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Thoughts on Banking and Finance

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Table of Contents

Editorial Note

Food inflation for the recent trend has been declining partly because of declining global and regional food prices. Non-food inflation also has the same trends. In Bangladesh both food and non food inflation are co-varied. Sometimes it is found that food inflation is much stable than non food inflation. However, many countries' experiences show that non-food inflation is more stable than food inflation. Now-a-days some countries use core inflation constructing inflation excluding food and other volatile non food items as their monetary targeting due to its good feature of stability and predictability. In Bangladesh headline inflation target has been set alongwith other macroeconomic variables. In presence of volatility in non-food inflation, it is difficult for Bangladesh to use core inflation targets in process of macroeconomic stabilization. Here is area of research to find why non-food inflation is more fluctuating in regard with food inflation in Bangladesh.

Exchange rate is very important for economic development. Many studies reveal that both exchange rate and current account have direct and positive association with inflation and they badly affect the small economies. An increase in domestic price level relative to foreign price level ends up with currency depreciation and weakens external competitiveness. It is widely known that currency depreciation encourage exports and improve current account balance. Stable exchange rate is needed for a country where exports are the main source of external earrings. On the contrary, currency appreciation retards exports and deteriorate currency account balance. However, currency appreciation is expected by some countries which have main sources of earning foreign exchange by selling government bonds in domestic currency. Such an attempt undoubtedly hampers exports unless other sources of external earnings are coming. Recently Bangladesh Taka is found in appreciating trends and is a concern to her economy. Here is an area of research whether appreciation of Bangladesh Taka affects adversely on the economy.

Green banking is a vital catalyst for green growth. Bangladesh Bank has been pursuing array of policy and financing support to banks and FIs for mainstreaming green banking into the core banking practices of banks and FIs. Bangladesh Bank has so far identified 47 green products under BB refinance scheme where 23 are green energy. If any bank or FI will come up with innovative green product that truly contributes to environmental conservation, BB will seriously look into the issue for identifying the product as a green one. Recently, Bangladesh Bank has set mandatory annual target for banks and financial institutions for direct finance. Shifting the investment from fossil-fuel to green energy is the only way for transforming economic growth paths. It is no doubt effective use of green financing policies can change the attitudes of financial institutions and private firms to invest more for the sake of keeping the environment sound. In this regard, it is needed to investigate socio-economic impact of the green finance policies in Bangladesh.

Islamic Banking has been growing in Bangladesh remarkably in the recent years and the shares of Islamic banks both in total deposits and credit in the banking system have increased significantly. Islamic banks are operating in Bangladesh based on Shariah

principles and their products are different from conventional banks. There are several Islamic banks in Bangladesh. However, competition among the Islamic banks and also conventional banks in search of deposit mobilization and credit expansion causes liquidity surpluses/crises of some banks. Liquidity surplus is no doubt considered as a gain of competitions while liquidity crisis as a way to collapse. Resent episodes of failure of many conventional banks and financial difficulties confronted by Islamic banks were due mainly to liquidity crisis. So the central bank monitors liquidity and credit position of every bank. Theoretically, every Islamic bank in principle operates their business on profit sharing motivation. Therefore, Islamic banks face problems of raising fund from interbank money market in case of liquidity crisis. In recent years, Government Islamic Investment Bonds is used in absorption of liquidity surpluses and mitigation liquidity crisis of Islamic Bank. Finding the effectiveness of Government Islamic Investment Bonds in liquidity management of Islamic banks and also usages of these bonds as government source of finance, this has become a suitable area of research.

In Bangladesh, electronic money schemes-debit cards or credit cards have become very popular and their uses increased significantly in recent years. The main benefit of electronic money is to transact like withdrawals or payments in small amounts in easier and more comfortable ways for both consumers and traders. However, the growth of electronic money depends on technology, security, regulation, and supervision. With available good network of internet, electronic money may affect directly money supply, the money multiplier and velocity of money in future. Increased reliance on electronic money as a substitute for currency will thus directly affect the central bank and its control over monetary aggregates and policies. To investigate the impact of use of electronic money on money supply is an area of research.

The interbank market very important for inflow of funds from large banks to small and medium sized banks or from surplus hit banks to crisis ridden banks. Interbank interest rates are considered as a key instruments used to limit flow of fund in the banking system. The central bank injects or withdraws liquidity on the interbank markets with a view to bring interest rate on right track. The central bank uses it policy rates to limit the inflow of fund in the banking and affects the interbank interest rate which in turn influences both deposit and lending rate. In this regard, an investigation on how central bank's policy rate influences interbank interest rate is an area of research.

These are the topics on which the papers of this issue has tried to address and the main points of the papers are listed below.

The first paper entitled "Key Determinants of Food Inflation in Bangladesh by Dr. Akhtaruzzaman, Bishnu Pada Biswas and Rama Rani Sutradhar explores an empirical investigation on the main factors at work for causing food inflation in Bangladesh which takes into account both the demand and supply-side factors that affect food prices in Bangladesh. The paper have done empirical exercise by using monthly secondary data from January 2001 to December 2013 of only four factors like broad money, wage rate in agriculture sector, food stock and Indian food price index. The paper finds through results of estimated regression analysis that demand-side factors, such as broad money and wage rate in agriculture sector has significant impacts on food prices whereas, supply-side

factors such as food stock and Indian food price index play insignificant role. This paper also highlights pattern of food inflation and proper policy recommendations that have helped a lot to arrest the overall inflation at a tolerable level.

The second paper entitled "Sources of exchange rate fluctuations in Bangladesh" by Mahfuza Akther, Mohammad Monirul Islam Sarker and Khan Md. Saidjada views that though exchange rate was stable in the initial stage of floating regime in Bangladesh, sharp depreciations occurred during August 2004 to April 2006 and again in July 2010 to January 2012. As excessive fluctuation of exchange rate can be an obstacle to macroeconomic stability, it is important to know the sources of fluctuations in both the phases. In this context, this paper tries to investigate the probable reasons behind sharp depreciation of Bangladesh Taka against US dollar in these two phases using Structural Vector Auto-regression (SVAR) model and uses data from January 2003 to June 2012. The paper finds that both the demand shocks mainly arising from external sector and the supply shocks are responsible for sharp depreciations of Bangladesh's exchange rate in the two phases. However, the supply shocks are less effective than demand shocks in exchange rate fluctuations and the money supply shock also has a negligible effect on the depreciation of Bangladesh Taka during the period of this study.

The third paper entitled "Review of Policy and Regulation on Green Banking and Environmental Risk Management in Bangladesh"by Nahid Rahman and Antara Zareen attempts to review the present regulatory framework for the promotion and implementation of green banking and ERM in Bangladesh. In this paper the current implementation status of green banking and ERM in banks and FIs are examined with a view to recognize the level of the financial sector in adopting these policies. The findings of this paper are that remarkable progress has been evident in banks and financial institutions' in-house green practices and online banking performance compared to their initiative for effective green finance by following ERM guidelines. Developing bank's own ERM guidelines, green products and green business models are yet to take a considerable shape. Finally, the paper recommends further study to develop a revised framework of green banking and ERM suitable for the financial sector of Bangladesh.

The forth paper entitled "Development of Islamic Banking in Bangladesh: Issues and Challenges" by Md. Alamgir identifies the dearth of standard and harmonized guidelines and tools for expansion of Islamic banking in the country and many of these may be required to address country and society specific needs. The paper views that in certain areas global common standards may be drawn from the globally recognized standard setters of Islamic banking and gives importance to activate interbank money market of the country. It also views that Islamic banks in Bangladesh need more Shariah compliant bonds to manage their liquidity effectively. The paper recommends that policy makers of the country may think of having bonds like Sukuk and potential of introducing Commodity Murabaha may also be explored.

The fifth paper entitled "From Manual to Mechanical: Do ATMs Convey Convenience? An Insight into How Automated Teller Service Fares" by Saleh Ahmed Abdullah attempts to trace how ATM service plays out in Bangladesh. Based on a primary survey, the paper shows that customers generally are satisfied with the automated teller service. The most

prominent problem coming up in the survey is network unavailability, trailed by operation failure and card stuck problem; other problems are minor. Customers are dissatisfied regarding security at booth surrounding and inadequate number of terminals around the locality—amounting to little less than nuisance to them. It is heartening that the nuisances are sporadic and not the usual order of the industry. The paper views that such issues warrant immediate resolution to have delighted customers.

The final paper entitled "Forecasting Short-term Borrowing and Lending Rate in Inter-Bank Market" by Papon Tabassum and Sujan Kumar Ghosh tries to forecast the interbank interest rates using Box-Jenkins ARIMA model with the data series of 1997 to 2013 and shows that there were some differences in pattern of movement (trend) between borrowing rate and lending rate but after the end of 2006, the trend of rates are same. The paper reveal the fact that both the borrowing and lending rates indicate a cyclical pattern till 2013 and forecast that it will be remained same till 2016 and after that fluctuation between the rates will be seen but at a slowly decreasing rate. In December 2014, short-term inter-bank borrowing rate will be at 7.78 and lending rate will be 7.82. In December 2021, short-term inter-bank borrowing rate will be lowest at 6.95 and lending rate will be 7.01. The paper also recommends that there is a need to provide appropriate environment through necessary incentives and facilities to the lenders and borrowers ensuring the removal of bottlenecks of money market.

Rokeya Begum

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Key Determinants of Food Inflation in Bangladesh

-Dr. Md. Akhtaruzzaman*
-Bishnu Pada Biswas*
-Rama Rani Sutradhar*

Abstract

This paper explores an empirical investigation on the main factors at work for causing food inflation in Bangladesh which takes into account both the demand and supply-side factors that affect food prices in Bangladesh. However, most of the supply-side factors would not be possible to include in quantitative estimation due to either paucity of data or lack of observable proxies.Therefore,while we explain argumentally with economic rationale, we use those quantitatively unobservable supply-side variables.We have done empirical exercise by using monthly secondary data from January 2001 to December 2013 of only four factors like Broad Money (M2), Wage Rate in Agriculture Sector (WRA), Food Stock (FS) and Indian Food Price Index (WPIF).The results of estimated regression analysis indicate that demand-side factors, such as Broad Money (M2)and Wage Rate in Agriculture Sector (WRA) have significant impacts on food prices whereas, supply-side factors such as Food Stock (FS) and Indian Food Price Index (WPIF) play insignificant role. This paper also highlights pattern of food inflation and proper policy recommendations that have helped a lot to arrest the overall inflation at a tolerable level.

Key words: Food Inflation, Demand and Supply-Side Factors- Wage Rate and Money Supply

I. Introduction

Food inflation is socially as well as politically sensitive issue for the food security of mass people in Bangladesh. All the governments of rich and poor countries adopt various policies and monitoring tools to contain overall inflationary trends under the umbrella of monetary and fiscal policies including interest and credit policies, subsidy on agricultural production and exemption of import tax etc. keeping side by side demand-supply management chain of food production fully market-based. In Bangladesh, Central Bank is

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* The authors are respectively, Economic Adviser, Deputy General Manager and Deputy Director of the Research Department of Bangladesh Bank. The views expressed in the paper are authors' own and do not necessarily reflect the institutional views. The authors are very thankful to Allah Malik Kazemi, Change Management Advisor and Md. Monirul Islam Sarker, Joint Director of the Bangladesh Bank for valuable contributions to improve this paper. Corresponding authors E-mail: drmd.aktaruzzaman@bb.org.bd and bishnu.biswas@bb.org.bd

very much active to supply sufficient agricultural credit and smooth delivery of such loan as a part of its inclusive and growth oriented monetary policy in addition to contribute to country's food production security. On the other hand, along with the monetary policy mechanism, Bangladesh Bank imposes different types of limits in credit facilities for wholesale buyers and sellers in different time period of urgencies to cushion against any stockpiling to protect any uptrend in food prices.

II) Objective

The objective of this paper is to investigate the main working factors for causing food inflation in Bangladesh which consider both the demand and supply-side factors that influence food prices in Bangladesh. This paper also highlights pattern of food inflation and proper policy recommendations that may help enormously to check the overall inflation at a sustainable level.

The paper proceeds in the following way. After the introduction and objectives, third section shows methodology of the study. The fourth section discusses theoretical and the empirical literature covering the causative factors of food inflation. The fifth section depicts rationalization why food inflation needs separate treatment vis-à-vis overall inflation or non-food inflation and also examines the similarities/dissimilarities of food and non-food inflations. The sixth section discusses briefly recent food situation in Bangladesh. The seventh section explains theoretical factors influencing on food inflation. The eighth section involves the estimation of Multivariate Regression Analysis (Cointegration) and explains the findings of estimated model of factors of food inflation.

The final section offers policy suggestions and conclusion to contain food inflation of Bangladesh.

III) Methodology

In this analysis, most of the supply-side factors like increasing food production cost, high prices of internally usable food items, oligopolistic market structure, attitude of earning abnormal profit of business syndication, hoarding tendency and political unrest etc.would not be possible to include in quantitative estimation due to either paucity of data or lack of observable proxies. Therefore, while we will explain argumentally with economic rationale, we use those quantitatively unobservable supply-side variables. However, the following four variables were found statistically significant with coefficient values relatively important. 1. Broad Money M2, 2. Wage Rate in Agriculture Sector (WRA), 3. Food Stock (FS) and 4. Indian Food Price Index (WPIF). To estimate the regression model using these variables (156 observations) monthly secondary data have been used from January 2001 to December 2013. All variables have seasonally adjusted which helped to

get positive results in terms of checking stationarity of the data. All variables have passed stationarity criteria using ADF tests except FS variable. However, as almost all variables except one passed stationarity criteria, OLS has suitably been used to estimate the Model.

IV) Literature Review

Several studies have been carried out on the determinants of food prices, especially after the occurences of several times increase in global food prices. In those studies there are divergence of factors have been found responsible for generating uptrend of food inflation.

Khan and Qasim (1996) suggested that inflation is cointegrated with money supply, value added in agriculture and support price of wheat and there is a stable long-run relationship among these variables. In their study money supply was found to be significantly related to food inflation. Hasan et al. (2005) estimated that supply shocks (production of agricultural goods) have negative impact on food inflation. Money supply or monetary policy showed an insignificant impact on agriculture food prices while they found that impact of money supply on raw material and manufacturing was significant.

A study on global food inflation (Johnson 2008) found that the increase in demand for globally traded food crops is the basic reason of increase in food prices. Furthermore, increasing interest of global investors in hording commodity for future contracts has a contribution to the rise in food prices by limiting the supply in the international market at a instant basis. Khan and Schimmelpfennig (2006) examined the effect of monetary and supply-side factors on inflation in Pakistan. The study applies Vector Error Correction Model using growth as well as log variables and found that money supply and credit to private sector played a significant role to influence food inflation in Bangladesh. Specifically, they found statistically significant strong long-run relationship between consumer price index and private sector credit. Khan and Gill (2007) analyzed the impact of money on food and general price indices by using the OLS technique during the period of 1975–2007. Their results show that CPI food, CPI general , WPI general, GDP deflator and SPI are negatively related with M1 and M2- supply of money, whereas these are positively related with M3- supply of money. It is concluded that M1 supply of money affects the CPI general more than CPI food.

The Asian Development Bank (ADB 2008) considered three sets of factors that are the main cause of high food prices in developing countries of Asia. First is the divergence between supply and demand; second is the divergence relationship between structural and cyclical factors; and third is the divergence between international and domestic markets. The study identifies that structural factors are responsible for falling production growth below consumption growth for several years and thus contribute to food price spiral. Capehart and Richardson (2008) argued that higher commodity and energy cost are the leading factors behind higher food prices in the USA. Moreover, they addressed the

rapidly changing consumption pattern i.e., a higher demand for processed food and meat in countries such as China and India, which in turn requires more food grains and edible oil. At the world level, the stock of corn, wheat, and soyabean are reducing with the world stock for wheat at a 30-year low which in turn raises the food prices by creating lower food supply in international market. They found that some important supply-side determinants such as urbanization and the competitive demand for land for commercial as opposed to agricultural purposes (Ibid) shranked food production and contribute to raises food prices. Moreover, the negligence of investment in agricultural technology, infrastructure, and extension programs are also to blame for the rapid growth deceleration in the supply of rice [International Rice Research Institute (IRRI), 2008]. Naim (2008) argues that the causes for overall inflation are increasing energy prices, non-food hedging policy against the drought years, speculation in food commodity markets, and the US corn ethanol policy which leave lesser amount of marketable food supply in the international market. Trostle (2008) concludes that food prices are affected by the global demand of bio-fuels feed stocks and adverse weather conditions in 2006 and 2007 as well as decline in the value of the US dollar, rising energy prices, increasing agriculture cost of production, growing foreign exchange holdings by major food importing countries. Policies adopted by some exporting and importing countries can be cause of food price inflation. Increase in global food inflation leads to an increase in the prices of products in the home country especially, if the country is a significant importer of a specific food product.

Akhtar Hossain (2009) conducted a study that tried to establish the link between food prices and the import and export of selected food items (fourteen commodities) using time series analysis. The import of crude petroleum and petroleum products has also been considered as the explanatory variable as these prices affect the food inflation in indirect way. The results of the study showed that in case of exports quantity effect was more dominant rather than unit value effect e.g. fish and rice earns much of the foreign exchange but increased quantity of exports of these items in any year will bear the risk of high prices of these items domestically.

V) Food Inflation as a Key Determinant of Overall Inflation and Similarities/Dissimilarities of Food and Non-Food Inflation

The overall inflation in Bangladesh is mainly driven by domestic and external food prices. Following Table shows that Bangladesh experienced double digit inflation (P-to-P) due to higher food inflation of 14.10 and 12.51 percent respectively in FY2007-08 and FY2010 11 whereas then non-food inflation was only 3.54 and 5.73 percent respectively. Historical data say that lower nonfood inflation failed to arrest overall inflation. Same way only 0.25 and 2.56 percent food inflation caused lowest inflation of only 2.25 and 5.55 percent respectively in FY 2008-09 and FY2011-12 though non-food was much higher of 5.94 and 10.21 percent respectively. In FY2011-12, non-food inflation reached 11.72 percent due to 4 times upward adjustment of fuel price (administered price) which encouraged overall

inflation not so significantly. Here it is noted that food weight (58.84 percent) of CPI basket is much higher than non-food items (42.16 percent) as per BBS calculation. This means a consumer spends Tk. 58.84 out of Tk. 100 to purchase his daily essential commodities. Core inflation shows lower rate of 6.03 percent as compared to rate of general inflation (6.66 percent) due to excluding mainly food and very insignificant weight of fuel items. Thus food inflation played a dominant role on overall inflation while the role of non-food inflation was not highly significant.

TABLE: RATE OF INFLATION FOR NATIONAL
(BASE: 1995-96 = 100)

Period	12-month Average Basis			12-month Point to Point Basis			Core Inflation*
	General	Food	Non-food	General	Food	Non-food	(non-food/fuel)
Weight	100.00	58.84	41.16	100.00	58.84	41.16	33.55
2005-06	7.16	7.76	6.40	7.54	8.81	5.73	
2006-07	7.20	8.11	5.90	9.20	9.82	8.34	
2007-08	9.94	12.28	6.32	10.04	14.10	3.54	
2008-09	6.66	7.19	5.91	2.25	0.25	5.94	
2009-10	7.31	8.53	5.45	8.70	10.88	5.24	
2010-11	8.80	11.34	4.15	10.17	12.51	5.73	
2011-12	10.62	10.47	11.15	8.56	7.08	11.72	7.87
2011-12@	8.69	7.72	10.21	5.55	2.56	10.21	
2012-13@	6.78	5.22	9.17	8.05	8.26	7.75	
2013-14@	7.35	8.57	5.54	6.97	8.00	5.45	
2014-15							
Sep-14 @	7.22	8.48	5.34	6.84	7.63	5.63	5.45
Dec-14 @	6.99	7.91	5.60	6.11	5.86	6.48	6.30
Mar-15 @	6.66	7.24	5.78	6.27	6.37	6.12	6.03

Source: Bangladesh Bureau of Statistics @New Base 2005-from BBS data

*Core CPI inflation derived by Research Department, BB Following calculation shows the impact of food prices on standard of living e.g per capita GDP of the two countries-Bangladesh and USA due to variation of budget allocation (CPI weight) for food items.

Percentage of total household budget devoted to food

USA 13.9%
Bangladesh 58.84%

Current CPI 100 = $(W_f)x(P_f) + (W_o)x(P_o)$

USA 100= (0.139)x(100) + (0.861)x(100)
Bangladesh 100= (0.5884)x(100) + (0.4116)x(100)

Impact of 100% increase in food price and 5% increase in non-food prices:

USA 118.2= (0.139)x(200) + (0.861)x(105)
Bangladesh 160.9= (0.5884)x(200) + (0.4116)x(105)

US standard of living would decline by 18.2% while the Bangladesh standard of living would decline by 60.9%

Decrease of GDP per capita 2013:

USA (PPP) $53142 price adjusted= $43470

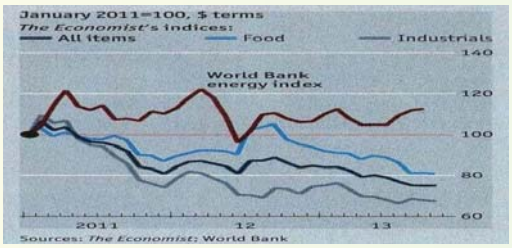
Bangladesh (PPP) $2557 price adjusted= $1068 VI) Recent Food Situation

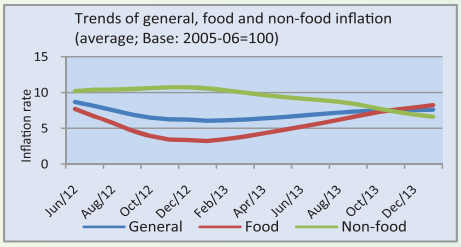
VI) Recent Food Situation

Current food inflation in Bangladesh is emanating from domestic demand driven factors and also domestic supply disruption as well as uptrend of international commodity prices such as prices of all sorts of imported dry and processed foods and intermediate and raw materials for food processing industries particularly during FY2007-08 and 2010-12. High production cost due to higher prices of agricultural inputs (e.g., fertilizer, irrigation, seed, wage etc.), hoarding and syndication due to lack of competition at wholesale market, collusive oligopolistic behavior of major wholesale business, disruption as well as absence of adequate storage and warehouse facility of cereals, higher cost of marketing due to infrastructural weakness including transportation bottlenecks, political unrest and natural catastrophes are considered as domestic supply shocks. Conversely, exchange rate, petroleum price, fertilizer price in international market and volatile international food prices are the contributing factors for external shocks. However, in Bangladesh case during recent years (since late 2012) external shocks have been minimal or absent due to the fact that domestic prices of petroleum and fertilizer were fairly adjusted by providing subsidies and the country has maintained crop food (rice) self sufficiency nearly in the last 4-5 years.

Food price index of main food items in the international market depicted downward trend from mid-2012 (Chart-1), but food inflation in Bangladesh showed an upward trend (Chart-2). This upward trend was due to demand pressure and supply shocks in the domestic market. Twelve-month average food inflation (Base: 1995-96) was lower somewhat after 2008 but it started to increase and stood at 11.34 percent at the end of 2010-11 and then started to fall steadily from FY12 and stood at only 5.22 percent at the end of FY13(Chart- 2, Source: BBS). However, food prices again rebound to uptrend and food inflation reached at 7.91 percent at the end of December 2014 and 7.24 percent at end March 2015.

Chart-1: World commodity price Index Chart-2: Trends of domestic inflation

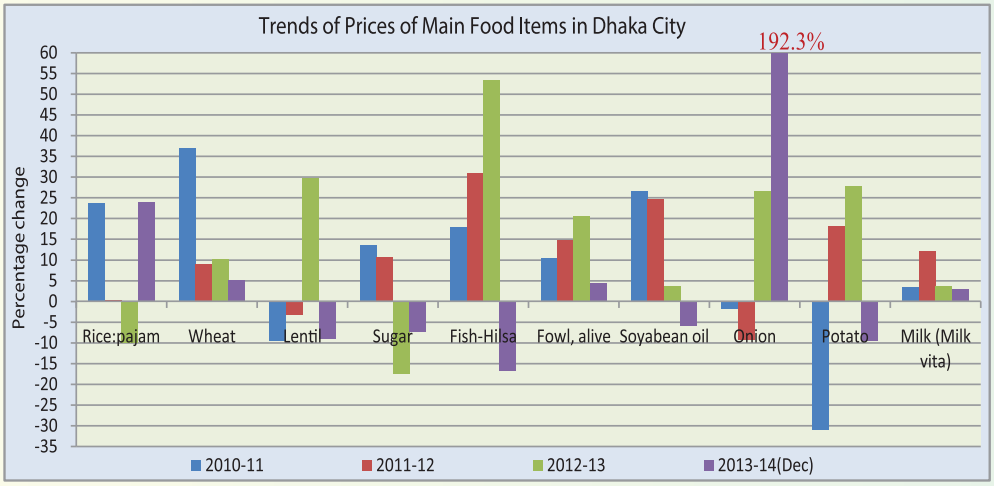




Price changes in main food items (e.g., rice, wheat, soyabean oil and sugar) in the international market show that in 2012 only the price of rice increased (5.2 percent), whereas the prices of other commodities decreased. Prices of all food commodities declined in 2013 in comparison to the preceding year. Though the imported food items influenced the domestic prices of food in the past, but recently impact of global food prices in domestic market prices is insignificant due to stable prices has prevailed in global market; also good domestic agricultural production contributed to reduce the import of those food items.

Analyzing the prices of main food items in Dhaka City, it is observed that price of fine rice was Tk. 41 per kg. at the end of FY2008 while it stood Tk. 50 and Tk.55 respectively at the end of FY2012 and FY2014. The price of soyabean oil was Tk. 92 per liter at the end of FY2008 while it stood Tk.135 and Tk.127 respectively at the end of FY2013 and FY2014. Similarly, price of milk powder (Dano) was Tk. 337 per kg. at the end of FY2008 while it stood Tk. 453 and 552 respectively at the end of FY2012 and FY2014 (Source: BBS).

VII) Key Determinants of Food Inflation in Bangladesh



The main supply side pressure of inflation would be increasing production cost of agricultural crops or non-crop food products due to higher wage and other input costs (e.g., fertilizer, seed, insecticide, irrigation etc.). In FY2012 to FY2013, wage rate in agricultural sector significantly increased at 15.2% and 21.4% respectively. After adjustment with inflation the rates were 4.6% and 13.7% respectively. Change in quality of supply is also creating pressure enormously in food price. In earlier period, various types of food items like rice, wheat, oil, spices were sold in unsorted and opened whereas currently these are selling with sorted, cleaned and packed up. That is why additional costs are generally adding to the consumer prices. The large food processing firms e.g. Arang, Pran, Square, Utsab, Sajeb, BD Foods etc. are now playing more influential role in the wholesale market. On the other hand, retail chain-shops e.g. Agora, Meenabazar, PQS, Nandan, Swapno, Almus have also influence on food price at consumers' level.

In the recent period, income level of the small town-based and rural-based people has increased. Infrastructural facilities of food storage have also expanded. Sufficient credit is being disbursed through specialized and commercial banks. By utilizing these infrastructural and monetary facilities, the storage of rice and wheat etc. are used as a means of maximizing profit. In addition, the businessmen are creating demand pressure through supplying insufficient food items from the godown which add on storage cost on food prices, interest of capital and loan of millers and whole-sellers and finally abnormal profit generation by such artificial hoarding or stockpiling on the part of businessmen which is finally fueling artificially on food price hike.

New pressure is generating on food inflation from demand side due to qualitative change in consumption basket of food items. In the recent period, the role of high price and income elasticity of food items e.g. fish, meat, egg, vegetables, fruits and maize has been highly pronounced due to higher per-capita GDP growth for both urban and rural people. Such higher income per-capita in real term while contributed to decline the household budget proportion or share to purchase traditional food items like rice and wheat in the consumption basket of both rural and urban areas; it is observed that non-traditional food items like fruits such as grapes and apples etc. and protein and fats sources like meat, milk, cheese, butter, bread etc. have been included in the new consumption basket of BBS for the rural areas which contributed to allocate higher proportion or share of their budget to purchase those non-traditional food items. But the demand for food grains such as rice, wheat and pulses has not been declined due to continued expansion of population size and significant expansion of urbanization; the increasing demand for animal feed of fish, meat and fowl producing firms have shrunk the availability or supply of such staples' foods which add-on price pressure.

Since late 2000s due to increasingly higher export of primary agricultural food items such as, frozen shrimps, frozen fishes, vegetables, dry foods, fruit juice and spices to abroad at higher price relative to domestic price which in turn generated lower availability of those

goods in domestic market and thus prices of those internally usable food items increased in the domestic markets. For example, export of primary food items has increased significantly to 42.6 percent in July-September quarter of FY14 compare to the same quarter of FY13.

Facing lower price of paddy and higher production cost in the previous years, the farmers are interested to produce pulses and oil seeds with less production costs and higher market prices. As a result, the production of major food crops may be decreased. On the other hand, BBS estimate shows that about 2.2-2.3 million additional population are added to total population every year and in this circumstance, the demand for both domestically produced and imported foods have been increasingly higher level every year and consequently generates pressure on food prices.

In recent years, the cultivation of fine rice has been increasing while the production of coarse rice has been reducing. Though per acreage production of fine rice is lower its production cost is lower and the market price of fine rice is higher (about 50 percent). Because of double advantages the production of traditionally frequently used coarse rice is lowering somewhat during the Boro and Aman season which is reducing the supply of coarse rice and contributed to higher market price.

Now-a-days most of the fine rice varieties are produced through the rubber polisher of modern automated machine. The mill owners apply modern technology to separate black, bleak and broken rice. As a result, the production cost and price of fine rice increases and in line with this, the price of coarse rice also increases.

Oligopolistic market structure created food crisis by the business syndication due to hoarding tendency of food items, is playing role to earn abnormal profit which fuels the food price hike. Sometimes continuous political unrest, like-continuous Hartal-Blockade etc, hampers the domestic supply channel of food seriously and doubles the transportation cost which fuels the commodity prices and food inflation. Similar political doldrums have been rampantly prevalent during recent time especially during December FY14 which broke down country-wide supply chain and contributed to surge food prices.

Relatively large expansion of private sector credit in the money market and remarkable growth in inflow of remittances sent by migrated peoples, have also influenced money supply which has increased aggregate demand or purchasing power of the people and consequently food inflation. Private sector credit growth recorded highly increase by 25.84 percent and 19.72 percent in FY11 and FY12 respectively. At the same time, Broad Money also went up by 21.35 and 17.39 percent respectively. A Study of RAMRU from ILO in 2013 conducted by Dr. Tasnim Siddiquee revealed the fact that migrated people spend 22 percent of their total remittance income to purchase food and daily essential commodities and 20 percent for purchasing land. So link between private sector credit and money supply with food inflation is very significant. Moreover, the income level of poor people is increasing day by day due to upholding of strong stance of Bangladesh Bank for

implementing the financial inclusion policy and credit disbursement for continuous development of MSME which has contributed to upward pressure on overall demand for foods at the mass scale level of population. These influences are very clearly observed considering some related proxy variables in a Multivariate Regression estimate and analysis conducted by the Research Department of BB.

VIII) Multivariate Regression Analysis

In the recent time with a view to find out the causes of increasing food inflation in Bangladesh, the influence of following four variables have been found to be statistically significant out of a good number of variables considered in the regression model estimates. In fact, in many econometric model runs, some variables other than the four variables stated below were found either statistically insignificant or with coefficient sign which is against established economic rationale. Many of the factors responsible for food inflation as explained in detail in the above section were either non-quantifiable or not available in data publication. However, impacts of some of the factors could be reflected in some other factors. For example, a portion of impact of higher remittance growth and higher demand during Eid and other festival have reflected in higher growth of broad money. Likewise, supply disruptions due to political turmoil or natural catastrophes or any other reasons such as artificial shortages by syndication could be somehow reflected in foodstock variables.

Also, overall depletion or inadequate level of foodstock of coarse rice due to its lower production relative to more profitable fine rice varieties would be reflected at least partially in foodstock variables. There are some factors which could not be quantifiable directly and in that case dummies are the alternative proxies to represent the effect of those factors in influencing food prices. However, we applied some dummies for political turmoil but the coefficient was found statistically insignificant. Finally the following four variables were found statistically significant with coefficient values relatively important.

1. Broad Money (M2), 2. Wage Rate in Agriculture Sector (WRA),

3. Food Stock (FS) and 4. Indian Food Price Index (WPIF).

To estimate the regression model using these variables monthly secondary data have been used from January 2001 to December 2013; therefore we have 156 observations. All variables have seasonally adjusted which helped to get positive results in terms of checking stationarity of the data. All variables have passed stationarity criteria using ADF tests except FS variable. However, as almost all variables except one passed stationarity criteria, it was possible to estimate the model by using OLS and the results of estimated Regression model is as following:

$$CPIF = \underset{(-5.822)}{-1.350} + \underset{(13.016)}{0.356}M2 + \underset{(0.275)}{0.001}FS + \underset{(0.644)}{0.014}WPIF^{india} + \underset{(4.692)}{0.176}WRA + \underset{(60.304)}{0.948}CPIF(-1)$$

(Note: values in the parenthesis indicate the t-ratios)

From the regression result, it has been observed that the coefficients of money supply and agricultural wage rate are significant and with relatively large coefficient values and the sign of coefficients are compatible to the economic theory. That means, money supply growth and increase in agricultural wage rate would be considered as the underlying medium to long run trend factors of recent food inflation. To explain more categorically these estimated coefficients it can be noted that, one percentage point increase in money supply and agricultural wage increase would contribute the food inflation to rise by 0.36 percent and 0.18 percent respectively. On the other hand, according to the model, the influences of food-stock and Indian food price Index are not significant at all (very low tratios) and also the coefficient sign for food-stock variable is counter-intuitive.

As already mentioned that one of the variables was not stationary (FS); thus we have also applied co-integration technique to estimate the model using all four variables but the results was not better as seen from counter-intuitive signs of two variables, agriculture subsidy (FS) as well as real wage rate in agriculture sector (WRA). As shown from below estimated co-integration equation that also the WRA is statistically insignificant as the value of t-ratio is very low.

$$CPIF = \underset{}{-2.063} + \underset{(8.347)}{0.376}M2 + \underset{(3.158)}{0.040}FS + \underset{(3.469)}{0.229}WPIF^{India} - \underset{(0.714)}{0.058}WRA$$

On the contrary in our OLS exercise we have got very sound estimate regarding WRA as both the sign and t-ratios were highly satisfactory and plausible. Thus, we argue that the OLS estimate gave us better results in terms of econometric fit.

Agricultural subsidy is expected to play positive role to contain inflation as it helps to reduce the cost of food production. Due to paucity of data for two initial years (2001-02) and also complete absence of month-wise data on agricultural subsidy we just have excluded this variable in our regression estimate. However, being interested to see whether there is any correlation between agricultural subsidy and food inflation; we estimated simple correlation and we observed that food inflation has a positive relation with agricultural subsidy. The estimated value of correlation coefficient found between food inflation and the ratio of agricultural subsidy to agricultural GDP is -0.68 as per annual data from FY06 to FY13. But, value of coefficient is found + 0.34 when data for the period FY2003 to FY2013 has been used to estimate the correlation coefficient. Thus it has been observed that government subsidy plays a positive role in reducing food inflation in Bangladesh at least during running decade.

IX) Policy Recommendations and Conclusion

Since money supply and agricultural wage rate are significant as underlying medium to long run trend factors of recent food inflation as per regression analysis, these should be addressed carefully. Bangladesh Bank needs to adopt monetary policy stance carefully in terms of programmed growth of credit to private sector so that credit flows should not be

beyond a rational level as excessive credit availability would fuel higher consumer demand for both food and non-food items. Remittance which encourages money supply significantly (correlation 0.98) should be given opportunity to invest in productive sectors or in purchasing Wage Earners' Bond rather than purchasing of land, flat and food. Past experience tell that BB's tight monetary policy helped to bring somewhat positive result with some time lag. In FY14 and FY15 (March), lower growth of money supply of 16.09 and 12.53 percent respectively was somewhat effective and inflation was taming gradually of 7.35 and 6.66 percent respectively which is now very near at the programmed level of 6.5 percent for the first half of 2015.

Agricultural wage cost as an important input of agricultural production is not rationale or possible to enchain it because market forces-demand and supply determine the wage rate. But wage cost may be minimized by using modern agricultural machineries which may be provided to the farmers at subsidized cost at the beginning stage. Domestic agri-machinery industry should be encouraged to make bank credit available which would help to keep the machinery price lower. The only way to meet the growing food demand is to invest in the agricultural sector to increase production by about an additional 1 percentage point per year above the existing rate. To achieve the target, more research by Bangladesh Agricultural Research Institute is needed to find out way to increase land productivity and to deploy more of the fallow and uncultivated land particularly in the saline affected southern area. Government should finance the farmers for cultivation of flood, drought and salt resistant rice varieties invented by BRRI which contribute to contain food inflation by increasing food supply.

The farmers are growing enough food and vegetables, milk and milk products, eggs, meat and fish etc. but due to perishable nature and lack of proper cold storage facilities and refrigerated transport availability, sometimes they incur huge loses creating pressure on food inflation much more than on cereals. They can be leveraged through the public and private sector. It may be useful to form vegetables and fruit etc. growers cooperatives like Milk Vita. By constructing infrastructures to enhance storage facilities and to expand industrial base of food processing units, the government should encourage to develop such cooperatives for the growers. These steps could significantly reduce the wastage of perishable goods which is currently about 25-30 percent.

Bangladesh Krishi Bank (BKB), Rajshahi Krishi Unnayan Bank (RAKAB) and BRAC should be financed more with more re-financing facilities. Government should encourage private banks for more participation in re-financing facilities in the agricultural sector so that both the crop and non-crop food and the agro-food processing units can be expanded to lessen food inflation by increasing food supply.

Government should ensure fair price so that the farmers do not incur losses due to decline in price after bumper production of their crops. Operation of Open Market Sale (OMS) should be made regular and also to be expanded through Trading Corporation of

Bangladesh to enhance outreach level. By introducing crop insurance, initiative should be taken to compensate the farmers for their loss of natural calamity

In conclusion, the higher food inflation in Bangladesh could not be analysed fully depending on some mere economic figures, models and graphs as some non-economic but significant factors like market distortions, low business confidence and political turmoil etc. have also contributed substantially to the food price hike. So, the Government and Bangladesh Bank should consider all the economic and non-economic factors duly to check food inflation at a optiomum level.

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Sources of exchange rate fluctuations in Bangladesh

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Abstract

Though exchange rate was stable in the initial stage of floating regime in Bangladesh, sharp depreciations occurred during August 2004 to April 2006 and again in July 2010 to January 2012. As excessive fluctuation of exchange rate can be an obstacle to macroeconomic stability, it is important to know the sources of fluctuations in both the phases. In this context, this paper tries to investigate the probable reasons behind sharp depreciation of Bangladesh Taka (BDT) against US dollar (USD) in these two phases using Structural Vector Auto-regression (SVAR) model following Clarida and Gali (1994) and uses data from January 2003 to June 2012. The paper finds that both the demand shocks mainly arising from external sector and the supply shocks were responsible behind such deprecierions. However, the supply shocks were less effective than demand shocks in exchange rate fluctuations and the money supply shock also had a negligible effect on the depreciation of BDT during the period of this study.

JEL Classification Numbers: E3, F41

Key words: Structural VAR, Exchange rate depreciation, Demand shock, Supply Shock, Nominal Shock.

Introduction

The sharp depreciation of Bangladesh Taka (BDT) against US dollar (US$) in late 2011 has accumulated considerable interest in seeking the reasons behind the exchange rate fluctuations in Bangladesh. The early stage of the floating exchange rate regime in Bangladesh was almost stable with low volatility and minimal depreciation of the taka against major trading partners' currencies due to adequate preparatory steps taken by Bangladesh Bank and the low inflationary environment at home and abroad (Rahman and Barua, 2006). From June 2003 to July 2004 the BDT/US$ exchange rate remained fairly

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stable while during August 2004 to April 2006 it experienced substantial depreciating pressure. After April 2006, the exchange rate moved very gently during May 2006 to June 2010. The exchange rates again started to depreciate sharply from July 2010 and it continued up to January 2012. Since then, an appreciating tendency is prevailing.

It is generally believed that depreciation of the domestic currency improves net exports as well as the external current account balance of the home country. But the benefits depend on the elasticity of export and import demand function of the country. Besides, it increases the country's rate of inflation through pass through effect. Therefore, depreciation is not always favourable for a country. It may also be harmful for the external sustainability as well as economic growth of a country. So, the paper attempts to find out the logical reasons behind the sharp depreciation of BDT against US Dollar as well as its trading partners' currencies. The paper also investigates the inter linkage of foreign exchange market with money market of Bangladesh. Besides, a comparative analysis between the two episodes is also presented for future policy options. In this regard, the paper is divided into five sections. The first section summarizes the literature review. In the second section, the exchange rate movements is analyzed rigorously. The third section focuses the plausible reasons behind the exchange rate depreciations. The fourth section seeks the long-run relationship among the variables of interest (relative output, relative real exchange rate and relative price) and also tries to find out the possible reasons of exchange rate fluctuations using Structural Vector Auto Regression (SVAR) model. The last section provides some concluding remarks with policy suggestions.

I. Literature Review

In literature, several studies attempted to investigate the sources of exchange rate fluctuations for different countries over different time periods. But a few studies are found for Bangladesh. Clarida and Gali (1994) was the pioneer to empirically investigate the sources of real exchange rate fluctuations. They studied exchange rate movements in Germany, Japan, Canada and Britain using the data since the collapse of Breton Woods. They found that nominal shocks explained a substantial part of the variance of the change in the dollar-DM and dollar-yen real exchange rates. They also found reverse results in the case of Canada and Britain. In case of Canada and Britain, demand shocks explained the majority of the variance in real exchange rate fluctuations, while supply shocks explained very little.

Bhundia and Gottschalk (2003) investigates the sources of fluctuations in the rand-U.S. dollar exchange rate in 2001 and 2002 using an empirical exchange rate model which identifies aggregate supply, aggregate demand, and nominal disturbances as possible sources for exchange rate fluctuations. They found that nominal disturbances explained by far most of the rand depreciation in the final quarter of 2001. They also found that financial market developments are the most likely source of the depreciation.

Wang (2004) reviews the evolution of China's real effective exchange rate during the period 1980 and 2002, and uses a structural vector auto-regression model to study the relative importance of different types of macroeconomic shocks for fluctuations in the real exchange rate. He showed that real relative demand shocks had been the most important sources of fluctuations in the real exchange rate over the estimation period, while supply shocks had been the main factors accounting for variations in relative output and relative prices. He also showed that supply shocks were at least as important as nominal shocks in contributing to real exchange rate variations in China.

Chen (2004) estimated a structural VAR model using quarterly data of the USA, Canada, Germany, Japan and the UK from 1974:Q3 to 2002:Q4 by following Clarida and Gali (1994). His finding was that the variance of real exchange rates can be attributed more to monetary shocks when the sample span is extended. He also used VAR model with long run annual data from 1889 to 1995 and found that monetary shocks can explain nearly 50% of real exchange rate variance in the long run sample period.

Inoue and Hamori (2009) empirically analyzed the sources of the exchange rate fluctuations in India using monthly data within the time range January 1999-February 2009 by employing the structural VAR model. The VAR model consists of three variables, i.e., the nominal exchange rate, the real exchange rate, and the relative output of India and a foreign country. The empirical evidence demonstrated that real shocks were the main drivers of the fluctuations in real and nominal exchange rates, indicating that the Central Bank could not maintain the real exchange rate at its desired level over time.

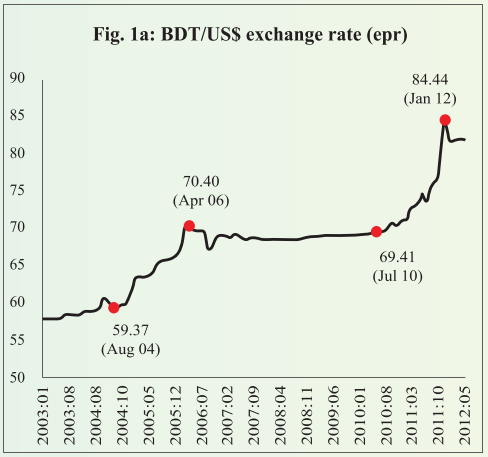
Rahman and Barua (2006) attempted to analyze the underlying causes and impact of the recent developments in the foreign exchange and money markets of Bangladesh using the data of FY05 and FY06. They observed that depreciation and volatility of exchange rate depends on various components of foreign exchange market. For example, when the gap between the monthly flow of imports and exports widens or the demand for opening import LCs rises, the exchange rate tends to depreciate. On the other hand, there is high positive correlation between volatility of exchange rate and that of call money rate.

The above survey indicates that a systematic and comprehensive study on recent sharp exchange rate fluctuations in Bangladesh is necessary for adapting future policy options.

II. Behavior of the exchange rate movements

As mentioned earlier, there were two episodes when there were pressures for exchange rate depreciation during the floating exchange rate regime in Bangladesh. The first episode continued about 21 months from August 2004 to April 2006 and the second episode lasted about 19 months from July 2010 to January 2012. During the first episode BDT depreciated by 15.67 percent against the US dollar and stood at Tk. 70.05per US$1.0 on April 2006 from Tk. 59.37per US$1.0 on August 2004. During the second episode BDT

depreciated by 17.80 percent and stood at 84.44per US$1.0 on January 2012compared with Tk. 69.41per US$1.0 on July 2010.



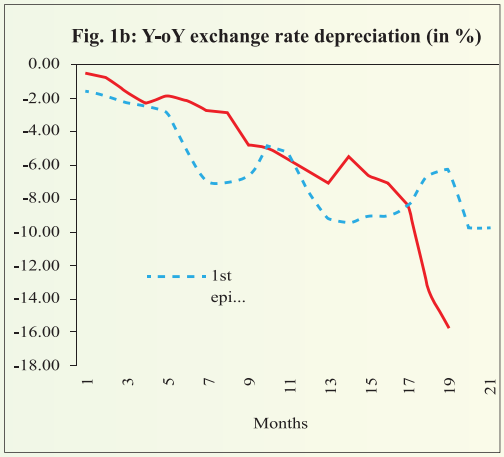
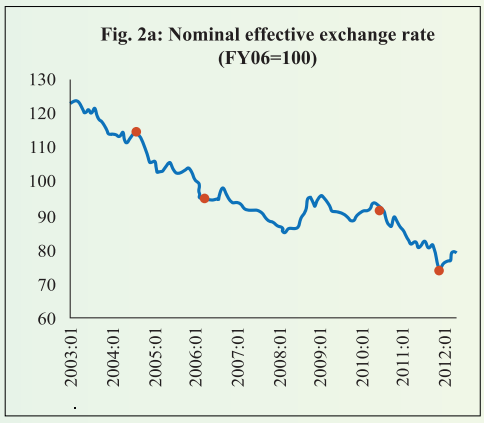
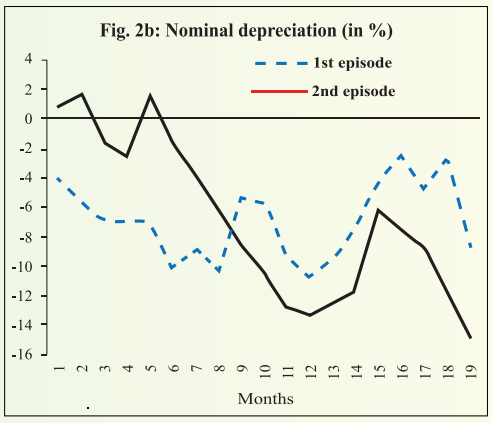
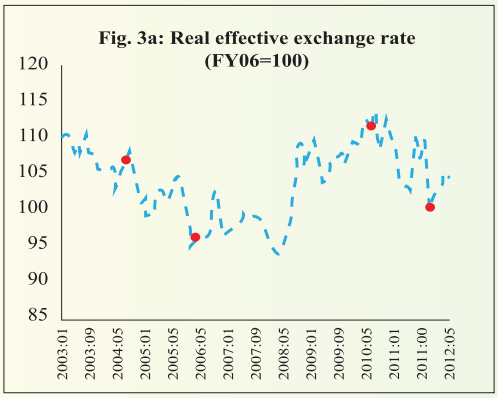


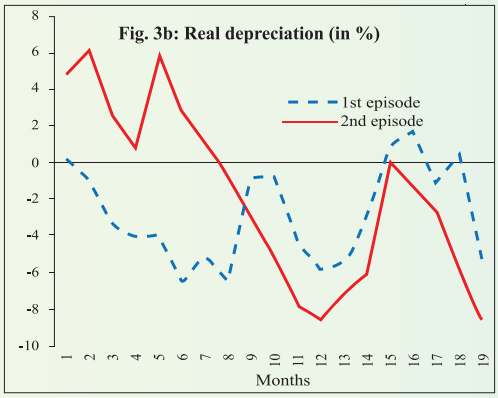
Figure 1a shows the movement of BDT/US$ exchange rate (end period rate, epr) and the figure 1b shows exchange rate depreciation (in percentage, %) during the two episodes mentioned above. It is observed that the trend and overall depreciation in 2nd episode was more severe than first one. But the trends of depreciation were increasing for both episodes. Therefore, the correlation between exchange rate movements between two episodes stood at 0.91 (highly correlated).

Although the USA is the second largest trading partner (18 percent of total trade in FY06) and US$ is the intervention currency in foreign exchange transactions of Bangladesh, the multilateral exchange rate , i.e., effective exchange rate is more important for policy decision. The ways to express the effective exchange rates are -Nominal Effective Exchange Rate (NEER) and Real Effective Exchange Rate (REER) indices.









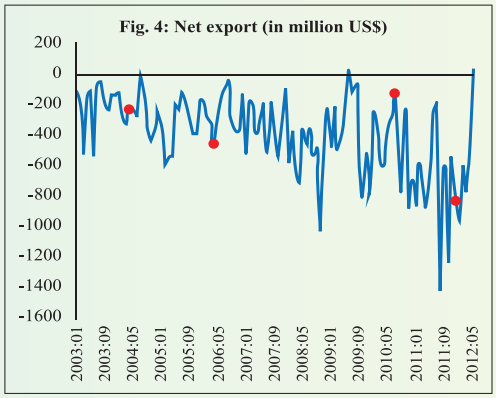
From figure 2a and 2b, it is observed that BDT sharply depreciated in nominal term against its major trading currencies during the first episode. The depreciation would have been more severe in the second episode except for the months of September-October, 2009.From figure 3a and 3b, it is also observed that BDT depreciated in real term in the first episode except for the months of November-December, 2005 and February 2006.It also depreciated severely in the second episode except for the months of July-December, 2010, January 2011 and September 2011.

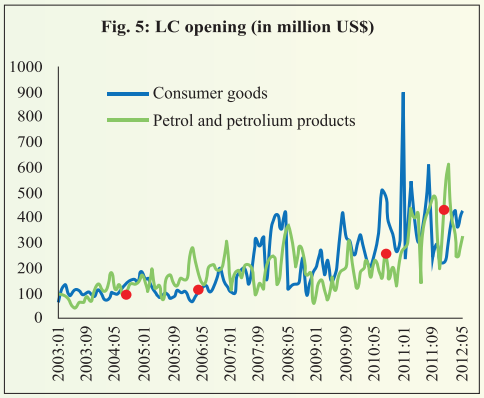
III. Plausible reasons for exchange rate depreciations

Under a floating regime, exchange rate movements depend on the demand and supply of foreign currency which are determined by the foreign exchange rate as well as money market variables. Some important variables are discussed below in order to explain the possible reasons for the sharp depreciation of BDT during the two episodes mentioned above.

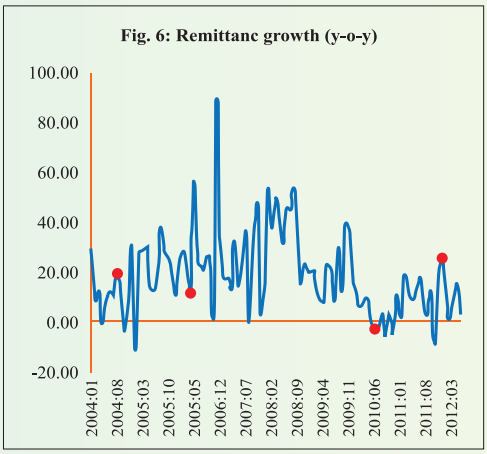
(a) Movement of net exports : Net exports in Bangladesh are always negative since its independence due to merchandise trade account imbalance. The size of the external trade account deficit becomes smaller or larger at different time periods. The vulnerability of the net export situation resulted mainly due to inelastic import demand of Bangladesh. About eighty percent of domestic exports are on account of woven garments and knitwear, which in-elastically depend on the import of raw materials. The other major import items namely consumer goods (basically food), machinery and petroleum products are also inelastic in nature. An increase in net exports increases the demand for foreign exchange and trends to put pressures on the BDT exchange rate against partners' currencies. From figure 4, it is observed that net exports of Bangladesh had increased sharply during both the 1st and 2nd episodes. From figure 5, it is apparent that import demands for consumer goods as well as for petrol and petroleum product were responsible for the higher import demand during the two episodes under review. It is observed that during the first episode import demand for

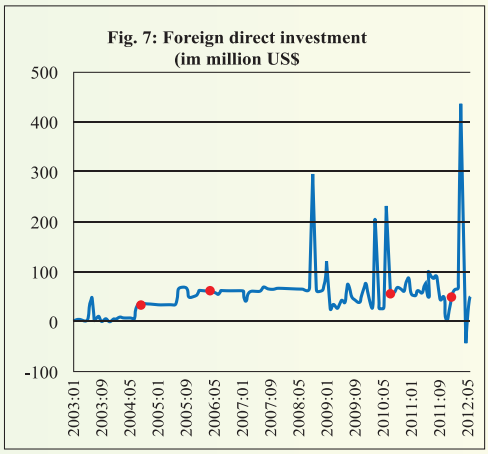
petrol and petroleum products was greater than the demand for consumer goods, but during the second episode demand for consumer goods was much morel higher than its levels in normal times. Demand for consumer goods increased sharply in value terms mainly due to increased food prices in the world market.





(b) Inward remittance : The flows of inward remittances in Bangladesh have contributed significantly to the external current account surplus recorded in the recent years. It is also a very important source of foreign exchange from the supply side of the foreign exchange market in Bangladesh and thus can play an important role in exchange rate determination. In this context it is noteworthy that the remittance growth, especially during the second episode, was disappointing (Fig. 6). The average growth of inward remittance during the second episode was 8.29 percent whereas the historical average growth of inward remittance was 18.86 percent (during January 2003-June 2012). The slower growth of inward remittances certainly exacerbated the recent exchange rate pressure in Bangladesh during the second episode.





(c) FDI inflow : The FDI inflow in Bangladesh has generally been very low compared to most other countries in the region. It was even lower during the two episodes under review compared to the inflow in between the two episodes (Fig. 7). The monthly average (y-o-y) FDI inflow during the first and second episodes were US$47.0 million and US$62.2 million respectively whereas it was US$68.8 million during the period in between the two episodes (May 2006 - June 2010).

(d) Net foreign aid : Bangladesh is still dependent on international foreign aid for financing its development projects and for the stability of the overall balance of payments. By financing imports associated with development projects and through budget support, foreign aid is also important for the stability of the foreign exchange market of the country. The level of foreign aid, especially during the first episode, was very low compared to the historical average (US$ 93.3 million, during January 2003 - June 2012). The monthly average of net amounts of foreign aid during the first and second episodes were US$69.8 million and US$84.21 million respectively where as it was US$107.1 million during the period in between the two episodes (Fig. 8).

Fig. 8: Net foreign aid (in million US$)

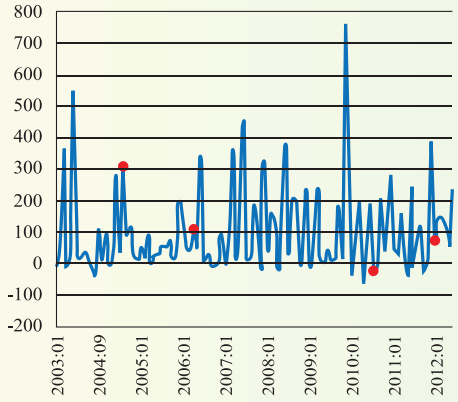
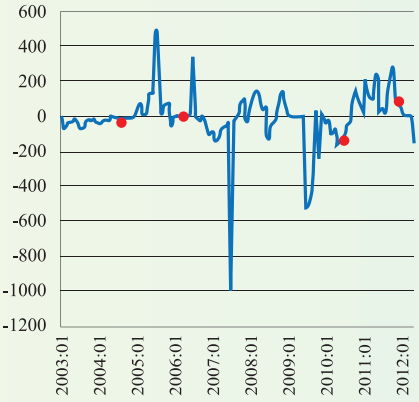
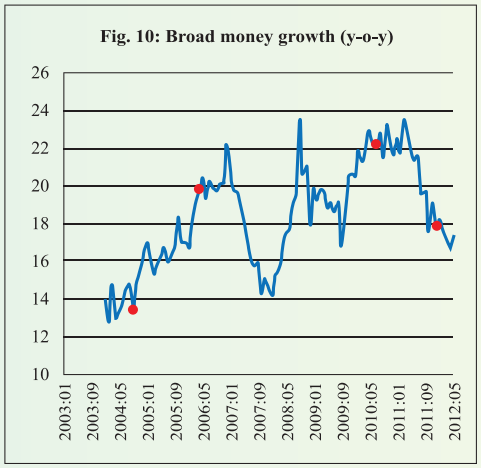
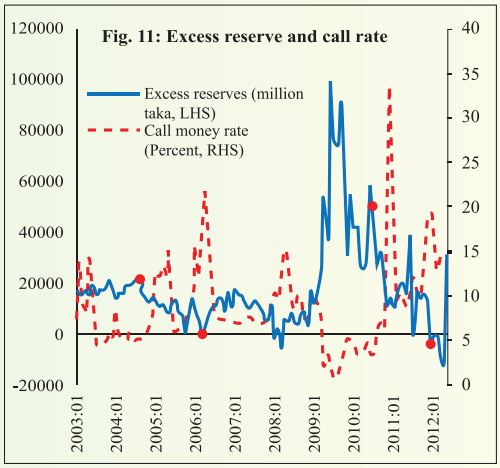


Fig. 9: Net FX sale (in million US$)

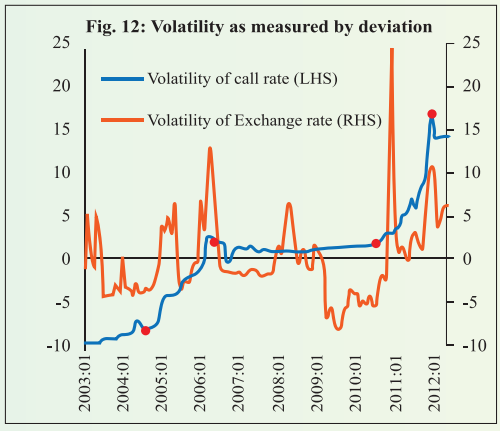


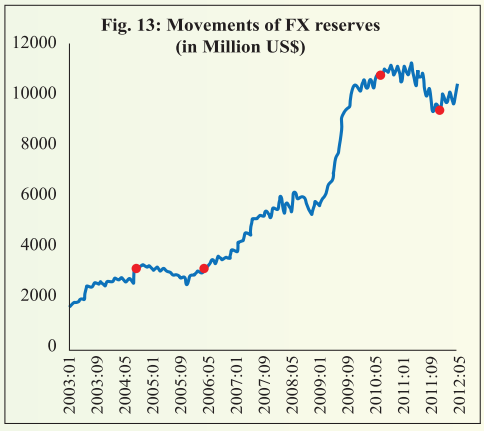
(e) FX intervention : Although the floating exchange rate regime has been prevailing, Bangladesh Bank has to intervene sometimes indirectly through selling and buying of foreign currency in the market to mitigate the undesirable fluctuations in the exchange rate. In this context, the amounts of net sales during the first and second episodes wereUS$1135.9 million and US$1680.5 million, respectively. Market interventions works to smooth out fluctuations due to temporary or short-term liquidity problems and it never works when the exchange market is fundamentally in disequilibrium. Since the interventions were made when the exchange market was subjected to some fundamental shifts on the supply and demand side both working toward larger excess demand for foreign exchange. Bangladesh Bank interventions were not sufficient to stabilize the market (Fig. 9).





(f) Liquidity movement: Theoretically, exchange rate depreciation is positively related with the expansion of money supply (liquidity). From figure 10, it is observed that the growth of broad money during first episode was increasing. For the second episode it may appear that liquidity was decelerating when the exchange market pressure emerged. However, a closer look at the monetary/liquidity situation would indicate that in the period immediately preceding the start of the episode for a significant period during the second episode, liquidity expansion remained at the very high level of about 22 percent. Therefore, the impact of nominal shock behind the sharp depreciation can be supported for both the episodes. This observation is also supported by the movement of excess reserve and call money rate. From figure 11, it is observed that the excess reserves were declining during both two episodes and the call money rates were comparatively higher. It may also be observed that (Fig. 12) the correlations between volatility of call rate and that of exchange rate (0.63 for first episode and 0.37 for second episode) were not strong.





(g) Foreign exchange reserves: Due to both domestic and external factors discussed above the level of foreign exchange reserves was decreasing during both episode, in part because of market interventions. Bangladesh Bank's inability to stabilize the exchange rate despite sizable market interventions and the consequent loss of reserves led to a sharp exchange rate depreciation pressure during the two episodes in Bangladesh.

IV. Model based analysis of exchange rate fluctuations

Theoretical background following the pioneering work of Blanchard and Quah (1989), there has been a growing body of literature in which long-run relationships from theory are used to identify structural shocks in an open economy setting. Clarida and Gali (1994) construct a three variable-relative output, relative prices, and the real exchange rate-structural VAR and identify three types of macroeconomic shocks: supply, real demand, and nominal shocks. The contribution of each type of shock to the variability of each variable is then assessed.

Clarida and Gali (1994) derive a stochastic version of the Obstfeld (1985) open economy macro model where output is supply determined over the long run. Their representation illustrates how the Mundell-Fleming-Dornbusch model can provide theoretical foundations for the restrictions used in their analysis to identify three separate types of "fundamental" shocks in the economy. The key assumptions of the model include (i) prices and output adjustments are sticky and (ii) foreign and domestic goods are imperfect substitutes in consumption. Shocks in the model can be categorized into: (i) real aggregate supply(AS) shocks, which includes all labor market factors, such as changes in the relative productivity of home to foreign countries, that shift the aggregate supply curve; (ii) aggregate demand or real good market (IS) shocks, encompassing exogenous changes to real relative domestic absorption due to shifts in consumption, investment, government expenditure and home/foreign goods tastes; and (iii) nominal or money market (LM) shocks, reflecting shifts in both relative money supplies, such as monetary policy shocks and relative money demands, such as velocity shifts, and effects of financial liberalization.

A positive supply shock, such as a higher productivity growth in the home country, raises the aggregate supply of domestic goods and the rate of return to capital and, in a traditional Mundell-Fleming model in which capital is mobile, leads to capital inflows and an appreciation of the exchange rate (Obstfeld, 1994). Over the long run, domestic output increases to its higher potential level, domestic price declines, and the real exchange rate depreciates in order to generate trade surpluses to pay down the accumulated stock of net foreign liabilities. A positive demand shock increases demand for home goods, pushes up prices of home products and leads to an appreciation of the real exchange rate and an increase in output in the short run. Over time, output returns to the long-run trend, but the price level remains higher and the real exchange rate remains above its trend. A positive nominal shock lowers home interest rates. In the short run, both the nominal and real

exchange rates depreciate, the relative price rises, and the domestic output increases. Over time, output and the real exchange rate return to their long-run trends. The long-run relationships described here are used in this paper as restrictions to identify the fundamental shocks in the model.

Data and Variables

Three variables-relative outputs (y), relative prices (p) and the real exchange rate (q)-have been included in this study. Monthly data on these variables have been collected for the period from January 2003 to June 2012. All variables are expressed in natural logarithms. The variables are relative to the weighted average of same variables in eight largest trading partner countries because both domestic and external macroeconomic conditions may affect the real exchange rate. Due to unavailability of quarterly or monthly data on GDP in Bangladesh, in this paper the index of industrial production (IIP) is used as a proxy of output variable. Hence, the log of relative real output is measured as the log of IIP of Bangladesh minus the log of trade weighted IIP of trading partner countries; the relative price level (CPI) has been measured similarly. Data on these variables related to Bangladesh have been collected from various publications of Bangladesh Bank and Bangladesh Bureau of Statistics (BBS). On the other hand, data related to trading partner countries have been collected from the CD-ROM of International Financial Statistics (IFS).

Model

The empirical model contains a three-variable structural VAR (Δy, Δq, Δp) and its identification restriction. The observed variations of economic variables are governed by three mutually orthogonal disturbances: supply shocks, demand shocks and monetary shocks. Formally, we want to transform the reduced form VAR to the structural model:

$$x_t = C(L)\varepsilon_t \qquad (1$$

where

$$x_t = \begin{pmatrix} \Delta y_t \\ \Delta q_t \\ \Delta p_t \end{pmatrix}, \qquad C(L) = \begin{pmatrix} C_{1_1}(L) & C_{1_2}(L) & C_{1_3}(L) \\ C_{2_1}(L) & C_{2_2}(L) & C_{2_3}(L) \\ C_{3_1}(L) & C_{3_2}(L) & C_{3_3}(L) \end{pmatrix} \quad \varepsilon_t = \begin{pmatrix} \varepsilon_t{}^s \\ \varepsilon_t{}^d \\ \varepsilon_t{}^m \end{pmatrix} \qquad (2)$$

In equation (2), $C_{ij}(L)$ is the polynomial of lag operator L, and $\varepsilon_t{}^s$, $\varepsilon_t{}^d$ and $\varepsilon_t{}^m$ are sequences of supply, demand and monetary shocks respectively. The orthogonality assumption implies $E\ \varepsilon_t\ \varepsilon_t = I$. Furthermore, following Clarida and Gali (1994), the restriction that neither monetary shocks $\varepsilon_t{}^m$ nor demand shocks $\varepsilon_t{}^d$ influence relative output levels in the long run requires that

$C_{12}(1) = C_{13}(1) = 0$ (3)

Similarly, the restriction that monetary shocks do not influence the real exchange rate in the long run implies that

$C_{23}(1) = 0$ (4)

Estimation Procedure

First, the reduced form VAR will be estimated by ordinary least square regression (OLS). Second, from the estimated reduced form VAR and long-run restriction denoted in equations (3) and (4), three orthogonal shocks can be disentangled, yielding the estimated coefficients $\{C_{ij}:i,j= 1,2,3\}$ in equation (2). Finally, the paper has employ impulse response and variance decompositions, which help us to investigate the direction and the sources of real exchange rate fluctuations.

Estimation Results

This section examines the time-series properties of the variables in the analysis. As we see in Figure 14, three variables included in this study are most likely to have unit roots. Regression of non-stationary variables may lead to a spurious result. Formal stationary tests are conducted and the results from the Augmented Dickey Fuller unit root tests are reported in Table 1. The null hypothesis of a unit root cannot be rejected for the levels of all three variables at conventional level of significance, while the first differences are confirmed to be stationary at 1 percent level of significance.

Fig. 14: Movements of variables

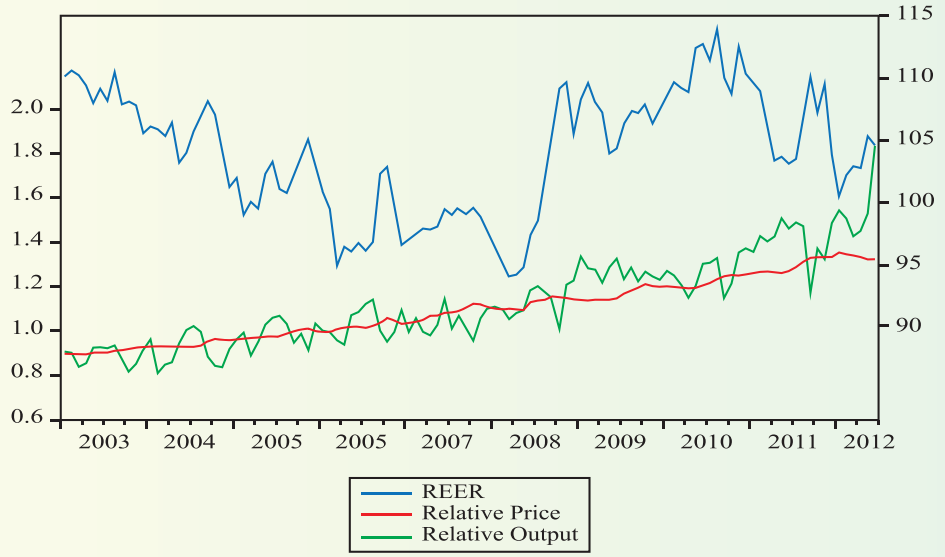


Table-1: Augmented Dickey-Fuller Test for Stationarity

Variables	In Level	In first difference
	t-statistic	t-statistic
Relative output	0.41	-10.16*
REER	-2.34	-9.81*
Relative Price level	1.70	-7.70*

Using the Akaike Information Criterion (AIC), we find that the Vector Auto Regressive (VAR) model is the most appropriate for the system. In order to examine the sources of fluctuation, computed impulse response functions (IRFs) and variance decompositions (VDCs) of these three variables have been used. Since the nominal exchange rate is of central interest to us, below we also present the impulse response analysis for this variable.[2]

Figure 15 displays the impulse response functions of relative output, real exchange rate, relative price level and nominal exchange rate to one standard deviation structural shocks. Since the variables were entered in first differences in the VAR, the resulting impulse responses were cumulated in order to obtain the impulse responses of level of each of the variable to the structural shocks in the model. These impulse response functions are in line with the theoretical priors discussed above. Figure 15 shows that a positive supply shock leads to an increase in output; however, it declines to a lesser rise over the long run. The increase in relative output in Bangladesh is accompanied by a relative decline in the price level in Bangladesh. Since it is a key characteristic of a supply disturbance to drive output and prices in opposite directions, the responses shown in the figure are consistent with the predictions of our theoretical model. The real exchange rate initially appreciates slightly in response to the supply disturbance, but then a pronounced and persistent depreciation sets in, which is the long-run response predicted by Clarida and Gali's model. To quantify the impulse response of nominal exchange rate we deduct the response of relative price from the response of real exchange rate. The figure shows that in response to supply shock, nominal exchange rate appreciates slightly in the long run and the response seems to be very weak.

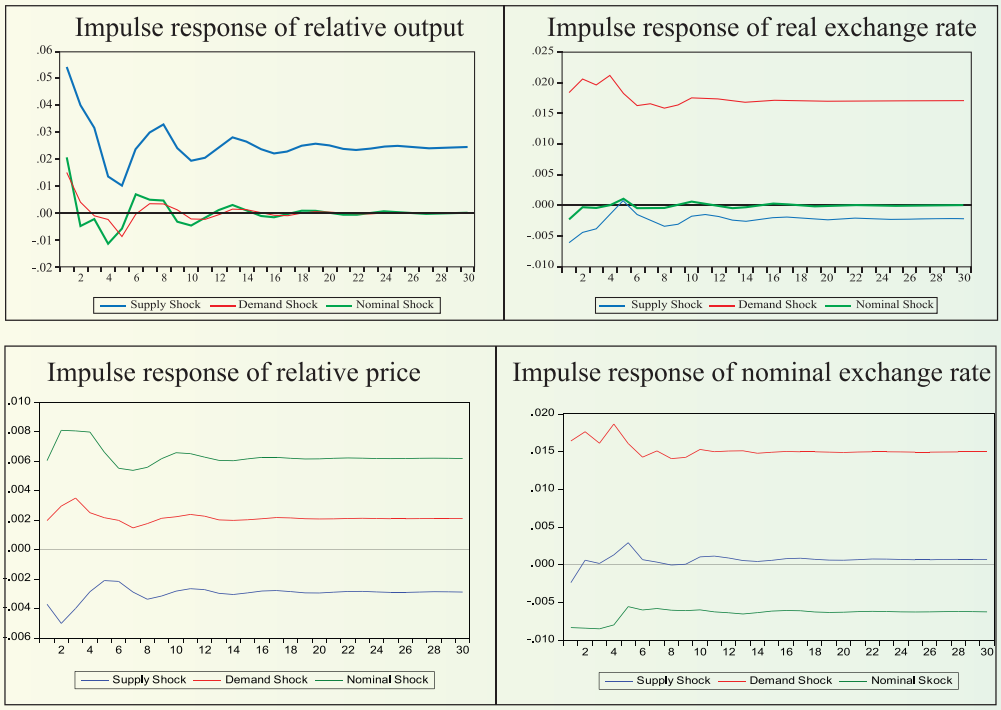
In the case of real demand shock, there is an increase in output, an increase in the price level, and an appreciation of the real exchange rate. Both responses are predicted by our theoretical model. The nominal exchange rate also appreciates. In the long run, the output response is restricted to zero. The price and the exchange rate responses, on the other hand, turn out to be very persistent.

In the case of nominal shock, the output response lasts for a few months and is accompanied by a depreciation of the nominal and real exchange rate. In the long-run, both the output and the real exchange rate responses are restricted to zero. But the nominal

1 Even though this variable does not enter our empirical model directly, it can be constructed from the relative price variable and the real exchange rate variable.

disturbance is followed by a persistent increase in the price level, and, consequently, in the nominal exchange rate. It is noteworthy that the nominal exchange rate overshoots its long-run level considerably, which is consistent with the predictions of the familiar Dornbusch (1976) model.

Fig. 15: Accumulated Impulse Response Function



While impulse responses are useful in assessing the signs and magnitudes of responses to specific shocks, the forecast error variance decomposition analysis provides an important insight into the relative importance of each shock at different forecast horizons to the structural disturbances in our model. Since this paper focuses on the nominal exchange rate, we report here the variance decomposition only for the nominal exchange rate, which has been produced from the variance decomposition of real exchange rate and relative price. Table 2 presents the share of the forecast error variance of nominal exchange rate at different forecast horizon that can be attributed to each type of shocks in the model.

Table 2 shows that the main cause of the unexpected changes in the nominal exchange rate is demand shock. Demand shock accounts for almost half of the short-run variability in the nominal exchange rate. At the one-year horizon, nominal disturbances still account for about 60 percent of the variance decomposition, but at the two-year horizon this share has declined to about one-third. It decreases slightly to 46.56 percent at six month forecast horizon and it remained persistent for longer forecast horizon. While nominal shocks are

the second largest source of the variability in nominal exchange rate which accounts for one-third of the unexpected fluctuations of the nominal exchange rate and it remains persistent in the longer forecast horizon. Initially supply shocks account for only 17.53 percent of the variability in nominal exchange rate. It increases to 20.44 percent at eight month forecast horizon and remains persistent thereafter.

Table-2: Forecast Error Variance Decomposition of Nominal Exchange Rate

Forecast horizon	Supply shock	Demand shock	Nominal shock
1	17.52	48.10	34.38
2	17.68	47.79	34.53
3	18.27	47.92	33.81
4	19.35	47.99	32.66
5	19.73	47.33	32.94
6	19.94	46.56	33.49
7	20.27	46.60	33.13
8	20.44	46.57	32.99
9	20.38	46.60	33.03
10	20.55	46.42	33.03
11	20.56	46.42	33.02
12	20.56	46.40	33.04

In this paper our main objective is to identify the sources of volatility of nominal exchange rate with special attention to two episodes (Episode 1: August 2004-April 2006 and Episode 2: July 2010-January 2012) of high depreciation pressure on nominal exchange rate in Bangladesh. This purpose may be better served by historical decomposition of the nominal exchange rate. Using the estimated VAR, a historical decomposition can be derived to examine whether or not the supply, demand, and nominal shocks that have been identified can plausibly explain the time path followed by the nominal exchange rate of Bangladesh during the two episodes mentioned earlier.

Figure 16: Historical Decomposition of Nominal Exchange Rate during the Two Episodes

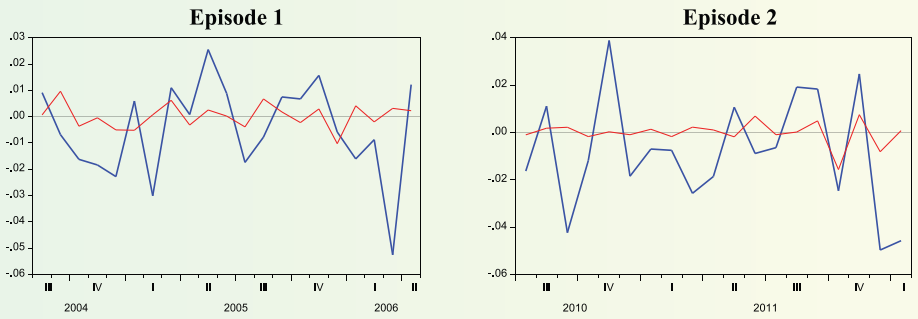
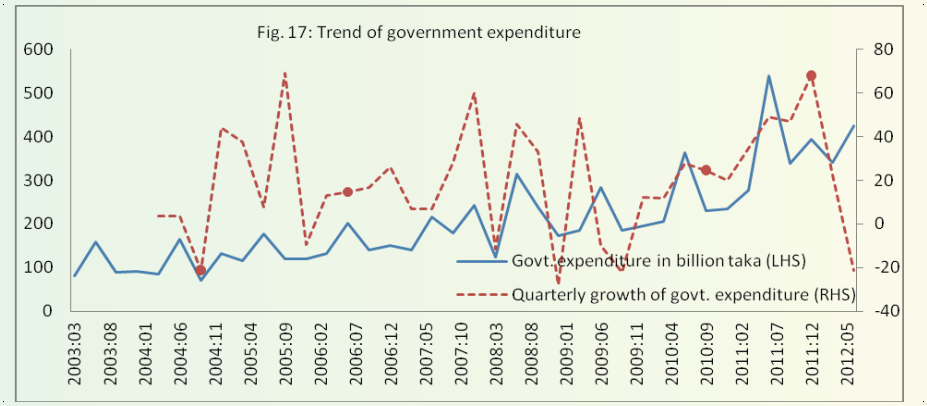
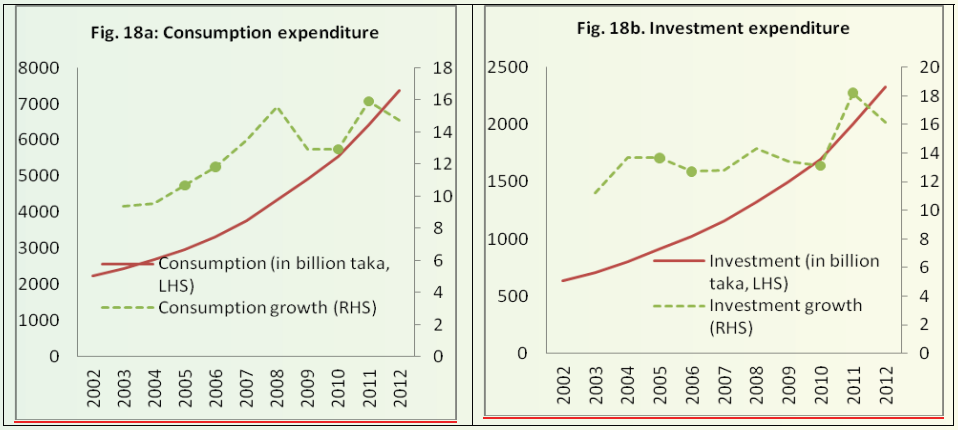


Figure 16 plots the unconditional forecast error for the nominal exchange rate and shows the decomposition of this forecast error into the components that can be attributed to supply, real demand, and nominal shocks. The blue line in each graph of two panels (for two episodes) is the total forecast error, which depicts the difference between the actual (log level of the) nominal exchange rate and the level that would have been forecast from the VAR. In other words, the blue line reflects the cumulative impact of the three types of structural shocks on the nominal exchange rate. The red line in each panel plots the contribution of each type of shocks to the total forecast error, or the forecast error that would have resulted if only one particular source of shocks had hit the variable. As shown in the figure, unexpected movements in the nominal exchange rate have been driven mainly by demand shocks.

Government expenditure which is a component of aggregate demand expands very largely during both episodes (Figure 17). The average quarterly growth of government expenditure stood at 19.37 percent and 40.51 percent during the 1st and 2nd episode respectively, whereas the average growth between two episodes was 15.79 percent. The growth of other components of aggregate demand except net exports (exports minus imports) also increases largely during the two episodes compared to pre-episodes periods (Figure 18a and Figure 18b).





The growths of consumption during 1st and 2nd episodes were 11.24 percent and 15.31 percent respectively, whereas the growths were 9.47 percent and 13.74 percent during pre-episodes respectively. The growths of investment during 1st and 2nd episodes were 13.19 percent and 17.19 percent respectively, while the growths were 12.47 percent and 13.41 percent during pre-episodes respectively. As a result, the nominal GDP growths during 1st and 2nd episodes were 11.74 percent and 14.78 percent respectively, whereas the growths were 10.40 percent and 13.69 percent during pre-episodes respectively.

V. Concluding Remarks

In order to find out the recent exchange rate fluctuations in Bangladesh, this paper has discussed all relevant variables of foreign exchange market and money market using graphical as well as econometric technique. This paper also tries to find out the reasons behind the exchange rate fluctuations on historical as well as episode basis. It is observed that demand shocks especially created from external sector are responsible for sharp depreciation of BDT exchange rate during the two episodes. As per econometric analysis

supply shocks are also important (but less than demand shock) for exchange rate fluctuation. The nominal shock, i.e., the money supply shock is ignored in the overall analysis.

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Review of Policy and Regulation on Green Banking and Environmental Risk Management in Bangladesh

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Antara Zareen[2]

Abstract

Keeping pace with the global initiatives for green banking and environmental risk management Bangladesh is also marching towards sustainable development by adopting dynamic banking. Relation between economic development and environmental issues are sometimes termed as paradoxical however both are complementary. This paper attempts to review the present regulatory framework for the promotion and implementation of green banking and ERM in Bangladesh. In this study the current implementation status of green banking and ERM in banks and FIs are examined with a view to recognize the level of the financial sector in adopting these policies. The findings of this paper are that remarkable progress has been evident in bank and FIs' in-house green practices and online banking performance compared to their initiative for effective green finance by following ERM guidelines. Developing bank's own ERM guidelines, green products and green business models are yet to take a considerable shape. Finally, Policy recommendations are indicated in this paper on the need for further study to develop a revised framework of green banking and ERM suitable for the financial sector of Bangladesh.

Key words: Green banking; ERM; Policy and regulation.

JEL Classification: L79, Q20, G28

1. Introduction

1.1 Background

Green banking is a part of global initiative by a group of stake holders to save the environment of this planet and environmental risk management is a core component of this. Economic development and environmental issues are closely related and it is really challenging to keep syncronization between the two. However, Green or sustainable banking has been identified as one of the major drivers of environment friendly sustainable economic growth in developing countries. Moreover, in a globalised economy, the

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industries and firms are vulnerable to stringent environmental policies, severe law suits or consumer boycotts while there are incentives to promote good corporate citizenship (Habib et. al, 2011). As a result, banks in developing economies cannot back out from adopting green banking and environmental risk management initiatives. Bangladesh Bank, the central bank of Bangladesh, has spearheaded adoption and promotion of green banking policy and guidelines throughout the financial sector, towards safeguarding environmental sustainability for the sake of potential development. In this regard, Bangladesh Bank has come forward with a dynamic and timely idea alongside some activities with the slogan of green banking.

Green banking involves a two pronged approach. Firstly, green banking focuses on the green transformation of internal operations of all banks. It means all the banks should adopt appropriate ways of utilizing renewable energy, automation and other measures to minimize carbon footprints from banking activities. Secondly, all banks should adopt environmentally responsible financing; weighing up environmental risks of projects or applicable business deal before making financing decision; and in particular supporting and fostering growth of upcoming 'green' initiatives and projects.

The financial and economic development of Bangladesh is inextricably linked to vulnerability to environmental degradation. Banks and financial institutions need to recognize the credit risks associated with environment and adopt Environmental Risk Management (ERM) practices in a formal and structured manner in line with global norms so as to protect their financing from the risks of a deteriorating environment and ensure sustainable banking practices. ERM Guidelines from the Bangladesh Bank are a mechanism to ensure that Banks and financial Institutions incorporate Environmental Risk into their credit risk management structure. The structure of the guidelines provide the minimum that needs to be in place and are intended to make available a common platform from which individual banks and financial institutions can launch their own environmental risk assessment framework which will capture a more accurate and developed image of the associated risks. Banks hold a unique position in an economic system that can affect production, business and other economic activities through their financing activities and thus may contribute to induce socially responsible behavior in other entities. By far the biggest impact banks have on the environment, and on the world, is through the lending decisions they make (Malk, 2011). In a nutshell, green bank means an ethical, a socially responsible and a sustainable bank (Millat et. al, 2012). Environmental Risk Management is for assessing environmental risks and not intended to squeeze investment; rather it is for sustainable finance.

Environment management in the banking business is like risk management. It increases the enterprise value and lowers loss ratio as higher quality loan portfolio results in higher earnings. Not only "Green Banking" will ensure the greening of the industries but it will also facilitate in improving the asset quality and rate of return of the banks in the long run. Further in this process, industries, which have already become green and are making

serious attempts to grow green, should be accorded priority to lending by the banks. Thus, through the process of green banking natural environment will be restored as well as sustainable banking for sustainable development will be ensured.

Bangladesh Bank published first Policy Guidelines for Green Banking and Environment Risk Management in 2011. The financial sector as a whole could not comply with the implementation deadline for initial difficulties but has assembled under the umbrella of BB to promote and support green banking in Bangladesh. Now it is the time to review this initiative for correction and adjustments. With this broad objective this study tired to review the BB steps towards the implementation of green banking and environmental risk management for the banks and financial institutions in Bangladesh. The specific objectives of the paper are One, to illustrate the theoretical framework of green banking and ERM for the financial sector of Bangladesh; Two, to review the regulatory framework for the promotion and implementation of green banking and ERM in Bangladesh; Three, to evaluate the current implementation status of green banking in the banks and financial institutions (FIs) of Bangladesh; and Four, to offer some customized recommendations for the future probable challenges and prospects of green banking in Bangladesh.

The research paper is based on both primary and secondary data. Published studies and information from BIBM and Bangladesh Bank are used as the main secondary sources. Relevant government publications are also consulted. Primary data have been collected through interviews conducted among the officials of the relevant desks of eighteen selected commercial banks (3 SCBs[3], 11 PCBs[4], 2 FCBs[5] and 2 SDBs[6]). Unstructured questionnaires/ schedules have been used to gather primary information. Review of government policy and regulation of ministry and departments relating to environment and checking current status of effectiveness of those policies are not extensively covered in this study.

This paper is organized into five sections. The background, objectives and methodology is covered in section 1. Section 2 attempts to discuss a theoretical framework of green banking around the globe which is used for discussing green banking practices in the financial sector of Bangladesh. Review of policy and regulatory initiatives and support to the promotion and implementation of green banking in Bangladesh are discussed in section 3. Section 4 focuses on the examination of current implementation status of green banking in the banks and FIs of Bangladesh and finally section 5 comes up with some customized recommendations based on the future challenges and prospects of green banking in Bangladesh.

3 Sonali Bank Ltd., Agrani Bank Ltd. and Rupali Bank Ltd.

4 Bank Asia Ltd., Eastern Bank Ltd., Uttara Bank Ltd., United Commercial Bank Ltd., Mutual Trust Bank Ltd., Dutch- Bangla Bank Ltd., One Bank Ltd., IFIC Bank Ltd., Islami Bank Bangladesh Ltd, Exim Bank Ltd, Shahjalal Islami Bank Ltd., Social Islami Bank Ltd, and Jamuna Bank Ltd.

5 Standard Chartered Bank and HSBC.

6 Bangladesh Krishi Bank and BASIC Bank Ltd.

2. Literature Review:

Traditionally, banking sector's concern for environmentally degrading activities of clients is like interfering or meddling in their business affairs. However, now it is being perceived that environmental hazard brings risks to their business. Although the banking and financial institutions are not directly affected by the environmental degradation, there are indirect costs to banks. Due to strict environmental disciplines imposed by the competent authorities across the countries, the industries would have to maintain certain standards to run their business. Islam and Das (2013) have found that though green banking is a new term in Bangladesh, it is a mature issue in developed countries. So banks should consider the environmental issues of the country as a social responsible person not only to face the impact of globalization but also to face competition. In the case of failure, it would lead to closure of the industry leading to a likelihood of default to the banks. For example the enactment of Comprehensive Environmental Response, Compensation and Liability Act in 1980 (CERCLA) in the US in late 1980s has resulted in huge loss to the banks in the US as banks held directly responsible for the environmental pollution of their clients and made to pay the remediation cost. Since then banks in the US are ahead of other countries in integrating environmental concerns into their business operations. In the recent years, several other countries (mostly in Europe) are seen adopting policies that have made banks responsible for the misdeeds to their clients. Therefore, the financial institutions need to engage proactively with the stakeholders on environmental and social policy issues and evaluate the impacts of their client's investment (Sahoo & Nayak, 2008).

Credit risk can arise indirectly where banks are lending to customers whose businesses are adversely affected by the cost of cleaning up pollution or due to changes in environmental regulations. The cost of meeting new requirements on emission levels may be sufficient to put some companies out of business[7]. Credit risks are also associated with lending on the security of real estate whose value has diminished owing to environmental problems (additional loss in the event of default). In few cases, banks have been held responsible[8] for actions occurring in which they held a secured interest (see Schmidheiny and Zorraquin, 1996 and Ellis, Millians and Bodeau, 1992). There are studies showing positive correlation between environmental performance and financial performance (Hamilton, 1995; Hart, 1995; Blacconiere and Pattern, 1993).

7 Example, in United Kingdom, the breach of terms of the license given by integrated pollution prevention control would lead to prohibition, financial penalties and enforcement notice. All such notices can have significant financial implications for the business and as well as the financial institutions those who have put money into it. Thus banks/financial institutions need to take actions before financing the project.

8 Some US courts (H. Thomson) have sought to hold banks and other financial institutions liable for the hazardous wastes. For example Fleet Factors case in 1990 where the bank (Fleet factor corporation) was held liable for environmental damages incurred in the foreclosure process by a firm they hired to auction off assets. environmental damage caused by their customer's actions, such as clean up costs and other damages associated with hazardous wastes. For example Fleet Factors case in 1990 where the bank (Fleet factor corporation) was held liable for environmental damages incurred in the foreclosure process by a firm they hired to auction off assets.

Globally, we find many instances of considering environmental risk management as a serious issue. International financial institutions like International Financial Corporation (IFC), Japan Bank for International Cooperation (JBIC) and World Bank (WB) have incorporated environmental management into their business operation. A study confirms that only air pollution causes the loss of 200 million working days and the resulting losses in productivity and medical expenses costs around 14 billion pound to the European Union (Stavros Dimas, 2005). Adopting environmentally sustainable technologies or modes of production is no more considered as a financial burden rather it brings new business opportunities and higher profit. Green banking saves costs, minimizes the risk, enhance banks reputations and contributes to the common good of environmental sustainability. Bahl (2012) urged banks to promote different types of environment friendly products to ensure the protection of environment and the profitability of banks in India. Mani (2011) indicated that as Socially Responsible Corporate Citizens (SRCC), banks have a major role to play and responsibility in enhancement of governmental efforts towards substantial reduction in carbon emission and building a green economy. Thus banks should go green and play a pro-active role to take environmental and ecological aspects as part of their lending principle, which would force industries to go for mandated investment for environmental management, use of appropriate technologies and management systems (Sahoo & Nayak, 2008). Indian banking is gradually coming to realize that there is need for a shift from the motive of 'profit, profit and profit' to 'planet, people and profit' (Verma, 2012).

The present green consumerism is more concerned with the quality of the products more than the quantity. In future, market will reward those industries or the companies, which emerge as the efficient users of the energy and raw materials and will penalize the less efficient one. Further, the investors in the stock market are equally aware of environmental pollution and would take a stand against those industries/institutions that do not comply with pollution norms (Gupta, 2003; Goldar, 2007). A unit can be said to be environmentally clean only when its pollution level is within the permissible level fixed by the pollution control board or any certified agency. For this measure to succeed the pollution control agencies are required to play an important role by supplementing the banks efforts to control pollution.

China's Banking Regulatory Commission (CBRC) issued the Green Credit Guidelines to encourage implementation of its green credit policy in 2012. The guidelines encourage banks operating in China to deny loans to energy inefficient, polluting, or socially risky enterprises, and instead to support green industries and projects with a goal to "increase the support to a green, low-carbon and recycling economy, fend off environmental and social risks, and improve their own environmental and social performance." To implement the CBRC guidelines, many banks have compiled their own green credit policies, standards, and indicators. For example, in 2012, ICBC refused to lend to projects and customers that fell short of the bank's standards (CBRC, 2012). Ye Yanfei, the Deputy Director General

of the CBRC statistics department, identified three main challenges to implementation green credit guideline. Chinese banks lack: 1. Expertise needed to build sophisticated, effective, and holistic systems to evaluate environmental risk and to ensure compliance on the ground; 2. Legal rights to enforce their credit policies among customers, which limit the ability of banks to drive environmental benefits and 3. Adequate incentives to develop green finance if faced with a conflict between environmental sustainability and profitability, as some environmental projects have a poor or unclear financial return on investment. The same lacking exist for the banks in Bangladesh. Based on Ye's remarks, BSR believes that three things may advance green finance in China: 1. Specific and Universal Requirements, Indicators, and Standards for Chinese Banks; 2. Transparency on the Implementation of the Green Credit Policy and Guidelines and 3. Formal Processes for Consultation and Collaboration with Stakeholders.

The latest addition to this "green banking" trend came in April 2014, when the Central Bank of Brazil introduced a new resolution requiring the banks it regulates to implement environmental and social risk policies. South Africa has also been in the vanguard of updating its pension policy to make it clear to institutional investors that prudence now means incorporating critical environmental, social and governance factors. These and many other examples could mark the beginning of a new era of green financial reform.

Malk (2011) in an in depth research on green banking has shown that an important first step is examining the reasons why banks consider environmental issues to be a matter of strategy, the actions being taken, and the benefits realized. This leads to a deeper understanding of the opportunities inherent in financing a greener future, new approaches to risk management, and cost-saving benefits of cutting environmental footprints both inside and outside a bank's walls. So what makes a comprehensive environmental strategy for a bank? Malk suggested several key components: 1. Green Lending, 2. Environmental Underwriting Criteria and 3. Green Operational Programs.

Bank of America, for example, has pledged to invest $20 billion by 2020 into environmentally preferred investments such as cleaner energy and green real estate. These investments neither are corporate philanthropy nor are simply corporate social responsibility. As Bank of America CEO Brian Moynihan recently remarked on his bank's green capital commitment, "This initiative is far more than doing good for its own sake – it has proven to be a long-term, compelling business opportunity for our clients, our company and our shareholders."

CPD (2003) analysis shows that only 49 percent of the corporations in Bangladesh recognize their responsibility in protecting the environment, and very insignificant proportion of companies has policies or strategies related to environment. Considering the insignificant roles of government in environmental protection in the country, some

environmental NGOs[9] are trying to put pressure on the government to undertake protective measures to save critical sectors like wetland conservation, pollution control and biodiversity protection. They are also trying to motivate the people and in some cases the government is accepting their ideas (Ahsan et.al. 2009). Governor of Bangladesh Bank, Dr. Atiur Rahman, urges bankers to change their mindset for sustainable development.

3. Review of the regulatory framework for the promotion and implementation of green banking and ERM in Bangladesh

Government policy and regulation

Bangladesh Government officially started the awareness build up and environment conservation effort mainly in 1980s by establishing a separate Ministry called Ministry of Environment and Forest (MoEF) and The Department of Environment (DoE). In 1992, Government formulated Environmental Policy and made commitments as a signatory of a number of Multilateral Environmental Agreements[10] to protect environment. In 1995 The Bangladesh Environment Conservation Act (ECA), 1995[11] is enacted. Other notable regulations/rules/guidelines include The Environmental Conservation Rules (ECR), 1997[12]; The Environment Court Act, 2000; Environment Court (Amendment) Act, 2010[13]; Bangladesh Environment Preservation (Amendment) Act, 2010 etc. In recent years the issue of climate change got the active consideration of the policy makers of Bangladesh. In order to utilize the resources of Climate Change Trust Fund in an effective and suitable manner, the Climate Change Trust Act, 2010 has been enacted.

Besides, to handle different waste in an environmentally and hygienically acceptable manner the Solid Waste Management Rules, 2011 and the Hazardous Waste and Ship Breaking Waste Management Rules, 2011 have been enacted recently. E-waste is another growing environmental concern of developing world including Bangladesh. In the adopted National ICT Policy, 2009, environment, climate and disaster management is identified as one of the ten objectives, which aims to ensure safe disposal of toxic wastes. Government has already prepared a draft National 3R (Reduce, Reuse & Recycle) Strategy where e-waste issues have been addressed.

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9 Bangladesh Poribesh Andolan (BAPA), Bangladesh Environmental Lawyers Association (BELA), Ongikar Bangladesh are examples of such types of NGOs.

10 Bangladesh is a signatory of the Rio Conventions (RCs), i.e. United Nations Framework Convention on Climate Change (UNFCCC), Convention on Biological Diversity (CBD) and United Nations Convention to Combat Desertification (UNCCD).

11 An act to provide for conservation of the environment, improvement of environmental standards and control and mitigation of environmental pollution.

12 To exercise the powers conferred by section 20 of the Bangladesh Environmental Conservation Act, 1995, the Government of Bangladesh passed this rule.

13 An act to provide for the establishment of environment courts and special magistrate courts in all districts.

To promote sustainable energy in the country, a Renewable Energy Policy has been prepared and various action plans have been undertaken with the target of generating 5 percent and 10 percent of total power production by 2015 and 2020 respectively. The government has also initiated to set up a Sustainable Energy Development Authority (SEDA) and has finalized Sustainable Energy Development Act, 2011. There is no doubt that the country has adequate rules/guidelines/policies in place, however, efforts needed for better enforcement and implementation.

For financing to the industry sector, ECA 1995 and ECR 1997 together provide a framework of environmental regulations. According to Section 12 of ECA'95 "No industrial unit or project shall be established or undertaken without obtaining, in the manner prescribed by rules, an Environmental Clearance Certificate (ECC) from the Director General, DOE". It is to be noted that the clearance from the DOE is one of the requirements for obtaining finance from commercial banks for the industrial units grouped under different categories of EIA. For the purpose of issuing the Environmental Clearance Certificate, the industrial unit and projects shall in consideration of their location and impact on the environment be classified into the following 4 categories: Green; Orange-A; Orange-B; and Red. ECR 1997 prescribes various performance standards[14] requirements that are both general and industry specific. Practically, the certification arrangement and prescribed standards are hardly effective in protecting environment from pollution by industrial units.

Bangladesh Bank's initiative as a policy maker

To support the government's motive in protecting environment, BB has encouraged the path to green banking from 1997. At that time commercial banks of the country were asked[15] by the central bank to undertake necessary steps for implementation of certain decisions in regard to environmental conservation and protection by the National Environment Committee. At the time of financing, Banks and FIs of the country were advised to take steps to control environmental pollution[16]. According to the BB requirements, the industrial units (that may cause environmental pollution) to be established under bank credit would get permission for opening LC to import machineries only after ensuring that the list of machines includes equipments to set up waste treatment plant[17].

14 The following are the prescribed standards: Water (Schedule 3), Sound (Schedule 4), Sewage discharge (Schedule 9), Waste from industries (Schedule 10), gaseous emissions from industries (Schedule 11) and sector-wise industrial effluent or emissions (Schedule 12). When operating the industries, these performance standards have to be met in order to ensure that there is no legal non-compliance.

15 BB BRPD Circular No-12 dated August 10, 1997.

16 BB BRPD Circular No-12 dated October 08, 1997; BRPD Circular No-21, November 10, 1999; and BRPD Circular No-17, December 29, 2010.

17 BB BRPD Circular No-12 dated October 08, 1997

Initially to encourage environmentally responsible practice, Bangladesh Bank introduced a comprehensive guideline on Corporate Social Responsibility (CSR) where banks have been asked to concentrate hard on linking CSR at their highest corporate level for ingraining environmentally and socially responsible practices and engaging with borrowers in scrutiny of the environmental and social impacts[18]. BB introduced Taka 2.0 billion refinance facilities in FY 10 against bank loans for investments in solar energy, biogas plants and ETPs in line with the government's plan to meet 5 percent of the total demand for electricity from green energy by 2015 and 10 percent by 2020.

The most remarkable step of BB on the way to promoting & implementing green banking is the comprehensive circular[19] of BB on 'Policy Guidelines for Green Banking', issued in February 2011. This is based on the draft policy framework proposed by BIBM in 2010. Bangladesh Bank's Policy Guidelines for Green Banking (2011) has stated that every bank and financial institution must follow the green banking activities as they are segregated into 3 phases. Many banks of the country could not comply with the implementation deadline of this guideline. Consequently, BB extended the timeline impending a thorough policy review. Now, Phase-I for all new banks scheduled in 2013 and all FIs should not exceed 30 June 2014; Phase-II and III for all banks and FIs should not exceed 31 December 2014 and 30 June 2015 respectively instead of a final timeline of 31 December 2013.

In phases-I, bank must formulate green banking policy showing general commitment on environment through in-house performance within June 30, 2014 which will be completed in nine stages. In Policy Formulation and Governance stage, Bank shall formulate and adopt broad environmental or Green Banking policy and strategies approved by their Board of Directors and keep a considerable amount for green banking in its annual budget. Banks must establish a separate Green Banking Unit or Cell to design, evaluate and administer green banking related issues of the bank. While incorporating Environmental Risk in Core Risk Management banks must incorporate Environmental and Climate Change Risk as a facilitating element of credit risk according to guidelines on Environmental Risk Management (ERM). Guidelines on Environmental Risk Management (ERM) are to be considered as green banking policy. In the third stage, Initiating In-house Environment Management, bank will prepare an inventory of the consumption of water, paper, electricity, energy etc. by its offices and branches in different places and circulate a "green office guide" to it employees for efficient use of electricity, water, paper and reuse of equipments. In Introducing Green finance, bank must give preference to finance in eco-friendly business activities and energy efficient industries. In Creation of Climate Risk Fund stage, bank should finance the economic activities of the flood, cyclone and drought prone areas from its corporate social responsibility fund. The

18 BB DOS Circular No-1, June 1, 2008.

19 BB BRPD Circular No-2, February 27, 2011.

sixth stage, Introducing Green Marketing, bank should use environmental causes for marketing their services to develop awareness among common people. In the seventh stage, bank must emphasize on online banking to help environment. In Supporting Employee Training, Consumer Awareness and Green Event stage, bank must organize training on environmental and social risk and the relevant issues continuously to develop awareness of both employees and clients. In the last stage, Banks shall report on the initiatives/practices to Bangladesh Bank and disclose in their respective websites.

Phase-II starts with Sector Specific Environmental Policy stage where banks need to formulate strategies to design specific policies for different environment sensitive sectors. In the second stage, Green Strategic Planning, bank should determine a set of green achievable targets and strategies, and disclose these in their annual reports and websites. In Setting up Green Branches, bank should entitle a branch as green branch with a special logo if it uses natural light, uses renewable energy, uses energy saving bulbs and other equipments, requires reduced water and electricity use, uses recycled water etc. The fourth stage of phase-II, Improved In-house Environment Management, tells bank to adopt strategy of reuse, recycling of materials and equipments. In Formulation of Bank Specific Environmental Risk Management Plan and Guidelines stage, bank should formulate and follow an environmental risk management manual or guidelines to assess and monitor project and working capital loans. In Rigorous Programs to Educate Clients stage, Banks should encourage and influence clients and business houses to comply with the environmental regulations and undertake resource efficient and environmental activities. In the last stage, Disclosure and Reporting of Green Banking Activities, Banks should publish independent Green Banking and Sustainability reports showing past performances, current activities, and future initiatives.

Addressing the whole eco-system through environment friendly initiatives and introducing innovative products and standard environmental reporting with external verification must be done in phase-III within June 30, 2015. In Designing and Introducing Innovative Products stage, bank must introduce environment friendly innovative green products to address the core environmental challenges of the country. In Reporting in Standard Format with External Verification stage, bank must publish independent Green Annual Report.

The circular points out some incentives in the form of preferential treatments for the compliant banks: BB will give points to compliant banks on management component while deciding on its CAMELS rating; BB will name top ten banks for their overall performances in green banking; and BB will take into account green banking in giving permission to open new branches. The circular notes, all financial institutions should report their initiatives/activities to Green Banking and CSR Department of Bangladesh Bank in specified format on quarterly basis. FIs have to submit the report within the next 30 days of each quarter (25th of the month as CIB report). FIs shall keep their annual report and websites updated with the disclosures on green banking initiatives/activities.

Guidelines on Environmental Risk Management[20] was prepared and circulated by BB on January 30, 2011 to support Policy Guidelines for Green Banking (2011) featuring qualitative assessment of environmental risks for the financial sector. This guideline, developed with the assistance of IFC, covers different conceptual aspects, applicability and benefits of ERM along with organizational requirements, technical manual and technical annexes for the financial sector in a consultative manner. The ERM guideline prescribes a set of sector specific 'Environmental Due-diligence Checklist'[21] for financing environmentally sensitive sectors[22] by banks. Banks/FIs should conduct a preliminary environmental risk review on each credit proposal using Environmental Due Diligence (EDD) checklists. There is one General EDD checklist, ten Sector EDD checklists and a Guidance Matrix. Potential borrowers will have to submit various documents to the DOE for obtaining the Environmental Clearance Certificate. Banks/FIs need to obtain copies of these documents as the background for completing the EDD checklists. The outcomes of both the General and Sector specific EDD checklists are combined in the Overall Environmental Risk Rating (EnvRRR). Finally, it is a 'yes' or 'no' decision for financing the proposed credit based on subjective judgment of 'High' 'Low' or 'Moderate' EnvRR. For 'High' EnvRR the credit risk management should ensure that additional conditions/covenants are included. The EnvRR should be considered along with the overall credit risk rating of a proposed credit for financing decision. Environmental Risk Rating are required for all individual customers (corporate, institutional, personal, small and medium enterprise) whose aggregate facilities are above BDT 2.5 million for SME, financing; BDT 10 million for Corporate, financing and BDT 10 million for Real estate financing.

4. Status of green banking initiatives in Bangladesh

Policy formulation and governance by banks

Environment friendly green initiatives are now very common in the banking sector of Bangladesh. But the focal point of these initiatives is mainly Corporate Social Responsibility of the banking unit. As per the green banking policy phase-I, 47 banks (scheduled before 2013) have their own Green Banking Policy Guidelines and have Green Banking Unit

20 BB BRPD Circular No-1, January 30, 2011

21 In this guideline Bangladesh bank designed 14 environmental due diligent checklists. One for general and other thirteen are sector specific. Among the thirteen sectors, six are included in red category and six in orange category in the environmental conservation act 1995. In this due diligent checklist BB focused on applicable environmental compliance certificate, location of land, protection against climate change impact, top management commitment to environmental management, potential borrower's planning to address environmental issues, manpower's skill in addressing environmental issue, solid waste management, air emissions prevention and control measures systems, ETP and waste water management, labor and social issues etc are considered.

22 Agri-business, cement, chemicals, housing, engineering and basic metals, pulp and paper, tannery, Sugar and distilleries, textile and apparels, and ship-breaking.

(GBU) for pursuing Green Banking activities. Moreover all the banks scheduled before 2013 have their own Green Office Guide for conducting their in-house green activities. In 2013, after the amendment in green banking policy guideline, among 9 new banks, 2 have formulated their own Green Banking Policy Guidelines and own Green Office Guide and none has formed Green Banking Unit (GBU) till the first quarter of 2014. Moreover, 13 FIs have formulated their own Green Banking Policy, 18 FIs have formed Green Banking Unit (GBU) and 15 FIs have prepared own Green Office Guide for conducting their in-house green activities till the first quarter of 2014. Now banks are interested to move forward with online banking facility for the customers. Remarkable progress has been observed in the expansion of online branches. 46 banks (out of 47 banks scheduled before 2013) have at least one online branch and 30 banks have introduced internet banking facility up to December 2013. Moreover, Internet banking and SMS/mobile banking facility have been increased notably. Till 2013, there are 311 branches powered by solar energy, 189 ATM/SME unit offices powered by solar energy and 4496 online branches.

Allocation and utilization of fund for green banking activities

In the green banking policy the banks as well as FIs are obligated to allocate and utilize fund for green finance, climate risk fund and green marketing and training. After introducing green banking policy, the total allocation for green banking activities is 237% higher in 2013 but in 2014 the annual allocation is decreased by 53% from the previous year. Though the budget allocation is lower in 2012 but utilization of the fund is higher in that year. In first quarter of 2014, 46% of the annual allocation is utilized, which is 16% higher than the utilization of the last quarter in the previous year.

Table - 1: Total Allocation and Utilization to Green Banking (BDT in million)

Bank Group	2012		2013		2014 (First Quarter)	
	Allocation	Utilization	Allocation	Utilization	Allocation	Utilization
SCBs	7,185	8,970	4,096	3,344	4,204.57	2,518.30
SDBs	1,800	8,206	5,473	3,385	6,272.30	86.53
PCBs	57,730	179,113	275,838	177,059	116,145.00	59,186.78
FCBs	41,766	77,420	80,245	78,758	44,985.00	17,068.35
Total	108,482	271,271	365,653	262,546	171607.00	78,859.96

Source: GBCSRD, Bangladesh Bank

Green finance

Green finance is the major part in green banking budget for the banking sector. Around 85% banks (scheduled before 2013) of the country have some exposure to the environment friendly financing. In terms of allocating and utilizing green financing budget, it is higher in 2013 though in 2012, the green finance budget utilization was greater than the allocation. The contribution of PCBs and FCBs have enhanced over the years. On the contrary, the picture is quite different for SCBs and SDBs. Among the nine new schedule

banks, only one (NRB Bank Limited) has allocated and utilized fund for green banking in the first quarter of 2014 which is Tk. 90 million in green finance. Six financial institutions have utilized their funds for green financing, which is Tk. 2,752.24 million in the first quarter of 2014.

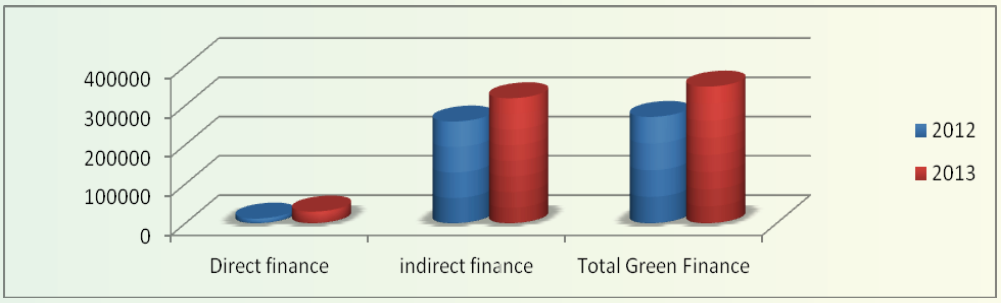
Table - 2: Green Finance (BDT in million)

Bank Group	2012		2013		2014	
	Allocation	Utilization	Allocation	Utilization	Allocation	Utilization
SCBs	5,000	6,507	3,915	3,248	4,049	2,514
SDBs	1,350	8,205	5,000	3,385	5,800	86
PCBs	56,268	178,812	275,024	262,810	115,687	59,044
FCBs	41,713	77,398	79,9901	78,684	44,751	17,049
Total	104,330	270,922	363,930	348,127	170,287	**78,694**

Source: GBCSRD, Bangladesh Bank

As per the definition of BB, the green financing mainly includes offering financing services to solar, bio-gas, HHK, bio-fertilizer, ETP, and projects having ETP. Financing to project having ETP, holds the major part in total green financing. This financing to project having ETP is known as the indirect green finance. In 2012 this indirect finance was about 96% of total green finance and in 2013 it is reduced to 91% (graph-1). There are some banks that don't have any exposure to direct green finance. It is to be mentioned that financing to 'project having ETP' by the top 10 green banks (2012) constitutes 95 percent of their total green financing. Some banks have huge financing to the projects that have negative impact on environment. In this aspect netting is needed to know the genuine picture of green finance.

Graph-1: Total Green Finance



In direct green financing, modern brick-kiln, solar home system, solar irrigation system etc are more popular. Over the year the financing trend of SCBs and SDBs has gone down for direct financing sectors. But modern brick kiln like Zigzag and HHK, are getting privileged trend. This is because of domestic regulation on traditional brick kiln that creates the demand for modern brick kiln financing. The detail picture of green financing is shown following table.

BB's refinancing scheme

Table-3: Status of Green Financing by Banks [2012] (BDT in million)

Bank Category	ETP	Projects having ETP	Bio Gas/Fertilizer	Solar/renewable energy plant	HHK	Others	Total
SCBs	119	2,994	10	985	539	1,861	6,507
SDBs	387	6,402	606	250	450	111	8,205
PCBs	688	173,188	284	1,686	842	2,090	178,811
FCBs	163	76,517	0	719	0	0	77,398
Total	1,357	259,100	900	3,638	1,830	4,062	270,922
Status of Green Financing by Banks [2013]							
Bank Category	ETP	Projects having ETP	Bio Gas/Fertilizer	Solar/renewable energy plant	HHK	Others	Total
SCBs	0	1,112	3	265	1,395	476	3,248
SDBs	60	3,119	1	133	49	23	3,385
PCBs	3559	236,244	479	933	1,449	17,716	262,810
FCBs	44	77,969	0	672	0	0	78,684
Total	3663	318,443	483	2,003	2,893	18,215	348,127
Status of Green Financing by Banks [first quarter 2014]							
Bank Category	ETP	Projects having ETP	Bio Gas/Fertilizer	Solar/renewable energy plant	HHK	Others	Total
SCBs	5.87	2,157.30	16	0.12	315.35	18.10	2,518.30
SDBs	0	72.28	2	00	9.00	3.15	86.53
PCBs	57.80	55,770.05	53	898.89	1,438.06	821.49	59,186.78
FCBs	20.00	13,819.35	0	573.00	0.00	0.00	17,068.35
Total	83.67	71,818.98	71	1,472.01	1,762.41	842.74	78,859.96

Source: GBCSRD, Bangladesh Bank

In promoting green financing, the central bank launched Tk. 2billion green banking refinance scheme in August 2009 to set up solar panels, bio-gas plants and industrial ETPs (effluent treatment plants) to help reduce industrial pollution and increase power supply. The fund has been named the "solar energy, biogas and effluent treatment plant sector refinance scheme." Bangladesh Bank has included 26 new products under its revolving refinance scheme for solar energy, biogas and effluent treatment plants to give loans at low interest. It also increased the credit limit for the sectors under the scheme. The new sectors that will come under the scheme includes setting up plants for solar mini grids, a solar irrigation pump system, vermin-compost production, hydropower, PET bottle reprocessing, solar battery reprocessing, LED bulb and Hybrid Hoffman Kilns in brick kilns for reducing carbon emergence. Under the scheme, Bangladesh Bank is providing loans to commercial banks at interest rates from 5% to 12% for direct refinancing and credit wholesale to the entrepreneurs, who will then have access to commercial bank loans in those sectors at a maximum interest rate of a further 5%. Overall interest rates will not

exceed 12%, according to the fund's conditions. The BB has so far disbursed to the tune of USD 9.6 million from this fund until December 2013. The status of green financing under the refinancing scheme is shown in the following table.

Environmental risk rating

Table-4: Refinancing Status of Green Banking (BDT in million)

Green Product Category	Jun-10	Jun-11	Jun-12	Jun-13	Dec-13
Bio Gas	1.95	50.24	133.22	113.62	94.84
Solar Home System	00	**59.37**	10.49	40.18	13.15
Solar Irrigation Pump	3.08	12.39	8.40	00	17.90
ETP	00	10.78	22.19	57.40	10.00
HHK	00	00	55.00	172.19	50.00
Solar assemble plant	00	00	248.80	122.72	49.64
Total	5.03	132.78	478.10	506.11	235.54
Source: GBCSRD, Bangladesh Bank					

In the green banking policy, Phase-I, the environment risk management gets a privileged in credit risk management. In 2011, Guideline for environment risk management is introduced and in green banking policy the ERM is incorporated to minimize the environment risk. According to this guideline, banks/FIs are required to measure the environmental risk considering the environment due diligence checklist (provided by this guideline). The number of rated the projects is increasing over the years. In total 88.76% rated project were financed in 2013. The status of ERR is shown in table-4. According to the ERM guideline, banks are supposed to place the high rated projects to the executive board for approval. In most cases, banks do not have policies or guidelines for the approval of these high rated projects. The ERM guideline requires banks to establish and maintain a database of NPLs due to environmental reasons and to have a reporting system on an annual basis. In survey banks are not found to be maintained the database.

Climate risk funds

Table-5: Green Banking and ERM Status by ERR

Year	2011	2012	2013
No of Project rated	4,394	12,088	31,183
No of project financed after rating	4,315	11,165	27,677
Amount disbursed to the rated projects (*BDT in Million*)	270,951	703,633	1,567,590
Source: GBCSRD, Bangladesh Bank			

Climate risk Fund is the new opportunity for the banking unit to support climate change adaptation program. Banking sector allocating a portion of its green banking budget to climate risk fund, which is 2%, 0.32% and 0.56% of the green banking budget in the year 2012, 2013 and 2014 respectively. Besides this from the aspect of utilizing the fund, banking sector's performance is poor. In 2013 it has utilized 27% fund and it is higher than 2012. Among the bank groups, status of SDBs is very poor over the year. In 2013, SCBs have a good position in utilizing the allocated climate risk fund. But PCBs have an increasing trend in utilization of climate risk fund over the year. Though all banks are supposed to create climate risk fund, the published data of BB indicate that 19 percent banks have no allocation for the fund. Of the banks, 6 percent have no allocation for climate risk fund; however, have reported certain volumes as utilization. Moreover there are confusions among bank executives over the use of climate risk fund. According to the BB policy document[23], the fund should mainly be used to cover additional risk premium and to meet emergency expenditure in the climate risk prone areas. The basic target, as appears in the policy documents, is to ensure regular financing. The fund could be created as part of CSR expenditure; however, it is obviously not simply about performing some philanthropic activities. As the survey team observed, the funds were mainly used for philanthropic activities like distribution of blankets, tube-wells, solar panels, food and other relief activities. A few banks have also utilized the funds for green financing at reduced rate.

Green marketing, training and awareness build up is one of the important factors in the

Table-6: Climate Risk Fund (BDT in million)

Bank Group	2012			2013			2014 (First Quarter)		
	Allocation	Utilization	% of utilization	Allocation	Utilization	% of utilization	Allocation	Utilization	% of utilization
SCBs	415	25	6%	95	81	85%	71	2	3%
SDBs	430	00	0%	433	1	0.23%	432	0	0%
PCBs	1,283	219	17%	540	212	39%	285	126	44%
FCBs	17	15	88%	128	23	18%	168	19	11%
Total	2,145	259	12%	1,196	317	27%	**956**	147	15%

Source: GBCSRD, Bangladesh Bank

green banking policy. Awareness development is mainly urban centric and Dhaka based though Bangladesh bank is trying hard to increase the awareness on green banking for all over the country. In this objective, Banks are asked to allocate annual fund to enhance this segment. The annual trend of allocation to this part is going down over the years. But the utilization is growing in 2013 (Table-6). For awareness build up the schedule banks are

23 FIs should finance the economic activities of the flood, cyclone and drought prone areas at the regular interest rate without charging additional risk premium. However, FIs should assess their environmental risks for financing the sectors in different areas for creating a Climate Change Risk Fund. This will be used in case of emergency. FIs would ensure regular financing flows in these vulnerable areas and sectors. The fund could be created as part of FIs' CSR expenditures.

advised to arrange training program for both employees and customers. Moreover they are supposed to report in every quarter on this issue. According to the BB quarterly publication, around 77% banks (scheduled before 2013) arrange the training programs. This 77% banks have arranged 157 training programs concerning green banking where total number of participants was 9,525 in the first quarter of 2014. It is encouraging that banks are now comfortable to arrange training programs for the customers. In this quarter 30 banks have initiated Green Marketing and 6 banks have arranged Green Events. Financial institutions have also arranged 20 training programs and trained up 170 participants in that quarter.

Green marketing and training

Disclosure of green banking activities has got the major emphasis in the Bangladesh Bank's green banking policy. Until the March 2014, 39 banks have pursued disclosure on green banking in their annual report, 36 have put green banking disclosure in their website. 19 banks have disclosed their green banking activities in the media and 4 banks have prepared Independent Report on green banking activities. And only one banks prepared its sustainability report by the GRI management. Some financial institutions and banks are following the format of GRI to prepare their sustainability report.

Bangladesh Bank's in-house initiatives to support sustainable green banking

Table-7: Green Marketing and Training (BDT in million)

Bank Group	2012		2013		2014	
	Allocation	Utilization	Allocation	Utilization	Allocation	Utilization
SCBs	610	1.00	86	15	85	2.00
SDBs	20	0.04	40	00	40	0.10
PCBs	57,730	82.00	274	93	173	17.00
FCBs	37	7.00	126	51	65	0.00
Total	846	90.00	526	159	363	19.10

Source: GBCSRD, Bangladesh Bank

Bangladesh Bank has already taken a lead in promoting paperless green banking by giving a circular, which promotes wide scale automation. Bangladesh Bank does not accept any paper-based communications from banks and financial institutions. They have to send their statements electronically to Bangladesh Bank. Bangladesh Bank does not accept any paper-based applications from jobseekers. They have to apply electronically. No Paper based tenders are accepted in Bangladesh Bank. E-tendering is the accepted mode. No cheques travel to Bangladesh Bank from different banks. Bangladesh Automated Clearing House (BACH) only clears the images of the checks. Electronic fund transfer networks now facilitate corporate to pay the salary of their employees electronically without issuing checks. The automated Credit Information Bureau (CIB) in BB now clears electronic applications of bank's client's credit history in seconds, which used to take weeks. No paper transaction is involved here. Beside these paperless green initiatives, 20 kilowatt solar power system is installed in the head office of Bangladesh Bank. Now BB take initiatives to

convert its 20 storied building into green building with rain water harvesting, waste water recycling and motion sensor energy efficient bulbs supported by window based solar panel.

5. Recommendations and Conclusion

In Bangladesh environmental banking is growing especially for the initiatives taken by Bangladesh Bank. In the beginning, it was very difficult to convince the banking community to accept with the concept. But now it is waving with some glorious prospects. Walking on this path is faced with some problems. Considering these issues, in this section, some recommendations have been identified that are relevant for the improvement and prospects of green banking practices in the country.

One: green finance is the major part of green banking activities in Bangladesh. Bangladesh Bank has taken some tremendous steps in this ground by introducing new investment opportunities. But over the year it is observed that financing to effective green investment has got a little importance for some banks. In this case, the banks, who are the genuine contributor to the environment, are not coming in the front. Moreover we need some mechanism to identity the authentic green banking activities by netting our investments. Development of green information database is needed for netting bona fide green financing.

Two: Environment risk rating is one of the major innovations in the environmental risk management in Bangladesh. To maintain the green commitment and to reduce the environmental risk, environment risk rating is the priority. Banks and few financial institutions are adapting this. The published data shows that around 90% of the rated projects are financed. Now a question may arise on implication aspect of this ERR as most of the rated projects are ultimately financed. Now a question may arise on implication aspect of this environment risk rating. As a beginner, introducing environment risk rating is the tremendous job of the central bank. But now it is the time to find out the applicability of this environment risk rating aspect.

Three: Bangladesh is highly climate vulnerable country. And climate change mitigation is not our obligation. Adaption to climate change is the major issue for Bangladesh. And the environmental banking in Bangladesh is less concerned on this ground. But Bangladesh bank already opened up the opportunity for adaptive investment by introducing the climate risk fund. Banks are allocating fund for climate risk, as it is a supervisory obligation. But they have no constructive plan to utilize this budget. This climate risk fund can be well utilized in the nation's climate change adaptation management if properly guided.

Four: In the ERM guideline, BB advised banks to place projects rated as 'High' to their respective executive boards or credit specialist teams. Most of these high rated projects have been financed, as observed in the survey. Only a few banks have their own guidelines to handle such high rated projects. The approval process of these projects by the executive

boards of different banks is not very clear. Quantitative scoring of ERM (like CRG) will be helpful for better implementation of green banking in banks and FIs. Carbon accounting in banks ie, measuring carbon footprints will be another milestone for green banking.

Five: Recently the time frame for implementing the 'Policy Guideline for GB' has been extended because banks failed to comply with the initial timeline. Now all the banks and financial institutions are not ready in the same way to comply with the new timeline. So it is necessary to build up capacity in banks to help them comply with new time frame. Some banks especially new and big ones may require extended time line. The existing green banking policy seems ambitious to heterogeneous banks in Bangladesh. Thus, a thorough review of the policy and guideline is required based on a survey all over the country.

Six: The initiatives of Bangladesh Bank in terms of awareness have brought remarkable changes in the banking sector. However, it is mainly urban or more specifically Dhaka centric. Moreover not all the banks are within the fold of the awareness programs of banks. Now bankers need to move to rural semi-urban areas for awareness development.

Seven: There is no doubt that a country like Bangladesh cannot afford to discourage all projects or economic activities only for environmental cause. Significant negative impact of production/economic activities on employment, income, and poverty cannot be ignored. Thus, it is important to identify the sectors or industries where banks should continue financing in spite of their negative impact on environment. There should be long term planning for these industries to handle environmental issues and all relevant policies should be consistent in this regard. Most polluting industrial sectors can be shifted to proper locations.

Eight: Monitoring and periodic review of green banking activities to keep track with proper implementation of policy are crucial. Consistency of reported data and its validation mechanism may complement the reporting of banks and FIs to BB. In this regard Bangladesh Bank needs to devise some monitoring tool which may be a mix of off-site, on site or on-line techniques.

Nine: Green banking activities are now taking a shape only for the green banking unit for some banks. But green banking is not only for the green banking unit, though separate unit is needed to run these activities. There is a need for holistic approach among all the stakeholders for the sustainability of green banking. MOU may be arranged for better understanding and responsibility among the stakeholders.

Ten: Developing green banking models as well as green products specially tailored for the financial sector of Bangladesh will help banks and FIs to follow the path of sustainable development effectively.

In a rapidly changing market economy where globalization of markets has intensified the competition, the industries and firms are vulnerable to stringent public policies, severe

lawsuits or consumer boycotts. This would affect the banks and financial institutions to recover their return from investment. Thus, the banks should play a pro-active role to take environmental and ecological aspects as part of their lending principle, which would force industries to go for mandated investment for environmental management, use of appropriate technologies and management systems. Green Banking if implemented sincerely will act as an effective ex ante deterrent for the polluting industries that has bypassed other institutional and regulatory mechanisms. But for better result in the development of environmentally responsible practices by banks green banking needs a collective effort of all stakeholders. Government and central bank have taken a very good policy steps. Now it is time for effective implementation of this policies, guidelines and rules. For the success in green banking an isolated effort by banking communities may not bring much. The success of the green framework would depend upon the pro-active role of all stakeholders and a sound incentive structure. This paper may cast some light on the need for further study to develop a revised framework of green banking for the financial sector of Bangladesh. It will be a step by step implementation of sustainable green banking and ERM with proper accounting of environmental risk management where the upcoming phase will be confirmed based on reviewed achievement of the previous phase.

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Annex 1: Some Environmental Initiatives By Banks

Box1: Major Green Banking Activities at a Glance in March 2014

- Green Banking unit has been established in 47 banks.
- 47 banks have introduced a Green Office Guide.
- EnvRR has been done for 9,191 projects.
- 7,115 rated projects have been financed.
- 361,665.73million taka has been disbursed against rated projects.
- 315 branches and 187 ATM/SME unit offices are powered by solar energy.
- 4,525 branches have been facilitated with online coverage.
- Taka 78,693.82 million has been disbursed as green finance.
- Taka 146.83 million has been utilized from climate risk fund.
- Taka 19.31 million has been utilized for green marketing, training and development.

Source: Bangladesh Bank, 2014

Box 2: Mutual Trust Bank is Well-ahead in Internal Green Management

Mutual Trust Bank Limited practices green banking activities with utmost care. It is one of the participants of BB's refinancing scheme for green products. The corporate Head office of the bank, located at 26, Gulshan is a modern building using technologies for efficient utilization of resources. The building has been built in such a manner so that day-light can be utilized. The bank uses energy saving bulbs. The bulbs and computers have sensor and they are automatically switched on/off with the presence and absence of people respectively. All water taps also have sensor. As a result water falls only when one's hand is placed below the tap. All sorts of correspondence of the bank are made through e-mail and i-mail (only between head office and branch) to save paper. The bank's Sirajgonj and Iswardi SME branches are running with own solar panel system. The online banking facilities of the bank allows customers do online transactions via internet such as withdrawals, transfer payment, checking account status etc lead to saving paper and reducing carbon emissions. The bank has already prepared green credit policy and an inventory of its utilities as per the policy guidelines for green banking. The bank conducts different training program for its employees' awareness development.

Source: Mutual Trust Bank 2011

Box-3: HSBC has Remarkable Initiatives in line with its Global Activities

HSBC is a globally 'Carbon Neutral bank'. Some initiatives of the bank are praiseworthy. It introduced fully Solar Powered ATM at Dhanmondi Branch. Tree plantation is a remarkable step of the bank. A total number of 300 trees have been planted at Lauachora in Sylhet with the help of green World, an environmental NGO funded by the USAID and will be transferred to the local community after 3 years. The bank ensures shut down of computer during lunch time. The bank has initiated 'Go green' campaign for business customers. It celebrates the 'World Environment Day' (5th June related to Earth Day) by wearing green costumes by all employees of the bank and on the same day they arranged plantation programs and a 'Quiz Contest' on environmental issues. The bank also introduces HSBC- The Daily Star Climate Awards to the eminent personalities of the country for their contribution towards protection and preservation of environment. The award is given for four categories of works: Climate change adaptation, Climate change mitigation, Climate change research and knowledge management and Green Business Entrepreneurship. As a part of its commitment, HSBC has set up rain water harvesting devices in two major schools of Dhaka city - Residential Model School and Rajuk Uttara Model College. Now, over 2200 students benefit from these projects. The program has been implemented at HSBC's Dhaka main office building too. As a part of this program, in 2010, one of the Bangladeshi climate champions implemented a project where HSBC volunteers planted over 300 varieties of saplings over a one-km stretch in Srimongal, Moulvibazar.

Source: HSBC 2011

Box-4: SCB using Greener Car using in Bangladesh

As part of the plan to reduce carbon emission resulted by direct operational impact; Standard Chartered bank has introduced green cars in its car pool for business use. 2 units of 'HONDA INSIGHT HYBRID 2012' will run at 11 KM/litre whereas conventional cars run at 6 KM/litre. With daily operational distance of 200 KM; these cars will save 15 litres of fuel per day which is equivalent of 36Kg of carbon di-oxide emission to the environment (burning 1 Lt Petrol emits 2.3Kg of carbon di-oxide and uses 1.7 Kg of oxygen which is the roughly equal to daily oxygen required by average human). Therefore in other way, each of these cars will save oxygen for 7 individuals every day.

Source: SCB 2013

Development of Islamic Banking in Bangladesh: Issues and Challenges

Md. Alamgir[1]

Abstract

Islamic shariah principles are the foundations of Islamic banking. Islamic banking is responsible not only to avoid riba, but also to avoid unethical practices and participate actively in achieving the welfare goals in an Islamic economy. In the process of offering Islamic banking services, the practitioners have been facing several challenges. Addressing some of these challenges is critical for improving the efficiency of Islamic banking activities in the country. As opined in the survey, while operating in conventional environment, Islamic finance requires a different legal and supervisory framework appropriate to its nature of business. Absence of separate act and comprehensive standards covering all areas for the Islamic Banking activities in Bangladesh are creating difficulties in a number of ways on Shariah compliance issues. Apart from this, the human capital involved in Islamic banking must be trained in the relevant field in accordance with the demand of the sector. The study identifies the dearth of standard and harmonized guidelines and tools for expansion of Islamic banking in the country. Many of these may be required to address country and society specific need. There is no doubt that in certain areas global common standards may be drawn from the globally recognized standard setters of Islamic banking. It is also important to activate interbank money market of the country. Islamic banks in Bangladesh need more Shariah compliant bonds to manage their liquidity effectively. The policy makers of the country may think of having bonds like Sukuk and potential of introducing Commodity Murabaha may also be explored.

Keywords: Islamic banking; Islamic Shariah; Riba.

JEL Classification: G21, G32

1. Introduction

1.1: Background of the Study

Islamic banking is a collection of banking activities that complies with the shariah principles . Islamic banking is obligated not only to remain free from riba, but also to maintain ethical practices and to participate actively in achieving the welfare goals in an Islamic economy. In Islamic law, riba is totally prohibited because it has a lot of bad effects on society (Usmani, 1996). The Islamic Shariah and its various sources like the Holy Quran, Sunnah, Ijma and Qiyas are the basis for forming and running the Islamic banking system. It has been argued in the Islamic banking literature that the investment in Islamic financial system could really be helpful to economy that might enhance the businesses and

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welfare of the society (Ahmad, 2008). In regard to the history of Islamic banking, 1950s and 1960s are seen as the decades of experiments, and 1970s is considered as the decade of establishment. Since the mid 70s Islamic banking and finance has expanded to over 70 countries encompassing most of the Muslim world; about 57 developing and emerging market countries and 13 other developed countries of the world (Otiti, 2014). While Islamic banking may not be a totally new concept, the widespread expansion of this form of banking is certainly not a fairly old phenomenon that started mainly from mid 1980s. Islamic banking commenced operations in Bangladesh in 1983, and now alongside full-fledged Islamic banks, a good number of conventional banks have been offering Islamic banking services using their branch networks. Since inception, Islamic banks have grown consistently in the country during a period of over 30 years. The efficiency level of the banking operations depends upon a number of factors of which adequate and reliable information are also crucial. In the context of Bangladesh, the information on the Islamic banking practices is being made available through limited research activities only in recent years. For the improvement of the Islamic banking practices, it is important to understand the status of operations, progress and trends in different Islamic banking activities by the bankers, academicians and researchers of the relevant fields. Capturing the detailed information on the trends, changes, dimensions, issues and challenges would also facilitate practitioners and academicians to handle challenges and to undertake future course of action for greater efficiency.

1.2: Objectives of the Study

The objectives of the study are: (1) to discuss conceptual aspects of Islamic banking and to review relevant literature; (2) to examine regulatory environment of Islamic banking in Bangladesh; (3) to discuss Islamic banking services and operation in Bangladesh; and (4) to identify challenges for improving Islamic banking operation in the country and place some recommendations.

1.3: Methodology and Data

Both primary and secondary data have been collected to fulfill the objectives of the study. Secondary data are collected from different books, journal, and publications related to Islamic banking practices in global economies and in the country. Both open-ended and close-ended questions have been incorporated in the questionnaire for the survey. Moreover, a schedule (open ended questionnaire) was used to obtain opinion on several critical issues of Islamic banking. The survey samples (Islamic banks and selected branches of the conventional banks) are determined purposively based on three considerations: one, Islamic banking practices of banks of the country should be brought under the survey; two, branches of the conventional banks that are involved in Islamic banking transactions should be covered by the study; and three, practices of the windows of a few conventional banks should be covered by the study.

1.4: Organization of the Report

The report has been organized under six sections: after an introductory section with the objectives and methodological issues, section 2 deals with the conceptual issues. Section 3 discusses Islamic banking practices in global economies. Legal environment of the Islamic banking in the country are discussed in section 4. Section 5 deals with the activities and operations of Islamic banking in Bangladesh. And section 6 identified challenges and put forward a few recommendations.

2. Islamic Banking: Conceptual Aspects

2.1: Evolution and Expansion of Islamic Banking

Islamic finance or Islamic Banking is in many ways very similar to conventional finance and banking (Ahmad, 2008). Islamic banking is based on Islamic Shariah law that provide fundamentals about financing and investing (El-Gamal, 2000). The Organization of Islamic Conference (OIC) defined an Islamic bank as "a financial institution whose statutes, rules and procedures expressly state its commitment to the Principles of Islamic Shariah and to the banning of the receipt and payment of interest on any of its operations" (Hassan, 1999). Sometimes it is also called as Interest-Free-Banking, and according to Khan and Bhatti (2008), interest-free Islamic banking is derived from two axioms, mutual fairness in transactions and reflection of actual reality.

It is difficult to say with accuracy which was the first such company or bank that pioneered this concept in practice. As found in some literature (Chapra 1996; Oitti, 2004) early experiments with Islamic Banking took place in Malaysia in the mid 1940s, in Pakistan in the late 1950s and in Egypt in 1960s. Some analysts and experts in the field are of the opinion (Mohamed 2007) that, Islamic banking and finance, in the modern context, first emerged in 1963, when Mit-Ghamr Saving Bank began an experimental project offering interest free banking in Egypt. According to Mastura (1988), Mit Ghamr Bank helped set general guidelines and came up with new terminologies that helped future Islamic banks and gave them the hope that Islamic banking could be competitive and profitable. In the seventies, a number of Islamic banks came into existence in the Middle East, e.g., the Dubai Islamic Bank (1975), the Faisal Islamic Bank of Sudan (1977), the Faisal Islamic Bank of Egypt (1977), and the Bahrain Islamic Bank (1979), to mention a few (Siddiqi 1988). Islamic banking made its debut in South and Southeast Asia in 1983 with the establishment of Islami Bank Bangladesh Ltd. and Bank Islam Malaysia Berhad (BIMB) which represent full-fledged Islamic commercial banks in Bangladesh and Malaysia (Man, 1988). Currently, Malaysia, Saudi Arabia, UAE and Bahrain with the largest concentration of Islamic financial institutions are hosting a good number of Islamic financial institutions dealing in diversified activities including commercial banking, investment banking and funds management (Ernst and Young, 2013). Of the other countries, notably, Sudan and Iran also switched over to Islamic banking system at national level in 1984. The Islamic

Banking System (now called Islamic Finance House), established in Luxembourg in 1978, represents the first attempt at Islamic banking in the Western world. In recent time, notable initiatives have been undertaken in UK, Germany, and USA.

2.2: Shariah Laws and Key Principles of Islamic Banking

It is well-known that Shariah' is the basis for Islamic banking. The rules and practices of fiqh muamalat are derived from the Holy Quran and the Sunnah, and other secondary sources of Islamic law such as opinions collectively agreed among Shariah scholars (ijma'), analogy (qiyas) and personal reasoning (ijtihad). More specifically, two sources have been identified for Shariah: primary and secondary sources. The Quran is the first primary source of Shariah. Sunnah is the second primary source. Sunnah generally refers to all that is narrated from the Prophet, his acts, his sayings, whatever he tacitly approved, plus all the reports that describes his physical attributes and characters (Kettell, 2011). Thus Sunnah is the second source of the Sharia'a after Qur'an; scholars of Islamic laws are to observe the order of priority. The secondary sources are Ijma, Qiyas and Istihad. Ijma means consensus of juristic opinions of the Scholars. Qiyas .i.e. analogical reasoning, suggests an equality or close similarity between two things, one of which is taken as the criterion for evaluating the other. The Arabic word Ijtihad literally means an effort or exercise to arrive at one's own judgment. In its widest sense, it means the use of human reason in the elaboration and explanation of Shariah a law. Qiyas or analogical reasoning, then, is a particular form of Ijtihad, the method by which the principles established by the Quran, Sunnah and Ijma are to be extended and applied to the solution of new problems not expressly regulated before (Kettell, 2011).

In Islamic finance, Riba is totally prohibited which is the return derived from the loan/debt. The word 'riba' as appearing in the Holy Quran is translated in English as 'usury' or 'interest'. Riba literally means an 'increment' or 'excess' but in essence it means unfair advantage or profiteering, which is prohibited in Islam[2]. Thus in some literature, attempts have been made to make distinction between Interest and Riba. However, according to most available literature and schools of thoughts, Interest is not different from Riba and is prohibited in Islam. Transactions must also avoid uncertainty (Gharar)[3], or anything that could lead to the unjust enrichment or unfair exploitation of one of the parties to a contract (Dusuki, 2011). Another kind of activity which banks have to avoid is gambling/games of chance (Ayub, 2007). Moreover, transaction cannot be made that involve prohibited products or activities, such as alcohol, illicit drugs and tobacco because Islam wants to develop an ethical and friendly environment in the society (Imeson, 2007). Thus, based on

2 Khan, Shahnewas (undated) The Differences between Riba, Usury and Interest. http://www.paklink.biz/articles/interest-riba.html

3 Gharar refers to entering into a contract in absolute risk or uncertainty about the ultimate result of the contract and the nature and/or quality and specifications of the subject matter or the rights and obligations of the parties. Gharar is also involved if there is a lack of adequate value-relevant information or there is inadequacy and inaccuracy of any vital information which leads to uncertainty and exploitation of any of the parties. (Ayub, 2007).

the Islamic laws and prohibitions, some key principles can be derived for the Islamic banking activities (based on Ayub, 2007; IERB, 2008; Kettell, 2011): predetermined loan repayments as interest is prohibited; profit and loss sharing is at the heart of the Islamic system; making money out of money is unacceptable- all financial transactions must be asset-backed; only Shariah-approved contracts are acceptable. However, it is to be mentioned that all prefixed returns are not Riba.[4] Available literature (Ayub, 2007; Kettell, 2011) also identified several business ethics to be followed while offering Islamic banking services: Justice in fair dealing; dealing in goods and not in money; adequate transparency and disclosure; and entitlement to profit with risk and responsibility. A Shariah compliant banking must meet all the requirements of Islamic law. To facilitate this, Shariah Supervisory Committee is commonly appointed. According to Fuad and Iqbal (2011), because of the religious dimension of Islamic banking and finance, no new product can be adopted until it is cleared by Shariah scholars. Even after a new product is put into use, Shariah auditing of the operations of financial institutions is very important to ensure that the actual practice complies with the requirements of Shariah.

2.3: Modes of Investment in Islamic Banking

The nature of Islamic banking is based on risk-sharing, owning and handling of physical goods, involvement in the process of trading, leasing and construction contracts using various Islamic modes of finance. Different modes have been prescribed in the available literature (Peter, 1992; Ayub, 2007; Ahmad, 2008) that comply with the Islamic Shariah: Partnerships or Mudaraba/Musharaka; Cost plus sale or Murabaha; Credit sales or Bai-muajjal; Leasing or Ijara; Islamic forwards or salam and Istisna. According to Usmani (1998) the partnership products like Musharakah and Mudarabh are ideal instruments of financing according to the Shariah. Murabaha is the most widely used instruments in Islamic finance. Nowadays the Home Finance and Islamic mortgage are based on the concept of Ijara and it is very successful tool in Islamic banking. Islamic forwards or Salam is not very commonly used.

Mudaraba or Trust Financing is a mode of Islamic banking that commonly grouped under the banner ‘profit and loss sharing’. It has been assumed by some that the profit and loss sharing methods were somehow more ideal from an Islamic point of view. It is a contract between investors/bank/financial institutions (FI) and entrepreneur/client, acting as silent partners, and a FI, acting as a fiduciary/manager, to invest in an activity or a pre-determined asset class that earns each partner an agreed upon profit portion of the investment.

Musharaka or Partnership is an equity participation arrangement where a bank and an enterprise in which the bank supplies and its partner share the profits which may be different from capital contributed. Alternatively, ‘Diminishing Musharaka’ agrees to buy out the Bank’s share over a period of time.

4 Any return on investment/transaction may not be variable. In a number of structures it could be fixed and still Shariah compliant. It depends upon the nature of transactions (Ayub, 2007).

Cost plus sale or Murabaha contracts in which a financial institution purchase goods upon the request of a client, who makes deferred payments that cover the cost and an agreed-upon profit margin for the financial institution. In such a contract, the Islamic bank or financial institution must own the item at the time the customer buys it from them with the specified profit margin.

Bai-Mua'jjal or Credit Sale is a deferred payment sale contract between the bank and client. As per the contract, the bank earns a profit margin on his purchase price and allows the buyer to pay the price of the commodity at a future date in a lump sum or in installments.

Ijarah or Leasing is not a sale of the object, but rather a sale of the usufruct (the right to use the object) for a specified period of time. The most important financial difference between the Shariah permitted leasing and conventional financial leasing is that the leasing agency must own the leased object for the duration of the lease.

Salam and Istisna or Islamic forwards are not very commonly used. These are contracts in which advance payment is made for goods to be delivered later on. The seller undertakes to supply some specific goods to the buyer at a future date in exchange of an advance price fully paid at the time of contract.

2.4: Savings, Investment and Other Products of Islamic Banking

Islamic Financial Institutions serve as intermediaries between savings surplus and deficit units, however, the instruments of interest is replaced by a number of instruments (Ayub, 2007). In regard to the area specific tools (deposit, investment and other products), there are multiple uses of an Islamic mode to meet different banking needs (summarized mainly from Ayub 2007; Kettell, 2011).

In regard to deposit products of Islamic banks, generally, no return is given on current accounts (based on Al-Wadeeah principle) on the grounds that such deposits take the form of investment given to Islamic banks and the investment cannot carry any return. They are kept as Amanah; but if the proceeds of such accounts are used by banks in their business, they are treated as investments that have to be paid back without any increase or decrease. All remunerative deposits in Islamic banks, including saving deposits against which banks provide checking facility, shall be accepted on a profit and loss sharing (PLS) basis. The ratio of profit distribution between the bank and the depositor shall be agreed at the time of account opening subject to the condition of the Shariah.

Bai-Murabaha, Bai-Muajjal, Bai-Salam are particularly suitable for trade, while Ijarah, Istisna'a are especially suitable for industry. More specifically, in trade and industry, financing is needed for the purchase of raw materials, inventory (goods in trade) and fixed assets as well as some working capital, for the payment of salaries and other recurrent expenses. Murabaha can be used for financing of all purchases of raw materials and

inventory. For procurement of fixed assets including plant and machinery, buildings, etc., either installments sale or leasing can be used. Funds for recurrent expenses can be obtained by the advance sale of final products of the company using Salam or Istisna. Personal finance for consumer durables can be provided through Murabaha, leasing and in special cases by way of return-free investments out of the current accounts or the banks' own funds. The alternatives for auto finance are Ijarah Muntahia-bi-Tamleek and Murabaha. Housing finance is possible through Murabaha, Diminishing Musharakah and rent-sharing. Project financing can be provided through various modes of financing. Currently, Ijarah is a popular mode of finance for undertaking project finance.

Four types of card representing plastic money, which are issued by banks and other institutions to withdraw cash from their accounts, to obtain credit or to pay for goods purchased or services received, are debit cards, charge cards, credit cards and ATM cards. These cards provide all or some of the benefits of liquidity, safety, mobility and flexibility to manage the budgets of the card holders. The AAOIFI has issued a Shariah standard on these cards, which provides a useful basis for developing electronic money by Islamic banks remaining within the Shariah framework.

Liquidity can be managed by the Islamic banks by dealing in the Islamic inter-bank fund market. The Mudarabah contract is the most useful instrument for transactions in the inter-bank market. Government and public sector enterprises can obtain finance by way of issuing Mudarabah or Musharakah certificates/Sukuk, which can be issued to purchase equipment or utility-generating assets. Ijarah, Musharakah and Istisna are best suited for infrastructure projects in the public sector. Recently, Ijarah Sukuk has emerged as the most crucial instruments for financing of the public sector. Through syndication arrangement, Islamic banks can supply goods/assets of enormous value to government entities or corporations on a Murabaha basis by setting up joint Murabaha pool of funds. For the inflow of foreign resources, the instruments of portfolio investment through stock markets, flotation of various categories of Sukuk and direct investment by foreigners can be used.

There are alternative views in regard to the forward contract and participation in the foreign exchange markets of Islamic banks. According to one school of thought, spot purchase and sale of one currency against another currency is allowed; forward purchase and sale is not allowed. However, IFIs can enter into a promise to purchase and sell agreement, and on this principle, foreign currency forward cover is allowed with certain conditions, as per another school of thought.

2.5: Comparison between Conventional Banking and Islamic Banking

There have been attempts in literature to compare Islamic banking and conventional banking. In this connection, Moumoud (2000) noted that 'Islamic finance' is in many ways similar to conventional finance. He added, 'Islamic banks' or 'Islamic financial

institutions' are to ensure that all their contracts would adhere to Islamic legal requirements (Moumoud, 2000). According to Ahmad (2008), Islamic banking has same purposes and practices as conventional banking except that Islamic banks operate in accordance with Sha'riah laws. Islamic banks, in compliance with the welfare principle of Islam, offer facilities more or less the same segment of the economy as the conventional banks do (Nienhaus, 1995).

According to El-Gamal (2001), the central concept in Islamic banking and finance is justice, which is achieved mainly through the sharing of risk; and stakeholders are supposed to share profits and losses. While justice stems usually from a religious or ethical basis, ethical finance is not a new concept. As Subbarao (2009) noted, people often forget that the godfather of modern capitalism, and often called the first economist, Adam Smith was not an economist, but rather a professor of moral philosophy. Smith had a profound understanding of the ethical foundations of markets and was deeply suspicious of the "merchant class" and their tendency to arrange affairs to suit their private interests at public expense…. in short, Smith emphasized the ethical content of economics, something that got eroded over the centuries as economics tried to move from being a value-based social science to a value-free exact science (Subbarao (2009).

Obviously, the operational procedures and approaches of the Islamic banks are different. From a practical standpoint, Islamic banking varies in terms of the level of risk sharing. While conventional intermediation is largely debt-based, and allows for risk transfer, Islamic intermediation, in contrast, is asset-based, and centers on risk sharing (Moumoud, 2000). Ideally, in Islamic banking, investors (profit sharing mode) share the risk and return with Islamic banks. The return on such investment is not guaranteed and depends on the bank's performance. Islamic banks share the risk in Mudharabah and Musharakah contracts and conduct sales contracts in most other contracts. In case of conventional banks, Depositors transfer the risk to the conventional banking, which guarantees a pre-specified return. Borrowers are required to pay interest independent of the return on their project. Commercial Banks transfer the risk through securitization or credit default swaps. Financing is debt-based (Moumoud, 2000).

On the funding side, profit sharing investment accounts are being replaced in a number of Islamic banks by time deposits based on reverse Murabahah transactions. These deposits do not have the risk-sharing features, since the return on them is guaranteed. In addition, demand deposits, which do not share profits or losses, represent a significant part of deposits in some banks. On the asset side, risk sharing (Mudharabah, Musharakah) is the exception rather than the rule: most financing is in the form of Murabahah contracts (cost plus financing) or installment sales (70-80 percent), making credit risk the main risk faced by Islamic Banks, similar to conventional banks. The Capital Adequacy and Risk Management standards issued by the Islamic Financial Services Board (IFSB) suggest that the type and size of financial risks in Shariah-compliant contracts are not significantly different from those in conventional contracts (IFSB, 2013).

3. Islamic Banking Practices in Global Economies

3.1: Status of Islamic Banking in the Global Economy

Islamic banking markets have been expanding rapidly over the years and Islamic banks account for the lion's share of total assets in the global Islamic finance market that is estimated to around 75 percent of the total (Standard & Poor, 2012). Global Islamic banking assets with commercial banks reached to USD1.8 trillion in 2013 from USD 1.3 trillion in 2011, representing average annual growth of 17 percent; it is forecasted to grow beyond the milestone of USD2 trillion by 2014 (Ernst & Young, 2013). Several factors have contributed to the strong growth of Islamic banking and finance, including: one, strong demand in many Islamic countries for Shariah-compliant products; two, progress in strengthening the legal and regulatory framework for Islamic finance; three, growing demand from conventional investors, including for diversification purposes; and four, the capacity of the industry to develop a number of financial instruments that meet most of the needs of corporate and individual investors (IFSB, 2013). According to a recent publication, potential for Islamic financial services is estimated at USD4 trillion by 2020 (Failaka International)[5].

In regard to the use of Islamic banking instruments, the PLS transactions are not often conducted by Islamic banks (Sobol, 2012). The reason for such a situation lies in the fact that there are many problems associated with those modes of finance, and most of the problems result from the information asymmetry which may lead to moral hazard behavior of the borrowers. As a consequence of problems associated with PLS transactions, other methods of finance such as murabaha, salam, istisna and ijara are much more often used by Islamic banks (Schoon, 2010).

3.2: Competition and Transformation of Islamic Banking

IFSB (2013) in its Islamic Financial Services Stability Report 2013 observed that Islamic banks were facing ever-increasing competition, and an important development in Islamic banking in the last few years had been the entry of some conventional banks in that market. Even some Giants of international banking business such as Chase Manhattan, Citibank, ANZ Grindlays, HSBC, Citi NA etc. have initiated Islamic banking activities in different locations; and these are kind of recognitions of the viability of Islamic banking as an alternative model (IFSB, 2013).

3.3: Regulatory and Supervisory Standards of Islamic Banking

The supervision of Islamic banks is as important as that of the conventional banks. In most countries, Islamic banks are put under the supervision of the central bank of the country and are given the same treatment as given to normal commercial banks. In some countries special laws have been introduced to facilitate Islamic banking, while in others no such

5 http://failaka.com/#sthash.nrssKGYY.dpbs

laws have been introduced (Chapra, 2000). One of the most important concerns of regulators and supervisors of islamic banks is how to apply internationally recognized standards to these institutions while, simultaneously, enabling them to operate in conformity with the Shariah. Islamic banks are generally supervised within the framework of the prevailing international commercial banking supervisory systems, and thus regulatory standards of the Basel Committee are also necessary for Islamic banks, because, there are systemic considerations.

Since capital adequacy is now internationally considered to be the core of systemic safety and hence supervisory concerns, the fulfillment of this crucial requirement help enhance the credibility and growth of Islamic banking worldwide. While the nature of demand deposits of these banks is not different from that of conventional banks, the nature of investments and deposits are significantly different. The establishment of capital adequacy standards by the AAOIFI has helped crystallize the differences between the capital of Islamic and conventional banks. However, the compliance with the standards of AAOIFI has not yet fully materialized (Ernst & Young, 2013). Some organizations and committees have been contributing in the development of Islamic banking in global economy as standard setters and for handling the unresolved issues related to Islamic banking. OIC and Islamic Development Bank (IDB) and AAOIFI have been playing crucial role in this connection. A committee of experts set up by the Governors of Central Banks and Monetary Authorities of the OIC countries have been working on the whole range of relationships between the Central Banks and the Islamic Banks and submitted several reports on Promotion, Regulation and Supervision of Islamic Banks. In regard to the spreading of Islamic banking practices in the Muslim majority countries, the active role of IDB has been a positive factor in the development of Islamic banking. AAOIFI, a technical and juridical organization of IDB, now functional and based in Bahrain, is composed of a supervisory committee and a Financial Accounting Standards Board responsible for preparing, issuing and amending the accounting standards. IFSB is another international standard-setting organization that promotes and enhances the soundness and stability of the Islamic financial services industry by issuing global prudential standards and guiding principles for the industry, broadly defined to include banking, capital markets and insurance sectors. The IFSB also conducts research and coordinates initiatives on industry related issues, as well as organizes roundtables, seminars and conferences for regulators and industry stakeholders. Some Institutions such as the Islamic Research and Training Institute and Islamic universities are also playing an active role, and of these OIC Fiqha Academy in Jeddah is notable (IFSB, 2013).

3.4: Some Unresolved Issues

Despite repeated efforts and discussion, some issues and areas remain challenging for the Islamic bankers and their well wishers. One of the most important of these issues is the failure of the purchaser of goods and services under the Murabaha mode of financing to

make payment on time even when he is capable of doing so. If this failure is due to strained circumstances, then Islam recommends not just rescheduling but even remission, if necessary. However, if it is due to unscrupulousness, then the question is whether a penalty can be imposed on the defaulter and whether the financier or the bank can be compensated for the damage as well as the loss of income caused by such default? If the late payment does not lead to any penalty, there is a danger that the default may tend to become a widespread phenomenon through the long-run operation of self-reinforcing mechanisms. Designing Shariah compatible financial instruments is one of the most important challenges confronted by the Islamic financial institutions at present. One of the most effective applications of financial engineering has been in the area of hedging. The question that, therefore, arises is whether the mechanism of hedging to protect the importer from exchange rate fluctuations is permissible. The classical verdict so far is that hedging is not permissible. This opinion is based on three objections. These are that: hedging involves Gharar (excessive uncertainty), interest (riba) payment and receipt, and forward sale of currencies. All three of these are prohibited by the Shariah. As far as Gharar is concerned, the objection is not valid because hedging in fact helps eliminate Gharar by enabling the importer to buy the needed foreign exchange at the current exchange rate (Dususki, 2011). The bank can also handle its own risk. The third objection is, of course, very serious. Forward transactions in currencies have been prohibited in Sunnah.

4. Legal Environment of Islamic Banking in Bangladesh

Bangladesh Bank issued license in 1983 (as per the Banking Companies Act 1991) for establishment of the first Islamic bank in Bangladesh. The Bangladesh Government had participated in establishing the Bank, by subscribing five percent share in the paid up capital. Though there is no complete Islamic Banking Act for controlling, guiding and supervising the Islamic banks in Bangladesh, some Islamic banking provisions have already been incorporated in the amended Banking Companies Act, 1991 (Act No. 14 of 1991). Bangladesh Bank has not set up any separate Department at its Head Office to control, guide and supervise the operation of the Islamic banks. Though there is a dedicated Inspection Department (DBI-4) for inspection of Islamic banks and foreign banks, the Inspection and supervision of the Islamic banking operations are conducted by the Bangladesh Bank as per the general guidelines framed for the conventional banks. So, ensuring implementation of Shariah principles in the Islamic banks are being conducted by their own Shariah Committees. The role of Bangladesh Bank in controlling, guiding and supervising the Islamic Banks in Bangladesh in accordance with Islamic Shariah is very minimal. In observing the Shariah implementation status of the Islamic banks, Bangladesh Bank examines mainly the report of the respective banks' Shariah Councils.

Considering lack of Islamic financial markets and instruments or products in the country, Bangladesh Bank had granted some preferential provisions for smooth development of Islamic banking in Bangladesh. For example, Islamic banks in Bangladesh have been allowed to maintain their Statutory Liquidity Requirement (SLR) at 11.5 percent of the

total deposit liabilities while it is 19 percent for the conventional banks[6]. Islamic banks have been enjoying relaxed rate of SLR mainly due to the non-availability of Islamic treasury bills/bonds in the market. In the deregulated regime, Islamic banks are allowed to fix up their profit-sharing ratios and mark-ups independently commensurate with their own policy and banking environment. This freedom in fixing PLS ratios and Mark-up rates has provided scope for the Islamic banks to follow the Shariah principles independently. However, according to the survey information, Islamic banks are to abide by the restriction of the interest rate spread of the Bangladesh Bank. At present, there is no Central Shariah Supervisory Board to monitor and examine the functions of Islamic banks in Bangladesh. Bangladesh Bank has to depend on the Shariah certificates provided by the Shariah Supervisory Committee of the respective Islamic banks.

Bangladesh Bank formulated a guideline[7] in 2009 for conducting banking business of the Islamic Bank/Islamic bank branches of conventional banks. This guideline embodying the principles and modes of deposits and investments also dwelt upon the issues of liquidity, maintenance of books of accounts and preparation of financial statements and other related issues. The guideline was issued in pursuance of Section 45 of Banking Company Act, 1991 (Amended in 2003). As noted in the guideline, this should be treated as supplementary, not substitute, to the existing banking laws, rules and regulations. It refers to AAOIFI standards for accounting and auditing in case of preparation and disclosure of financial statements.

The BB guideline pointed out specific criteria for setting up full-fledged Islamic Bank in the country. The financial transactions of the bank shall be conducted based on the principles of Islamic Shariah. The banking company is to maintain the required capital adequacy ratio, as prescribed by the Bangladesh Bank. The Chief Executive (CE) would be a professional combined with at least 3 years Islamic banking experience, and having complied with all the terms & conditions of the 'Fit & proper Test' issued by Bangladesh Bank and have no adverse information regarding his integrity and performance. Practically, the provisions related to the establishment of Islamic banks and appointments of CE are almost same.

The guidelines identifies terms & conditions for the conventional Banks to obtain License for opening Islamic Banking Branch. The applying bank is required to submit a proposal for opening Islamic branch to the concerned department of Bangladesh Bank with a working paper that states services and products to be offered (regarding deposits, investments, financing etc.) by the Islamic banking branch; commitment to keep funds and accounts of Islamic banking branches completely separate from those of the conventional ones; methods of segregating the funds of the Islamic branches from the funds of

6 BB DOS Circular No-1, 19 January 2014.

7 Based on the recommendations of a Focus Group comprising representatives of the central Bank, a number of Islamic Banks and the Central Shariah Board for Islamic Banks of Bangladesh (BRPD Circular No 15, Nov 09, 2009).

commercial branches of the bank; accounting aspects to be followed, the principles and mechanism of profit / loss sharing / distribution; undertaking for preparing separate financial statement for the Islamic branches. According to BB guideline, the conventional banks which have Islamic banking branches or windows must have Islamic banking division in their respective head offices and in case of foreign Bank in the Country Office (in Bangladesh). These Islamic banking divisions are required to coordinate their Islamic banking activities with the central bank to ensure proper compliance of various rules and regulations.

As noted in the BB guideline, separation of Funds of Islamic banking branches and control and pursuance of appropriate procedures are to be ensured for safeguarding the interest of the depositors. In this connection, an operational Manual for running Islamic banking business is to be prepared and get approved by the Board of Directors of respective banks and in case of foreign bank, it is to be approved by their Head Office. The Banks have to maintain separate accounting system for their Islamic banking branches. For this purpose, separate ledger books, software etc. are to be maintained. The BB guideline prescribes the necessary measures for the conversion of a Conventional Bank to an Islamic Bank in the country. It will be the responsibility of the board of directors of the respective banks to ensure that the activities of the banks and their products are Shariah compliant. The Board of the Islamic banks/ Subsidiary company/Conventional commercial banks having Islamic branches, therefore, be constituted with directors having requisite knowledge and expertise in Islamic Jurisprudence. The Board may form an independent Shariah Supervisory Committee, however, the Board shall be responsible for any lapses/irregularities on the part of the Shariah Supervisory Committee. A fit and proper criteria for selection of members of the Shariah Supervisory Committee is also noted.

The guideline noted Shariah principles for receiving deposits[8] and making investments[9] by the Islamic banks under different modes including export and import businesses, remittance and other banking services. Besides, the Islamic banks are to fully abide by the national and international norms and guidelines relating to export/import business. Other than these Islamic banks can transfer money through D.D, T.T, T.C etc. and collect the bills (cheque, Draft, Payment order etc.) and realise commission or service charges within the norms of Shariah. Islamic banks can render miscellaneous banking services like locker services, receipt and payment of clients' bills, issuance of Guarantee and working as agents

8 i) Al-Wadeeah principle; and ii) Mudaraba principle.

9 As the investment principles the funds of Islamic banks are to be mainly invested in the following modes:Mudaraba; Musharaka;Bai-Murabaha (Murabaha to the purchase orders);Bai-Muajjal;Salam and parallel Salam;Istisna and parallel Istisna;Ijara;Ijarah Muntahia Bittamleek (Hire Purchase);Hire Purchase Musharaka Mutanaqisa (HPMM);Direct Investment; Investment Auctioning; Quard; Quard Hassan etc. i) Import of Commercial goods. ii) Import of raw materials for production purpose. iii) Import of capital / machineries. The importers avail of investment facilities against all kinds of imports. But in case of imports under category (i) and (ii), investments are made under the Shariah approved Bai-Murabaha and Bai-Muajjal modes and in case of import under category (iii), investment is made under the Shariah compliant mode of Hire Purchase under Shirkatul Melk (HPSM). Investment facilities are also provided for import business through Bai-Salam, Musharaka and Mudaraba modes.

of clients against commission or service charges. Collection of service charges or commissions for rendering those services are permissible under Shariah.

According to the BB guideline, in case of liquidity surplus and crisis the Islamic banks or branches of the conventional banks may invest in the 'Bangladesh Government Islamic Investment Bond' (Islamic Bond introduced by the Government). In the same way, Islamic banks/branches facing liquidity crisis can tide over the crisis by availing of investment from Islamic Bond fund as per the prescribed rules. The operations of 6-month, 1-year and 2-year Bangladesh Government Islamic Investment Bond (Islamic Bond) is introduced in FY05.

Bangladesh Bank initiated to introduce a call money market in December 2011[10] titled Islamic Inter-bank Fund Market (IIFM) for Shariah-based banks that came into existence in June 3, 2012. In such a market, transactions are based on profit instead of interest. On the first day, Islami Bank Bangladesh Ltd offered funds worth Tk 100 crore, while four banks applied for taking Tk 60 crore from the funds. According to rules, if any bank has excess fund, it will invest the amount in the IIFM for one day. Another Islamic bank requiring fund will borrow the money from the IIFM for one day. Though the IIFM has been formed in the model of the traditional call money market to remove the temporary and short-term liquidity crisis of the Islamic banks, yet it failed to attract substantial response from the market. In the first half of the year 2013, there were a few transactions under IIFM, but no single transaction was held in the second half of the same year.

5. Islamic Banking Activities and Operations in Bangladesh

The financial sector of Bangladesh is dominated by the banking sector. At present, out of 56 commercial banks in Bangladesh, eight are full-fledged Islamic banks. In addition, fifteen other regular commercial banks and one foreign bank are offering Islamic products through their Islamic banking branches/windows (a total number of 8 banks licensed for branches and 8 banks for windows). Thus as a whole, eight banks[11] are operating as full fledged Islamic banks with more than 750 branches, and eight conventional banks are offering Islamic banking through setting up of 20 Islamic banking branches and eight more conventional banks are doing so with 30 Islamic banking windows[12]. As per the survey observation, all conventional banks which have Islamic banking branches or windows have Islamic banking divisions. According to the BB information, the market share of the Islamic Banks was around 15 percent of the total assets of all banks as of end 2013 in terms of total assets. The figure would definitely be higher if the assets of the branches and windows are considered. In a recent article in a newspaper (Financial Express)[13] it has been

10 BB DOS Circular 23, December 27, 2011.

11 Excluding the newly established Union Bank Limited.

12 Md Touhidul Alam Khan (2014), Huge demand for Islamic banking in Bangladesh, 2014, A country report on Islamic Banking in Bangladesh, Islamic Finance News (IFN) Annual Guide-2014, Malaysia.

13 M Hamid (2013), Streamlining Islamic finance in Bangladesh, Financial Express, 06 April 2013.

claimed that Islamic banking is having 25 per cent market share in the banking sector of Bangladesh. According to the BB information, during 2013, Islamic banks achieved around 15 percent asset growth which is higher the growth archived by the conventional bank (14%). Other than one, all other Islamic banks met required capital adequacy requirement of 10 percent as of end 2013. The non-performing investments of Islamic banks (excluding ICB Islamic and Bank Al-falah) was less than 4 percent of their total investments which is significantly lower than the overall figure of the banking sector[14].

5.1: Governance of Islamic Banking in Bangladesh

Board, formed as per laws and regulations prevailing in the country and Bangladesh Bank Guidelines, is responsible for governing the banks whether it is Islamic or conventional. Board set and approve overall policy and strategy; monitor progress toward corporate objectives; and ensure accountability of the management to protect stakeholders' right. As part of Shariah governance, a Central Shariah Board for Islamic Banks of Bangladesh (CSBIB) has been formed in 2001 as per the direction of the Bangladesh Bank with the objective to offer the Shariah-based directions and opinions for the Islamic banking industry of Bangladesh. However, till date its activities are mainly limited to organizing a few training and workshops; and publishing books and bulletin for Islamic bankers. One of the important governance organs in an Islamic bank is the presence of Shariah Supervisory Committee (not applicable for conventional counterpart). The committee is governed by the bye-laws approved by the Board. The committee gives opinion and guidelines to implement and comply with the Shariah principles in all activities of the bank and provide a clearance of Shariah compatibility of all products. It oversees the activities of the bank from Shariah perspective and ensures that the profit has been derived without violating the Shariah rulings. The committees of the Islamic banks also evaluate performance of the officials in terms of their Shariah compliance and conducts Shariah inspection to ensure that the Shariah principles are being implemented. Like conventional banks, Islamic banks have Executive Committee, Management Committee, Asset-Liability Committee (ALCO), and Audit Committee to play similar roles. Audit committee is also responsible for Shariah compliance issues alongside the rules and standards of Bangladesh Bank. All the core risk management guidelines of the BB are equally relevant for the Islamic and conventional banks of the country. Thus it can be observed that the Islamic banks are to comply with some additional requirements than that of the conventional banks.

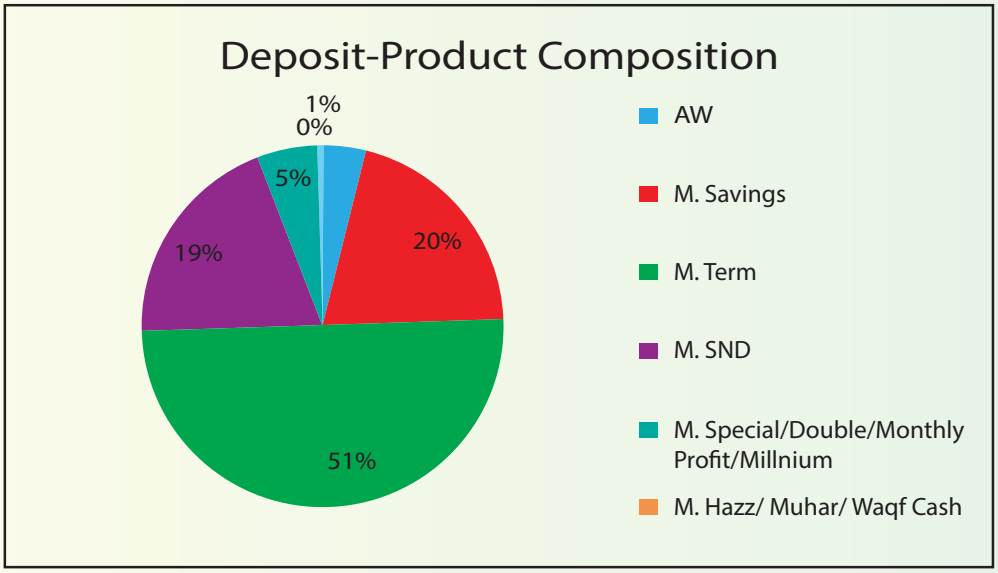
5.2: Deposit Products in Islamic Banking in Bangladesh

According to the available information of BB, as of end 2013, in Bangladesh, the total Shariah-based deposit was around 19 percent of the total deposits of the banking sector. As

14 Bangladesh Bank (BB) Governor Dr Atiur Rahman told in a seminar that Islamic banks in Bangladesh are performing better than conventional ones, "Barring one exception of a small sick Islamic bank in process of restructuring, the Islamic banks in Bangladesh generally have higher capital adequacy ratios and lower non performing loan ratios than their conventional banking counterparts," (News today, September 24, 2013).

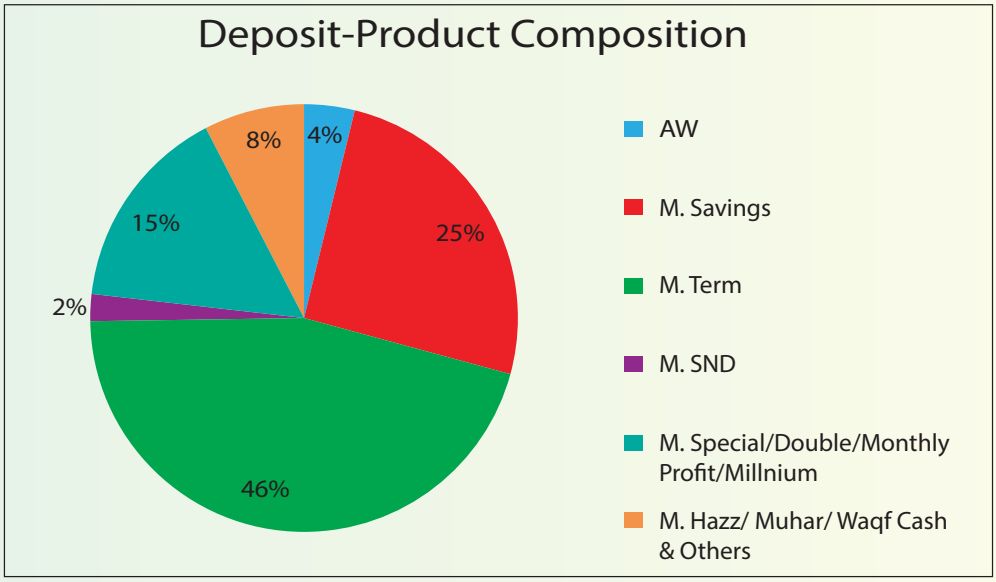
observed in the survey observation, the major deposit products of Islamic banks and Islamic banking branches/windows are based on the basic principles of Islamic Shariah: Al-wadeeah and Mudaraba. The first one is basically in the nature of current account of conventional banking where the customers are not entitled to receive any benefits/profits from the banks. Whereas, in case of Mudaraba products/schemes profits are distributed as per pre-agreed ratio that generally take different forms and titles: Mudaraba savings; Mudaraba term deposit; Mudaraba Short notice deposit; and a few special deposit schemes targeted to certain category of clients and to meet certain purposes. According to the survey data, 'Mudaraba term deposits' is the major component that comprises 51 percent of the total deposits of Islamic banks (Figure-1). Other major forms of deposits include Mudaraba savings (20%) and Mudaraba SND (19%). The volume of Al-wadeeah form of deposits is relatively low with only around 4 percent. Similar composition of deposits is observed in case of Islamic banking branches/windows of the conventional banks (figure-2).

Figure 1: Deposit Composition of Islamic Banks (Amount outstanding as of end of 2013)



Source: Survey Data

Figure 2: Deposit Composition of Islamic Banking Branch/Window of the Conventional Banks (Amount outstanding as of end of 2013)



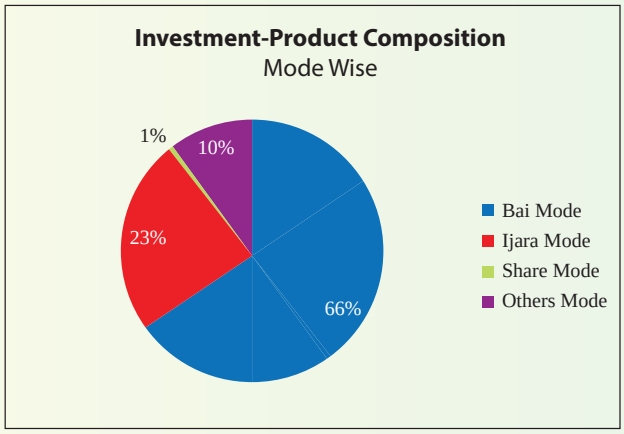
Source: Survey Data

5.3: Investment Products in Islamic Banking in Bangladesh

According to BB information, Shariah-based investment accounted for around 21 percent of the total investment and advances as of end of 2013. As observed in the survey observation, the major investment products of Islamic banks and Islamic banking branches/windows (of the conventional banks) are based on the Bai- mechanism or buying and selling as per Islamic Shariah principles. Other mechanism includes Ijara and Share. In most cases, all the other basic modes of Islamic banking have been tagged with these mechanisms. Of the Bai modes, the common investment products that are in use in the country include Bai Murabaha; Bai Muajjal; Bai Salam; Bai-as-sarf; and Bai Istisna. Hire purchase and Hire Purchase under Shirkatul Meelk are related to Ijara mechanism, whereas share mechanism includes Mudaraba and Musharaka. According to the survey data, Bai mode (66%) is the most commonly used investment mechanism of which Bai Muajjal and Bai Murabaha are particularly popular (figure-3). It is to be mentioned here that in some literature, no distinction is made in between Bai Maujjal and Bai Murabaha because of the similarity of the processes. Of the total investment Ijara (HPSM) accounts for 23 percent of the total. It can be observed that the use of the most ideal form of Islamic banking tool based on PLS (Mudaraba and Musharaka) is hardly in use. Similar situation can also be

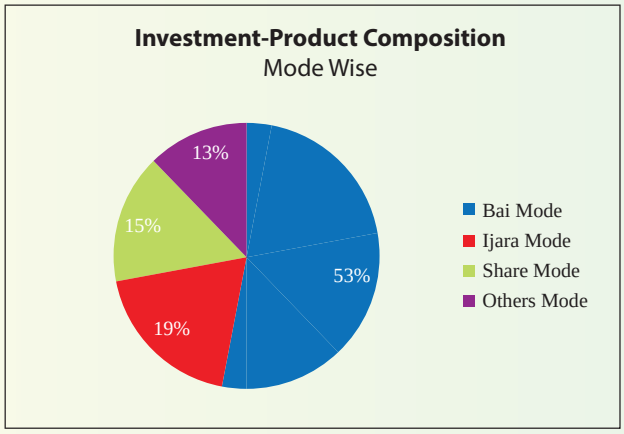
observed in case of Islamic banking branches/windows of the conventional banks where Bai is again the most commonly used mechanism in the country. The only exception is that 15 percent of the total investment portfolio of the branches/windows is in the category of share mode i.e.,Mudaraba/Musharaka (Figure-4). These investments are in the nature of Diminishing Musharaka used mainly by a single foreign bank. To meet the same purposes, local banks generally use Ijara mode (HPSM).

Figure 3: Investment Product Composition of Islamic Banks (Amount outstanding as of end 2013)



Source: Survey Data

Figure 4: Investment Composition of Islamic Banking Branch/Window of Conventional Banks (Amount outstanding as of end of 2013)



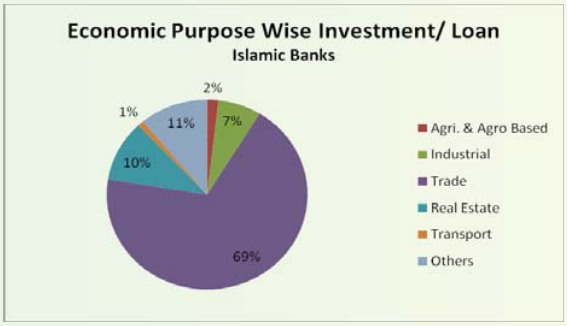
Source: Survey Data

Islamic banks offer trade related services to their clients that are related to letter of credit, back-to-back LC, foreign bank guarantees, bill purchases, and exports bill collections for which different Shariah permissible modes are followed. While opening LC, Islamic banks generally obtain a letter of authorization from the client to act as an agent on behalf of the client. In Islamic Shariah, banks are supposed to handle goods. In this connection, application of UCPDC (mandatory for all banks in the country) may contradict. Generally, goods are consigned to the name of the bank in case of import where banks take ownership of the goods and then sell it to the client under Murabaha agreement. Inland documentary bills are purchased by the Islamic banks under Musharaka mechanism. Purchase and negotiation of export bills are done by the Islamic banks under Bai-as-Sarf mode for which Islamic bank realizes commission or get exchange gain (or loss). Of the other investment products, all Islamic banks offer ATM card services. Two banks (one Islamic bank and other Islamic banking windows of a conventional foreign bank) have credit card services for their clients. Exim Bank Limited is the first local Islamic bank that has introduced credit card in the country for their clients. In regard to the foreign exchange transactions, Islamic banks only transact on the spot.

5.4: Sector Specific Exposure of Investment by Islamic Banks/Branches/Windows

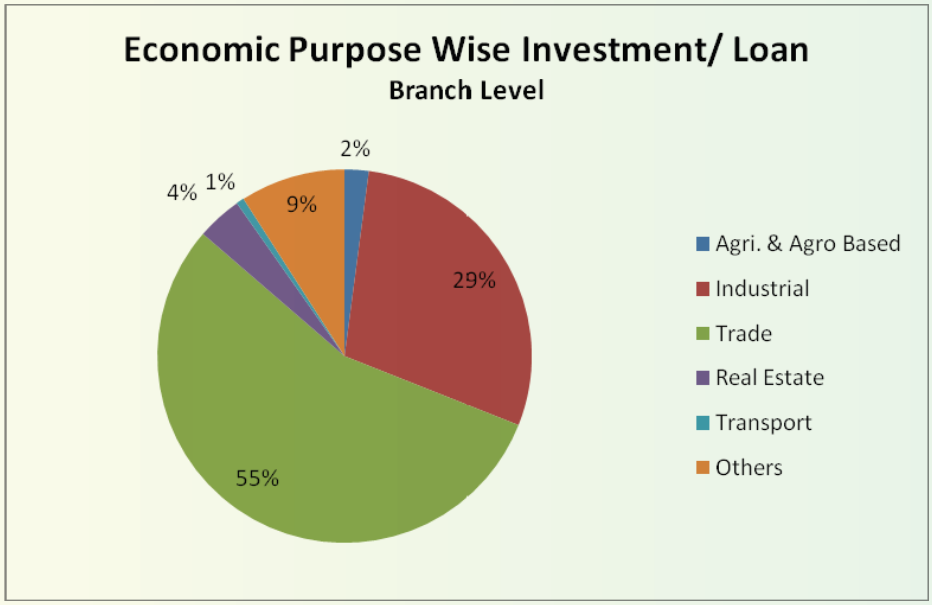
Most of investments of Islamic banks are allocated to the trading sector of the country. Other sectors include industry, real estate etc. Islamic banks are now also focusing on a wider horizon, by getting involved with SME financing, microfinance and financing in agricultural sectors. According to the survey observations, 69 percent of the total investments of the Islamic banks were in trading sector as of end of 2013 (figure-5). In this context, the Islamic banks are not very different from conventional banks. Notable portions of investments are also allocated to real estate (10%) and industrial sector (7%). The sectoral distributions of the Islamic banking branches/windows are not very different (figure-6).

Figure 5: Sector Specific Exposure of the Investments of Islamic Banks (Amount outstanding as of end of 2013)



Source: Survey Data

Figure 6: Sector Specific Exposure of the Investments of Islamic Banking Branch/Window of Conventional Banks (Amount outstanding as of end of 2013)



5.5: Marketing of Islamic Banking Products

Religious belief and faith is the key factor for the popularity of the Islamic banking in the country, as opined in the opinion survey. Almost unanimously it is agreed (in the opinion survey) that it is the Muslim customer base because of which Islamic banking activities are increasingly adopted by a growing number of banks. However, services of the banks have been adding value to pull their customer bases with the increasing competition. Today, even a group of non-Muslims is also showing interests to the Islamic banking products as alternative channel of obtaining funds because of the services. This is obviously not true equally for all Islamic banks. With the growing competition, Islamic banks are also getting aggressive alongside conventional banks to improve their customer bases. Most of the Islamic banks operating in Bangladesh have their own written policy for marketing of Islamic banking products. They have also established marketing department with separate employee set-up in the banks.

5.6: Employee Development, Training and Research Activities

All Islamic banks (except one) have training or training & research centers to train their employees. Alongside organizing foundation training programs for their newly recruited employees, these training centers commonly offer employee development programs on the issues related to Islamic Shariah, banking procedures and regulatory requirements of the

central banks. Islami Bank Training and Research Academy (IBTRA) publishes journal, conducts training programs for the other Islamic banks of the country and abroad, and arranges Internship programs for the university students on the Islamic banking issues. It has also a certification program called 'Diploma in Islamic Banking (DIB)'.

5.7: Refinancing, Liquidity Management and Participation in the Bond Market

The only refinancing facility of the BB i.e. 'Funding Assistance Program' (introduced in October 2013) remained inoperative till date. Though the IIFM has been formed to remove the temporary liquidity difficulty of the Islamic banks, yet it failed to attract substantial response from the market. In the first half of the year 2013, there were a few transactions under IIFM, but no single transaction was held in the second half of the same year. As of end of June 2013, the total sale against this Bangladesh Government Islamic Investment Bond (Islamic Bond) amounted to Taka 107.13 billion while balance of total amount of financing stood at Taka 67.78 billion and the net outstanding against the bond stood at Taka 39.35 billion (BB Information).

5.8: Corporate Social Responsibility Activities of Islamic Banks

All Islamic banks commonly pay Zakah on their respective equity and reserve position as per Islamic rules. Under the umbrella of Corporate Social Responsibility (CSR) activities, the Islamic banks in Bangladesh are engaged in contributing to different sectors including natural disaster, environment, education, health and other social and humanitarian areas. Most of the Islamic banks have set up various types of Bank Foundations which are carrying out the social welfare, education, health and medicare activities on behalf of banks. The aims and objectives of the Foundation are to serve distressed humanity, promote people oriented mass education, extend health and medicare facilities to the poverty-stricken people in urban and rural areas, create facilities for productive self-employment and develop human resources for improving economic condition and quality of life, assist healthy growth of art, culture and literature, science and technology, sports, research and propagation of Islamic teachings.

5.9: Outcome of the Opinion Survey on Challenges of Islamic Banking and Suggestion

Table-1: Opinions on the Problems of Islamic Banking in Bangladesh [as percent of the total banks/branches/windows]	
Inadequate legal and Institutional Framework	100%
Absence of Uniformity on Shariah Standards and Practices	100%
Lack of Customer Orientation	100%
Inadequate Training and Education Facilities	95%
Low exposure in PLS modes	90%
Absence or underdeveloped Islamic Money and Bond market	80%
Inadequate skilled and Professional Islamic Banker	60%
Lack of Required Products to address the Clients	45%

Table-2: Opinions on the measures to Improve Islamic Banking Operation in Bangladesh [as percent of the total banks/branches/windows]	
Enacting Separate Islamic Banking Act	100%
Setting up Separate Islamic Banking Department in the Central Bank	100%
Facilitating Training and Awareness Development Programs for the Stakeholders	100%
Introducing Shariah Compliant Refinancing Programs by BB	100%
Introducing Effective Shariah Compliant Instruments for Liquidity Management	100%
Allowing Takaful (Islamic Insurance) for Supporting Shariah Compliant Activities	90%
Cooperation of BB and Islamic Banks on Shariah Compliance	90%
Establishment of Separate Training and Research Centre for Islamic Banks	80%
Introducing Courses on Islamic Banking in Public and Private Universities	60%

6. Concluding Remarks

In the process of offering Islamic banking services, the practitioners have been facing several challenges. Addressing some of these challenges is critical for improving the efficiency of Islamic banking activities in the country. As opined in the survey, while operating in conventional environment, Islamic finance requires a different legal and supervisory framework appropriate to its nature of business. Absence of separate act and comprehensive standards covering all areas for the Islamic Banking activities in Bangladesh are creating difficulties in a number of ways on Shariah compliance issues. In some countries, such Acts were introduced before initiation of Islamic Banking activities. Apart from this, maintaining a capable and active Shariah Board with adequate number of scholars and experts is a challenge for banks. It is also a challenge to transform the Central Shariah Board to a highly capable and active organization to perform the role of advising and giving directives as to whether all functions of the Islamic banks including investment procedures are being carried out in accordance with Shariah or not. A good volume of overhead expenditure is also involved in this process. For small Islamic banks and Islamic banking branches/windows of conventional banks may find the process undesirable. Lack of skilled and trained professionals to fulfill the requirements of the fast growing Islamic banking industry of Bangladesh is a major barrier to the development of Islamic banking in Bangladesh. Islamic banking has also great challenges due to lack of awareness about Islamic banking by its customers. In comparison to the growth of Islamic banking in Bangladesh, there is a shortage of related human resources as well as institutions to teach and train Islamic banking. The Islamic banks of the country face difficulties in liquidity management due to the underdeveloped nature of money market, very shallow bond market and secondary market. Considering these, the study came up with the following recommendations for improving the operational efficiency of the Islamic banking activities of banks:

(1) A separate act on Islamic banking may be enacted. Currently the central bank has a guideline for Islamic banks. As Islamic banking has become a part of mainstream banking in Bangladesh, it has become necessary to introduce more comprehensive guidelines to bring greater transparency and accountability to the industry. However, in some areas integrated rules would be workable like standards related to prudential regulation, internal controls, risk management and greater transparency. From the central bank's point of view, it is obviously not regulating the religion rather but merely regulating and supervising the commercial transactions just like any other financial transactions. Regulation should aim at achieving healthy growth of the sector and welfare of the society.

(2) It might be desirable, at least for smaller banks to have a common Shariah board to determine the Shariah compatibility of their products. A common platform well-versed in both the Shariah and modern finance and having adequate research facilities may perhaps be the most suitable for providing the services of a Shariah board. For improving efficiency banks should undertake initiative to activate Central Shariah Board to the desired level with the cooperation of the Bangladesh Bank. The establishment of such institutions will help reduce the overhead costs of Islamic banks and raise their profitability.

(3) The human capital involved in Islamic banking must be trained in the relevant field in accordance with the demand of the sector. In the current situation of the market, facilitating Islamic banking education alongside modern banking education is an immediate need. To establish Islamic banking and financial system on strong ground, it is essential to create sufficient number of Islamic bankers having full command of Shariah, Fiqha, and Islamic financial products. An effective training on Islamic banking must blend basic banking, Islamic banking, Shariah law and state law.

(4) It is important to activate interbank money market of the country. Islamic banks need more Shariah compliant bonds to manage their liquidity effectively. The policy makers of the country may think of having bonds like Sukuk; and potential of introducing Commodity Murabaha may also be explored.

The study identifies the dearth of standard and harmonized guidelines and tools for expansion of Islamic banking in the country. Many of these may be required to address country and society specific need. There is no doubt that in certain areas global common standards may be drawn from the globally recognized standard setters of Islamic banking. However, at the same time we think, the Holy Quran has allowed us enough space and flexibility to interpret certain things based on consensus by our own experts and scholars for the well-being of the country through Islamic banking tools.

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From Manual to Mechanical: Do ATMs Convey Convenience? An Insight into How Automated Teller Service Fares

*** Saleh Ahmed Abdullah**

Abstract

The use of ATM is increasing rapidly in the country. This article is the outcome of an attempt to trace how ATM service plays out in Bangladesh. Based on a primary survey, the study shows that customers generally are satisfied with the automated teller service. The most serious problem coming up in the survey is network unavailability, trailed by operation failure and card stuck problem; other problems are minor. Customers are dissatisfied regarding security at booth surrounding and inadequate number of terminals around the locality—amounting to little less than nuisance to them. It is heartening that the nuisances are sporadic and not the usual order of the industry. These issues warrant immediate resolution to have delighted customers.

Keywords

ATM, customer satisfaction, problems

First Things First

An Automated Teller Machine (ATM) is an electronic means of dispensing cash. Unlike credit and debit cards and many other modes of payment making as wire transfers, Automated Clearing House (ACH) and Electronic Bill Presentment and Payment (EBPP), ATMs do not represent a payments type per se; rather they offer a convenient alternative to more traditional dispensers, such as bank tellers, automobile drive-through facilities and supermarket checkout lines (Weiner 1999).

The development of ATM services, claims Norman Penny, can be attributed to three factors. First, financial institutions initiated to improve their competitive positions by attracting customer accounts and increase their revenues by increasing loans, creating higher balances and enhancing their financial services packages. Second, ATMs were designed to perform many of the same tasks like a human teller at a lower cost. Finally, some financial institutions made ATM decisions based on marketing considerations. Before building a new branch, for instance, one financial institution used its ATM to test whether the location would support a branch office (Pidgeon 2000 in Islam et al 2005).

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A financial innovation is something new that reduces costs, minimises risks or provides an improved product/service/instrument that better satisfies financial system participants demands. Financial innovation can be grouped as new products (eg subprime mortgages) or services (eg Internet banking); new production processes (eg credit scoring); or new organizational forms (eg Internet-only banks) (Frame and White 2009). Recent service innovations primarily relate to enhanced account access and new methods of payment—each of which better meets consumer demands for convenience and ease. Automated teller machines (ATMs) which were introduced in the early 1970s and diffused rapidly through the 1980s, significantly enhanced retail bank account access and value by providing customers with around-the-clock access to funds.

Jewell (2001) describes that technological change is the most potent source of change in the environment of business organizations. It can be seen as the process of 'creative destruction' in which new products, processes and therefore working practices replace old ones.

A distinction is made between the mass automation regime and the smart automation regime. Mass automation dealt with mechanization of back office procedures in the 1960s and was a period of incremental innovation, whereas smart automation dealt with the diffusion of network technologies like ATM and was characterized by radical process innovations (Singh and et el 2002).

From the economic vantage point, one reason that typically factors into the adoption of any new technology is cost. It may require an investment in equipment and staff that merchants are unwilling to bear until they are convinced that customers will be interested. Customers, in turn, may not be interested until enough merchants are participating. Reaching this critical mass of users is a hurdle that any almost new mechanism has to overcome. A second factor may be uncertainty over security, standards and compatibility issues associated with new technologies (Weiner 1999).

Potential problems are likely to be associated with inadequate safeguards in the use of technology. Consolidation and increased nonbank ownership of fund transfer networks-especially networks for ATMs, debt cards and credit cards-may expose banks to new operational risks. It may involve outsourcing certain functions, including moving work offshore, involves political, business-continuity, and security risks. Inadequate IT staffing may make some banks vulnerable to attacks on the software they use, with customers exposed to inconvenience and weakens banks reputations and competitive positions (Hanc 2004). Sienkiewicz (2007) discusses the potential for prepaid cards to be used in money laundering schemes. The author notes instances with offshore card issuance and the ability to access cash at ATMs as being the most vulnerable to illicit activity (Frame and White 2009).

Banks began to look at e-banking as a means to replace some of their traditional branch functions for two reasons. Firstly, branches were very expensive to set up and maintain due to the large overheads associated with them. Secondly, e-banking products/services like ATM and electronic funds transfer were a source of differentiation for banks that utilized them. Being in a fiercely competitive industry, the ability of banks to differentiate themselves on the basis of price is limited (Singh and et el 2002).

There are huge potential cost savings if the banks manage to carry out a higher percentage of their transactions over the Internet and other channels such as ATM (Raihan 1998 in Islam et el 2005). It costs a bank about $1 to deliver a manual transaction at a branch; by contrast, an ATM transaction costs 25 cents and an on-line transaction costs a whopping 1 cent (Dixon and Nixon 2000).

Clearing and settling of a cheque is an expensive process, estimated to cost two to three times more than an electronic payment (Hancock and Humphrey 1997). In recognition of this, clearing house associations, the Fed and the banking industry in general have been striving in recent years to electronify various aspects of the cheque collection process (Weiner 1999). Bauer and Hancock (1995) found that over the 1979-1994 period the cost of processing an ACH item fell dramatically owing to scale economies, technological change and lower input prices.

As bank products and services become commoditized, financial institutions can solidify customer relationships by reducing "customers' interaction costs. In other words, the ubiquity of bank branches, ATMs, and electronic banking products and services reduces the costs customers bear to interact with their financial institutions (Robbins 2006).

Research points out that ATMs have two fold advantages. Firstly the customers can walk into the ATM centers at any time to carry on their transactions such as withdrawing money, depositing money, collect a statement of account, place a check book requisition etc. Secondly the number of customers visiting the bank will reduce by an estimated 80% which will in turn result in huge saving in the employee-related costs for the bank. The cost incurred in servicing a customer through the ATM is 1/3rd of the cost incurred if the same customer were to be served personally through the branches of the bank. Reduced use of checks and increased use of electronic payments are likely to exert downward pressure on costs of the banking system as a whole (Hanc 2004, Mcandrews 2003).

In Bangladesh, most of the commercial banks have developed their Core Banking Solutions to facilitate better service. Out of 56 scheduled banks, 52 banks provide full or partial online banking services. Plastic cards (debit/credit cards) are becoming more popular and banks are offering these to attract new customers and retain their customer base. The statistic from the Bangladesh Bank demonstrates an increasing trend in the adoption of electronic banking features during CY11-CY13. Although the number of banks introducing credit cards during CY12-CY13 became stagnant, there was a significant increase in online banking operations in CY13. Moreover, 460 new ATM machines were

set up during CY13 (Bangladesh Bank). According to ATM & Debit News (2007) there were approximately 26.5b debit transactions in the US during 2006. This is up from 6.5b transactions in 1999—a four-fold increase.

The pace of ATM increase in the country has far outpaced that of bank increase. A statistics shows that in 2009 there were 48 banks and 8 ATMs per thousand kilometers in Bangladesh. But the number has increased to 59 banks and 35.5 ATMs per thousand kilometers in 2013 (Dr Atiur Rahman, Prothom Alo, December, 2014).

During early years of e-banking innovations, bank location was a key factor for most households in choosing a bank. In 1995 when opening a checking account, the most important factor for most Americans was a bank's location. Among 31 possible factors, almost one-half of U.S households said location was most important. Number of services and low fees or minimum balance requirements, all other reasons paled in comparison.

Despite increasing use of e-banking technologies, the majority of U.S. households still consider bank location the most important factor in choosing their primary financial institution. In addition, the number of bank branches has increased considerably in recent years. The nature of what bank location means to consumers may have changed as a result of innovations in service delivery. For example, instead of expanding their reach by building brick-and-mortar branches, banks can provide convenient access to bank services by deploying ATMs (Robbins 2006).

Notwithstanding widespread use of some e-banking products, these technologies, argues Robbins (2006), may not be a perfect substitute for personal interaction. Many customers still visit their bank frequently and therefore value convenient bank locations. While many of these customers are conducting financial transactions that could be completed online, even online banking customers come into the bank on a regular basis. A survey in 2006 showed that 30 percent of all respondents were inside a bank at least once or twice a week and an additional 44 percent said they visited their bank several times a month or at least once per month.

Electronic banking may not be a substitute for bank offices because, although many financial transactions can be conducted via online banking, a large population still chooses not to use newer e-banking technologies. Online banking use by retail customers varied widely, between 20 and 50 percent, while commercial customers seemed more likely to use online banking. A survey found that only 43 percent of Internet users also used online banking.

Another barrier to substitutability is the depth of consumer adoption. For example, among online banking customers, most use the service to monitor their accounts (95 percent), while only 56 percent also used it to pay bills. Thus, notes Robbins (2006), rather than acting as a substitute for services offered by bank branches, e-banking products are likely viewed by consumers as complementary to bank locations (Robbins 2006).

Bank branching also pays off for banks. Banks with more branches have "higher noninterest income, lower interest and noninterest expenses, and higher returns on equity." Some may argue that these findings probably apply to large banks that have extensive branching networks. However, these findings were available to apply to both large banks as well as community banks with less than $1 billion in total assets. Therefore, even if e-banking innovations reduce customers' need to visit bank branches physically, banks may not want to rely on these innovations alone to provide convenient access to an expanding customer base (Seale 2004).

Dias and et el (2012) point out that the high degree of manual processing is costly and slow, and can lead to inconsistent results and a high error rate. By taking full advantage of IT-enabling operations, banks can often generate an improvement of more than 50 percent in productivity and customer service. Given the relatively strong growth banks experienced before the 2008 recession, most did not change their business processes. However, the banking systim requires much lower back-office costs; and with regulators and consumers pressuring banks for greater transparency, better credit and portfolio risk management and heavily expedited data processing for customer accounts, bank leaders are realizing they must take a different approach (Dias and et el 2012) and that undoubtedly toward more automation.

The adoption of e-banking products was more prevalent among consumers with certain demographic characteristics. It is positively correlated with household income and educational background and negatively correlated with age. Households with higher incomes and deeper educational backgrounds were more likely to use electronic banking products across the board (Robbins 2006). Stavins (2001) uses data from the 1998 Survey of Consumer Finances (SCF) and finds that debit usage is positively related to educational attainment, homeownership status, marital status, business ownership, and being a white collar worker; and is negatively related to age and net worth.

Shastri (2001) digged into the effects and challenges of new technology on banks. He found that technology has brought a sea change in the functioning of banks and use of ATMs has increased with the passage of time. DeYoung, Lang and Nolle (2007) report that Internet adoption improved US community bank profitability-primarily through deposit-related charges. In a related study, Hernando and Nieto (2007) find that online banking was associated with lower costs and higher profitability for a sample of Spanish banks. Both papers conclude that the Internet is a complement to rather than a substitute for- physical bank branches (Frame and White 2009).

In a study carried out in Pakistan, Khan (2010) explained the effect of ATM service quality on customers using five key ATM service quality factors: convenience, efficient operation, security, privacy, reliability and responsiveness. He found a strong positive relationship between ATM service quality and customers' satisfaction level.

Though various articles have been published in various journals in Bangladesh regarding e-banking, computerization, innovation in banking sector etc, no separate study has been undertaken regarding customer satisfaction of ATM service.[1] Moreover, banks that are issuing ATM cards provide brochure in order to make the users understand what the ATM is, how to use the service, the cost of service etc, but they rarely have information regarding the level of customer satisfaction with respect to various aspects of ATM use (Islam and et al 2005).

In a study on satisfaction of debit card users across some private commercial banks, Parvin and Hossain (2010) identified that card users are satisfied on average: most satisfied with availability of taka in the booth, and least satisfied with network service. The study marks off that by improving network service, providing receipt after transactions and solving of problems promptly, banks can make the debit card users fully satisfied. A good deal of factors are considered to calibrate the customer satisfaction including availability of ATM booth, service quality, denomination variety, availability of transaction receipt and availability of money.

Islam and et el (2005) evoked customer satisfaction of ATM service as a case study of HSBC ATM. The study pins down that location, personnel response, quality of currency notes, promptness of card delivery and performance of ATM are positively related to the satisfaction of the customer. However, admittedly by authors, projecting the data used in the study beyond the sample is statistically inappropriate.

Another study by Shamsuddoha and et el (2008) reveals that main services consumed by ATM users are cash withdrawal, balance inquiry, cash deposit, fund transfer and cheque book requisition. Factors underpinning customer satisfaction are 24 hours service, accuracy, and convenient location; however, lack of privacy and safety, and complexity of machine draw flak from customers.[2]

Against this milieu it is worth undertaking an evocation of customer satisfaction with the automated teller service. The major objective of this endeavor is to measure level of customer satisfaction with different aspects of automated teller service. It also has peripheral goals: delineate the problems, if any, faced by ATM users, recommend on the basis of findings.

Limitation

The scope of the study was limited to Sylhet metropolitan area, which puts an undertow to the robustness of findings. Though service of ATMs is not supposed to be much variant across the country, generalization of the study findings for the whole country may prove to be over the board and warrants a bit of caution on the part of the interpreter.

1 Not at least to the level of coverage and rigor ensured in this study.

2 The opinion survey was carried out on 160 respondents across 10 multinational and domestic private commercial banks.

Methodology

The study promises to invoke insight into satisfaction of ATM users. It makes an excursion into how automated teller services played out in Bangladesh. The population of the study comprises all ATM users. The study is carried out in Sylhet metropolitan area over 7 consecutive days. 51 card users participated in the opinion survey, and this article is the outcome of that survey. Card users are chosen in a convenience method.

The initial survey revealed that on some accounts customer satisfaction varies dramatically from one bank to another, and users of some ATMs face more problems than other ATM users. Moreover, the number of ATMs installed varies considerably from bank to bank—the figure going from as few as 1 for several banks to as high as 17 in the same metropolitan area.

Table-1 : contains the number topsy-turvy of ATMs across banks.

Banks	Total ATMs	Percent	Users	Percent
UCBL	7	10%	5	10%
Brac	7	10%	5	10%
City	5	7%	4	8%
Mercantile	5	7%	4	8%
DBBL	17	24%	12	24%
AB	8	11%	5	10%
IBBL	5	7%	4	8%
Prime	5	7%	4	8%
Trust	1	1%	1	2%
Pubali	11	15%	7	14%
Total	71	100%	51	100%

Taking the number of ATMs a bank has as indicative of the market share of the bank, the same proportion is kept in the sample of users surveyed so that the sample reflects the population (Table 1).

The survey is conducted at ATM terminals. Whenever a user came at the booth, s/he is approached with a questionnaire and asked to fill it up. No prior contact was made with the respondent; neither the participant was provided any incentive for partaking in the survey—it was solely on voluntary basis.

A structured questionnaire is used for the purpose. It consisted of multiple choice questions, dichotomous questions and multiple response questions. Different aspects of ATM use are put on satisfaction yard stick, such as speed and accuracy, withdrawal limit and number of transactions limit; satisfaction regarding privacy and security of the booth, location and number of ATMs, available services and charges, wait time etc is corralled in the survey.

For the purpose of satisfaction calibration, a five point Likert scale is used, where 5 indicated strong satisfaction and 1, at the other end of the continuum, indicated strong dissatisfaction; 2, 3, 4 indicated levels in between. To mark off the problems faced by customers in ATM use multiple response questions is used. Care has been taken to make the problem list comprehensive. Problems surfaced in the survey are power outage, network failure, card stuck, unavailability of desired denominations, computer crime, torn or fake notes etc.

General knowledge is that customers usually do not tend to report a problem since they presume that such reporting does not do any good. To understand what percent of problem goes unreported and if the reporting customer is satisfied with the way the report is handled by the bank, is also elicited in the survey. Such demographics of participants as age, sex, occupation and educational qualification are also corralled to factorize those in customer satisfaction. Length of ATM card usage, possession of multiple cards, and the frequency of card use also came up in the survey.

Two things put an undertow to the sample size forcing it to be restricted to 51. First is locking the proportion of card users in the sample to the same proportion of ATMs a particular bank has in the locality. It was that several users of one ATM may be available for interview but the number of ATMs of that bank in the population required fewer than that to be interviewed. On the other hand, chance was also that there are several of ATMs of a particular bank but enough number of users cannot be found to take interview. Moreover, tempus fugit was there to bedevil from behind. Last, but in no way the least, is the outrageous reluctance on card users' part to spare their valuable time to partake the survey.

SPSS 16.0 is used to analyze data. One sample t Test and Kruskal Wallis test are used in analysis.

Result and Discussion

1 Respondents Profile

Mainly males are card users predominantly within the age range 20-30 years

Table-2 : Age * Sex Crosstabulation

Count				
		Sex		
		male	female	Total
Age	below 20 years	2	0	2
	20-30 years	36	2	38
	31-40 years	5	3	8
	above 40 years	2	1	3
Total :		45	6	51

Most card users do jobs at service organizations and half of the users have educational qualification below graduate level (Fig 1 & 2).

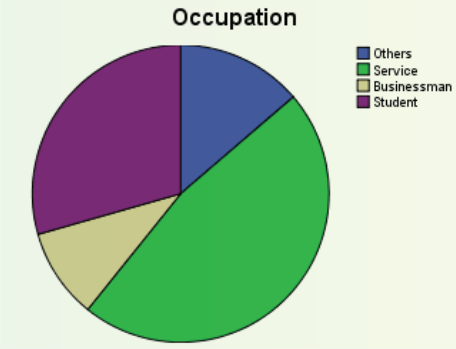

Figure 1

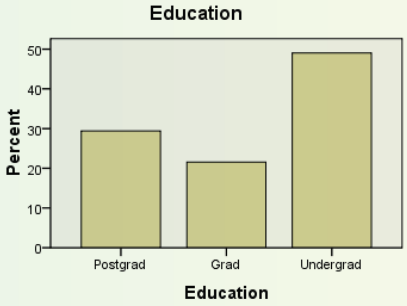

Figure 2

Length of being ATM card user has no effect on the possession of multiple cards by the user as can be seen in Table 3. Customers on an average use the card five times per month

Table-3 :

Time of ATM use * Multiple card Crosstabulation				
Count				
		Multiple card		
		No	yes	Total
Time of ATM use	less than 1 year	3	1	4
	1-3 years	26	9	35
	4-5 years	5	4	9
	more than 5 years	1	2	3
Total		35	16	51

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.046[a]	3	.385
Likelihood Ratio	2.863	3	.413
Linear-by-Linear Association	2.535	1	.111
No. of Valid Cases	51		

a. 5 cells (62.5%) have expected count less than 5. The minimum expected count is .94.

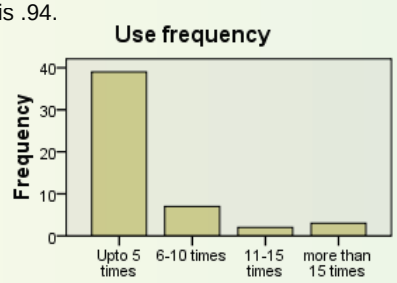

Figure : 3

2. Users Satisfaction

Table-4 : Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Speed of ATM	51	2	5	4.33	.589
Accuracy of ATM	51	2	5	4.18	.684
Transaction number	51	2	5	3.80	.775
Withdrawal limit	51	2	5	3.37	1.076
Privacy of booth	51	2	5	3.88	.791
Security of booth	50	2	5	3.18	1.137
Location of ATM	51	2	5	3.69	.905
Number of ATMs	50	2	5	2.84	1.037
Service charge	51	1	5	3.45	1.189
Services available	50	1	5	3.60	1.030
Ease of operation	51	3	5	4.41	.536
Availability of money	51	2	5	3.57	1.025
Waiting time	51	1	5	3.90	.900
Valid N (listwise)	48				

One Sample t Test divides ATM factors into those customers feel satisfied with and those they are not with (Table 5). The test is run with the test value setting at 3.5. The assumption here is that if the mean value is above 3.5 for a factor, customers are satisfied with it. On the other hand, if the mean value is smaller than 3.5, it indicates customers' dissatisfaction with the variable. To see if satisfaction means vary across banks the nonparametric Kruskal Wallis test is run (Table 6).

Table-5 :

One-Sample Test

	Test Value = 3.5					
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Speed of ATM	10.108	50	.000	.833	.67	1.00
Accuracy of ATM	7.060	50	.000	.676	.48	.87
Transaction number	2.800	50	.007	.304	.09	.52
Withdrawal limit	-.846	50	.402	-.127	-.43	.18
Privacy of booth	3.451	50	.001	.382	.16	.60
Security of booth	**-1.990**	**49**	**.052**	**-.320**	**-.64**	**.00**
Location of ATM	1.469	50	.148	.186	-.07	.44
Number of ATMs	**-4.499**	**49**	**.000**	**-.660**	**-.95**	**-.37**
Service charge	-.295	50	.770	-.049	-.38	.29
Services available	.686	49	.496	.100	-.19	.39
Ease of operation	12.153	50	.000	.912	.76	1.06
Availability of money	.478	50	.635	.069	-.22	.36
Waiting time	3.189	50	.002	.402	.15	.66

Test Statistics[a,b]

	Chi-Square	df	Asymp. Sig.
Speed of ATM	6.218	9	.718
Accuracy of ATM	12.328	9	.195
Transaction number	7.482	9	.587
Withdrawal limit	6.672	9	.671
Privacy of booth	4.180	9	.899
Security of booth	**17.252**	**9**	**.045**
Location of ATM	11.177	9	.264
Number of ATMs	**18.209**	**9**	**.033**
Service charge	18.938	9	.026
Services available	8.348	9	.500
Ease of operation	7.505	9	.585
Availability of money	3.595	9	.936
Waiting time	10.830	9	.288

a. Kruskal Wallis Test

b. Grouping Variable: Bank

The t-Test demonstrates that customers are satisfied with the speed, accuracy and privacy of the ATM. They find the number of transactions per day satisfactory. They feel the operation of the terminal easy and user friendly and the wait time to execute their transaction reasonable; ATMs provide a wide range of services, are located at convenient place and do not run out of money when they should not.

At 10% level of significance, however, customers are less than satisfied with the security of the ATM booth and the number of ATMs in one locality; users feel insecure at the terminal, and find the number of ATM booths inadequate. These two problems, nonetheless, are exception for one or two ATMs and in no way the general trend; the Kruskal Wallis Test shows that at 5% level of significance the condition of security at booths and the number of ATMs are not same across banks. On the other hand, though customers seem to be less comfortable with the withdrawal limit per transaction and surcharge for ATM use, but they are not statistically significant (Table 5).

3. Problems and Feedback

What beset customers most concerning the use of ATM is the faulty and disruptive network; operation failure and having the card stuck in the machine trails in short order (Figure 4). Other problems faced by customers fade away against those.

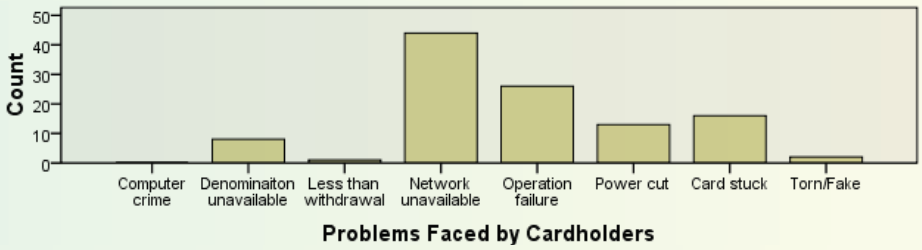

Figure 4

The corresponding Pareto chart shows addressing network and operation failure problems will solve 80 percent of the total problem (Figure 5).

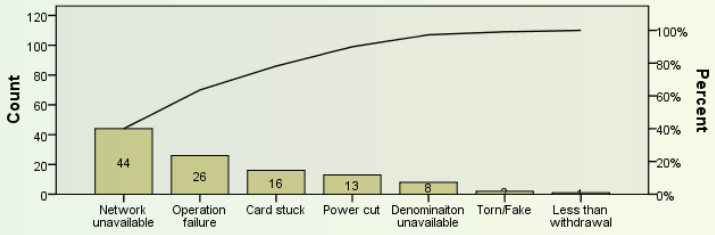

Figure 5

51 out of 51 participants in the survey faced one or several of the problems; however, only 37% reported it to the management. Most customers who reported the problem (70 percent), nonetheless, are satisfied with the way banks handle the problem (Figure 6). Thus the problem handling procedure of banks is also satisfactory.

Figure 6

Recommendation

- Customers feel insecure at the booth. The lighting of the terminal should be increased, and installing surveillance system should add to the security condition. Consoles can be made well-partitioned prohibitive to protruding eyes. Customers in one way or the other must defray the cost of beefed-up security.
- Many customers report inadequacy of number of ATM terminals in an area. Piggybacking on other operators can solve the issue at not more than little expense. Increasing the number of ATMs might be another option—though expensive. Customers, however, would not mind shouldering that cost for smooth access.
- Technical nuisances like disruptive network, failure of operation and getting the card stuck inside the ATM slot are minor but potent enough to renege on customers once the problems become unremitting. Therefore, they should not avoid the eye of the firms.
- Far more than half of the population who faced one or more problems during their use of the ATM did not even bring it to the notice of bank management; only 37% reported! Might be customers find the procedure byzantine or become dis-incentivized to tread the labyrinth. Therefore banks should encourage customers to report, and find out if customers face any difficulty in reporting.

Conclusion

Overall, ATM users are satisfied with the automated teller service. Though customers have ire with security adequacy at the terminal and qualms with the number of ATM booths nearby, comfort is even these nuisances are the exception, not the rule of the service! All in all, customers expressed their satisfaction. Unavailability of network though put infringement, trailed by operation failure and card stuck, customers are satisfied even with the sincerity and earnestness banks resolve the problem once the customer brings it to their notice. What to rub in is complacence, nevertheless, cannot get the better of the bank management. Banks should struggle to solve the customer grievances.

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Forecasting Short-term Borrowing and Lending Rate in Inter-Bank Market

-Papon Tabassum
-Sujan Kumar Ghosh

Abstract

The call money rate or short-term inter-bank borrowing and lending rate is generally the rate that a large number of banks use to borrow and lend from one another in the overnight market for a short period of time. This study has been attempted to forecast short-term inter-bank borrowing and lending rate of Bangladesh up to 2021. The month-wise data for the years 1997-2013 has been used to forecast the rates for each month-wise of the next eight years. This data has been obtained from Bangladesh Bank. Box-Jenkins ARIMA model have been deployed to forecast the rates. During the perod 1997 to 2013, data series shows that there were some differences in pattern of movement (trend) between borrowing rate and lending rate but after the end of 2006, the trend of rates are same. Results suggest that both the borrowing and lending rates indicate a cyclical pattern till 2013, it will be remained same till 2016 and after that fluctuation between the rates will be seen but at a slowly decreasing rate. In December 2014, short-term inter-bank borrowing rate will be at 7.78 and lending rate will be 7.82. In December 2021, short-term inter-bank borrowing rate will be lowest at 6.95 and lending rate will be 7.01.The study also recommends to provide appropriate environment through necessary incentives and facilities to the lenders and borrowers ensuring the removal of bottlenecks of money market.

Keywords : Call Money Rate, Overnight Money Rate, Call Money Market, ARIMA, Forecasting, Time series, ADF, Box-Jenkins

JEL Classification : C22, C32, C53, E52

1. Introduction

1.1 Background of the Study

With economic reforms and financial liberalization, Bangladesh started to put greater reliance on a market based financial system since the early 1990s. Overtime, among others, administered interest rate structures have been abolished and deregulation in the banking sector has taken place (Shahiduzzaman & Naser, 2007). Accordingly, Bangladesh Bank (BB), the central bank of Bangladesh, started reinforcing indirect monetary policy operations, namely repo (repurchase agreement), reverse repo, interbank repo and floating exchange rate system. Through the passage of time, an increasing focus has also been given to monitor the day-to-day activities in the short-term inter-bank borrowing and lending market or call money market in order to pursue a prudent monetary policy by the

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central bank. Theoretically, call money market is the institutional arrangement where short-term funds flow from banks and other financial institutions holding excess liquidity to banks and financial institutions in need of immediate funds without any collateral security. There are various reasons why central banks around the world pay greater attention to the stability of the call money market. It is generally viewed that the uncertainty caused by volatility in the call money rate gives confusing signals to the market participants about the stance of the monetary policy. In addition, as other interest rates in the money market come with different lags, it is the call money rate, which the central bankers and market participants can monitor on a daily basis. In a market, where call money rates fluctuate from a very high to a very low end, market players, especially banks, are encouraged to keep higher excess reserve than under normal situation to meet the uncertainties and can even be reluctant to purchase near cash assets like bills and bonds from the primary market. The situation exacerbates if there is no active secondary market for bills and bonds where banks can easily convert those to cash reasonably quickly. In such a situation, Open Market Operations (OMOs) conducted by the central may not be such effective as to influence the excess liquidity in the market.

Call money rate for overnight transactions reflects the demand for and supply of liquidity in the market. Therefore, the use of monetary policy instruments to influence the liquidity position in the market places a substantial impact on the rate. A common objective of the central bank's monetary policy is thus to minimize the persistent deviations of the call money market rates. It is therefore expected day-to-day implementation of monetary policy would be linked to the stability of the call money market rate. On the other side, if market participants find that the central bank's operational measures can effectively control the movement of market rates then they incorporate the belief into their demand. Obviously, the success of this process depends on the effectiveness of the transmission channel of the interest rates. However, if such success holds, credibility of the central bank would be enhanced, which further helps policy measures to become more effective. It is also argued that central banks can use open mouth operations (signaling) rather than any actual interventions to keep market rates at a target level, if such credibility holds (Guthrie & Wright, 2000).

Given the above reasons, there is a common objective of a central bank's operational policy to minimize the persistent deviations of the overnight money market rate(s) from its policy rates. This study forecasted the future pattern of short-term inter-bank borrowing and lending rate till 2021, which will take us to the 50th anniversary of our independence[1]. In order to do so, the time series pattern of both the rates between the periods 1997 to 2013 on a monthly basis with 204 observations have first been examined. Having investigated this pattern, empirical models for both the rates have been created for capturing the feature of the data. The empirical results presented in the paper have important implications for monetary policy.

1 Bangladesh Government has chalked out Vision-2021 program aiming to elevate the country as a middle-income country over the next decade.

1.2 Objectives of the Study

The paper is an attempt to identify the following two research questions, one, to show the trend pattern of short term inter-bank borrowing and lending rate based on month-wise data for the period 1997-2013 and two, to forecast short term inter-bank borrowing and lending rate over a period 2014-2021.

2. Literature Review

As money became a commodity, the money market became a component of the financial markets for assets involved in short-term borrowing, lending, buying and selling with original maturities of one year or less (Wikipedia). According to Akhtaruzzaman et al. (2005), the five distinct components under the organized segment of money market in Bangladesh are: Inter-bank Market, Call Money Market, Bill Market, Repo Market, and Reverse Repo Market. Among them, inter-bank call money market is very important for the financial institutions for their required fund management. Short-term inter-bank borrowing and lending rate are actually termed together as Call money Rate or Call Money Rate or Overnight Money Rate or Overnight Call Money Rate or Broker Loan Rate or day-to-day Money Rate or Islamic Inter-bank Fund Market (IIFM).

Bangladesh Bank (BB), the central bank of Bangladesh, has introduced a new call money market, Islamic Inter-bank Fund Market (IIFM), for shariah-based banks and financial institutions. BB laid out a set of rules, according to a statement released. The decision to introduce the IIFM has been taken to discipline the liquidity management of all shariah-based banks, financial institutions and Islamic banking branches of the traditional financial institutions and banks operating in Bangladesh. It is said that the transactions would be based on profit instead of interest. According to the rules, if a bank has excess funds, it will invest the amount in the IIFM for a day, allowing another cash-starved Islamic bank to borrow for the same period (The Daily Star, 2011).

According to Sarker (1999), it is generally observed that Bank Rate has a significant impact on the movement of transaction in call money market and the interest rate associated with it. In general, call money rate varies directly with the movement of Bank Rate but transaction varies in different direction. It is also noticed that though the Bank Rate remained fixed for a considerable period of time, the rates of interest in call money market fluctuated significantly. Therefore, it may be assumed that many factors other than Bank Rate contribute to the fluctuations of transaction and rate of interest in this market. The major factors that can be held responsible for the movement of the transactions in call money market and the rates of interest associated with it are as follows: Economic Activity, Delay in Getting Loan from the Central Bank, Attitude of the Central Bank, Availability of Loanable Fund, Maintenance of Banker-customer Relationship and Avoidance of Penalty from Central Bank Sarker (1999).

The primary money market of Bangladesh is comprised of banks, Financial Institutions (FIs) and primary dealers as intermediaries and saving and lending instruments, treasury bills as instruments. There are currently 15 primary dealers (12 banks and 3 FIs) in Bangladesh. The only active secondary market is overnight call money market which is participated by the scheduled banks and FIs. The money market of Bangladesh is regulated by BB, the central bank of Bangladesh (BB Website).

Overnight rate refers the interest rate at which a depository institution lends immediately available funds (balances within the central bank) to another depository institution overnight. Overnight means 24 hours. Theoretically in Bangladesh, loan is taken for 24 hours but practically its goes for more than one day and maximum 7 days. All listed banks and financial institutions are participated in this system. Bangladesh Bank does not fix its rate. Its rate depends on demand and supply of the money market. The demand of call money is high sometimes seasonally especially in Eid Festival.

In recent years, the inter-bank call money rate remained almost stable as there was injection of fresh funds by the central bank in the market ahead of the Eid-ul-Fitr. The central bank sometimes injects fresh funds through purchasing US Dollar from the commercial banks directly and some banks are selling their excess foreign currency to the central bank and receive local currency that is being used in the money market before the Eid festival. The short-term borrowings normally increase before the Eid festival for meeting the growing demand of bank clients. The central bank continues its intervention in the inter-bank foreign exchange market through buying of US currency directly from the commercial banks aiming to keep the market stable (The Financial Express, 2009).

According to Alam (2013), though the demand for cash increased in the banks and Non-Bank Financial Institutions (NBFIs) ahead of the Eid-ul-Fitr, the inter-bank call money rate remained steady. The call money rate is the interest rate that banks charge other banks or financial institutions on overnight loans. The banks borrow funds from other banks to finance the shortfall created during festival-time demand. Usually, the call money rate experiences an abnormal rise ahead of two major festivals, the Eid-ul-Fitr and the Eid-ul-Azha. “Of the total amount, some amount of money has been injected into the banking sector by the central bank. The remaining amount was meant to replace with the mutilated notes. However, BB statistics shows that the banks and NBFIs transact at a call money rate. Meanwhile, commercial bank branches in the city and elsewhere witness a rush of customers withdrawing cash before Eid. Bank managements take preparations in advance before Eid to meet the demand for cash to mark the Eid. Besides, managements of different banks stock adequate cash to be posted in the Automated Teller Machine (ATM) booths time to time to facilitate cash withdrawal. But sometimes the demand for taka soars ahead of the Eid, but fails to make much impact on the currency market, as call money rates does not significantly increase. Bankers are not attaching any significance to the meagre one to one-and-half percent rise in the call money rates because they think it is normal.

Considering that the last banking day ahead of Eid, the rush for the cash withdrawals from the bank are huge. But that does not push up the call rate very much. For various reasons there is adequate liquidity in the market. The Bangladesh Bank has been helping the commercial banks to maintain the cash flow by offering special repos. This has stabilized the currency market (Abdullah, 2013). According to a Bangladesh Bank statement, during the first five days of the current month, the Central Bank has boosted circulation of money by Tk. 35.34 billion. Updated statement of the Bangladesh Bank showed a banking sector surplus of Tk. 720 billion. Of this, Tk. 500 billion was invested in various government bills and bonds. Banks were free to invest the remaining around Tk. 220 billion, but it could not do so for weak demand. Due to the surplus cash in the banks, the demand for call money is less in 2013. That is why even the interest rate is stable. Three years ago, on December 19, 2010, banks and other financial institutions had to borrow money at a whopping 190 percent interest due to acute shortage of cash. From since last year the situation has turned for the better with call money rates stabilizing between 7 to 12 percent. However, it had increased to 18 to 20 percent ahead of Eid. In 2013, it is truly stable even in the festive season – another indication of Bangladesh's economic stability in the midst of uncertain, fractious politics (www.bdnews24.com).

Bangladesh Bank has recently issued a circular to submit Net Asset Particulars only through online to the Department of Financial Institutions and Markets within 25 January and 25 July DFIM Circular Letter No. 7, dated September 1, 2013. Financial institutions have to submit Net Asset Particulars due to account of the limit of borrowing credit from call money market (Highest limit of Net Asset is 15%).

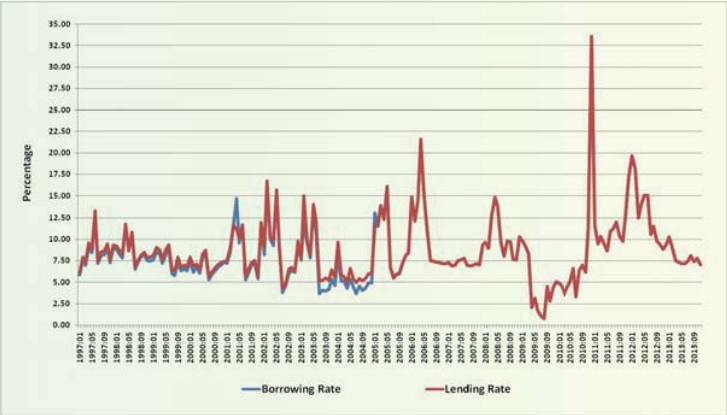
3. Data and Methodology

The data of this article is collected from Bangladesh Bank, Monthly Economic Trend, Various Issues. The information of the study is based on both qualitative and quantitative data. Qualitative data was compiled by computer program such as MS Word. Quantitative data is analyzed by Eviews-7.1 software and MS Excel. This study has been adopted the methodology of Box-Jenkins using ARIMA models and Augmented Dickey Fuller (ADF) for Unit Root Test. The article is divided into different sections. After introductory section, second chapter reveals the literature review. The third section shows the methodology of the study. The fourth, fifth and sixth sections are the analysis parts. Fourth section expresses the trend of short-term inter-bank borrowing and lending rate. The fifth section formulates the models. The sixth chapter forecasts the rates. The seventh section includes recommendations and concluding remarks.

4. Data Plotting and Analysis

Based on data, at first the author has tried to plot these data in a line curve (Figure-1) and tried to understand the types of trend pattern.

Figure-1: Monthly Short-term Borrowing and Lending Rate in Inter-Bank Market for the Period 1997-2003



Source: Authors' Calculation.

Figure-1 shows cyclical components of time series analysis with little seasonal factors. The series of Figure-1 displays no trend. It does, however, appear highly serially correlated. There is some seasonality in this series also. Basically, Eid festival is the season when most fluctuations are seen in our country. But the month of Eid is not fixed as it is decided based on moon. According to Naser & Shahiduzzaman (2009), month-by-month analysis for the period 1997 to 2007 suggests that call rates have an upward trend starting from March to June. Thereafter, a gradual downward movement sets in up to November. After a brief slowdown, the rates again move up for the month in December for the practice of 'window dressing' by the commercial banks. But after those periods, it has a reverse trend. Figure-1 reveals that the call rates have been highly volatile reflecting some noise and brisk activities in the money market, resulting from the pressure in the foreign exchange market and tight liquidity situation in the money market (Bangladesh Bank, Annual Reports, Various Issues, Chapter 6). According to Bangladesh Bank, Monetary Policy Statement (January- June 2014), Call money rates have leveled off and average retail interest rate spreads have fallen below 5%. Call money rates have declined since their peaks in early 2012 when they were around 20%, and also fell in H2FY13 from around 10% in January 2013 to around 7% in June 2013. They have since leveled off ranging from around 7-8% in H1FY14.

5. Model Identification and Analysis

To uncover the hidden structure as well as to forecast short-term inter-bank borrowing and lending rate, the following equations have been taken into consideration in this work:

$B_t = \alpha + \beta_p B_{t-p} + \theta_q \varepsilon_{t-q} + \lambda D_t + \varepsilon_t$ ..... (i)

Where,

B_{t-p} = Borrowing Rate at Period t-p

ε_t = Random Error Term at Period t

ε_{t-q} = Random Shock at Period t-q

D_t = Dummy Variable, where D_t =1 if time is month of Eid and 0 otherwise

p = AR Model

q = MA Model

t = Present Period

α, β_p, θ_q and λ are Parameters to be Estimated.

$L_t = \alpha + \beta_p L_{t-p} + \theta_q \varepsilon_{t-q} + \lambda D_t + \varepsilon_t$ ..... (ii)

Where,

L_{t-p} = Lending Rate at Period t-p

ε_t = Random Error Term at Period t

ε_{t-q} = Random Shock at Period t-q

D_t = Dummy Variable, where D_t =1 if time is month of Eid and 0 otherwise

p = AR Model

q = MA Model

t = Present Period

α, β_p, θ_q and λ are Parameters to be Estimated.

Both the above equations are nothing but ARIMA models, which are developed by Box & Jenkins (1976). Since then, this model has gained enormous popularity due to its versatility in many areas in business and in economics in particular. Here dummy variables are used in both the models. Generally, there is no significant seasonality is seen in these data series, but there are some significant fluctuations also in these series. As it is a rare case, that's why dummy variables are used here and Holiday Variation which is one type of calendar effect of measuring seasonality due to Eid festival. Because of this, an "Eid Dummy" is used here which is 1 if the month contains Eid and 0 otherwise.

From the line graph (Figure-1), we see a time series of short-term inter-bank borrowing rate that is non-stationary in both mean and variance. After plotting the data series through E-views 7.1, the Autocorrelation Function (ACF) and Partial Autocorrelation Function (PACF) also indicate that the time series is non-stationary as there is a significant spike at ACF at lag 1, and then slowly declined. The PACF also shows that it has also spike at lag 1. Therefore, it can again be conclude that the time series is non-stationary. Taking the first difference of the data gives the series of monthly changes. Now the series looks just like a white noise series, with almost no autocorrelations or partial autocorrelations outside the 95% level. Now it is clear that the ACF and PACF at first difference series have no significance spikes at any lags. Thus, ARIMA models with first difference are recommended for the time series. We see that after taking first order difference, the absolute value of ADF test statistics (-13.69) is greater (in absolute terms) than the critical "tau" (in absolute terms) -2.58, -1.94, -1.62 at 1%, 5% and 10%, respectively. Therefore, we can conclude that the values of series are stationary at first difference and the first differenced time series can be used for forecasting. The Durbin-Watson statistics is significant at 2.03. In order to find the values of the model coefficients which provide the best fit to the data and testing the assumptions of the model to identify any areas where the model is inadequate. Then, we can construct the ARIMA model as following steps.

Table-1: Value of the Model Coefficients for Short-term Inter-bank Borrowing Rate

ARIMA Model	BIC	Adjusted R^2	SEE
1;1;1	**5.120800**	**0.184868**	**3.032917**
1,7;1;1	5.160226	0.178107	3.057586
1,2;1;1	5.141696	0.189310	3.031905
1,2,7;1;1	5.177555	0.181698	3.050900

Source: Authors' Calculation.

Schwarz Criterion (BIC) has achieved the smallest values for model (1;1;1) compared with other models, this would prove that (1,1,1) is the optimal model for forecasting. So, the model of short-term inter-bank borrowing rate can be written as:

$$B_t = \alpha + \beta_1 B_{t-12} - \theta_1 \varepsilon_{t-12} + \lambda D_t + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots \text{(i)}$$

Where,

B_{t-12} = Borrowing Rate at Period t-12 for AR(1) Model

ε_{t-12} = Random Shock at Period t-12 for MA(1) Model

D_t = Dummy Variable

ε_t = Random Error Term at Period t

α, β_1, θ_1 and λ are Parameters to be Estimated.

Similar procedures are also followed for short-term inter-bank lending rate as its data series is also looked like borrowing rate. After taking first order difference of lending rate, the absolute value of ADF test statistics (-13.98) is greater (in absolute terms) than the critical "tau" (in absolute terms) -2.48, -1.94, -1.62 at 1%, 5% and 10%, respectively. The Durbin-Watson statistics is significant at 2.03. Now we can construct the ARIMA model as following steps.

Table-2: Value of the Model Coefficients for Short-term Inter-bank Lending Rate

ARIMA Model	BIC	Adjusted R^2	SEE
1;1;1	5.106277	0.191979	3.010973
1,2;1;1	**5.097516**	**0.219878**	**2.965664**
1,2,7;1;1	5.160322	0.186873	3.024725

Source: Authors' Calculation.

Schwarz Criterion (BIC) has achieved the smallest values for model (1,2;1;1) compared with other models, this would prove that (1,2;1;1) or (1,1,1) [smallest AR] is the optimal model for forecasting. So, the model of short-term inter-bank borrowing rate can be written as:

$$L_t = \alpha + \beta_1 L_{t-12} + \theta_1 \varepsilon_{t-12} + \lambda D_t + \varepsilon_t \quad \text{..... (ii)}$$

Where,

L_{t-12} = Lendig Rate at Period t-12 for AR(1) Model

ε_{t-12} = Random Shock at Period t-12 for MA(1) Model

D_t = Dummy Variable

ε_t = Random Error Term at Period t

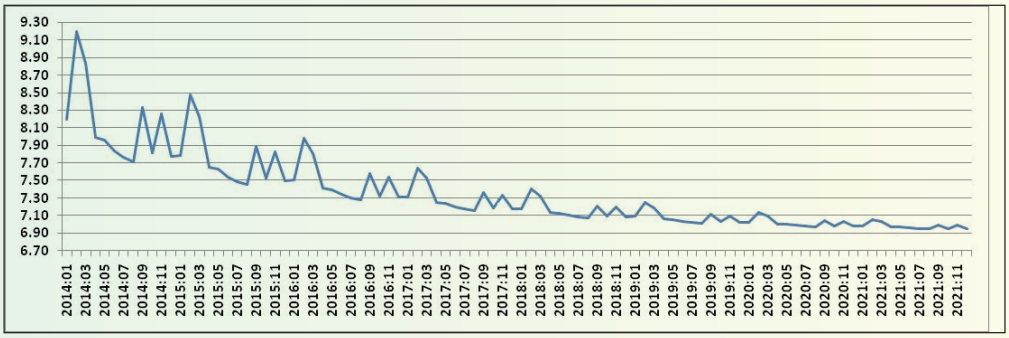
α, β_1, θ_1 and λ are Parameters to be Estimated.

6. Forecasting

6.1 Forecasting Short-term Inter-bank Borrowing Rate

Bangladesh has been experiencing a relatively moderate but sustained short-term inter-bank borrowing rate in recent years. This study has found that this trend will not sustain in the every month of next 8 years as we see the trend has downward gradually with cyclical fluctuations at a certain rate (in between 9 to 6) as there are still seasonal factor of the month of Eid festival (Figure-2). All the forecasted values of every month of next eight years (up to 2021) are shown in Appendix-1 which is shown with following line curve.

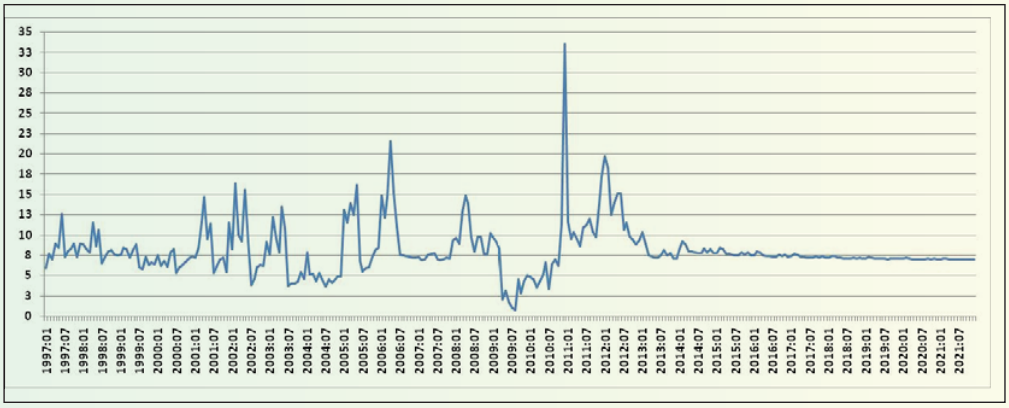
Figure-2: Forecasted Short-term Inter-Bank Borrowing Rate for the Period 2014:01 to 2021:12



Source: Author's Calculation

In Figure-3, we see the history of short-term inter-bank borrowing rate of Bangladesh starts through 1997, together with the out-of-sample point and 95% interval extrapolation forecasts for the next 96 months begins through 2014. The forecasts look reasonable; the model has evidently done a good job of capturing the cyclical patters with some seasonal factors.

Figure-3: Short-term Inter-Bank Borrowing Rate: History (1997:01-2013:12) and Forecast (2014:01-2021:12)



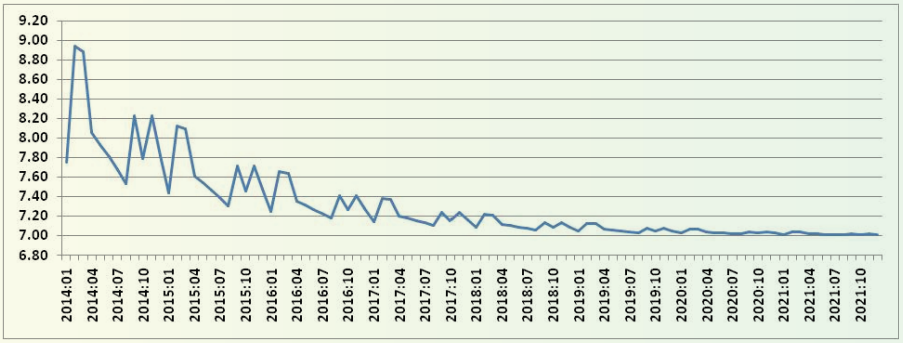
Source: Author's Calculation

6.2 Forecasting Short-term Inter-bank Lending Rate

Bangladesh has also been experiencing a relatively moderate but sustained short-term inter-bank lending rate like borrowing rate in recent years. This study has found that this trend will not sustain in the every month of next 8 years as we see the trend has downward gradually with cyclical fluctuations at a certain rate (in between 9 to 6) as there are still

seasonal factor of the month of Eid festival (Figure-4). All the forecasted values of every month of next eight years (up to 2021) are shown in Appendix-2 which is shown with following line curve.

Figure-4: Forecasted Short-term Inter-Bank Lending Rate for the Period 2014:01 to 2021:12



Source: Author's Calculation

In Figure-5, we see the history of short-term inter-bank lending rate of Bangladesh starts through 1997, together with the out-of-sample point and 95% interval extrapolation forecasts for the next 96 months begins through 2014. The forecasts look reasonable; the model has evidently done a good job of capturing the cyclical patters with some seasonal factors.

Figure-5: Short-term Inter-Bank Lending Rate: History (1997:01-2013:12) and Forecast (2014:01-2021:12)

Source: Author's Calculation

7. Recommendations

From the past and future behavior in the short-term inter-bank borrowing and lending market, it may be concluded that the need for additional inflow of cash may arise from different reasons. One bank cannot expect what is going to be happened in the other bank at a particular period of time due mainly to bilateral negotiations among the financial institutions. The situation is almost uncontrollable for any bank which feels the need of additional inflow of cash. Under the circumstances, banks need to come to central bank for soft lending like discount loan, repo facilities etc. But central bank has some limitations regarding outflow of money due mainly to keep the price level stable. Therefore, the banks/NBFIs have no other way but to borrow their necessary fund from the inter-bank money market at a high rate of interest which may help the market to be volatile. But to keep the these rates at a reasonable level, central bank has already advised the NBFIs to avoid their high dependency on call money market and also advised to seek their required fund through credit line, mortgage-based securitization, asset securitization, etc. as the substitute source of call money market for their long-term fund. Accordingly, it has been decided that all registered Financial Institutions (FIs) will be allowed to borrow money maximum 15% of their net asset from the call money market. Therefore, all FIs should keep the level of their borrowing from call money market at 15% (maximum) of their net asset. Besides these, we may recommend the following policy options:

1. Prudential guidelines may be issued for the participants so that the call money market should be perfectly competitive. For example all banks/NBFIs having excess cash reserve, should have willingness to participate in the inter-bank call money market for lending their fund.
2. Prudential guidelines may also be made for the utilization of money from inter-bank money market. Banks and NBFIs should mention the purpose of borrowing money from the call money market in their daily statements. In this regard, penalty may be charged for the banks those have taken the opportunities of borrowing money at a low interest rate and lend it to other banks/NBFIs at a high interest rate during the same period.
3. A strong data base on call money information (including daily database, the name of borrower and lender; bank-wise highest, lowest and weighted average interest rates on borrowing and lending; bank-wise amount of borrowing and lending etc.) along with a monitoring cell may be formed by the central bank for close monitoring of the movement of call money market etc.
4. To eliminate unofficial money broking business by the banks, a money broking house/company may be established.
5. The central bank can consider soft lending through its repo operations for those banks and NBFIs who are financially weak.

8. Concluding Remarks

The main objectives of this research paper were to forecast short-term inter-bank borrowing and lending rate till 2021. From this study, it is found that the short-term inter-bank borrowing and lending rate will be fluctuated at a slowly decreasing rate which highlighted the fact that during the entire forecasted period, there will be balance between supply and demand of credit in the call money rate and thus it will ensures smooth pace of investment and the country has a probability to maintain the current growth rate of these rates under money market operation.

Several important lessons emerge from the study for the market players, including the policy makers. The results suggest that Bangladesh Bank can influence the call money rate both through its conduct of the monetary policy and through the market structure that it creates through setting reserve requirements. Regarding the adoption of various indirect operational arrangements in recent years by BB namely, repo and reverse repo, both the repo and reverse repo operations can significantly influence the movement in the market clearing rates. Banks of Bangladesh will gain own solvency that inter-bank transactions will be less and only those will be happened during major crisis of liquid money. Bangladesh will succeed to be a middle-income country by 2021 which actually the target of the Vision 2021.

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Introduction to Bangladesh Bank Training Academy (BBTA)

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

BBTA's Mandate

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

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Bangladesh Bank has adopted its 5-year **Strategic Plan 2010-2014** and bestowed responsibilities upon BBTA (Strategy # 13, Objective 13.2) to adopt all-out efforts to enhance professional excellence and grooming of the officers of Bangladesh Bank. To fulfill the target of the plan document, BBTA has been employing its full capacity to providing need-based training to the officials both from central bank and commercial banks; continuously striving to diversify the contents of its courses in order to ensure their consistency with evolving training needs; facilitating the practical application aspects of knowledge of economics, banking and finance; and developing training as a scientific discipline.

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

1. Building and enhancing training capacities of the trainers;
2. Improving quality, efficiency, impact and cost-effectiveness of training programs;
3. Linking training with real-world cases and experiences;
4. Building training partnership programs with the public and private sector domestic and overseas training institutions;

5. Building and maintaining the BBTA financial institutions information system,
6. Utilization of the Internet for dissemination of the Academy's biannual Journal 'Thoughts on Banking and Finance';
7. Building a database on trainers and training institutions in the field of banking and finance; as well as
8. Facilitating the digitization of BBTA documents.

Organization

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

Location

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

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