in small business while 15 percent were involved in transportation works. About 16.5 percent income was gained from small business per year. After small business, the major sources of income were respectively teaching (16.3 percent), transportation works (15.0 percent), service (14.4 percent), etc. The factors which emerged as responsible for labor migrations included poor living condition, high income probability, seasonality in agriculture, high input cost, lower return from farming, and decline in soil fertility, etc. It is found that migration is beneficial for both migrants and their families. Migration from farm to non-farm activities was observed to improve the income level, education attainment, expenditure pattern and increases in the use of modern facilities*

1. Introduction

Agriculture is an important sector of the economy of Bangladesh and it is considered as one of the main drivers of economic growth. Agriculture is considered to be the predominant livelihood activity among rural households; the non-farm sector is a significant source of alternative income.

The participation of rural household in non-farm activities is tremendously increasing. IFAD (2011) reported that, typically between 50.0 and 60.0 percent of

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the households in Asia and Latin America are participating in non-farm activities, whereas in sub-Saharan Africa between 25.0 and 50.0 percent of households are participating in the non-farm sector. In Bangladesh, due to limited scope of employments in farming and urban manufacturing sector, the livelihood diversification in rural areas has become one of the major challenges. The Government of Bangladesh has already identified the sector Non-Farm employments as a "leading sector" in the rural economy. But in practice the non-farm sector is not getting due attention like the farm sector. The non-farm sector expands quite rapidly in response to the farm sector development and therefore merits special attention in designing poverty reduction strategy (Arif, et al., 2000).It is believed that the non-farm employments (NFEs) have significant impacts on household production both in farming and consumption (food and non-food) since the non-farm sector develops.

Migration from farming activity also added the income to the total household income. Migration is often considered as a driver of growth and an important route to get out of poverty with significant positive impact on people's livelihoods and wellbeing (Anh, 2003). It is evident that employment in agricultural sector is decreasing every year; it was 51.7% in 2002-03 while in 2010 it was 47.3% (BBS, 2012).Previous studies on internal migration clearly demonstrated that greater job opportunities in the cities and metropolitan areas 'pulled' migrants from rural to urban areas. Existing estimates suggest that the growth of agricultural income was less than 1% as opposed to nearly 6% annual growth of nonagricultural income between 1988 and 1995 (Hossain et. al., 2002).The study of migration is an important issue in different fields. It comes out not only from the people's movement from place to place but also considers its influence on livelihood aspects of individuals as well as urban growth. In a wide sense, it is the rearrangement of dwelling of various period and natures. Labor Migration from farm to non- farm sector as well as rural to urban migration is one of the major causes of fast and unintended expansion of cities and towns.

2. Objectives of the Study

The major objective of the study is to identify the principal factors influencing migration of the sample households from farm to non- farm activities in the selected areas of Bogra district in Bangladesh.

3. Literature Review

In the course of conducting this research some relevant studies were reviewed which are briefly noted below.

Akhter (2015) carried out a study on the analysis of migration, determinants of rural-urban migration and migration intensity at the farm households. The study

observed the impact of migration on farm production and input use and also food security condition of the migrant households.

Chamicha (2015) examined the relationship between non-farm activities and rural livelihood in Tanzania where the driving factors enable rural households to participate in the non-farm activities, the developed linkage between non-farm and farm activities and identified the significance of non-farm activities as a livelihood strategy.

Uddin and Firoj (2013) conducted a study on rural-urban migration in Chittagong city, to identify the causes and consequences of the movement on the physical and social environment of the city. The study found that there are various reasons for regional migration and these reasons may vary from country to country.

De Janvry *et al.* (2005) studied that without non-farm employment, rural poverty would be much higher and deeper. The non-farm incomes lead to decline in the incidence of household poverty, both in the depth of poverty, and in the severity of poverty.

Hossain (2004) found a positive impact of rural non-farm employment in raising rural incomes and reduction of poverty in rural Bangladesh. Diversification into non-agriculture contributes to a substantial reduction in poverty.

Kuhn (2000) showed that land as an important factor of migration in Bangladesh. Landless family took their decision for migration more often comparing those with land. The family those have land be able to manage the risk by natural disasters like periodic rain, flooding, drought, river erosion, land slide, soil erosion, but the landless households could not handle the resultant effects. Most of the studies focused particularly on rural-urban migration, causes and consequences of rural-urban migration. This study intends to analyze labor migration from farm to non-farm activities, factors influencing labor migration and its impact on their livelihood. These are the research gaps that this study intended to fill, specifically in the context of Bangladesh.

4. Methodology

This study was conducted at two upazilas of Bogra districts (Northern part of Bangladesh) namely Bogra sadar and Shahjahanpur. These study areas were selected randomly considering the migration situation and agricultural practices of the areas.

The reasons for selecting these areas are:

- Crops surplus areas;
- Availability and easy access to the research data
- Meeting the research objectives

A total 60 households were selected taking 30 from each Upazila for data collection. Data were collected from March to May 2017. With a view to collecting primary field level data from selected sample households, face to face interview methods with structured questionnaire was followed. The secondary data included government annual report, International organization based report, official statistics abstract and other researches findings. Data were analyzed with a combination of descriptive statistics (i.e., sum, average, percentage, ratios etc.), and econometric analysis (factor analysis).

4.1 Factor Analysis Model

Mathematically factor analysis is similar to multiple regression analysis, in that each variable is expressed as a linear combination of underlying factors. The amount of variance a variable shares with all other variables included in the analysis is referred to as communality. According to (Malhotra, N.K., 2005), the factor model may be represented as

$Y_i = Ai_1F_1 + Ai_2F_2 + \ldots + A_{im}F_m + U_i$

Where,

Y_i = Labor migration

A_{ij} = Factor loadings of variable i on common factor j

F = Common factor

m = number of common factors

i = 1, 2 … 5; and

U_i = Error term

The common factors themselves can be expressed as linear combinations of the observed variables.

$F_i = W_{i1}X_1 + W_{i2}X_2 + W_{i3}X_3 + \ldots + W_{ik}X_k$

Where,

F_i = estimate of i^{th} factor

W_i = factor score coefficient

k = number of variables

4.2 Determination of the Factors

The factors are determined based on eigen values. In this approach, only factors with eigen values greater than 1.0 are retained, the other factors are deducted. An eigen value represents the amount of variance associated with the factor. Hence, only factors with a variance greater than 1.0 are included. Factors with variance less than 1.0 are no better than a single variable, because due to standardization, each individual variable has a variance of 1.0.

5. Empirical Results and Discussion

5.1 Factors Influencing Labor Migration

There are several factors that influence rural livelihood to engage in nonfarm activities. Before discussing those factors, it is important to discuss the indicators that show the level of rural household's participation in nonfarm activities. Further the involvement of rural households in nonfarm activities is triggered by different motives. These motives can be grouped in two categories "push factors" and "pull factors". Engagement in nonfarm sector by push motives occurs when rural households choose to engage in the sector in response to economic distress while by push is in response of the economic opportunities. In this study it was observed that, households in the surveyed area decide to engage in nonfarm activities because of both push and pull motives. The reported push motives involves; seasonality in agriculture, higher income probability, high input cost, less output price etc. while pull motives involves poverty and financial crisis, better job opportunities and better education and health facilities etc.

Hence, these factors will be considered as potential factors which influence migration status of the migrant households.

List of factors prepared after analyzing the interviews:

1 = Poor living condition/poverty

2 = Lack of Employment Opportunity

3 = Food shortage

4 = Financial Crisis

5 =Inadequate farm land/ Landlessness

6 = Higher Income Probability

7 = Lower return from farming

8 =Large family size

9=Absence of guardian

10 = Better job/business opportunities

11 = Failure to repay NGO loan

11 = Better education and health

12= Low wage rate

13 = Seasonality of agriculture

14 = Less output price

15 = Higher input cost

16= Education

17= Natural disaster

18= Decline in Soil fertility

19=others

5.2 Factor Analysis

To analyze the factors, the determinants are characterized by five categories: pull factors, push factors, financial factors, income and environmental factors. The cumulative percentage of the variances of these factors is 65.702, which implies that the determinants could reasonably be sufficient to explain the determination of migration status process. Push factors, explaining 24.24% of the total variance, is the most dominant factor in this case. This is represented as a positive correlation (factor loadings) with the following factors:

5.2.1 Push Factor for labor migration

One of the major reasons for labor migration in nonfarm activities is the lack of year-round employment in rural areas in Bangladesh. This was because agricultural production in Bangladesh is seasonal in nature. During lean season, there is no or limited employment opportunities and the farm workers have to face employment and livelihood challenges. Having no employment opportunity in rural areas, many of them want to migrate from rural to peri-urban and urban areas for their employment and livelihood. But the scope is very limited because of their poor income to bear transportation cost. On the other hand, the non-farm employment workers get employment opportunity on an average 26 days per month. They get employment year round.

Table 1: Push Factors for Labor Migration

Variable	Household respond (%)	Factor loadings
Financial crisis	70.0	0.605
Seasonality in agriculture	61.7	0.669
High income probability	83.3	0.596
High input cost	86.7	0.632
Less output price	83.3	0.478
% Variance		24.241
Eigen value		4.606

Source: Computed from Surveyed Data

Farming is risky due to natural disaster and becoming non-profitable due to the increasing cost of inputs. In the surveyed area 86.7 percent respondents reported that labor cost is higher during peak periods of farming that means in the period of harvesting and planting compared to earlier times because many people were migrating to the city. On the other hand migrant households mentioned about the increase in the cost of farm inputs as a result of withdrawal of the government's subsidies on farm inputs.

The possibilities of earning more and better service facilities influence the migration decision. The study showed that 83.3 percent respondents migrated due to higher income probability (Table 1). People can lose their source of income due to several reasons. Losing the source of income, they gather in the cities in search of new employment. In the villages of Bangladesh, there is no adequate scope for recruiting laborers in agricultural sector. Besides, rural areas are still backward in respect of industrialization. So unemployment is a general feature of the villages in Bangladesh. Adult, young, adolescent and children of rural areas do not get satisfactory employment. As a result they got engaged in different types of nonfarm activities for earning higher income.

5.2.2 Pull Factors, Financial Factors and Income Factors for Labor Migration

A discussion with the respondents revealed that the pull factors which involves increased business opportunities is largely attributed by the growth of small traders in the surveyed area. Through this study, it was found that around 33.3 percent respondents were directly engaged in different types of small business in order to increase their family earnings. Chamicha (2015) also conducted a study in Tanzania which indicated that both push and pull motives have significance influence towards a household's decision to engage in nonfarm activities.

When, work is not available, food is scarce, poverty engulfs from all the sides, people try their best to survive. Accordingly, when poor people even after trying their best fail to provide food to their hungry family members and beloved children, they are compelled to migrate to nonfarm sector in order to get rid of poverty and to lead a better life. In this study, 68.3 percent of the respondents have identified extreme poverty as the first reason of migration.

The observation from this study revealed that 48.3 percent of the respondents engaged in nonfarm sector were educated (Table 2). The discussion with respondent indicated that the nonfarm activities undertaken in the surveyed areas were small scaled which does not require higher level of education.

Table 2: Pull Factors for Labor Migration

Variable	Household respond (%)	Factor loadings
Poor living condition/poverty	68.3	0.609
Low wage rate	60.0	0.646
Better living &educational facilities	33.3	0.429
Better job/business opportunities	45.0	0.43
Education	48.3	0.378
% Variance		15.281
Eigen value		2.903

Source: Computed from Surveyed Data

The findings further indicated that, heads of household with secondary and college level education are participating in those nonfarm economic activities which require higher capital than those with primary education.

Bangladesh is a densely populated country. So, population problem is one of the major problems of Bangladesh. In rural areas, there are many families with 8-10 family members. It becomes difficult to provide those additional family members with food and shelter. In the study area 36.7 percent respondents migrated to nonfarm activities due to large family size (Table 3).

Table 3: Financial Factors for Labor Migration

Variable	Household respond (%)	Factor loadings
Low wage rate	60.0	0.418
Large family size	36.7	0.222
Financial crisis	70.0	0.422
% Variance		10.862
Eigen value		2.064

Source: Computed from Surveyed Data

It was observed that 68.3 percent of the migrant households were involved in nonfarm activities to give financial support to their families.

It is evident that financial factors, both as push and financial factors play significant role in migrants' migration status determination. This is evidenced by 86.7 percent of the respondents that they adopted nonfarm activities due to lower return from agricultural activities. Eighty percent respondents reported decline in soil fertility as the driving factor (Table 4).

Table 4: Income Factors for Labor Migration

Variable	Household respond (%)	Factor loadings
Lower return from farming	86.7	0.676
Decline in soil fertility	80.0	0.545
% Variance		8.442
Eigen value		1.604

Source: Computed from Surveyed Data

5.2.3 Environmental Factors for Labor Migration

Bangladesh is a natural disaster prone country. River-erosion is a common phenomenon for the people living in river bank areas. River erosion washes away houses, assets and people become helpless and shelter less. So they migrate to other places in order to construct their new dwelling place.

Table 5: Environmental Factors for Labor Migration

Variable	Household respond (%)	Factor loadings
Natural disaster, cyclone, river erosion	40.0	0.496
Lack of food/crop failure	70.0	0.374
Landlessness	55.0	0.363
% Variance		6.876
Eigen value		1.306

Source: Computed from Surveyed Data

People affected by different types of natural calamities like cyclones in 1970 and 1991 killed 300,000 and 170,000 people respectively, and in 2007 a category-5 cyclone (Sidar) hit Bangladesh killing about 5000 people (Rasheed, 2008). So like river-erosion, different types of natural calamities also act as environmental factors behind labor migration. According to this study, about 40% of the respondents migrate due to natural disaster like storm, flood, drought, excessive rainfall and after losing their shelter, asset and all their belongings, people are compelled to migrate in nonfarm activities in order to generate income for their survival and to lead a better life.

Rutasitara (2002) conducted a study in Tanzania where it was found that, 42.9 percent of the households were engaged in nonfarm activities because the profitability they considered to be obtained from farm activities could not be achieved. Other 35.7 percent of the surveyed household was observed to engage in nonfarm activities because of the seasonality of agriculture activities, the reduction of income from agricultural activities was reported by 7.1 percent of the households who were engaged in nonfarm sector.

Labor migration in the context of nonfarm sector, land is an important factor in Bangladesh. Landless families took their decision for migration more often in comparison with land owning families. The family with land may be able to manage the damaged caused by natural disasters like periodic rain, flooding, drought, river erosion, land slide, soil erosion, but the landless households could not handle the resultant effects. Hossain (2001) found in his study that farm families with larger land properties (more than 50 decimals) in Bangladesh were migrated more often than those who had smaller land properties (6 to 50 decimals). However, the land ownership and migration were not always clear-cut. The reason for this was, the people with greater resources were normally not more involved in farm activities. However they tried to broaden their earnings and hazards over a number of geographical settings. On the other hand the landless people shifted their livelihood on permanent type of migration because they didn't have more choices. This was because, a new 'class' of people has emerged in rural areas, who depend more on physical and human capital than on land and manual labor. Landless and land-poor farmers have left the agricultural labor market for tenancies, wage labor in trade and business enterprises, rickshaw pulling and other manual non-agricultural activities. In the surveyed area 55 percent respondents migrated to nonfarm sector due to landlessness.

In this study, 78.3 percent respondents mentioned easy access to informal economy as one of the most dominant forces in case of nonfarm sector. In Bangladesh, based on LFS (Labor Force Survey), 2010the unemployment rate in Bangladesh is only 4.5%. Of the employed population, 87.43% is in informal

sectors, which was 78.48% in LFS 2005-06 and 79.23% in LFS 2002-03 (BBS, 2012). However informal jobs include rickshaw pulling, hawker activities, roadside small business, day laboring, etc.

Another important factor, which determines household migration status, is availability of jobs in industrial sectors. In this study, however, about 45 percent respondents had given priority to better job opportunities or searching job in the industrial sector. Due to low educational requirement they find it easier to be employed in this sector.

6. Conclusion

In rural areas of Bangladesh, agriculture is considered as the primary source of livelihood for most people. But increasing pressures and opportunities resulting from recent economic liberalization and globalization have led people to diversify their earning sources for securing livelihood pattern. The findings of the paper suggest that non-agricultural activities are growing in importance for rural livelihoods and the rural populations are becoming less agrarian with each passing year. In the rural areas of Bangladesh, agricultural laborers are considered as the vital input in the agricultural production activities. But the recent trend shows that agricultural laborers are migrating to different parts of the country for earning their livelihood and in this way there is disequilibrium between labor demand and supply. This surplus labor force is mainly motivated to migrate within the country with the desire to improve their economic and social condition.

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A Critical Analysis of Bangladesh Labor Market from Decent Work Perspective: Implications and Policy Options

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Abstract: *There is a growing global debate around decent work and its development. A country's labor market plays a vital role in shaping decent work paradigm to a large extent. The objective of this paper is to critically analyze the labor market from decent work perspective with special reference to Bangladesh. The study has conducted an extensive review of research papers, policy documents, working papers, and survey reports, national and international publications. It was revealed from the study that Bangladesh has made a substantive progress towards decent work paradigm but still a lot of works are yet to be done to attain the decent work objectives in true sense. An integrated labor policy considering national and international phenomena is critical for attaining decent work objectives in Bangladesh. A list of policy options and research agenda are outlined in the paper.*

1. Introduction

Throughout the history, several labor movements have taken place claiming some sort of rights. For example, during the middle Ages, the Peasants' Revolt in England demanded for remunerative employment and better working conditions. Throughout the passage of time, these movements established a set of common rights of the workers which is now termed as labor rights. These labor rights are the new addition to the modern corpus of human rights. Thus, ensuring human rights are critical for human development. Not all work, however, contribute equally to the human development (Frey & MacNaughton, 2016). Most of the jobs do not pay enough to meet the basic needs of the workers (Gross, 2010). Moreover, many jobs are boring, dangerous, or demeaning (Mundlak, 2007). For people across countries, work is the only mechanism for escaping poverty. Accordingly, a productive work that provides an adequate income to support the livelihoods is a universal aspiration (Narayan et al, 2000). Excessive work hours, working poor, poor working conditions, child labor, and obstacles to form associations are some common features of work and working conditions around the globe.

Considering the universal labor rights, International Labor Organization (ILO) introduced the decent work concept in 1999 as a part of its vision to establish social justice in the world. This decent work initiative of ILO calls for many

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issues such as ensuring employment for all, promoting rights at work, establishing social security and accelerating social dialogue. Decent work is critical for sustainable development as it combines economic growth and social justice.

The United Nations incorporated this decent work notion into its Sustainable Development Goals (SDGs). The goal 8 of SDGs is to ensure decent work for all by 2030. Many scholars argue that the labor rights Movements of ILO and SDGs of the United Nations work towards a common aim – human well being (Darrow, 2012; Langford et al., 2013).

A country's labor market plays a vital role in shaping the employment and working conditions. Decent work objectives and labor market patterns of an economy are closely related. Achieving decent work for all requires a collective effort of government and labor market institutions. Decent work agenda cannot equally be applied to every country as each country has its unique social goals and labor institutions (Rodgers, 2007). However, a critical analysis of labor market indicators from a country perspective is quite helpful for understanding decent work scenario.

Bangladesh is an emerging economy having more than 158.5 million people. This country has made significant progress on poverty reduction and achieved some of the MDGs, especially reducing the proportion of people living below the poverty line. It has achieved notable economic growth. However, the employment growth has not increased compared to rate of economic growth (Bell & Newitt, 2010). Precarious employment and poor working conditions remain at the center of employment characteristics in Bangladesh. As a result, a basic question arises about how far decent work agenda are relevant in an emerging economy like Bangladesh.

This paper is organized in four critical sections. First, the purpose and rationale of the study is presented along with a brief note on methodology. Second, an overview of decent work and its objectives are briefly discussed. The paper then provides a critical analysis of labor market in Bangladesh and their implications for decent work. Finally, the paper concludes with policy options and research agenda.

2. Purpose and Rationale

The main purpose of this study is to critically analyze the labor market from decent work perspective taking Bangladesh as an example. The paper strives to meet this objectives based on the answer of some basic questions such as, what is the current labor market scenario in Bangladesh? How far this labor market scenario is effective for attaining decent work objectives? What are the key obstacles towards decent work in Bangladesh as per the findings of labor market

analysis? What are the best possible policy options to make decent work a reality in Bangladesh and the world as a whole? What are the research gap areas in this field? The discussions of these questions are carried out throughout the paper.

The decent work agenda of ILO is a noble attempt to establish the labor rights and dignity. Unfortunately, since its inception in 1999, very few studies were conducted to examine the different dimensions of decent work and its effectiveness. Bell and Newitt (2010) conducted a study to examine the role of decent work in eradicating poverty. MacNaughton and Frey (2010) examined decent work from human rights perspective. Hauf (2015) examined decent work from cultural and political economy perspective. However, no significant study is available focusing on the relations between labor market and decent work. This study is the first of its kind as it intends to examine the impact of labor market indicators on decent work. Again, country-specific study on decent work is rare. Thus, this study will establish the example of country specific study and will open the door for future research.

Although the study focuses on Bangladesh, some variables of like poverty, income and employment represent the common aspirations of the people throughout the world. Thus, the discussions and findings of this study will set the example for developing countries like Pakistan, India, Brazil and South Africa. Regarding the case of Bangladesh, no notable independent research on decent work was conducted till now. This study is an exploratory one on this field, especially labor market research. The findings of the study can be applied both at national and organizational level. The study is supposed to provide implications for both the policy makers and human resource professionals. Finally, this research will be helpful for researchers, academics, and interested readers.

3. Methodology

This study is basically conceptual and descriptive in nature. It aims to review the labor market status in Bangladesh from decent work context. The methodological framework of this study consists of a thorough review of the research papers, journals, books, working papers, strategy papers, conference proceedings, monographs and e-materials. A critical review is important when the field of research is comparatively new and an attempt is made to integrate the different dimensions of the topic (Torraco, 2016). In addition to the review, an extensive statistical analysis of published data was conducted. Thus, this paper consists of both theoretical and empirical analysis pertaining to labor market and decent work in Bangladesh.

For the purpose of this study, a three-step review process was conducted. First, the relevant research papers and documents were collected from world's leading

journals and publication houses. Second, the collected documents were securitized based on the relevance and reliability. Third, the exclusively relevant research papers and statistical facts were analyzed. An attempt was made to present the discussion in a consistent manner. The publications of Bangladesh Bureau of Statistics, Bangladesh Bank, World Bank, ADB, and ILO were given importance in collecting and analyzing the data. The most current data of these organizations were taken into account to make the study time-effective and worthy.

4. Decent Work: Concept and Objectives

The Director-General of the International Labor Organization (ILO) first used the term decent work in the International Labor Conference in June 1999 (ILO, 1999). He further explained decent work as follows:

> *The primary goal of the ILO today is to promote opportunities for women and men to obtain decent and productive work, in conditions of freedom, equity, security and human dignity* (ILO, 1999a).

The above concept of decent work entails seven core characteristics regarding work and working conditions. There should be equal employment opportunities for both men and women. The work should be productive i.e., the work should yield an adequate income. Workers have the right to get equal treatment in terms of sex, migrants and minorities. There should be better working conditions to ensure occupational health and safety. Workers have the right to form an association to represent their interests. Workers have the right to receive respect and live with social dignity. A minimum social security is also an important element of decent work. There are four constituent pillars of decent work which are interdependent and mutually reinforcing such as productive employment opportunities, rights at work, social security and social dialogue. These four dimensions of decent work affect each other at a large extent. For example, rights at work provides framework for social dialogue and influence its contents. Social dialogue, on the other hand, extends the scope and effectiveness of labor rights. The employment dimension influences social security through labor flexibility, innovation and productivity. Social security dimension, on the other hand, calls for full employment in an economy.

Decent work paradigm is a development approach that focuses on productive employment accompanied by rights, representation and protection. Thus, decent work strives to establish respect for international labor standards in addition to sustainable economic development. Although decent work is applicable to both developed and developing countries, the importance and priority of its dimensions vary across countries, regions and even sectors (Bell & Newitt, 2010). Moreover, there is no unique set of indicators to measure decent work.

5. Labor Market and Decent Work: Bangladesh Case

Being an important part of an economy, a labor market portrays the labor standards as well as the labor policies and practices of a particular society. Labor market information is critical for monitoring and assessing the work and working conditions. Organizations, institutes, governments and policy makers need timely and relevant data on labor market to set labor related strategies. However, there is no agreed-upon set of indicators to measure the labor market performance. In recognition of this reality, International Labor Organization (ILO) introduced Key Indicators of the Labor Market (KILM). Thus, this KILM represents a core set of labor market indicators. Moreover, ILO has formulated this KILM in consideration with its decent work agenda. Accordingly, this study analyzes Bangladesh labor market statistics based on the indicators set in KILM program along with their implications for decent work.

5.1 Population Characteristics in Bangladesh

A country's population structure is significant in understanding the current and potential labor market patterns. Population aging is associated with economic growth and labor supply (MacKellar, 2000). According to Shimer (1999), changes in the demographic structure of a country's population have important influences on labor market indicators. Bangladesh is small country having more than 158.5 million population; of them, 79.6 million are male and 78.9 million are female (BBS, 2017).

Table 1: Distribution of the Population, by Sex, Age Group and Area

(In million)

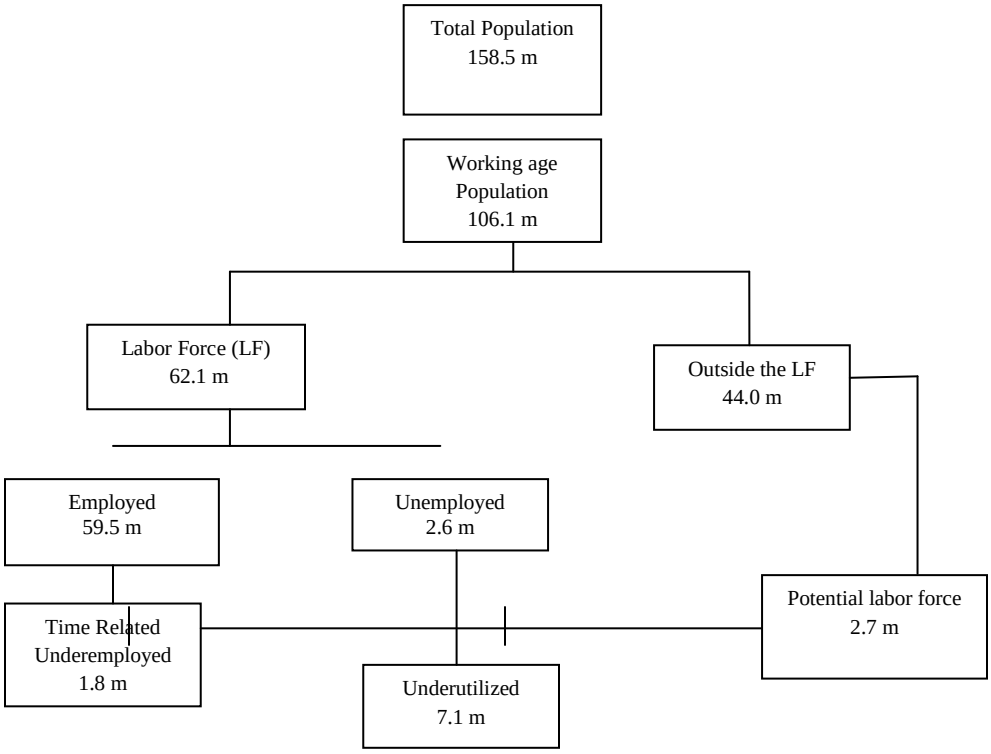
Age Group	Rural			Urban			Bangladesh		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
0-14	20.1	18.7	38.8	7.0	6.6	13.6	27.0	25.3	52.4
15-17	3.6	2.6	6.2	1.3	1.2	2.4	4.8	3.8	8.6
18-24	6.2	7.1	13.3	2.5	3.3	5.8	8.7	10.4	19.1
25-29	4.2	5.3	9.5	2.0	2.5	4.4	6.2	7.8	13.9
30-64	20.1	20.3	40.4	8.6	8.0	16.6	28.7	28.3	57.0
65+	3.3	2.6	5.8	0.9	0.7	1.6	4.2	3.3	7.5
Total	57.4	56.7	114.0	22.3	22.2	44.5	79.6	78.9	158.5

Source: Bangladesh Bureau of Statistics (2017)

According to the statistics of table 1, Bangladesh is a country with a dominance of youth population. The age group 30-64 years consists of 36% (57 million) of the

total population in comparison with only 4.7% (7.5 million) aged more than 65 years. Again, there is a positive potentiality of Bangladesh in terms of workable population. Near about 33% of total population are in the 0-14 age group as per current statistics. According to Johnson and Zimmermann (1992), an older age dominated labor market pushes up the employers' wage costs if current earnings differentials are maintained by age. In addition, the older employees are at higher risks of long-term unemployment following job loss (Gregg et al., 1999).

Figure 1: Distribution of Population by Labor Force Framework



Source: Bangladesh Bureau of Statistics (2017)

Figure 1 reflects the population distribution of Bangladesh through the lens of labor force framework. As stated in figure 1, near about 106.1 million people are in working age in Bangladesh; of them, 62.1 million are in labor force and 44.0 million are outside the labor force. Surprisingly, near about 7.1 million labor force are underutilized.

5.2 Educational Attainment and Illiteracy

An important aspect of a country's labor market performance is the abundance of skilled labor force. This skilled labor force is generally imparted through educational attainment and training.

Several studies have been conducted to examine the effect of education on labor market (e.g. Angrist and Krueger, 1991; Harmon & Walker, 1995). Currie (2009) conducted a study on the relationship between education and labor market effectiveness and found that both the quantity and quality of education affects the labor market performance. Education has an important implication for decent work program. Decent work strives for ensuring adequate earnings from employment. According to Kenn (2016), education is an important mechanism for eradicating poverty and creating productive societies. In addition, educational attainment is associated with economic growth and individual earnings (Bils & Klenow, 2000).

Table 2: Population Aged 5 or Older, by Leave of Completed Education, Sex and Area

(%)

Broad Education Group	Rural			Urban			Bangladesh		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
None	32.1	38.0	35.1	19.8	25.3	22.6	28.5	34.3	31.4
Primary	24.2	23.0	23.6	20.4	20.3	20.4	23.1	22.2	22.7
Secondary	32.7	33.7	33.2	35.6	38.6	37.2	33.5	35.2	34.3
Higher Secondary	7.3	4.1	5.7	11.9	9.5	10.7	8.6	5.6	7.1
Tertiary	3.4	1.1	2.2	12.0	6.3	9.1	5.9	2.6	4.2
Others	0.4	0.1	0.2	0.1	0.1	0.1	0.3	0.1	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Bangladesh Bureau of Statistics (2017)

As stated in table 2, near about 31.4% people are completely illiterate in Bangladesh. Only 7.1% completed higher secondary education followed by 4.2% tertiary education. Thus, Bangladesh has a lot of works to do to attain an acceptable educational level, especially for attaining decent work objectives. Only 2.1% people aged 15 or older received training. The scenario of training is more or less equal in both rural and urban areas.

Table 3: Population Aged 15 or Older, by Leave of Completed Education, Sex and Area

% of working age population									
Received Training	Rural			Urban			Bangladesh		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Yes	1.9	1.0	1.4	4.7	2.5	3.6	2.7	1.4	2.1
No	98.1	99.0	98.6	95.3	97.5	96.4	97.3	98.6	97.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Bangladesh Bureau of Statistics (2017)

5.3 Labor Force Participation Rate

The Labor Force Participation Rate (LFPR) is a measure of the proportion of a country's working age population who are active in the labor market. A change in LFPR has several implications for potential labor market in terms of labor supply and demand. A country's LFPR is subject to change due to three important factors, such as demographic, cultural, and institutional changes (Mosisa & Hipple, 2006). A downward trend in LFPR may result in slow or negative growth in labor hours in addition to the size of the working age population (Aaronson et al., 2006).

Table 4: Labor force as % of Working Age Population-LFPR by Age Group, Sex and Area

(%)									
Age Group	Rural			Urban			Bangladesh		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
15-29	69.7	32.8	50.6	69.4	31.1	48.6	69.6	32.3	49.9
30-64	94.8	44.4	69.5	94.0	32.5	64.4	94.6	41.0	68.0
65+	54.6	11.9	35.7	44.1	8.2	28.6	52.3	11.1	34.2
Total	81.9	37.6	59.6	81.7	30.8	56.0	81.9	35.6	58.5

Source: Bangladesh Bureau of Statistics (2017)

It is evident from table 4 that the current LFPR is 58.5% in Bangladesh. In terms of gender, LFPR is 81.9% for male and 35.6% for female. As per decent work agenda of ILO, both the male and female should have the equal employment opportunities. For attaining this decent work requirement, Bangladesh should reduce this gender-based gap in LFPR to a minimum level.

5.4 Employments-to-Population Ratio

A country's employment to population (EP) ratio is the proportion of working age population that is employed. It indicates a country's ability to create employment opportunities. It is an important indicator of labor market because it considers the effects of both labor force participation and unemployment. Another implication of EP ratio is that it can be used to make the meaningful comparisons across time and groups with dissimilar population size. A high EP ratio is generally considered positive for decent work.

Table 5: Employed Population Aged 15 or Older, by Age Group, Sex and Area

(%)

Age Group	Rural			Urban			Bangladesh		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
15-29	64.6	29.1	46.2	64.2	27.5	44.2	64.5	28.6	45.6
30-64	94.0	42.6	68.1	93.0	31.0	63.1	93.7	39.3	66.7
65+	54.3	11.6	35.4	43.7	8.0	28.4	52.0	10.8	33.9
Total	79.5	35.2	57.1	79.1	28.4	53.5	79.4	33.2	56.1

Source: Bangladesh Bureau of Statistics (2017)

As per survey results of BBS, the EP ratio is 56.1% in Bangladesh out of which 53.5% in urban areas followed by 57.1% in rural areas. The EP ratio for male is 79.4% compared to only 33.2% for female. This is clearly an obstacle for Bangladesh to attain decent work objectives, especially in terms of equal access to employment.

5.5 Status in Employment

Status in employment is an important indicator of labor market analysis. It classifies the employed people in two groups: employees and self employed. Further, self-employed people are categorized as employers, own-account workers, members of producers' cooperatives and contributing family workers. The comparison by employment status indicates the dynamics of labor market and the level of development in a particular country.

Table 6: Employed Population Aged 15 or Older, by Status in Employment, Sex and Area

(% of total employed)

Status in Employment	Rural			Urban			Bangladesh		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Employer	1.5	0.1	1.5	1.1	0.0	1.2	2.6	0.1	2.7
Own Account Worker	25.5	8.2	33.7	7.9	1.6	9.5	33.4	9.9	43.2
Contributing Family Helper	2.7	10.1	12.7	0.6	1.2	1.8	3.2	11.2	14.5
Employee	20.0	3.9	23.9	10.6	4.6	15.2	30.6	8.5	39.1
Others	0.2	0.1	0.3	0.1	0.0	0.1	0.3	0.1	00.4
Total	49.8	22.4	72.2	20.3	7.4	27.8	70.2	29.8	100.0

Source: Bangladesh Bureau of Statistics (2017)

As stated in table 6, nearly 39.1% of employed population is employees compared to only 2.7% are employers. The percentage of male employer is 2.6% in against of only 0.1% female employers. Most of employed people are own account workers comprising 43.2% of total employed population. Thus, the statistics presented in table 6 indicate that Bangladesh has made progress in creating self-employment opportunities.

5.6 Employment by Sector

Employment by sector disaggregates employment into three broad categories: agriculture, industry, and service. This indicator indicates sectoral employment growth and decline. Sectoral employment flows are an important measure of labor market analysis as it intends to focus on labor productivity trends. It is quite useful to identify the sectoral growth of employees because there should have a shift from low productivity to high productivity sectors. One of the objectives of decent work is to ensure that the workers are involved in higher productive sectors.

Table 7: Employed Population Aged 15 or Older, by Economic Sector, Sex and Area

(% of total employed)

Sector	Rural			Urban			Bangladesh		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Agriculture	21.9	17.2	39.1	2.0	1.6	3.6	23.8	18.8	42.7
Industry	9.9	2.3	12.3	5.7	2.5	8.2	15.7	4.8	20.5
Service	18.0	2.9	20.9	12.6	3.3	16.0	30.7	6.2	36.9
Total	49.8	22.4	72.2	20.3	7.4	27.8	70.2	29.8	100.0

Source: Bangladesh Bureau of Statistics (2017)

As observed from table 7, still 42.7% people are employed in agricultural sector followed by 36.9% in service sector. Only 20.5% people are employed in industrial sector. In service sector, only 6.2% of employed population is female in comparison with 30.7% male employees. Although the economy of Bangladesh is dominated by agricultural sectors, she has made significant progress in releasing labor flow from agriculture to industry and service sectors in last few decades.

5.7 Employment by Occupation

Employment by occupation has several implications for labor market analysis. It is used by most of the economists to analyze the differences of distribution of income over time and between groups. It is also used to analyze the imbalances of supply and demand in different labor markets in-and-between countries. Policy makers use occupational statistics in formulating national labor planning. Mangers need occupational statistics to formulate personnel policies and monitoring working conditions. As per the decent work agenda, governments should establish direct or indirect measures to generate remunerative employment and productive occupational opportunities compatible with country-specific factor endowments.

Table 8: Distribution of Employed Population Aged 15 or Older, by Occupation, Sex and Area

(%)

Occupation	Rural			Urban			Bangladesh		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Managers	1.1	0.3	0.8	5.4	2.1	4.5	2.3	0.7	1.8
Professional	3.8	3.3	3.7	6.9	12.3	8.3	4.7	5.6	4.9
Technicians	1.7	0.6	1.3	4.1	1.8	3.5	2.4	0.9	1.9
Clerical Workers	1.3	0.4	1.0	3.1	1.6	2.7	1.8	0.7	1.5
Service Workers	17.4	2.5	12.7	28.6	7.3	22.9	20.6	3.7	15.6
Agriculture	32.5	62.0	41.6	7.4	16.9	9.9	25.2	50.8	32.8
Craft Workers	15.2	10.8	13.8	20.5	27.5	22.3	16.7	14.9	16.2
Plant	8.3	1.9	6.3	11.6	8.2	10.7	9.3	3.5	7.5
Elementary	18.6	18.3	18.5	11.9	22.3	14.7	16.7	19.3	17.4
Others	0.3	0.0	0.2	0.5	0.0	0.4	0.3	0.0	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Bangladesh Bureau of Statistics (2017)

According to the statistics in table 8, 32.8% of employed persons are skilled agricultural workers compared to 17.4% elementary occupational workers. Only 1.8% of employed persons are managers. Near about 15.6% employed persons are in service and sales occupations followed by 16.2% craft and related trades workers.

5.8 Hours of Work

Working hours have an important impact on health and well-being of workers as well as the level of productivity. It has both physical and psychological health effects. Since decent work aims at promoting occupational health, it is therefore necessary to reduce the excessive work hours. Hanglberger (2010) analyzed the impact of working hours on employee job satisfaction and found that there is a positive relationship between self-determined working hours and job satisfaction for full-time employees.

In table 9, it is observed that the number of working hours vary according to sectors in Bangladesh. The workers of industry and service sectors work 55 hours per week compared to 41 hours by agricultural workers. Moreover, female workers work less hours (39 hours per week) compared to male workers (53 hours per week). Since excessive working hours refers to more than 48 working hours per week, workers of industry and service sectors do excessive work in Bangladesh. It hinders the attainment of decent work objectives in terms of sound occupational health and an optimum work-life balance.

Table 9: Average Number of Hours Employed Person Worked per week, by Sector, Sex and Area

(Weekly working hours)

Status in Employment	Rural			Urban			Bangladesh		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Agriculture	47	33	41	46	33	40	47	33	41
Industry	55	50	54	56	56	56	56	53	55
Service	56	45	55	56	48	55	56	47	55
Total	52	36	47	55	47	53	53	39	49

Source: Bangladesh Bureau of Statistics (2017)

5.9 Employment in the Informal Economy

The informal economy across countries plays an important role in creating employment opportunities at a large scale. Work in the informal economy refers to work with no legal identity, poor working conditions and high incidence of work-related accidents. Maloney (2004) criticized the informal employment sector as an unregulated micro-entrepreneurial sector.

The labor policy makers must assess the employment portion in informal economy in formulating labor policies. Decent work paradigm calls for respect for work and recognition. Since employment in informal economy is suffering from the absence of legal identity and basic employment benefits, a higher ratio of this sector hinders the achievement of decent work objectives.

Table 10: Informal Employment as % of Total Employment

									(% of total employed)
Age Group	Rural			Urban			Bangladesh		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
15-29	88.7	96.7	91.3	85.6	94.5	88.6	87.8	96.1	90.5
30-64	84.0	97.0	88.1	67.9	87.6	72.5	79.2	94.9	83.8
65+	91.5	98.3	92.5	76.4	93.0	78.4	88.6	97.5	89.9
Total	85.9	97.0	89.3	73.6	90.6	78.1	82.3	95.4	86.2

Source: Bangladesh Bureau of Statistics (2017)

The informal employment is an indicator of quality of employment in an economy. As stated in table 10, more than 86% of employed persons are involved in informal economy. Thus, they are deprived from basic labor rights. In against of male workers (82.3%), female workers are more involved in informal employment having 95.4% of total employment.

5.10 Unemployment Rate

The unemployment rate (UR) is the most widely used indicator of labor market analysis. It indicates the proportion of labor force that does not have a job, but is available for work as well as looking for the job. One of the important objectives of decent work is to reduce the unemployment rate at a minimum level. Accordingly, creating more work opportunities disregarding sex and nationality is critical for ensuring social justice in a country.

Table 11: Unemployment Rate Aged 15 or Older, by Age Group, Sex and Area

									(% of total labor force)
Age Group	Rural			Urban			Bangladesh		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
15-17	10.1	14.1	10.9	9.7	9.0	9.5	10.0	12.0	10.5
18-24	8.9	12.2	10.0	9.1	12.8	10.4	8.9	12.4	10.1
25-29	4.6	9.8	6.5	5.6	10.7	7.3	4.9	10.0	6.7
30-64	0.9	4.0	1.9	1.1	4.8	2.0	1.0	4.2	1.9
65+Years	0.6	2.5	0.8	0.7	2.2	0.9	0.6	2.4	0.9
Total	2.9	6.5	4.1	3.2	7.7	4.4	3.0	6.8	4.2

Source: Bangladesh Bureau of Statistics (2017)

The UR is 10.5% in 15-17 age groups in Bangladesh compared to only 1.9% of persons aged 30-64 years. Again, male unemployment rate (3.0%) is lower than its female counterparts (6.8%). People of urban areas are more unemployed than those of rural areas as seen in table 11.

5.11 Youth unemployment

Youth unemployment refers to the portion of unemployed people aged 15-24 and in some cases it extends to 29 years. It indicates the problems that the young people are facing in finding jobs. This youth unemployment rate has significant implications for decent work. The young people who are unemployed have the tendency to look for jobs with poor-quality, low-paid and low-productivity. Thus, decent work objectives become difficult to attain. Moreover, higher youth unemployment is associated with depletion of human and social capital.

Table 12: Youth Unemployment Aged 15–29 in Total Unemployment, by Age Group, Sex and Area

% of total unemployed									
Age Group	Rural			Urban			Bangladesh		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
15-19	27.7	12.0	19.7	19.1	12.8	16.0	25.1	12.2	18.6
20-24	31.2	22.5	26.8	31.6	28.1	29.9	31.3	24.1	27.7
25-29	20.4	25.2	22.8	25.9	25.1	25.5	22.1	25.2	23.6
Total	79.3	59.7	69.3	76.5	66.0	71.4	78.4	61.5	69.9

Source: Bangladesh Bureau of Statistics (2017)

In table 12, 69.9% young people are unemployed who are in between 15-29 years. The female youth unemployment rate is 61.5% compared to 78.4% of male youth unemployment. The situation is more or less similar in both rural and urban areas.

5.12 Time-Related Underemployment

The time-related underemployment refers to the percentage of employed people who work less than 40 hours a week but they are interested to do more work. It indicates the underutilization of the productive capacity of labor force. Since decent work strives for increasing labor productivity, time-related underemployment rate should be brought down at minimum level.

Table 13: Time-related Underemployment by Age Group

									(%)
Age Group	Rural			Urban			Bangladesh		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
15-29	41.1	38.9	40.3	42.6	49.7	45.0	41.4	41.1	41.3
30-64	56.0	59.9	57.3	55.1	49.9	53.3	55.8	57.8	56.5
65+	2.9	1.2	2.4	2.3	0.5	1.6	2.8	1.1	2.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Bangladesh Bureau of Statistics (2017)

The statistics of table 13 indicates that the time-related underemployment rate among the employed people aged 65+ is only 2.2% compared to 56.5% of 30-64 age group. Near about 41.3% employed persons work less than 40 hours during the reference period. The rates do not vary notably from gender perspective.

5.13 Persons Outside the Labor Force

Persons outside the labor force are basically the inactivity rate that refers to the portion of the people that is neither working nor seeking work. This inactivity rate indicates the social custom, attitude towards women in the labor force, and family structures of a particular country. The reasons behind the inactive labor force are of critical interest for decent work purpose. A high inactivity rate hinders the core objective of decent work i.e. creating employment opportunities for all.

Table 14: Not-in-Labor-Force as % of Working Age Population

									% of working age population
Age Group	Rural			Urban			Bangladesh		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
15-29	30.3	67.2	49.4	30.6	68.9	51.4	30.4	67.7	50.1
30-64	5.2	55.6	30.5	6.0	67.5	35.6	5.4	59.0	32.0
65+	45.4	88.1	64.3	55.9	91.8	71.4	47.7	88.9	65.8
Total	18.1	62.4	40.4	18.3	69.2	44.0	18.1	64.4	41.5

Source: Bangladesh Bureau of Statistics (2017)

Nearly 50.1% people aged 15-29 years are outside the workforce in Bangladesh compared to 65.8% of people aged more than 65 years. The female persons are outside the labor force at a notable rate (64.4%) in comparison with their male counterparts (41.5%).

Surprisingly, 50.1 % young people are outside the force followed by 32.0% of people aged 60-64 years. This high labor inactivity rate is a serious concern for Bangladesh, especially in terms of decent work.

5.14 Earnings from Employment

Remunerative employment is an important aspect of decent work that states that employment should yield adequate income to support the costs of living. Wages are the most common indicators in this regard. The average wages information serves as an important indicator of a country's labor market.

Table 15: Average Monthly Income by Group

In Bangladeshi Taka									
Age group	Rural			Urban			Bangladesh		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
15-24	10488	10959	10565	11503	11034	11323	10814	11004	10862
25-34	11885	11261	11771	14800	13173	14288	12955	12303	12801
35-44	12208	11846	12147	17846	14631	16948	14254	13305	14053
45-54	12616	10047	12232	20540	14733	19204	15416	12304	14857
55-64	11388	9890	11164	18073	14173	17438	13492	11333	13160
65+	9862	8189	9611	15480	11554	14879	11173	8990	10844
Total	11635	10988	11527	15945	13021	15066	13127	12072	12897

Source: Bangladesh Bureau of Statistics (2017)

The average monthly income of 15-24 age group is BDT 10862 compared to BDT 14857 of 35-44 age group. Workers of more than 65 years age earn BDT 10844 taka which is very negligible to support living costs. On an average, the monthly income of Bangladeshi employed people is 12897 Taka.

5.15 Labor Productivity

Labor productivity is used to assess the international competitiveness of a labor market. It refers to output per unit of labor input. It is a measure of economic

performance. Labor productivity is closely related to earnings. Thus, it has significant impact on decent work. Miyamoto (2017) examined the impact of productivity growth on labor market dynamics and found that there is a significant relationship among productivity growth, unemployment rates and rates of job finding. As stated in table 16, the highest labor productivity is in mining and quarrying sector (780.4) compared to 612.6 in utilities sectors. The labor productivity is 47.2 in agricultural sector although 41% people are employed in this sector in Bangladesh. The labor productivity in real-estate and other business activities is 697.6 compared to 335.0 in financial sector.

Table 16: Labor Productivity by Type of Economic Activity, 2010

Economic Activity	Gross value added per employee
Agriculture, hunting, forestry and fishery	47.2
Manufacturing	185.0
Wholesale and retail trade; repair of vehicles and motorcycles	140.1
Transportation, storage and communication	182.2
Other community and personal services	191.8
Construction	213.5
Hotels, accommodation and food-service activities	64.0
Education	143.4
Real-estate and other business activities	697.6
Human health and social-work activities	374.5
Finance	335.0
Public administration and defence; compulsory social security	344.8
Mining and quarrying	780.4
Electricity, gas, steam and air-conditioning supply, water	612.6

Note: Gross value added per employee is calculated by dividing total value added in an industry by the number of jobs in that industry.

Source: ADB (2010)

5.16 Working Poor

Working poor refers to a situation when individuals are unable to generate sufficient income from employment to support the standard of living. This is probably the most concerning matter for decent work paradigm. Working Poverty is thus an outcome of labor market functioning. Bodea and Herman (2014) conducted a study on working poverty in Romania and found that working poor is associated with employment vulnerability. A comparative picture between Bangladesh and some selected countries is presented in table 17.

Table 17: Poverty in % of Population below $1.90 a Day (2011 PPP)

Country	(% of population & Year)	Country	(% of population & Year)
Argentina	1.7% (2014)	Iraq	2.5% (2012)
Bangladesh	18.5% (2010)	Nepal	15% (2010)
Colombia	5.7% (2014)	Nigeria	53.5%(2009)
China	1.9% (2013)	Pakistan	6.1% (2013)
Dominican Republic	2.3% (2013)	Senegal	38% (2011)
Georgia	9.8% (2014)	South Africa	16.6% (2011)
Ghana	25.2% (2005)	Sri Lanka	1.9% (2012)
India	21.2% (2011)	Thailand	1% (2012)
Indonesia	8.3% (2014)	Uganda	34.6% (2012)
Jamaica	1.7% (2004)	Zimbabwe	21.4% (2011)
Malaysia	0.3% (2009)	Vietnam	3.1% (2014)

Source: World Bank (2016)

As mentioned in table 17, 18.5% of people of Bangladesh earn less than $1.90 a day compared to only 1% in Thailand. The most severe case exists in Nigeria where more than 53.5% employees earn less than $1.90 a day on an average. Sri Lanka, being a SAARC listed country, holds only 1.9% people who earn below $1.90 a day. Malaysia is experiencing the least working poverty in comparison with other countries.

6. Policy Options

Being an international organization, ILO strives to establish social justice in the world by settling labor standards and promoting quality work. In light of this vision, it introduced decent work agenda in 1999. Undoubtedly, decent work is the dream of the workers disregarding sex, race, age and nationalities. A growing number of employers, employees and governments investigate the policy options adherent to the principles of decent work. Perceptions toward decent work vary across cultures due to national differences, the political views of policy-makers and each individual's position in relation to the labor market. Thus, policy options depend on country specific factor endowments. In addition, there is an increasing policy interdependence of countries due to the interdependence of the global economy.

Despite a small country of Southern Asia, Bangladesh is enriched with working age population. There are 106.1 million working population out of 158.5 million total populations. This higher percentage of working age population creates golden prospects for Bangladesh.

Favorable labor policies focusing on this huge working age population are critical for economic growth and sustainable development. Based on the labor market analysis, several policy options can be outlined for Bangladesh pertaining to labor market growth, employment and social outcomes. First, most importantly, Bangladesh should work more closely with multilateral institutions on labor policies. Sharing and exchanging national and international views on labor standards will help Bangladesh to set labor-friendly strategies. In addition, there should be more dialogue with other countries and international organizations like ILO that are working on labor issues.

Since decent work promotes labor rights in terms of productive employment and social security, the government policy makers should arrange regular dialogues with national labor organizations, pressure groups, and different related institutional bodies. The outcomes of these dialogues will be quite helpful in setting acceptable labor policies, especially in the light of domestic circumstances. Bangladesh should focus on sustainable economic growth policies to create more employment opportunities. Since 44.0 million people are outside the labor force in Bangladesh, policies should be developed for bringing this large portion of people in labor force framework. A good policy option in this case is to prioritize employment growth because steady growth in jobs and households incomes creates more jobs in a country. Bangladesh should take attempts to create favorable investment environment to attract both national and international investors. These investments will create more jobs.

Income inequality and working poverty exist in Bangladesh labor market. It diminishes the living standards of workers and threats social cohesion. Expansion of social protection as proposed in ILO's decent work agenda may play an important role in achieving benefits against poverty and supportive demands. Another policy option may be the transition towards green economic policies that encourages new investments and the creation of green jobs.

Bangladesh should adopt policies supportive for building strong labor market institutions because these institutions help ensure that employment and social protection policies are identified and addressed. Since skilled labor force is critical for labor productivity, Bangladesh should invest more in education and training sectors. Vocational education should be given priority in this case as it increases the skill level of the nation. Trade, employment, labor market and social protection are closely related. Thus, reforming trade and employment policies based on open market mechanism are critical for sustainable development and employment growth. The government also should look for setting minimum wage level and working hours for attaining decent work objectives.

7. Research Agenda

Decent work is relatively a new phenomenon and most of its discussions are limited to conceptual discussions only. Lots of avenues are open for doing research in this field. Since labor market and labor rights are the indispensable parts of human life, the debates and discussions on these issues are of great interest for researchers, academics and policy makers. The most important fact of decent work research is that no significant empirical work is done in this field. So, the interested researchers may conduct empirical studies on different dimensions of decent work. Even, the conceptual and theoretical research is not properly grounded till now. Research can be conducted to explore the concepts of decent work paradigm and its different principles.

Although decent work objectives are the reflections of worldwide labor movements, its principles and their applicability vary across cultures. Thus, an important potential area of research is the investigation of applicability of decent work agenda across countries. Examining the influence of labor market on decent work in a specific country is another potential area of research. The role of national and multilateral institutions towards decent work may be investigated. Since labor market is a multidimensional subject, one can do research to examine the effect of each indicator on decent work. A comparative study of decent work between countries is another interesting field of potential research. The conflicting issues on decent work agenda between countries and ILO should be examined.

8. Conclusion

Since its inception in 1999, lots of debates and discussions were held about decent work and its principles. The increasing number of national and international working papers on decent work is the primary evidence in this case. Decent work is significant for establishing social justice and promoting human and labor rights. The national labor policies of the countries are now being adopted coherent to decent work principles. A country's labor market influences decent work agenda to a large extent. Being a country with huge working age people, Bangladesh has potentiality to attain the benefits of ILO's decent work agenda. In spite of having this advantage, a large portion of people is still outside the labor force. Poor income, labor underutilization, dominance of informal employment and precarious employment are the common features of Bangladesh labor market. Still a significant portion of female people are outside the labor force. These features of labor force framework create impediments towards the attainment of decent work objectives. Round table discussions with national and international labor institutes, collaboration with international labor agencies, exchanging experiences with other countries, creating favorable grounds for national and international investment, more investment in education and training sectors are some of the possible options for Bangladesh for adopting decent work friendly labor policies. This study is supposed to help the researchers, academics, policy makers and managers with a brief analysis of different labor market indicators along with their implications for decent work paradigm.

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Profitability of Agar Oil Production in Maulvibazar District of Bangladesh: An Economic Analysis

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Abstract: *This study was conducted to estimate the profitability of agar oil production at Barlekha upazila under Maulvibazar district of Bangladesh. Data were collected from 100 respondents (60 factory owners and 40 factory workers) using stratified and simple random sampling. Both tabular and mathematical analyses were performed to achieve the study objectives. Maximum owners (63.3%) were graduate and had involvement in agar oil organization whereas most of the workers (45%) were illiterate and did not have such type of involvement. Annual income of 68.3% factory owners was between 1 crore to 2 crores where it was between 50 thousand to 1 lakh and above 1 lakh for 50% workers. Total per liter costs and returns of agar oil production were estimated at Tk. 1,84,509.91and Tk. 5,08,100, respectively. BCR was 2.75 for agar oil production which indicated that agar oil production was a highly profitable business. The study recommends that factory work should be more mechanized, and bank loan and other institutional credit should be made available on easy terms and conditions to agar oil producers.*

1. Introduction

Agarwood, also known as oud, oodh, agar, aloeswood or lign-aloes, is dark resinous heartwood that forms in Aquilaria and Gyrinops trees (large evergreens native to Southeast Asia). In Bangladesh in a suitable and preferable condition Agar tree (*Aquilariaagollocha*) grows. In Bengali, agarwood is known as "Agor/Agorogach" and the agarwood oil as "Agor/Agoroattar".Bangladesh is producing three major products namely agar-wood, agar-oil and agar dust/powder in agarwood sector. It has multidimensional uses in perfume, cosmetics, and medicine sector. It is also known as liquid gold of Bangladesh. Agarwood has traditional, religious as well as cultural uses in different parts of the world. Major agarwood producing countries in the world are India, Malaysia, Indonesia, Vietnam, Cambodia, Laos, Brunei, Singapore and Bangladesh. In Bangladesh, people living in north-eastern districts are engaged in agarwood production, processing and trading of agar products for several decades. Agarwood is a

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diseased tissue corresponding production of oleoresin which begins to become odoriferous and this aromatic resinous wood is called agarwood (Ba, 2010). At this moment, no other substances are similar toagarwood. Chemical substitutes are already available for perfume but do not come even close to emulating the natural product (Ali, 2006).

The value of agar oil is extremely high. Almost all of the respondents were highly dependent on agar oil business. A whole range of qualities and products is on the market varying with geographical location and cultural deposition. Agar oil is mostly used in cosmetics and perfume sector. The total volume of agar oil production per year is about 4,870 liters and the market value of it is $6-12 billion US. Prices range from a few dollars per liter for the lowest quality to over thirty thousand US dollars for top quality oil.Agarwood chips start at £20 per kilo up to £6,000 per kilo depending on how much resin is inside the chips (Akter*et al.* 2013).

Agarwood products were seen as an important strategy to earn a high income by virtue of being expensive and therefore, many villagers were attracted to this livelihood activity (Persoon, 2007). It was found that there were a higher number of households (38%) getting cash from agar oil. Agarwood and oil production and wage labor were considered the most important occupation in the study area. This was supported by the fact that wage employment often improved the standard of living. Commercial planting of agarwood has created an impact as a livelihood strategy. It was amply evident during the study that this was taking over the earlier strategies indicating the dynamism in the livelihood evolution process. The social activities of the peasants change over time in the process of developing their livelihood and social status. In Bangladesh, there are about 350-400 enterprises producing agar oil. These are mainly based at Barlekha Upazila of Maulvibazar district of Bangladesh. Their primary source of raw materials (agar tree) was collected from privately owned forests. An agar tree requires 12-15 years to be used as raw materials. About 8-10 years old tree has to be selected for ironing (putting the iron rod inside the tree). About 100 to 150 kg iron rod is required for ironing a medium size agar tree. It takes about 3-4 years after ironing a tree to be used for extracting agar oil (Abdin, 2014).

2. Objectives of the Study

The main purpose of the study is to obtain a comprehensive insight into the profitability of agar oil production and its consequent impact on the livelihood of the agar oil producers. It is expected that the present study would provide valuable information to the people engaged in agar oil production and would also indicate the adjustment needed in the allocation of the resources. The producers will get

information regarding the actual cost of production of agar oil and its profitability. The specific objectives are:

i. To identify the socioeconomic profile of Agar oil producers; and
ii. To estimate the profitability of Agar oil production.

3. Literature Review

In this section, an attempt was made to briefly review some relevant studies related to this research.

Rahman *et al.* (2015) carried out a study on management and economic aspects of growing *Aquilariaagallocha*Roxb. In Bangladesh, The study based on a survey of 120 agar farmers and 20 agar-based enterprises in the Maulvibazar district of Bangladesh, to investigate the management system of agar plantations and agar-based oil enterprises and the financial viability of both sectors. The result of the analysis implied that the net present value of 1 ha of agar plantation was estimated at Tk. 4.9 million and the net annual return from agar-based enterprises was estimated at Tk. 0.8 million.

Yusoff *et al.* (2015) explored that the effective extraction method conducted by standard hydro-distillation and redesign hydro-distillation in order to increase the oil production. The results indicated that the high oil yield obtained by the oil extracted with sample parameter size of 0.5cm (0.44%) and shake for 7 days (0.34%) compared to another parameter.

Islam *et al.* (2014) conducted a study on the development of low-cost agarwood essential oil extraction system from agar tree growers in Bangladesh. The study revealed that the extraction of agar oil processes is very complex, comprising of expensive mechanical, solvent extraction and cold processing system. The result showed that 7 ml agar oil production cost and benefit were Tk. 2,33,600 and Tk. 7,78,389, respectively. Benefit-cost ratio was found as 2.33 which indicating agar oil production is very profitable for agar tree growers and agarwood oil traders of Bangladesh.

Abdin (2014) at carried out a study at Sujanagar, Barlekha, Maulvibazar. This analysis disclosed that agar oil is a 100% export oriented sector based on local raw materials and using indigenous technology which exporting values are about TK. 5.00 million to TK. 100 million per year. In this study, they concentrated more to identify development barriers of agarwood sector in Bangladesh and generate few recommendations in this regard in order to increase foreign currency earning sectors for Bangladesh.

Mamat *et al.* (2010) examined the costs and benefits analysis of *Aquilaria* species on the plantation for agarwood production in Malaysia. The analysis implied that whether planting *Aquilaria* spp. integration with banana (*Musa* spp.) or planting *Aqualaria* spp. as a single crop for agarwood production, both options are viable. The result of the study displayed that the net present value of the investment at a 10% discount for 1,000 hectares integrated planting is RM185.6 million while the option involving single crop *Aquilaria*plantation for agarwood production is RM153.6 million.

Shahidullah and Haque (2010) conducted a study on linking medicinal plant production with livelihood enhancement in Bangladesh: implications for a vertically integrated value chain. They analyzed the value chain for medicinal plants produced by village-based marginal farmers and homestead growers whose livelihoods are significantly supported by the commercial scale production of several plant species which conducted in Natore district of northwest Bangladesh where a total of 160 farmers and households from eight villages were engaged in the production of medicinal plant species, resultant improvements in livelihoods. The result implied that 53% of the respondents agreed that their livelihoods improved with income generated from medicinal plant cultivation with the profit margin at the middleman level ranged from 59% to 139% and at the wholesale level it was 22% to 90%, as opposed to the cost of goods sold by the middlemen and wholesalers, respectively.

A quick survey of the literature suggests that some studies were carried out in greater Sylhet district. But such kind of survey was not undertaken in very recent times in Maulvibazar district. Hence, this work intends to fill the knowledge gap.

4. Methodology and Data Sources

4.1 Study Area, Sample Size and Data Collection

To achieve the objectives of the present study, Barlekhaupazila under Maulvibazar district was selected purposively. A total of 100 sample respondents were interviewed for the study. Among them, 60 respondents were agar oil factory owners and 40 respondents were agar oil factory workers. In the case of selecting factory owners, stratified sampling technique was used and at the same time, simple random sampling technique was used for selecting workers. To collect primary data, field survey method was used.

An interview schedule was carefully prepared to collect the required data. Before finalization of the schedule, a preliminary questionnaire was developed in accordance with the objectives of the study. The questionnaire was then pre-tested at field level to ensure the appropriateness of the contents. On the basis of the

experience, the schedule was improved, rearranged and modified. After making necessary adjustments, a final interview schedule was developed.

4.2 Analytical Techniques

Descriptive statistics was extensively employed by designing a list of tables in respect to the objectives of the study. The calculation procedure of the entire technique was based on weighted average and percentages. Toarrive at meaningful conclusion socio-economic characteristics of agar oil factory owners and workers, input use, costs and returns of agarwood oil production, gross margin, net margin and the benefit-cost ratios (BCR) were estimated in this study.

Gross return: Gross return was calculated by multiplying the total volume of output of an enterprise by the average price in the harvesting period (Dillon and Hardaker, 1993). The following equation was used to calculate gross return-

$GR_i = \sum_{i=0}^{n} Q_i P_i$

Where,

GR_i = Gross return from i^{th} product;Q_i= Quantity of the i^{th} product;P_i= Selling price of the i^{th} product; andi = 1, 2, 3.....n.

Gross margin: Gross margin calculation was done to have an estimate of the difference between gross return and total variable costs. The analysis is also easily understandable because of its simplicity. The Following equation was used to assess gross margin-

GM = GR-TVC

Where,

GM = Gross margin;GR = Gross return; andTVC = Total variable cost.

Net return: Net return was calculated by deducting all costs (variable and fixed) from gross return. To determine the net return of agar oil production, the following equation was used in the present study (Dillon and Hardaker, 1993):

$\pi = \Sigma (P_{Yi}.Q_{Yi}) - \Sigma (P_{Xi}.Q_{Xi}) – TFC$

Where,

π= Net return;P_{Yi}= Price per unit of i^{th} produces;Q_{Yi}= Quantity of the i^{th} produces; Pxi= Price per unit of i^{th}input;Q_{Xi}= Quantity of the i^{th} input;TFC = Total fixed cost; and i = 1, 2, 3,.....,n (number of inputs).

This function determines the net return by subtracting the total cost of production from its total return.

Benefit-cost ratio (BCR): The BCR is a relative measure, which is used to compare benefit per unit of cost. The BCR was estimated as a ratio of gross

returns and total costs. The formula for calculating BCR (undiscounted) is shown below:

BCR=GR/TC

Where, GR= Gross return and TC= Total cost.

5. Empirical Results and Discussion

5.1 Socio-economic Profile of the Respondents

Extraction of agar oil mainly consummated through agar oil factory. The factory owners had to bear all types of expenses included in the process of agar oil production whereas all physical works were performed by the factory workers. So, the socio-economic profile of sampled factory owners and workers are discussed below. In this context, the socio-economic background of the sampled respondents particularly the age of the respondents, family size and composition, family type, educational level, marital status, religion, occupation, year of experience, membership of organization, credit access, factory size, land ownership pattern and annual income and expenditure, etc.,are displayed in this section.

Age of the Respondents

In this study, all the selected respondents were classified into three age groups such as 0 to 14 years, 15 to 64 years and above 65 years. Table 1 showed that most of the owners (93.33%) belonged to 15-64 age groups (against the national average of 65.58%). Only 4 respondents (6.67%) belonged to above 65 age category (against the national average of 4.97%). It was further noted that most of the workers (95%) belonged to 15-64 age groups. Only 2 respondents (5%) belonged to 0-14 age category (against the national average of 29.45%) while none was above 65 ages.

Table 1: Percentage Distribution of the Respondents by Age Group

Items	Owners		Workers	
Age categories	No.	Percentage (%)	No.	Percentage (%)
0-14	0	0	2	5
15-64	56	93.33	38	95
65+	4	6.67	0	0
Total	60	100	40	100

Source: Field Survey, 2017.

Gender Distribution of the Respondents

The total number of respondents was classified into two groups such as male and female. It is evident from the Table 2 that majority of the factories (96.7%) were male-headed while only 2 factory (3.3%) were female-headed. That was the indication of male dominant power in the study area. On the other hand, the majority of the factory workers were male that is 34 respondents (85%) while only 6 respondents (15%) were female.

Table 2: Percentage Distribution of the Respondents by Gender Distribution

Items	Owners		Workers	
Gender categories	No.	Percentage (%)	No.	Percentage (%)
Male	58	96.7	34	85
Female	2	3.3	6	15
Total	60	100	40	100

Source: Field Survey, 2017.

Family Size and Composition

Family size of the sampled respondents has been classified into three categories as having the number of the member between 2 to 5, 6-10, and above 11. Table 3 suggests that the majority of factory owner families (45%) were in 6-10 and above 11 categories while only (10%) fell in the 2-5 categories. Conversely, the majority of workers families (42.7%) were in 6-10 categories while only 7 respondents (17.5%) were above 11 category.

Table 3: Percentage Distribution of the Respondents by Family Size

Items	Owners		Workers	
Family size categories	No.	Percentage (%)	No.	Percentage (%)
2-5	6	10	16	40
6-10	27	45	17	42.5
11+	27	45	7	17.5
Total	60	100	40	100

Source: Field Survey, 2017.

Family Type

It was observed from Table 4 that majority of the owner's family (56.7%) were the nuclear family while 43.3% were joint family. On the other hand, the majority of the factory workers families (75%) were nuclear family while 25% was joint family. Since agar oil production is a very specialized type of enterprise, this type of family structure was very likely.

Table 4: Percentage Distribution of the Respondents by Family Type

Items	Owners		Workers	
Family type categories	No.	Percentage (%)	No.	Percentage (%)
Joint family	26	43.3	10	25
Nuclear family	34	56.7	30	75
Total	60	100	40	100

Source: Field Survey, 2017.

Education Level

Table 5 reveals that most of the owners (63.3%) were graduate indicating their higher level of education. However, 18 workers (45%) were illiterate and 14 respondents (35%) have completed primary level of education while only 1 respondent (2.5%) was reached in the secondary level of education.

Table 5: Percentage Distribution of the Respondents by Education Level

Items	Owners		Workers	
Educational level categories	No.	Percentage (%)	No.	Percentage (%)
Illiterate	0	0	18	45
Primary	0	0	14	35
Secondary	0	0	7	17.5
Higher secondary	22	36.7	1	2.5
Graduation	38	63.3	0	0
Total	60	100	40	100

Source: Field Survey, 2017.

Occupational Pattern

The main occupation of sampled factory owners is agar oil production. Besides this, some were engaged in farm activities as agar tree production, crop production, livestock rearing, etc. Conversely, the earning of workers largely depends on the factory work. Besides this most of them were engaged in agricultural wage labor, livestock rearing, small business, etc. Table 6 shows that all the respondents were engaged with agar oil and agar tree production. Besides, only 4 respondents were involved in livestock rearing which was for the family consumption of milk and meat. At the workers level almost all the respondents (60%) were involved in factory work while 9 respondents (22.5%) were involved in factory workand livestock rearing and 7 respondents (17.5%) were involved in factory work and small business.

Table 6: Occupation Status of Sampled Respondents in the Study Area

Owners			Workers		
			Occupational status	Frequency	% of the occupational status
Occupational status	Frequency	% of the occupational status	Factory work	24	60
Agar oil + Agar tree producer	56	93.33	Factory work+ livestock rearing	9	22.5
Agar oil + Agar tree producer+ livestock rearing	4	6.67	Factory work + small business+ agricultural labor	7	17.5
Total	60	100	Total	40	100

Source: Field survey, 2017.

Year of Experience

In this study, the owners with high experience run their business smoothly avoiding different obstacles. At the same time, workers with high experience do their work more effectively and quickly than others who have less experience in this field of work. Experience in agar oil production was divided into three periods such as below 10 years, 11 to 30 years and above 31 years. It is evident from Table 7 that 63.33% sample owners had experience between 11-30 years

while 22 respondents (36.67%) had below 10 years' experience and (57.5%) percent sample workers had experience between 10-30 years while only 2 respondents (5%) had above 31 years' experience.

Table 7: Percentage Distribution of the Respondents by Year of Experience

Year of experience categories	Owners		Workers	
	No.	Percentage (%)	No.	Percentage (%)
<10	22	36.67	15	37.5
11-30	38	63.33	23	57.5
31+	0	0	2	5
Total	60	100	40	100

Source: Field Survey, 2017.

Credit Access

Most of the owners take credit from their organization, banks, and relatives. At the same time, workers take credit from the association, *Mahajan*, NGO, etc. in order to fulfill their daily necessaries with the high-interest rate. Table8indicates that 66.7% respondents had access to credit and 33.3% respondents had no access to take credit. And at the workers level 42.5% had access to credit and 57.5% had received no credit.

Table 8: Percentage Distribution of the Respondents by Credit Access

Items	Owners		Workers	
Credit access categories	No.	Percentage (%)	No.	Percentage (%)
Credit access	40	66.7	17	42.5
No credit access	20	33.3	23	57.5
Total	60	100	40	100

Source: Field Survey, 2017.

Factory Size

Factory size is a very important socioeconomic variable which indicates the livelihood pattern of the owners. On the other side, this variable is not applicable

for the workers. Table 9 shows all categories of owners according to their factory size. The factory categories were small (2-4 Decimal), medium (5-8 Decimal) and large (>8 Decimal).It is evident from the Table 9 that majority of the owners 73.33% fell into the medium factory size category while 16.67% were in large size and only 10% belonged to small factory size category.

Table 9: Percentage Distribution of the Owners by Factory Size

Items	Owners	
Factory size categories	No.	Percentage (%)
Small (2-4 Decimal)	6	10
Medium (5-8 Decimal)	44	73.33
Large (>8 Decimal)	10	16.67
Total	60	100

Source: Field Survey, 2017.

Land Ownership Patterns

In this study, the landholding of the sample respondents was defined as the sum of all types of land possessed by them. It is computed by adding the area rented and mortgaged in from others and deducting the area rented and mortgaged out to others. It is an important variable which indicates the living standard of the owners. Such type of ownership is absence in the worker's sector. Therefore, the land size was measured by using the following formula: Land size = Own land (homestead + pond + own cultivated + Garden) + (Rented in + mortgaged in) – (Rented out + mortgaged out)

Table 10: Percentage Distribution of the Owners and Workers by Land Ownership Patterns

Owners:		
Items	No.	Percentage (%)
Small (1-4 acre)	23	38.33
Medium (5-8 acre)	23	38.33
Large (>8 acre)	14	23.34
Total	60	100

Workers:		
Items	No.	Percentage (%)
Own land	15	37.5
Khash land	15	37.5
Rented in land	10	25
Rented out land	-	-
Mortgaged in land	-	-
Mortgaged out land	-	-
Total	40	100

Source: Field Survey, 2017.

It is evident from Table 10 that small and medium category owners represented38.33% each of total owners. Only 14 respondents comprising 23.34% of owners were large landowners.

Annual Income Pattern

Annual income means the total amount of income earned annually by all family members from different activities that were done by them. Gross annual income represents the amount of money a person earns in one year from all sources before taxes. The average family income of the sample owners was divided into three groups below 1 crore, between 1 crore to 2 crores and above 2 crores. In the case of workers it was below 50 thousand, between 50 thousand to 1 lakh and above 1 lakh. It is noted from Table 11 that annual income of the majority of owners numbering 41 respondents (68.3%) lies between 1 crore to 2 crores category while for only 2 respondents (3.3%) annual earnings were above 2 crores.And in the workers level annual income of 20 workers representing 50% of workers was 50 thousand to 1 lakhlevek.The corresponding income of the rest 20 workers was above 1 lakh level (Table 11).

Table 11: Percentage Distribution of the Respondents by Annual Income Pattern

Owners			Workers		
Category	No.	Percentage (%)	Category	No.	Percentage (%)
<1 Crore	17	28.4	<50 Thousand	0	0
1-2 Crore	41	68.3	50 Thousand to 1 Lakh	20	50
>2 Crore	2	3.3	>1 Lakh	20	50
Total	60	100	Total	40	100

Source: Field Survey, 2017.

Annual Expenditure Pattern

The annual expenditure means an amount of money that is spent to fulfill the necessaries of family over the year. The average family expenditure of the sample owners was divided into three groups below 10 lakh, between 10-40 lakh and above 40 lakh. And the average family expenditure of the sample workers was divided into three groups below 80 thousand, between 80 thousand to 1 lakh and above 1 lakh. Table 12 depicted that annual expenditure of majority of owners numbering 39 respondents (65%) lies between 10 lakh to 40 lakh category while only 1 respondent (1.7%) fell in 10 lakh and the expenditure of 33% of owners was above 40 lakh category. Besides this annual expenditure of majority of workers (60%) lies between 80 thousand to 1 lakh category while that 22 respondents (36.67%) was above 1 lakh category and that of only 2 respondents (3.33%) was below 80 thousand category.

Table 12: Percentage Distribution of the Respondents by Annual Expenditure Pattern

Owners			Workers		
Category	No.	Percentage (%)	Category	No.	Percentage (%)
<10 Lakh	1	1.7	<80 Thousand	2	3.33
10-40 Lakh	39	65	80 Thousand to 1 Lakh	36	60
>40 Lakh	20	33.3	>1 Lakh	22	36.67
Total	60	100	Total	40	100

Source: Field Survey, 2017.

5.2 Profitability of Agar Oil Production

In order to analyze the profitability of agar oil production, it is mandatory to estimate the production cost of different items where the cost will be deducted from the revenue. The cost of agar oil production includes both fixed cost and variable cost. Variable costs include cost of human labor, cost of trees, repairing cost of machineries and equipment, transportation cost, electricity bill, gas bill, etc. Fixed costs include depreciation cost of factory building and machineries, the opportunity cost of land use and interest on operating capital.

5.2.1 Cost of Agar Oil Production

Cost of Human Labor

Human labor was one of the most important inputs for agar oil production. Human labor was broadly classified as permanent labor and hired labor. Permanent labors were like as family labor. Hired labor included weekly labor, monthly labor, day to day contract basis labor, etc. Human labors were used to perform the following activities: i) turn the trees; ii) nail removing; iii) chipping trees into small pieces; iv) soaking small pieces of trees in water; and v)collecting oil. The actual wage paid to the hired labor was considered in calculating the cost of human labor. This also includes the value of money was paid to individual labor. The standard average wage rate was considered Tk. 180 per man day and standard working hours were 8 hours per day. Table 13 implied that in the study area, the use of human labor per liter of agar oil was 10. The total cost of human labor per liter was estimated at Tk. 1800.

Cost of Trees

In the study area, trees were purchased from both tree growers and middleman who were from Kulaura and Barlekha. In our calculation, the price of trees was considered that are actually paid by the owners for purchasing trees from the both areas. Table 13 revealed that the price per tree was Tk. 2500. In the study area, per liter of oil production requirement of trees was 35 pieces and total cost of trees incurred for producing per liter of oil was Tk. 87500.00

Cost of Transportation

Cost of transportation included expenses on transportation for purchasing trees, equipment's, collection marketing information, etc. Among the various transport costs, expenses incurred for purchased trees were the most important. The average transportation cost of trees for producing per liter oil was estimated at Tk. 4000.

Table 13: Cost and Return of Agar Oil Production (per liter)

Item	Unit	No./ Quantity	Price (Tk./unit)	Total value (Tk.)
A.Variable cost				
Cost of trees	Tk.	35	2500	87500
Cost of transportation	Tk.	2	2000	4000
Repairing cost of machineries & equipment's	Tk.	-	-	3056.99
Electricity bill	Tk.	-	-	312.95
Gas bill	Tk.	-	-	80000
Human labor cost	Man-days	10	180	1800
Total variable cost	Tk.	-	-	176669.94
B. Fixed cost				
Opportunity cost of land	Tk.	-	-	2761.66
Depreciation cost of factory building	Tk.	-	-	2443.41
Depreciation cost of machineries	Tk.	-	-	1786.88
Interest on operating capital	Tk.	-	-	848.02
Total fixed cost	Tk.	-	-	7839.97
C. Total cost (A+B)	Tk.	-	-	184509.91
D. Gross return	Tk.	-	-	
Agar oil	ml/Tk.	1000	500	500000
Agar wood sticks	Sack/Tk.	13,110	200,50	8100
Gross return	Tk.	-	-	508100
E. Gross margin(D-A)	Tk.	-	-	331430.06
F.Net return (E-C)	Tk.	-	-	146920.15
BCR (Undiscounted)	-	-	-	2.75

Source: Authors' calculation based on field survey, 2017.

Repairing Cost of Machineries and Equipment

Machineries and equipment are very essential input in every factory. A large number of works were done by the machineries and equipment. Without equipment turn and nail up cutting of trees is impossible. Also, the works of human labor were largely depending on correct equipment. Conversely, hydro-distillation was impossible without proper distillation machineries. So, every owner had to incur some repairing cost of equipment on monthly basis. The repairing cost of equipment incurred per liter oil was Tk. 3056.99 which was appeared in Table 13.

Electricity Bill

Another cost item of agar oil production was electricity bill. In every factory work, proper supply of electricity played a vital role which was quite similar in agar oil production too. It was the cost that was paid by the owners on monthly basis. It is evident from Table 13 that cost of electricity per liter oil was Tk. 312.95.

Gas Bill

Gas bill is one of the major costs in agar oil production. Production of agar oil mostly depends on this. Without the supply of gas, it is almost impossible to produce oil. Because the production of oil from soaks wood is dependent on the proper heat. Table 13 showed that the cost of gas bill per liter oil was Tk. 80000.

Opportunity Cost of Land

The land is an essential input in any production process. It is the base of any production. The value of land was different in the different places based on distance, location, and topography. In the study area, every owner had their own land in which they established their factories. For this reason, the opportunity cost of land was calculated. Opportunity cost refers to a benefit that a person could have received, but gave up, to take another course of action. In investing, it is the difference in return between a chosen investment and one that is necessarily passed up. Here, the opportunity cost of land was indicating that owners used their land in factory purpose rather than used it for agricultural cultivation. The annual average opportunity cost of land was estimated at Tk. 2761.65.

Depreciation Cost of Factory Building and Machineries

The factory building was the place where every technical work has been done. Soaking of wood chips, hydro-distillation, and processing of oil was done in the factory with the help of machineries. Depreciation of factory building and machineries was fixed cost. Depreciation was the allocation of the net cost of assets to each year of its operation. Here depreciation was calculated by using the method of the straight line. According to the straight line method, depreciation was calculated by differentiating the purchasing price and the salvage value and dividing by the total life-span. It appears from Table 13 that cost of depreciation of factory building and machineries was Tk. 2443.41 and Tk. 1786.88, respectively.

Interest on Operating Capital

Interest on operating capital was determined on the basis of opportunity cost principle. It was assumed that instead of investing the money in the agar oil production if he kept the money in the bank, he would have received interest on it.

In our calculation, we considered 12 percent rate of interest and the period of time is considered 1 month. Interest on operating capital was calculated on variable cost: such as trees cost, transportation cost, repairing cost of machineries and equipment, human labor cost, cost of electricity and cost of gas supply, etc. The following formula was used to calculate the interest on operating capital (Dillon and Hardaker, 1993):

$$\text{Interest on operating capital} = \frac{\text{Operating capital} \times \text{Rate of interest} \times \text{Time considered}}{2}$$

In the study area, the interest on operating capital for agar oil production per liter was calculated at Tk. 848.02 (Table 13).

Total Cost

To estimate the average total cost per liter, all resources used in the agar oil production as mentioned earlier has been computed together. Table 13depicted that per liter total cost of the agar oil production was Tk. 1,84,509.91 where total variable cost and total fixed cost were Tk. 1,76,669.94 and Tk. 7,839.97, respectively.

5.2.2 Return from Agar Oil Production

Gross Return

Per liter gross return of the agar oil production was obtained by multiplying the total amount of production with their respective market prices. Gross return includes by-product also. The main product produced by the factory owners were agar oil and per ml price of agar oil was 500 Tk. The by-products were white agarwood sticks and *Kosh*wood sticks and the selling price of these products were 200 Tk. and 50 Tk. per sack, respectively which were shown in Table 13. The gross return per liter of the agar oil production was Tk. 5,08,100.

Gross Margin

Gross margin was calculated by deducting the variable cost from the gross return. Table 13showed that gross margin of per liter agar oil production was Tk. 3,31,430.06.

Net Margin

Net margin was obtained by deducting the total cost from gross margin. Table 13indicated that the net margin per liter of the agar oil production in the study area was Tk. 1,46,920.15.

Benefit Cost Ratio (BCR)

BCR is the very important tool to measure the financial profitability or financial performance of any kind of agribusiness. It is indicative of whether a business is

profitable or not. Table 13exhibits that the BCR (undiscounted) for agar oil production per liter was 2.75 indicating high profitability and at the same time it implied that Tk. 2.75 would be earned by investing every Tk. 1 in the agar oil production.

6. Conclusion

The above discussion showed that agar oil production was profitable in the study area. The socioeconomic profile of selected agar oil factory owners and workers differed from each other. Maximum owners were graduate and had involvement in agar oil organization which enriched them financially and economically whereas most of the workers were illiterate and do not have such type of involvement. Annual incomes of factory owners were very high which helped them to maintain a high standard of living whereas maximum workers were poor and they are spending very hard life for their survival. Based on the cost-effective assessment, it could be concluded that agar oil production was more economically profitable for the agar oil factory owners rather than other agricultural crops. In the study area, there was the opportunity for raising the profit from agar oil production and the livelihood of the people in that area were considerably depend on agar oil production. So, the production of agar oil could change the economic conditions of both factory owners and workers. On the basis of the findings of the study, the following recommendations may be advanced which are likely to be useful for policy implications: i) the factory work should be more mechanized, improved technology and laboratory system should be introduced in order to smooth production process; and ii) bank loan and other institutional credit should be made available on easy terms and conditions to agar oil producers.

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Impact of Selected Macroeconomic Variables on the Economic Growth of Bangladesh

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Abstract: *With a view to measuring the economic development of a country, some endogenous and exogenous variables are required. Their adequate contribution to the Gross Domestic Product (GDP) could bring about possible economic development. This paper attempts to study the influences of crucial macroeconomic variables on GDP growth. The selected variables were inflation, fixed capital and foreign direct investment (FDI) to draw out the possible growth trends of Bangladesh since 1980. An economic framework for examination and to draw predictions were developed through Descriptive statistics, ANOVA, correlation analysis, coefficients and multiple linear regression techniques for this research. The empirical analysis of the paper was based on necessary data that were collected from sources like Bangladesh Bank and World Bank Indicator Report. The result indicates that inflation, negatively affects Bangladesh GDP growth, whereas increases in the value of foreign direct investment (FDI) and fixed capital (FC) result in the growth of GDP. Finally, this paper indicates effective measures that could assist in the better performance of these variables and provide a clearer scene of development in Bangladesh*

1. Introduction

Bangladesh is a country which comprises a total area of 147,570 sq. km. It is one of the densely populated countries which got independence in 1971 from Pakistan. Three-fourths of its people live in the rural areas. Bangladesh is an agriculture-based economy, which is also its principal source of employment. But the contribution of the agriculture sector in GDP has declined from 50 percent to 14.74 percent during 1973-2017 (GOB-2017). The economic development of the country has been constrained due to a variety of socio-economic factors such as, unemployment, the cheap rate of wages and high rate of inflation which are considered as reasons behind this slow economic growth.

About one-third of the country's labor force is unemployed; agriculture still accounts for 14.74% of GDP while employing 63% of total labor force (BER, 2016-2017). The RMG-dominated manufacturing sector and services, accounting for 20.77% and 52.58% of GDP, respectively, have been the sources of the economy's growth in the year of 2016 (BER,2016-2017). Industrial and export sector have achieved production growth in the last five years. Bangladesh is one of the ten leading countries which export labor force abroad. In search of livelihood, they force themselves to do any work. Due to lack of job

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opportunities, the labor force from Bangladesh works in low paid jobs (CPD, 2003).

2. Objective

Do the selected variables affect the GDP Growth in Bangladesh?

An increase in real GDP of a country will boost the overall output and lead to economic growth. Economic growth is helpful to increase the incomes of the society, bring unemployment at low levels and also delivers public services. Over the last few decades, macroeconomic variables and economic growth relationship became crucial issues amongst the researchers. With a view to achieving the main objective, some relevant objectives have been stressed upon in this paper. These relevant objectives include:

- Analyze the growth trends of GDP in Bangladesh.
- Evaluating the relationship between GDP growth and Inflation Rate.
- Exploring the relationship between GDP growth and Foreign Direct Investment.
- Finding out the relationship between GDP growth and Fixed Capital.

3. Literature Review.

Barro (1995) explores the inflation–economic growth relationship using a large sample covering more than 100 countries from 1960 to 1990. His empirical findings indicate that there exists a statistically significant negative relationship between inflation and economic growth if a certain number of the country characteristics are held constant. More specifically, an increase in the average inflation by 10 percentage points per year reduces the growth rate of real per capita GDP by 0.2 to 0.3 percentage points per year. In other words, his empirical analysis suggests that the estimated relationship between inflation and economic growth is negative when some reasonable instruments are considered in the statistical process. Finally, he added that there is at least some reason to consider that higher long-term inflation reduces economic growth.

Sarel (1995) mentions that inflation rates were somewhat modest in most countries before the 1970s but later the rate started to increase. Most empirical studies conducted before the 1970s show the evidence of a positive relationship between inflation and economic growth and a negative relationship between the two beyond that time period due to the severe inflation hike.

Faria and Carneiro (2001) investigate the relationship between inflation and economic growth in the context of Brazil which has been experiencing persistent

high inflation until recently. Analyzing a vicariate time series model with annual data for the period between 1980 and 1995, they find that although there exists a negative relationship between inflation and economic growth in the short-run, inflation does not affect economic growth in the long-run.

Mubarik (2005) estimates the threshold level of inflation for Pakistan using an annual data set from the period between 1973 and 2000. He employed the Granger Causality test as an application of the threshold model and finally, the relevant sensitivity analysis of the model. His estimation of the threshold model suggests that an inflation rate beyond 9-percent is detrimental to the economic growth of Pakistan.

One research by Debapriya Bhattacharya (2006), involved an analysis of the external sector and GDP trend of Bangladesh in making predictions about the behavior of each of these sectors and their impact on growth in the FY2020. The study involved the development of economic models for each component based on past statistics. The researcher concluded that the country has been able to experience the first transition, transforming from an aid-dependent country to a trade-oriented nation. For the second transition, the country needs to boost the performance of the external sector. Policy reforms and institution building measures must focus on promoting export, sustaining remittance and increasing FDI. The analysis suggested that the country would be able to attain sustained growth rates only by experiencing a breakthrough in the external sector.

A research by the center for policy dialogue (CPD), (2003), stated that the political economy of foreign aid in Bangladesh has undergone important changes over the last decades. There has been an important shift in the focus of foreign aid, particularly in the context of a gradual reduction in Bangladesh's aid dependence. The fact of growing regional export concentration during the 1990s in the markets of EU and USA, with a single product, namely the readymade garments, is now playing an important role in defining Bangladesh's foreign policy than its need for aid. In contrast, during the 1980s Bangladesh's foreign policy was targeted to ensure an uninterrupted flow of foreign aid. Today, Bangladesh's aid dependence is focused on the international and regional financial institutions.

A study conducted by World Bank indicated that Bangladesh has been able to experience an impressive growth of 5.4% over the period 2001-2005. The growth has been fuelled by large garment exports and remittance inflows, especially in construction and service sectors. Research shows that for future growth, the country needs to enhance the competitiveness of the domestic firms to function more effectively in the world market. Reduction in tariffs, which account for about 50% of tax collection effort, can also ensure future growth. World Bank

(1996) stated that restrictions on imports of sugar, salt, and some other commodities encourage large illegal imports from India. Removing these restrictions would expose the domestic industries to greater competition, generate tariff revenues and benefit consumers by reducing prices.

4. Methodology and Data Sources

The overall objective of this paper is to find out whether Inflation rate(I.R), Foreign Direct Investment (F.D.I) and Fixed capital (F.C) are the key factors of GDP Growth rate or not. In order to attain this objective, the study employs multiple regression analysis techniques. In doing so it included descriptive statistics, ANOVA, and Coefficients. To make the statistical technique robust it performed the KMO and Bartlett's Test. The study employed secondary data and valuable information from the official sources of the Bangladesh Bank and World Bank Indicator Report.

4.1 Selected Variables in This Study

Dependent variable:

GDP growth rate

Independent variables:

i)Inflation Rate

ii)Foreign Direct Investment

iii) Fixed Capital Formation

4.2 Model Specification & Statistical Techniques

The variables which were considered to be responsible for the GDP growth rate of Bangladesh from 1980 to 2014 were included in the model. The model was specified as follows:

GDP= *f* (INF, FC, FDI)…… (1)

Where,

GDP = Gross Domestic Product

INF = Inflation Rate

FC = Fixed Capital

FDI = Foreign Direct Investment

4.3 Hypothesis of the Study

Main Hypothesis

H0: There is no relationship between all independent variables and GDP Growth in Bangladesh.

H1: There is a relationship between all independent variables and GDP Growth in Bangladesh.

All Alternative Hypotheses

H0: There is no relationship between Foreign Direct Investment and GDP Growth.

H1: There is relationship between Foreign Direct Investment and GDP Growth.

5. Findings

The expected liner model is expressed as follows:

Expected Model:

$Y = \beta_0 + (\beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3) + e$

Where,

Y = GDP Growth Rate (percent)

X_1 = Inflation Rate (percent)
X_2 = Foreign Direct Investment (million U.S. dollars)

X_3 = Fixed Capital (million U.S. dollars)

e = Error term

So, the following regression model is

GDP Growth = (Inflation Rate, Foreign Direct Investment, *Fixed Capital)*

Table 1: Descriptive Statistics

Descriptive Statistics

	Mean	Std. Deviation	N
GDP	4.9024	1.28802	33
Inflation	6.8852	3.92008	33
FDI	3.4438E8	5.03898E8	33
Fixed Capital	8.1427	3.61503	33

It is evident from Table 1, all variables have the same number of observation 33. GDP has a mean value 4.9382 and S.D value 1.28543. The mean value of Fixed Capital is 8.1427. On the other hand, FDI has a higher S.D value 5.038 and GDP has the mean value as well as standard deviation value of 4.9382 and 1.28543 respectively.

Table 2: Estimated Regression Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.530	.419		8.420	.000
	Inflation	-.082	.038	-.251	-2.164	.039
	FDI	1.423E-9	.000	.557	4.876	.000
	Fixed Capital	.178	.041	.500	4.299	.000

a. Dependent Variable: GDP

For the sake of brevity and efficiency the econometric model along with various tests are presented in the appendices. The appendices present ANOVA, F-Statistic, Adjusted R Square, D.W. test, KMO and Bartlett's test. The results of various tests suggest the adequacy, efficiency, and goodness of fit of the model (Appendices).

Table 2 presents regression coefficients that are obtained from the regression model. It is observed that the dependent variable GDP growth rate has been significantly influenced by independent variables.

By running the regression of dependent variables on the independent variables, Table-2 shows the coefficients of the regressors. It is also noted that Foreign Direct Investment and fixed capital are significant at 1% and Inflation is significant at 5% level of significance. Foreign Direct Investment and fixed capital have a positive impact on GDP growth. So, both Foreign Direct Investment and fixed capital appear to significantly influence the GDP growth. The slope coefficient value of inflation rate is negative. The value implies that higher inflation rate is likely to reduce the GDP growth.

Bangladesh has achieved a consistent GDP growth of over 5% in the last decade and never experienced a negative growth. Even Bangladesh sustained a growth of over 5% during the recent global economic crisis. In 2009 Bangladesh achieved a 5.9% GDP growth. Various necessary steps like the generation of a huge number of SMEs, success in microcredit and NGO activities, the rapid spread of telecommunications services, a record level of foreign remittances, acceleration of

export earnings are taking the economy at a higher level of growth. Based on the result, there is a negative relationship between Inflation rate and Bangladesh GDP growth. But this negative result also shows a positive relationship because the result suggests that as the GDP growth increases the Inflation rate falls that is a good indication for any developing country economy like Bangladesh. (GOB, 2017)

6. Concluding Remarks

An attempt has been made in the present research to investigate the impact of a few selected variables on GDP growth. The impact of the variables except inflation rate was positive. The null hypotheses are rejected in general. Findings of the paper conform to the results of many of the contemporary studies. As a note of caution it may be noted, however, that the present study should be considered as an exploratory one. A detailed and an in-depth long-term study with more variables employing panel data could come up with more worthwhile findings.

Appendices

Table A.1: Results of ANOVA Test

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	33.184	3	11.061	16.116	.000[a]
	Residual	19.904	29	.686		
	Total	53.088	32			

a. Predictors: (Constant), Fixed Capital, FDI, Inflation
b. Dependent Variable: GDP

Table A.1 reveals that F value is significant at 1% levels implying it is significant at 1% level. Thus the inclusion of INF, FDI and FC variables to quantify their impact on GDP is logical.

ANOVA produces the F statistic which is the ratio Between Group Variation to the Within Group Variation. The table shows that the Model`s total sum of squares is 53.088 with 32 degrees of freedom, where the sum of the squares of regression is 33.187 and sum of squares of error are 19.904. As the test is significant the ANOVA value or F test value is 16.116 with 1% level of significance. That means the result is significant with 1% level where R square value is not zero but 79.1% (Table A.2).

Table A.2 Model Summary

Model Summary

Model	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.791[a]	.586	.82847	2.045

a. Predictors: (Constant), Fixed Capital, FDI, Inflation

b. Dependent Variable: GDP

Table A.2 shows the R square value is 0.791 which implies that 79.1%. of the variations in GDP has been explained by the independent variables included in the model.

Further, the Durbin-Watson Statistic of this model is more than 2 or approximately or 2.045 implying that the error terms in the model are not significantly auto-correlated.

Table A.3 KMO and Bartlett's Test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.543
Bartlett's Test of Sphericity	Approx. Chi-Square	210.06
	df	10
	Sig.	.000

The KMO and Bartlett's test represents the effectiveness of dependent variable on independent variables. It suggests the independent variables which are most efficient for the result of this paper. It also helps for measuring whether sampling of particular research is well enough or not.

In Table, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy test was employed. It implies that the overall sampling of this paper is good enough because KMO value is 54.3% which is more than 50%. The Bartlett's Test of Sphericity shows that the Approximate Chi-Square value is 210.06 with 10 degrees of freedom. This test also testifies that the significance level is good and

it was significant at 1% level. That means all the variables and information which are included in this model as well as in the survey of research, have influence over measuring the dependent variable.

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Economic Stability and Export Growth: An Empirical Study on Net Balance of Bangladesh

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Abstract: *The study was conducted to find out the correlation-causation between the economic stability and export growth especially in developing countries. Economic stability itself is a complex term since it has some dimensions. In this study an attempt was made to provide a proper understanding of economic stability and evaluate the data of selected countries with each dimension and demonstrate that there is a positive correlation-causation between economic stability and export growth. In the second part of the paper, it explored some factors responsible for negative net balance of Bangladesh as this negative net balance would affect exports growth and that lower export growth would negatively affect the economy in terms of stability.*

1. Introduction

Economic stability itself is not a visual term as it has no formulated terminology. But the stabilization of economy is going to be a very important phenomenon in modern economies. Neither higher growth rate with higher inflation rate nor lower growth rate with lower inflation rate is considered a stabilization process. IMF declares the ingredients of economic stabilization in such a fashion. On the other hand, growth rate of exports plays a vital role in fulfilling the conditions of economic stabilization. Almost in all developing countries and even in some developed countries which are reliant on their exports earning, exports growth itself is a staircase to the economic stabilization.

In this context, this study attempts to estimate the correlation-causation between the export growth and economic stability and it assessed this relation with the help of Bangladesh's data aimed at unleashing four major causes of Bangladesh's export-import deficit. It has been noticed since FY1995-96 that Bangladesh has been experiencing a negative net balance that threatens economic boom (Taslim, 2007). Although export growth in this country in the recent past has remained positive with minor exception, Bangladesh needs some augmented positive steps to economic stabilization and in this study an attempt was made to address that issue.

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2. Objectives of the Study

The specific objectives of the study are:

1) To understand the association between the economic stability and export growth .
2) To assess the facts and figures for failure in Export-Import balance of Bangladesh and make some feasible recommendations.
3) To bring into notice of country's policy makers that this continuation in net export deficit will negatively affect economic stability.

3. Literature Review

The main purpose of this section is to review the previous research works and studies that are somehow pertinent to this study. It includes findings from previous works on economic stability, GDP growth, net exports review as well as comparative correlation studies on these topics.

Balassa (1978) conducted a renowned study funded by World Bank on "Exports and Economic Growth: Further Evidence" with the empirical data series. The study showed that in the selected countries there is a positive correlation in between the export and economic growth. It also showed some argument how growth of export affects economic growth more than any other macroeconomic variables.

Matthiasand Koniger (2012) conducted an empirical study on"Trade and Economic Growth: A Re-examination of the Empirical Evidence" where it showed the effects of trade on economy and argued that the effect of trade in dynamic panel estimations depends crucially on the specification of trade.

Haque and Taslim (2011) carried out a study on "Export Performance of Bangladesh: Global Recession and After" and discussed at length Bangladesh's overall export and import performance in the World Market as well as USA, EU and UK markets. It argued that due to world recession the developed western countries reduced their imports and for that reason after the recession Bangladesh faced a big lacking in net exports. It also suggested some comparative advantages for Bangladesh.

Ahmed and Uddin (2009) conducted an empirical study on "Export, Imports, Remittance and Growth in Bangladesh: An Empirical Analysis" where it argued that export will be a major phenomenon for the economy of Bangladesh as it has been unfortunately negative for a long time and this will affect country's overall economic growth.

Almost all studies mentioned here discussed the correlation-causation of economic growth and growth of exports as well as few studies investigated the export condition of Bangladesh. The focus of this study is to investigate the correlation-causation of economic stability and export growth. Further the study aimed at showing the major responsible phenomena of negative net balance of Bangladesh and its probable recommendations.

4. Methodology and Data Sources

In general the methodology is analytical. In this study, tabular technique is used to illustrate the whole picture of analysis. Statistical and graphical charts were also employed as a supplement to the tabular technique. It employed data from secondary sources such as World Bank Database, IMF Indicators Data source, Bangladesh Bank's Data, Bangladesh Economic Review, the data and indexes from BGMEA, BBS and BIDS. The data for exports and its growth in developing countries were taken from World Bank database. For obtaining the latest rates of inflation and so on the data of "World Economic Prospect-2016" published by World Bank were used. Secondary data from Bangladesh Bank, Ministry of Finance, and BGMEA database were also used.

5. Defining Economic Stability

Economic instability refers to fluctuations in aggregate output (GDP) and employment. Here economic stability refers to a condition where there is absence of excessive fluctuations in the macroeconomic variables. As International Monetary Fund (Global Economic Stability, 2011) mentioned: "Economic Stability is the absence of excessive fluctuations in macroeconomic variables, an economy with fairly constant output growth and low-stable inflation rate and free from recession (either economic or financial) would be considered as economically stable".

However, even with stable aggregate output, price instability is possible in the sense of changing the relative price. Sharp changes in the terms of foreign trade, which are an especially serious matter for highly specialized primary producing countries, are an example on the international level. In the developing countries economic instability results to a large extent from the reflection of the business cycle in the industrial world or the consequences of autonomous inflationary policies.

Following the notion of the IMF (Economic Stability Index, 2011), this paper considers that to be a stable economy one country should have these four components:

1) Fairly constant output growth

2) Low and stable inflation rate

3) Absence of excessive macroeconomic fluctuations

4) Free from recession (either economic or financial).

This study is basically concerned with drawing a correlation-causation in between the exports growth and economic stability.

This paper explores economic stability in a rather restricted sense. Its main focus is to show the relation of export growth and economic stability. In this context some preconditions of getting exact correlation-causation are assumed:

1) The economy is a developing country's economy.
2) It has a healthy and pronounced dependency on exports.
3) Moderate level of political stability exists.

6. Correlation and Causation Analysis of Economic Stabilization and Export Growth

In examining the effects of export growth on economic stability in countries, we test the hypothesis that export-oriented policies lead to better growth performance that makes the economy stable. It is of further interest to examine the relationship between export growth and the stabilization of economy. In an inter-country context, the correlation between these variables may be taken to reflect the indirect effects of exports operating through changes in incomes and costs. In turn, the correlation between export growth and Economic stability (E_s) will provide an indication of the total (direct plus indirect) effects of exports on economic stability. There are some variables of economic stability as IMF declares: Fairly constant output growth, Low and stable inflation rate, Free from recession and no high rate of fluctuations in macroeconomic variables. So in this section an attempt will be made to assess the correlation of export growth with these four main conditions of economic stability and then by analyzing the data from FY1999-00 to FY2016-17 of Bangladesh the causation will be examined. Before going to economic stabilization and export growth correlation-causation analysis, study conducted by Belassa (1978) could be conducive to the causation proving where he showed that the relation between export growth and economic growth is positive. Analyzing the time series data and regression analysis he demonstrated a highly positive relation between the growth rate of export and economic growth. He analyzed the correlation with the time series data of selected developing countries like India, Indonesia by using rank correlation and regression analysis (Table 1).

Table 1: Correlation of Exports Growth and GDP

Correlation	Years		
	1960-66	1966-73	1960-73
Export growth Vs Output growth	0.822 (0.001)	0.934 (0.001)	0.888 (0.001)
The average ratio of expports to output vs the growth of output	0.327 (0.163)	0.767 (0.003)	0.703 (0.008)

Source: Bela, Belassa(1978)-Journal of Development Economics(05).

So, the correlation equation of economic stability and export growth can be defined as

$$E_S = n + a\, X_G \quad \text{(i)}$$

Where E_s= Stability of Economy (Indigenous Variable)

And GDP Growth, Rate of Inflation (i), Fluctuations in Macro-Economic Variables (ΔM_V) and recession occurrence are the subset of E_s

n = Autonomous Variables

X_G = Growth Rate of Exports (Exogenous Variable)

It has been assumed that if an economy has 2%-3% GDP growth rate that is a safe interval and the rate of inflation should be in 2%-3% as well as the natural rate of unemployment couldn't exceed the interval 4.7% to 5.8%. Taking Bangladesh as a sample country attempt is now made to test the hypothesis, export growth and economic stability has a positive correlation, with the help of some empirical data from FY2000-01 to FY2016-17. The total data set is presented in Table 2.

Table 2: GDP Growth Rate, Exports Earning, Export Growth, Inflation Rate and Trade Balance of Bangladesh

Year	GDP Growth rate	Exports Earning (US million $)	Export Growth (%)	Rate of Inflation (%)	Trade Balance (US million $)
2000-01	5.4	6467.3	14.398	2.208	-2868
2001-02	5.6	5986.09	14.903	2.007	-1768

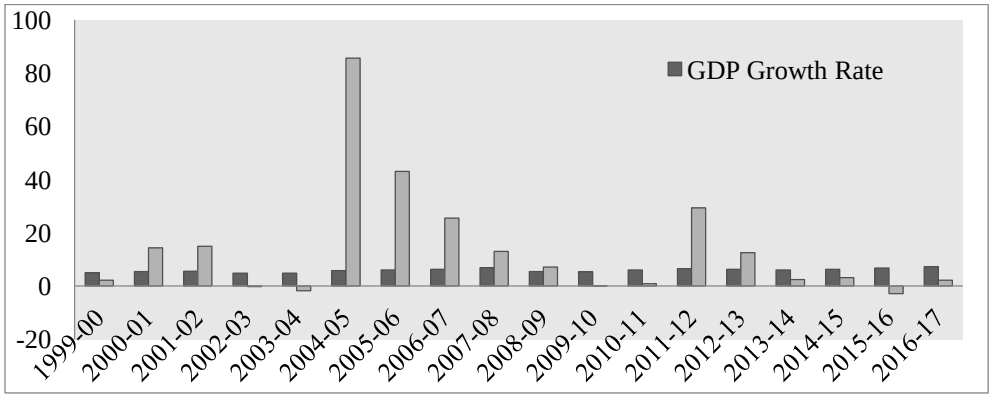
Year	GDP Growth rate	Exports Earning (US million $)	Export Growth (%)	Rate of Inflation (%)	Trade Balance (US million $)
2002-03	4.8	6548.44	-0.164	3.332	-2215
2003-04	4.8	7602.99	-1.696	5.668	-2319
2004-05	5.8	8654.52	85.613	7.587	-3297
2005-06	6.1	10526.16	43.002	7.046	-2889
2006-07	6.3	12177.86	25.476	6.765	-3458
2007-08	6.9	14110.8	12.975	9.106	-5330
2008-09	5.5	15565.19	7.081	8.901	-4710
2009-10	5.3	16204.65	0.028	5.423	-5155
2010-11	6	22924.38	0.941	8.126	-9935
2011-12	6.5	24301.9	29.339	10.704	-9320
2012-13	6.3	27027.36	12.532	6.218	-7009
2013-14	6	30186.62	2.451	7.529	-6794
2014-15	6.3	31208.94	3.201	6.991	-6965
2015-16	6.8	34257.18	-2.829	6.194	-6460
2016-17	7.2	34655.92	2.196	5.513	-9472

Sources: World Bank Database (2017), Bangladesh economic Review (2017)

6.1 GDP and Export Growth

First, GDP is much more related to export growth. Bangladesh is fortunate to have enjoyed a GDP growth of 5% to 7%. There is the relation of export growth and GDP growth since GDP is considered the major phenomenon for economic stability in figure 1.

Figure 1: GDP Growth and Exports Growth of Bangladesh



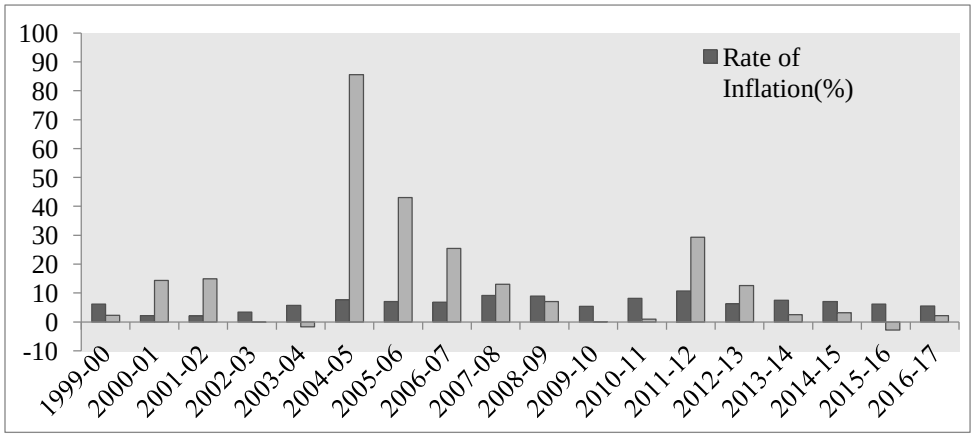
Source: World Bank Database (2017)

It is observed in general that over the years from FY'99 in keeping with increasing Export Growth (X_G) the output growth or GDP has increased. Although in some years like FY'15 it experienced negative growth in exports.

6.2 Inflation and Export Growth

The IMF considers low and stable inflation rate (r) as a condition of stabilization of economy. From that standpoint Bangladesh seems to show the signs of stability. As Bangladesh has a better exports growth, rate of inflation that Bangladesh faced during last 15-20 years is also stable and somehow low in terms of expected consequence before and after the worldwide recession in 2007-08 in figure 2.

Figure 2: Inflation Rate and Exports Growth of Bangladesh



Source: World Bank Database (2017)

6.3 Economic Stability and Change in Macroeconomic Variable

The third component of economic stability is change or fluctuation in macroeconomic variable (ΔM_V). Haque and Taslim (2011) argued in their study that Bangladesh did not face huge deviation in common macroeconomic variables from FY'95 except for some years. The unemployment rate of Bangladesh is still on the track and overall macroeconomic variables did not exceed the tolerance interval as well as both authors argued that after the Global recession Bangladesh did not suffer substantially from the bad effects of recession.

In line with the findings of Belassa's study (1978) that there is a positive (somewhere highly positive) correlation between the exports growth and the economy's output or GDP, and this paper found a conceptual and graphical positive correlation and causation of exports growth with the combination of IMF's conditions for economic stability, hence it can be concluded that there is a positive correlation in between the economic stability and exports growth.

With the relative combination of overall conditions of GDP, Inflation rate, Change in macro-economic variables and recession occurring, the overall survey of data and findings demonstrate the positive correlation between the export growth and economic stability.

7.1 Scenario of Net Balance during 2000-2017

The positive relationship between time and export growth alone provides, however, a partial picture. To have a glimpse of the overall situation, the net balance situation is to be examined (Table 2). Although Bangladesh's export growth is following an increasing trend over the years, it is very concerning for the country that the trade deficit is also increasing. This continuation in negative net trade balance could make Bangladesh's economy unstable. In FY'17 Bangladesh exported $34.65B and imported $44.12B. As a result total net balance is now with a negative balance of $9.47B. Since the FY'2000 Bangladesh has been regularly experiencing a negative net balance situation ranging from $1.76B to $9.47B. In this context, an attempt is made to show the major causes of Bangladesh's negative net balance. Four major factors generally considered why Bangladesh is not doing well in export balance are illustrated.

7.1.1 Continuous Failure in RMG Sector

Following the event of 'Rana Plaza' collapse, though Bangladeshi share in the global export has continued to increase in recent times; the country is facing tough challenges mainly from internal forces. However global downturn in apparel business is also another reason. A recent release from Bangladesh Garment Manufacturers and Exporters Association (BGMEA) has revealed that continuous fall in price of RMG products in UK, USA and European Union (EU)

in the context of 'Brexit' referendum and the price falling of Euro have exerted negative impact on RMG's growth of Bangladesh. Recent reports of EPB (Export Promotion Bureau) Bangladesh shows RMG sector of Bangladesh has not managed to achieve export targets which can be a setback in reaching the 2021 goal of the country to reach $50 billion exports mark. EPB shows Bangladesh exported 28.6 billion USD in 2016. However, latest information from EPB shows that the country is still maintaining a growth in RMG export but the growth rate is going down significantly. In first ten months of the financial year 2016-17, the country exported 23.14 billion USD which is only 2.26 percent higher than the export of the same period of the previous year. It is most likely that the country will miss the target of current fiscal year. In this context, BGMEA warns the policy makers and government that they are losing their capability in global competition and the dream of Bangladesh to attain first position in exporting RMG products in the world is gradually becoming gloomy.

7.1.2 Lack of Export Diversification

Export has proved to be a very crucial factor for GDP growth.. The most important contributing sector in the GDP is the exporting sector. But, overdependence on a few products or on a single product is not a wise decision. For sustenance of business, it needs diversification of both export products and export destinations. In the perspective of export performance of Bangladesh, the country is still dependent on ready-made garments (RMG) sector with contribution of nearly 80 percent of national exports. If the home textile and specialized woven and knitted fabrics are included with knitwear and woven garment items the contribution will reach nearly 85 percent. If we talk in terms of markets analysis, we will see Bangladesh is dependent on a few traditional markets including the US, the EU and Canada. Of the total exports of the country 23 percent goes to the US, nearly 60 percent to the EU, 5 percent to Canada and 12 percent to the rest of the countries of the global market. So, it is clear that the country's exports are concentrated on a few markets. Export diversification is a continuous process. Through export diversification it is possible to minimize the risks in business. Export diversification is needed not only for minimizing risks, but also to create employment with new skills of workers. Full utilization of natural resources is also possible through product diversification. Export diversification itself is a very conducive potential to have a greater net balance.

7.1.3 Losing GSP in USA Market

As Bangladesh lost their GSP privilege in US market because of failure to improve the overall safety of garments factory it has suffered a big loss. It is the Generalized System of Preferences (GSP) which allows duty-free entry of over 5,000 goods to the US market from least developed countries. The probable

financial loss in terms of falling export may be very small, at least in the short run, but in the long run Bangladesh will lose a big portion of its exports earning. As RMG products (which make up most of the US import from Bangladesh) are not included in the list of duty-free products in GSP, there will be an export fall of about $40 million according to Charles Kernaghan-an executive director of Institute for Global Labor and Human Rights. At present, Bangladesh exports about $5 billion worth of goods (mostly RMG products) to the USA every year and hence, it is about 8% loss of overall markets of Bangladesh in USA. So in the long run it will result in a great loss for the economy of Bangladesh.

7.1.4 Political Instability Inside and Outside the Country

Since 2012-13, political instability has been a matter of great concern for Export Balance. Because of this problem Bangladesh has already lost huge foreign investment. The economic impact of any kind of political or non-political incident can be traced easily with the help of the lead and lagged economic variables. Lead variables are those that forecast the likely impacts and effects whereas the lagged variables reveal the impacts only after they have been felt. However, there is another kind of economic variable in many developed countries, which is called 'coincidental variable'. Coincidental variables reveal the real-time impact of any kind of shock on the economy. It is difficult to identify any coincidental economic variable in developing countries like Bangladesh. No matter who says what, both lead and lagged economic variables are showing deep scars in the economy created by the ongoing unrest. If this situation continues, these scars may become unmanageable. So ultimately this continuation will affect the export module.

8. Concluding Remarks

Although Bangladesh is on the continuous negative net balance, it has immense possibilities and lot of opportunities to go forward. It does possess a huge number of less expensive laborers especially a good number of women. Entering in new markets with the newer goods and semi processed food products and commodities like leather and footwear, pharmaceuticals, tools, IT items, shipping industry products and so on could be considered. On the other hand, Bangladesh must ensure a stable socio-political condition so that the foreign investors get encouraged to work with Bangladesh. Imposing more tax on the importing-goods could be done in the long run. To uplift the current condition of garments, government should make a better understanding to get back the GSP privilege. Subsidizing some grooming industries such as pharmaceuticals, ship industry, old and customary handcraft Industry would be prioritized. All these measures could result in paving the way towards a higher level of export earning and eliminating the negative net balance scenario.

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