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Thoughts on Banking and Finance

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July-December, 2021

Bangladesh Bank Training Academy
Mirpur-2, Dhaka-1216

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Bangladesh Bank Training Academy (BBTA)
Bangladesh Bank, Head Office, Mirpur-2, Dhaka-1216, Bangladesh
Phone: 880-2-48040816, Fax : 880-2-8032110
E-mail : bbta.respub@bb.org.bd

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Editorial Note

Bangladesh Bank Training Academy (BBTA) publishes the half yearly journal 'Thoughts on Banking and Finance' containing articles on key economic and financial issues which offer substantial insights to policymakers as well as researchers and academicians. The current issue contains 8 articles which shed light on different economic and financial matters related to Bangladesh and other Asian countries.

The first article 'Is Inflow of Foreign Loans in Bangladesh Sensitive to Interest Rate Differentials?' attempts to empirically analyse the relationship between foreign loan inflows and interest rate differentials in Bangladesh. The empirical results show that interest rate differentials have a positive impact on the gross inflows of foreign loans. It indicates that gross inflows of foreign loans would rise by 0.06 percentage point if interest differentials increase by 1 percentage point.

The second paper 'Equilibrium Exchange Rate, Current Account Deficits and Exchange Rate Misalignment in Bangladesh' aims to estimate the equilibrium exchange rate and the deviation of the exchange rate from its equilibrium in Bangladesh economy during the period of 1980-81 to 2017-18. Using nominal exchange rate, current account balance, GDP and Terms of Trade data the study finds that currently Bangladesh currency is overvalued compared to its equilibrium rate. This finding suggests gradual adjustment of exchange rate with the equilibrium value. The study also examines the impact of the determinants on the exchange rate. It reveals that external resource balance as proxied by the foreign aid and remittance have significant positive impact which indicates that an increase of external resource will depreciate the currency.

The third article 'The role of Interest rate liberalization on Endogenous Private Savings Growth on East and South Asian Countries- Staggered Diff and Diff panel data approach' examines the role of interest rate liberalization on private savings in eleven Asian developing countries using panel data for the period 1980 to 2015. The paper concludes that there is no significant impact of interest rate liberalization on private savings growth within the specified time. Nevertheless, it is traced that interest rate liberalization significantly stimulates the Asian financial crisis further to drain out the capital from Asian region.

The fourth article 'Responses of Domestic Investment to a change in Real Exchange Rate in Case of Bangladesh' investigates the long run relationship and detects the short-run and long-run causality among domestic investment, real Exchange rate and real income using annual data over 1976 to 2015. The result shows that real income and real exchange rate affects domestic investment positively and significantly. It is also found that there is long-run causality among the variables and short-run causality running from real income to domestic investment but no short run causality from exchange rate to domestic investment.

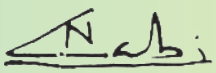
The fifth paper 'Measuring Efficiency of Commercial Banks: Empirical Evidence from Bangladesh' analyses the managerial factors that affect commercial bank's efficiency in Bangladesh from 2012 to 2016. The factor-Bank Efficiency is identified by Net Asset Value per share (NAV); Managerial Factors are identified and calculated by Cost Efficiency Ratio (CER) Liquidity Ratio (LR), Credit Composition Ratio (CCR), Credit Risk Ratio (CRR), Capital Adequacy Ratio (CAR), and the Bank Size (BSZ). The key finding of this study is that CRR, CER and BSZ are the major managerial factors that affect commercial bank efficiency in Bangladesh. Among the variables, both CRR & CER have significant but negative effect and BSZ has significant & positive effect on the efficiency of Bangladeshi commercial banks.

The sixth paper 'The Path designed to exterminate Poverty: PKSF Experiences in Bangladesh' aims to find out the efficacy of Ultra Poor Program (UPP) run by Palli Karma-Sahayak Foundation (PKSF) to deal with the problems of the Ultra Poor. The author selected PIDIM Foundation, one of Partner Organizations (POs) of PKSF to run a study by taking Interview of 40 respondents and arranging two Focus Groups Discussions. The study investigates the impact of Ultra Poor Program of PKSF on increasing income, expenditure, saving, consumption level, wage employment versus self-employment creation, enrollment of the school going children, asset, social dignity, acceptance, vulnerabilities and shocks, crisis coping mechanism, participation of ultra-poor in rural power structure. The author opines that sheer microcredit cannot change the life of ultra poor and they need rigorous education, vocational training and primary health care facilities.

The seventh paper 'People's Perception towards Life Insurance: Risk Management Tool or Expectation of Fixed Return' focuses on demographic factors (gender, age and income) and people's perception towards purchasing life insurance policies (either risk management motive or expectation of fixed return).The findings show that people consider buying different life insurance policies being influenced by their gender, age and income level. Furthermore, the study reveals that risk management and fixed return expectation factors individually have not much influence over people's buying life insurance. Conversely, when both factors are put together, the study concluded that people purchase life insurance considering risk management factors above fixed return expectation.

The eighth paper 'Effect of Stress on Employees Job Performance: A Study on Banking Sector of Bangladesh' examines the relationship between job stress and job performance on bank employees of Bangladesh. It uses the data obtained through structured questionnaire from 256 employees of commercial banks and employs the PLS-SEM technique for analyzing the data. The study finds that job related factors, organization related factors and individual factors are statistically significant and negatively correlated with employee job performances. Therefore, the result of the study confirms that job stress significantly reduces the performance of bank employees in Bangladesh. The results suggest that organization should facilitate supportive culture within working atmosphere of the organization to reduce stress level of employees.

Finally, I would like to convey my heart-felt thanks and sincere gratitude to all authors, reviewers and members of the Editorial Advisory Board and the Editorial Board of BBTA Journal for their sincere help and support to publish the current issue of the journal. I am also grateful to all associate members of the journal management committee for their hard and dedicated work for publishing the current issue. I appreciate constructive criticism and thoughtful feedback for further improvement of the Journal in future.



Dr. Md. Golzare Nabi
Director &
Executive Editor
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Is Inflow of Foreign Loans in Bangladesh Sensitive to Interest Rate Differentials?

Mahfuza Akther[1]
Mohammad Masuduzzaman[2]
Nazmun Nahar Mily[2]
Md. Maidul Islam Chowdhury[3]

Abstract

Theoretically, an increase in interest rate differentials—the difference between domestic interest rate and foreign interest rate—boosts either inflow of foreign loans or investment or both in any country. In Bangladesh, before the financial sector reform programme (FSRP) in 1990s, the inflow of external resources in the form of foreign direct investment (FDI), portfolio investment and other foreign loans were insignificant. But the policy changes in the financial sector, as well as the external sector, facilitated the increased inflow of external resources. Against this backdrop, this paper attempts to analyse empirically the relationship between foreign loan inflows and interest rate differentials in Bangladesh. The empirical results show that interest rate differentials have a positive impact on the gross inflows of foreign loans. It indicates that gross inflows of foreign loans will rise by 0.06 percentage point if interest differentials increases by 1 percentage point. However, the paper also finds that for the periods from quarters of 2012 onwards a higher response of gross inflows of foreign loans is evident with the change in foreign exchange policy. The paper suggests that liberalisation of external economic policies can expedite inflows of foreign loans in Bangladesh.

Keywords: International capital movement, interest rate differentials, external sector openness.

JEL Classification: C22, F21, F34, G15, O53

[1]General Manager (Retired), [2]Additonal Director, [3]Joint Director, Research Department, Bangladesh Bank. Views expressed in this article are the authors' own which do not necessarily reflect the views of the organization they work. All remaining errors are the authors own.

1. Introduction

Capital inflows in the form of foreign loans or foreign investment—foreign direct investment (FDI) and portfolio investment—are very crucial for countries facing external shocks or encouraging foreign investment for economic development. Both foreign loans and investment depends on the difference between domestic and foreign interest rates. While higher domestic interest rate increases inflows of external resources like FDI and portfolio investment, a lower foreign interest rate induces to increase in the inflow of foreign loans. Interest rate differential is considered as a major determinant of capital inflows into developing economies and at times, it is felt that changes in monetary policy measures could increase or decrease the volume of capital inflows into a country. Capital inflows can help to show the relative strength or weakness of the external sector of an economy through building up foreign exchange reserves.

Capital inflows grew worldwide in the second half of 2010 due to the sign of recovery of the global economy from the financial crisis and so there were a lot of investment opportunities in emerging markets. Now the question is what caused these inflows into emerging markets? The answer lies mostly in interest rate differentials— the gap between monetary policy interest rates in emerging market economies (EMEs) and advanced economies. Advanced economies have been still striving to recover from the financial crisis and have eased monetary policy. In contrast, the recovery of emerging markets has been much stronger and in order to keep this recovery sustainable, authorities have had to tighten monetary policy and control inflationary pressures. So, the interest rate differential widened and attracted capital inflows to emerging markets (Gregorio, 2011).

Interest rate differentials invite arbitrage operations, i.e. attempts by actors to profit from price differences across different markets. There is an incentive to borrow money in a low-interest currency and invest that money in another high-interest currency to earn the interest differential. Dornbusch (1976) and Frankel (1979) observed that a relative rise in domestic interest rates reflects a rise in the domestic real interest rate. A rise in domestic interest rates will attract foreign capital inflows and thereby bring on an appreciation of home currency which moves the exchange rate and the interest rate differential in the same direction. But large speculative flows in “search for yield” can potentially jeopardize financial stability as they are volatile by nature. Volatile inflows typically concentrated in short-term maturity instruments can trigger sharp asset price movements and destabilizing sudden stops or reversals of flows. The International

Monetary Fund (IMF) in its Global Financial Stability Report 2007 (IMF 2007b) suggested that more open economies and increased global liquidity are associated with lower capital volatility for emerging market economies.

In Bangladesh, before the financial sector reform programme (FSRP) in 1990s, the inflow of external resources in the form of FDI, portfolio investment, and other foreign loans were insignificant. But the policy changes in the financial sector as well as the external sector facilitated the increased inflow of external resources. However, the increasing gap between the international rate of interest and domestic rate of interest induced domestic investors to go for foreign loans which in turn raising gross capital inflows into Bangladesh. The foreign exchange market in Bangladesh is floating since 2003 which also insinuates that Bangladesh is moving towards market-based system for international transactions. So the issue of the inflows of foreign loans in Bangladesh is becoming more important and relevant for Bangladesh day by day. It is true that associated risks with the foreign loans are also necessary to be addressed but the benefit from foreign loans also needs to be considered as the country is suffering from sufficient private investment with low-interest rate. The existing relationship between interest rate differential and inflows of foreign loans can guide the policymakers to take the decision on further liberalisation of financial market and capital account addressing pertinent menaces.

The objective of the study is to identify the relationship between inflows of foreign loans and interest rate differentials; to find the interest rate (either domestic or foreign) dominating on the gross inflow of foreign loans in Bangladesh and to formulate external shock accommodating interest policy.

After reviewing the literature in the second section, we discuss the trends in capital inflows and interest rate differentials in Bangladesh in the third section. In the fourth section, we depict policy developments for capital inflow in Bangladesh. We explain methodology and model specification in the fifth section. The sixth section contains the analysis of empirical findings. The concluding observations and relevant policy recommendations are presented in the final section.

2. Literature Review on Capital Inflows

There is a large and growing body of literature dealing with various issues like trends, determinants and impacts on capital inflows, surprisingly a few are found on the relevant topics.

In the East Asian case, Bird and Rajan (2000) also found that an interest rate advantage persisted. Domestic interest rates actually increased due to financial liberalisation. In East Asian economies the persistent interest rate advantage was associated with rising domestic interest rates rather than falling world interest rates. This suggested that capital was "pulled" rather than "pushed".

In line with Bird and Rajan, Taylor, Mody and Kim (2001) analysed capital flows forecasts for 32 developing countries based on underlying domestic (pull) fundamentals and international (push) factors using a dynamic vector error correction framework. They took level of domestic credit, consumer price index, level of industrial production, short term debt to forex reserves ratio, credit rating, domestic short term interest rate and reserve to import ratio as a country-specific factors. They included factors such as the strength of the US output growth, the Emerging Markets Bond Index (EMBI), the US short-term and long-term interest rates, the US swap rate and the US high-yield spread (as proxies for a measure of risk aversion) as global or 'push' factors. Their variance decomposition analysis suggested that for developing countries domestic or "pull" factors were relatively more dominant in the determination of capital flows. Shocks to global real factors such as zero growth in the US industrial production which dropped capital flows to emerging markets substantially and continued to decline without any signs of recovery. They also found that changes in both the US interest rates and the US high-yield spreads had significant effects on capital flows to most emerging markets.

In linkage of capital inflows with economic growth Ying and Kim (2001) examined the macroeconomic factors of capital inflows and economic fluctuations in Korea and Mexico using the structural VAR method during the period January 1960 to April 1996.They took foreign interest rate and foreign output as push factors and as pull factors, they took domestic money supply and domestic productivity as determinants of capital inflows. Their empirical result suggested that a foreign interest rate shock generated a moderately negative effect on domestic output in both countries. They also observed that foreign output shock accounted for more than 50 percent of the variation in capital flows for both countries.

Chakrabarty (2006) has found a long-run relationship between net capital inflows, interest rate differential, and the real exchange rate using quarterly data for the period 1993 to 2003 for India by using the co-integration method. He also observed an error correction mechanism for the post-liberalisation period which related dynamic adjustment to capital inflows to the movements in the real exchange rate and the interest rate differential. Since 1993, the changes in the real exchange rate in India have mainly been due to the intervention by the Reserve Bank of India in the foreign exchange market. These changes in the real exchange rate were, therefore, followed by the changes in net capital inflows, such that a long-run equilibrium relationship changes among capital inflows, real exchange rate, and interest rate differential. The policy of exchange market intervention was, therefore, instrumental in preventing the volatility of the real exchange rate, which could have resulted from the volatility of the net capital inflows into India.

There is a debate on whether capital flows to emerging market economies are driven by external (push) factors or domestic (pull) factors. In this regards Culha (2006) studied the determinants of capital flows into Turkey using the Structural Vector Auto Regression (SVAR) model, impulse response function, and variance decomposition functions for the period 1992:M01 to 2005:M12. He used push-pull factors approach. He took the Istanbul stock exchange index, current account balance, real interest rate, and budget balance on Turkish T-Bills as pull factors while US industrial production index and interest rate on 3-month US T-Bills are taken as push factors. He found a general dominance of pull factors over push factors in determining capital flows into Turkey. More specifically, he found a negative relationship of capital inflows with budget balance and current account balance while a positive relationship was found between stock exchange price index and capital inflows. He also observed that a shock in the real interest rate in Turkey resulted from an immediate capital outflow in Turkey during the periods January 1992 to December 2005. Moreover, in the sub-period January 2002 to December 2005, it was seen that a shock to real interest rate tended to initially enhance capital inflows while keeping it in the positive territory over the twelve-month horizon.

Singh (2007) estimated a cointegration and error correction model (ECM) for the determinants of the Indian external commercial borrowings using quarterly data during the period March, 1993 to December, 2007. He observed that interest rate differential, real activity (proxied by IIP), and liquidity (proxied by broad money supply) had a statistically significant long-run effect on the demand for external borrowings. Liquidity had an inverse relation with the external borrowings while the real activity and interest

rate differential had a positive association. The coefficient of the error correction equation suggested that there is a rapid and complete adjustment to deviation from the long-run path of external commercial borrowings in about three quarters. He also found that an interest rate differential (arbitrage) was the second most important variable to explaining changes in external borrowings.

Singh has done the same job in 2009 and found a high correlation between external commercial borrowing disbursements and interest rate differential (i.e. the commercial banks' prime lending rates minus the six-month LIBOR). He examined the factors of various components of private debt flows and equity flows to India using multivariate regression on monthly data for the period 1993-2009. During the normal periods, the overseas borrowings are influenced by the underlying domestic demand shocks, the external credit shocks which seem to be the most dominant factor during the periods of the financial crisis. He also observed strong co-movement of ECBs and domestic activity which is predominantly influenced by the pace of domestic real activity, followed by interest rate differentials and the credit conditions in domestic markets. For determinants of non-resident Indian deposits, he applied vector error correction model (VECM) and found that NRI deposits are significantly influenced by real economic activity in the host country (index of oil price was taken as a proxy), exchange rate movements and interest rate differential (between the interest rate on NRI deposits and six month LIBOR) which revealed that NRI deposits were found to be much unstable in nature. He tested the Granger causal relationship between portfolio flows and the stock prices and revealed that these two variables have a simultaneous interaction due to their bidirectional causal relationship. Johansen's approach to the co-integration analysis also suggested a long-run relationship between the two variables. With regard to portfolio equity flows, he found co-movement in volatility of daily net foreign institutional investments inflows and stock returns.

To find out the relationship between interest rate differentials and capital inflows Verma and Prakash (2011) have done a great job and provides empirical evidence on the sensitivity of capital inflows to interest rate differential in the India specific context. By using both Granger causality and cointegration analyses during the period from 2001-2010, they suggested that foreign direct investment and foreign institutional investment equity flows, which together on a net basis are not sensitive to interest rate differentials as it depends on long-term fundamentals of the economy. In turn, debt-creating flows, in particular, external commercial borrowings, foreign currency denominated deposits and

non-resident Indian (NRI) deposits exhibit statistically significant sensitivity to interest rate differentials, even though other determinants of these inflows dominate significantly the impact of interest rate differential. They have also found that, at the aggregate level, cumulative gross capital inflows appear to increase by 0.05 percentage points in response to a one percentage point increase in interest rate differential.

Byrne and Fiess (2011) studied national and global determinants of international capital flows to emerging and developing countries. They assess the permanence of shocks to commonalities and their determinants if the commonalities exist. They consider individual country coherence with global capital flows and also measure the extent of co-movements in the volatility of capital flows. Their results suggested that there are commonalities in capital inflows, although aggregate or disaggregate capital flows respond differently to shocks. They found that the US long-run real interest rate is an important determinant of global capital flows, and real commodity prices are relevant but to a lesser extent.

In studies discussed above shows a positive relationship between capital inflows and interest rate differentials. As a developing country like Bangladesh foreign loans or investment can play a vital role on our economy and interest rate differentials positively influence in the capital inflows in Bangladesh though we have not found any literature on this issue in Bangladesh context. So, we are the first to examine this issue in context of Bangladesh.

3. Trends in Capital Inflows and Interest Rate Differentials in Bangladesh

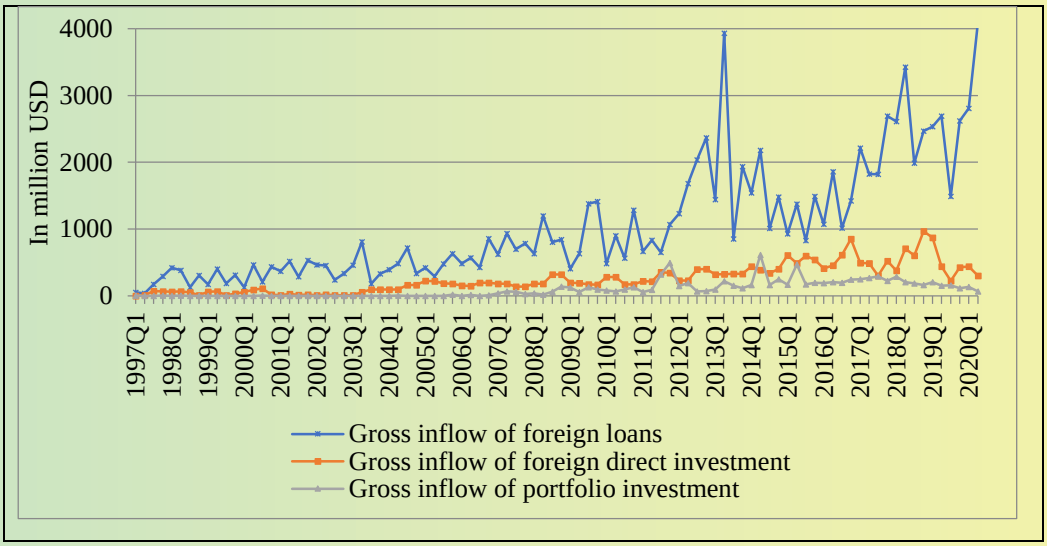
The statement of balance of payments (BOP) produced by Bangladesh Bank is the source of data on capital flows in Bangladesh. Capital inflows consist mainly of foreign loans (GFL), foreign direct investment (GFDI) and portfolio investment (GPI).

3.1 Trends in components of capital inflows in Bangladesh

Bangladesh recorded a capital and financial account surplus of USD 7.65 billion in FY20 from USD 691 million in FY97. The quarterly trends in the components of capital inflows (figure 1) show that GFL spearheaded the composition of the inflow over time. Data from 1997Q1 illustrates that GFDI and GPI are moving at a constant pace when GFL is moving with even fluctuations till 2012Q1. Then the fluctuations in GFL increased sharply with increasing trends in the flow. An important effect of post external sector liberalisation is the slight rise in GPI when GFDI shows even mean inflow with

increased fluctuations. But the scope of private sector borrowing raised the inflow of GFL significantly accompanying by high fluctuations following 2012Q1. The scope also affected other components of gross inflow but at a milder extent.

Figure 1: Trends in Components of Capital Inflows

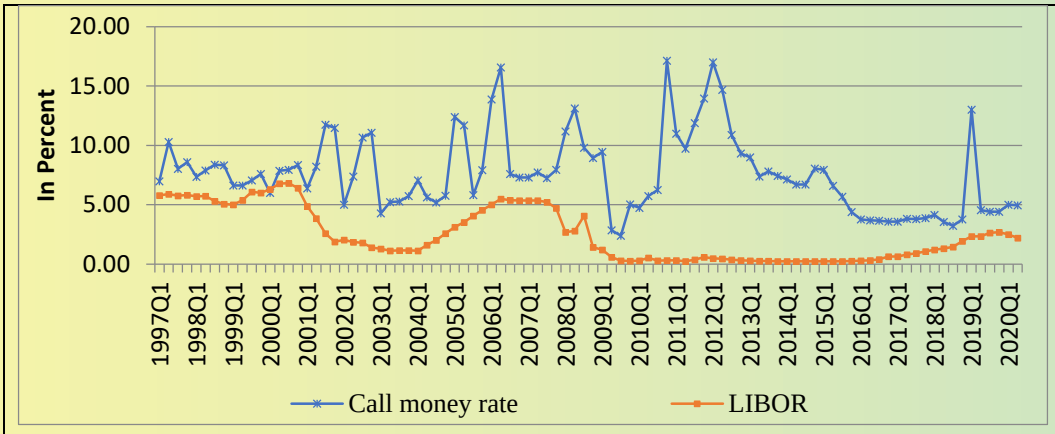


Source: Bangladesh Bank

3.2 Trends in Domestic and Foreign Interest Rates

The interest rate differential is defined by two interest rates: the interbank call money rate of Bangladesh and the London interbank offer rate (LIBOR). The movement of the domestic call money rate and LIBOR is shown in figure 2.

Figure 2: Trends in Interbank call money rate of Bangladesh and LIBOR



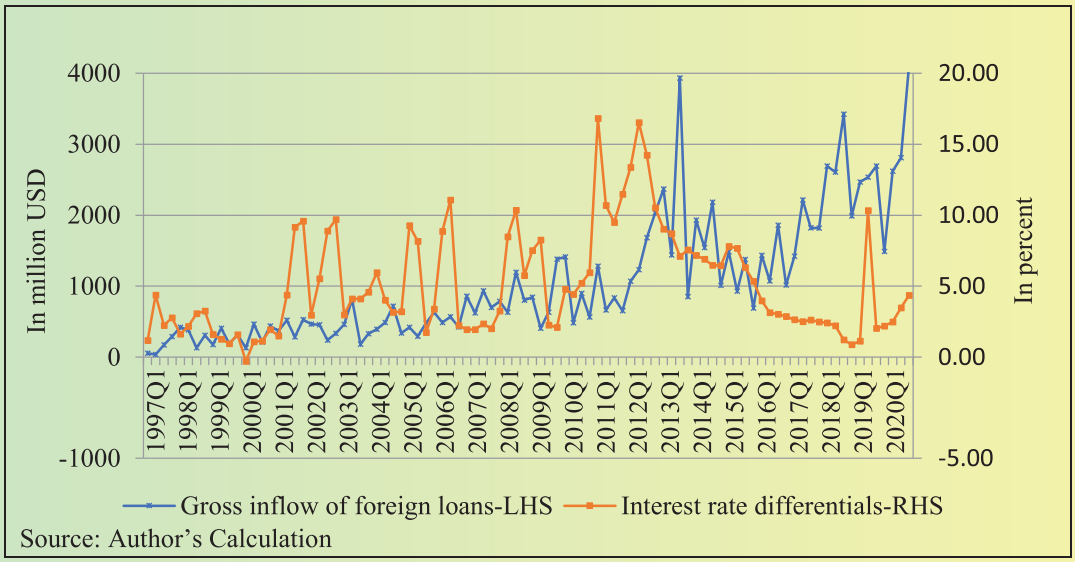
Source: Bangladesh Bank and Federal Reserve Bank of St Louis

Figure 2 shows that the domestic call money rate and LIBOR are moving closely from1997Q1 till 2009Q2. In this period domestic call money rate was more fluctuating comparing with LIBOR. With high fluctuations, domestic call money rate kept rising till the second quarter of 2006. After 2006Q2, the domestic call money rate fell and maintained a declining trend with fluctuations till the third quarter of 2009 accompanying the commencement of external sector liberalisation in Bangladesh. LIBOR started to fall from the third quarter of 2007 and reached to the lowest level in the third quarter of 2009. Following 2009Q3, the domestic call money rate picked upward when LIBOR remained at the low level consistently. So, the gap between domestic call money rate and LIBOR reached to a maximum level which caused the opening of external sector borrowing liberalisation in 2012Q1. With the effect of the policy, the domestic call money rate started to fall from 2012Q1.

3.3 Trends in gross inflows of foreign loans and interest rate differentials

The interplay between gross foreign loans inflow and interest rate differential is depicted in figure 3. The quarterly data shows that the gross inflow of capital is following the interest rate differential. Both the variables moved very closely when the gross foreign loans inflow continued at the same pace but there were fluctuations in the interest rate differentials.

Figure 3: Trends in gross inflow of foreign loans and interest rate differentials



Source: Author's Calculation

Increased call money rate and decreased LIBOR contributed to the fluctuations in the interest rate differential. In spite of fluctuations in the interest rate differentials, the gross foreign loans inflow followed the direction of interest rate differential changes. Since 2006Q4, the interest rate differential remained almost the same when the gross foreign loans inflow also remained steady till 2008Q1. After this period, interest rate differential started to fluctuate again and gross foreign loans inflow followed the fluctuations. Both the gross foreign loans inflow and interest rate differential moved closely with fluctuations. Fluctuations in the interest rate differential increased significantly and gross foreign loans inflow started to show an increasing trend. From the second quarter of 2009, LIBOR plummeted below one percent which contributed to the significant fluctuations in the interest rate differential. Access to foreign credit source for

domestic investors with low-interest rate depicted through the high-interest rate differential which can be taken as one of the prime causes behind the increasing trend in the gross foreign loans inflow from 2012Q1. Gross foreign loans inflow reached the peak in 2013Q2, but it fell in 2013Q3 indicating a cycle in the inflow of capital. From the end of 2012, domestic call money rate in the domestic market fell, but still it was too high compared to the LIBOR. As a result, amid the fall of interest rate differential, gross foreign loans inflow has been increasing since 2012 indicating the considerable impact of interest rate differential on the gross capital inflow into the country.

4. Policy Developments for Financial and External Sectors in Bangladesh

Bangladesh, like many other developing countries, undertook a Financial Sector Reform Programme (FSRP) in the early 1990s. One of the key elements of the FSRP was to promote a market-based interest rate policy. The main objectives of market-based/liberalised interest policy were to introduce flexibility in the deposit and lending rates, permitting individual banks to establish their own rates, within limits set by the Bangladesh Bank, which would encourage competition among the banks and price their products based on market forces of demand and supply.

Likewise, the external sector liberalisation process has been enhanced with the support from IMF under various programmes—Structural Adjustment Facility (SAF) from 1988 to 1990, Enhanced Structural Adjustment Facility (ESAF) from 1990 to 1993, Poverty Reduction and Growth Facility (PRGF)/Poverty Reduction Strategy Papers (PRSPs) from 1993 and Extended Credit Facility (ECF) from 2012 to onward.

4.1 Developments in Foreign Exchange Market

To activate an effective and efficient inter-bank foreign exchange market, Bangladesh Bank had taken a lot of policy measures since the mid-1990s for development in the foreign exchange market. Some of such measures are depicted in box-1.

Box 1: Developments in Foreign Exchange Market

- Adoption of market-based floating exchange rate system;
- Rationalisation of Bangladesh Bank's intervention in the foreign exchange market;
- Approval of transactions in USD only by Bangladesh Bank with other banks;
- Fixation of the minimum amount of transactions with Bangladesh Bank (BB);
- Permission given to banks to freely quote to both bank and non-bank customers;

- Establishment of foreign currency clearing arrangement with BB;
- Enhancement gradually of the open position limits of banks;

Since the adoption of the floating exchange rate system in May 2003, the exchange rate is now being determined based on market demand and supply of the respective currencies. All scheduled banks are now free to set their own rates for inter-bank and customer transactions. Besides, BB has remained vigilant in the foreign exchange market in line with its monetary policy goal of ensuring stability in the foreign exchange market. BB also intervenes sometimes to maintain orderly condition in the foreign exchange market. At present in Bangladesh, strong growth of remittance from wage-earners abroad and flow of foreign aid with the rationalisation of import payments and moderate export growth has helped to keep Bangladesh taka (BDT) competitive during the last couple of years.

4.2 Current account liberalisation

The most significant measure adopted is the acceptance of current account convertibility in 1994, symbolising a turning point in the country's exchange rate management and exchange rate systems. Thereafter, restrictions have been being gradually removed for current account transactions and extensive powers have been given to the authorised dealers (ADs). ADs do not require prior approval from BB to conduct current account transactions within the indicative limit as set by BB. Major reform measures undertaken on current account convertibility are shown in box-2.

Box 2: Current Account Liberalisation

- **Repatriation requirement on earnings abroad:** Resident entities other than ADs are not entitled to retain funds outside Bangladesh and must repatriate to Bangladesh export receipts, factor income and any other earning abroad.
- **Provisions in respect of funds of foreign nationals and non-residents:** Foreign nationals and non-resident Bangladeshi (NRB) can maintain foreign currency (FC) accounts with ADs in Bangladesh and have been permitted to convert foreign currencies so that they can send them abroad and vice versa.
- **Short-term external borrowing for trade:** Importers can avail short-term suppliers' credits/buyers' credit from abroad for tenure up to one year. Recently BB has allowed foreign-owned/controlled industrial enterprises in Bangladesh to access interest-free loans for working capital other than input procurements from parent companies/shareholders abroad for up to one year without any prior approval. Besides, exporters are allowed to access short- term foreign currency for import of inputs from the

Export Development Fund (EDF) on sight basis through ADs for up to 180 days. Export bills relating to direct and deemed exports of Bangladeshi products on usage basis can be discounted in foreign exchange by the concerned AD of the exporter.

- **Short-term borrowing by ADs:** ADs may obtain short-term loans and overdrafts for a period not exceeding 7 days at a time from overseas branches and correspondents.
- **Establishment of Off-shore Banking Units (OBUs):** BB has permitted the establishment and operations of OBUs in Bangladesh, allowing free foreign exchange transactions by 100% foreign-owned companies of Export Processing Zones and with persons who are nonresidents in Bangladesh.

However, exchange regulations require residents to repatriate export proceeds and other foreign earnings, as also to file proof of the arrival of goods against import payments within specified periods. Exchange regulations necessitate some extent of documentation requirement and bona fide checks on current transactions as well. For instance, travel-related foreign exchange needs, and royalty/technical fee payments abroad at higher than specified usual rates attract prior bona fide checks before authorisation.

4.3 Capital account liberalisation

In order to increase capital flows in the form of equity or loans, Bangladesh Bank has taken a lot of measures towards capital account liberalisation. Box-3 shows mentionable policy measures in capital account liberalisation.

Box 3: Capital Account Liberalisation.

- **FDI and FPI Inflows**: Both foreign direct investment and foreign portfolio investment in Bangladesh are allowed except in a few reserved sectors. Investments in few sectors require permission. Foreign investors are free to buy and sell debt/equity securities from/to stock markets in Bangladesh. They are also allowed to buy shares of companies not listed in the stock exchange. Besides, NRBs are allowed to invest and sell Bangladesh Government Treasury Bonds (BGTBs) at any time. Recently the government has withdrawn mandatory lock for a period for foreign investors.
- **The ceiling for Investment**: For foreign private investment, there is no ceiling in Bangladesh. Foreign investors are allowed to establish enterprises in full ownership and also permitted to repatriate their dividend/profit and proceeds of liquidation of the investment.
- **Borrowing from local banks:** Short-term or long-term borrowings including working capital from the local banks are allowed for foreign-owned/foreign-controlled companies based on banker-customer relationships.

- **External borrowing**: External term and medium borrowing are also allowed, subject to approval from the Board of Investment where the same deeds are applicable for locally-owned and foreign-owned companies.
- **Short-term capital flows**: To avoid speculative/volatile inflow and outflows of capital as short-term funds, access of non-residents to Bangladesh Taka (BDT) money market securities is still restricted.

In addition, Bangladesh Bank is allowing buyers' credit for banks since 2012. Also, banks are permitted to obtain a short-term credit line from abroad for discounting export bills. Both initiatives have attracted enterprises.

5. Methodology and Model Specification

5.1 Theoretical Background

Standard Neoclassical theory describes that return differentials among countries drive the capital flows. In the absence of any restrictions, capital will flow where returns are comparatively higher and capital is relatively scarcer, i.e., to developing countries. This theory postulates that there is a positive relationship between capital inflow and interest rate differentials shown as follows:

$$CF = f(i\text{-}i^*) \qquad (1)$$

$$\frac{dCF}{d(i - i*)} > 0$$

where CF is capital inflows, (i-i*) is interest rate differentials which is defined as domestic interest rate (i) minus foreign interest rate (i*).

For the positive relationship between *CF* and (i-i*), liberalised policies for external inflows or outflows are required and domestic interest rates must be determined by market forces. Liyanage (2016) examined the relationship between capital inflow and interest rate differentials for Sri Lanka where the capital inflows were expected to increase in response to the rise in the interest rate differentials. In addition to interest rate differentials, Liyanage (2016) used world GDP, domestic GDP, budget deficit, current account balance, year-on-year growth of credit granted by licensed banks, and a dummy variable for civil war to explain the inflow of capital. The paper defined interest rate differentials as the difference between annualised Sri Lankan monthly Treasury bill rate and 3-month LIBOR rate. However, we used only the interest rate differential variable as a determinant of capital inflow into Bangladesh as our central interest is in the role of

interest rate differentials in capital inflow and most of the other variables used by Liyanage (2016) are difficult to find for Bangladesh in the data frequency we used for our analysis. It is also noteworthy that Mundell (1963) showed in the case of extreme degree of mobility of capital that no country can generate interest rate differentials, but the extreme degree of capital mobility is not common for developing countries like Bangladesh.

5.2 Econometric Model

In Bangladesh, for foreign loans or investment-any kind of foreign capital—inflows are easier than outflows because any kind of capital outflows takes time for completing formalities e.g. lock-in, permission, restrictions, etc. Outflows of foreign loans or investment in Bangladesh need more time than inflows. Therefore, it is very difficult to make the relationship with interest rate differentials and net inflows of foreign loans or investment. So, to establish a relationship between interest rate differentials and capital inflows as stated in equation (1), we use gross inflows of foreign loans—the dominant component of gross capital inflows in Bangladesh. Accordingly, for empirical analysis, we will use the Ordinary Least Squares (OLS) method and specify our model modifying equation (1) as follows,

$$log\ G_{FLt} = a + b\ I_{Dt} + u_t \qquad (2)$$

where $logG_{FL}$ is the logarithm form of gross inflow of foreign loans, I_D is interest rate differentials defined as interbank call money rate of Bangladesh and LIBOR, and u is the error term.

While choosing OLS method, it is often very useful to examine the nature of data i.e whether there is a unit root. There are two most popular tests—Phillip Parron (PP) and augmented Dickey-Fuller (ADF)—for checking unit root. The ADF test adjusts Dickey-Fuller test to take care of possible serial correlation in the error terms by adding the lagged difference terms of the regressand while PP test uses nonparametric statistical methods to take care of serial correlation in the error terms without adding the lagged difference terms (Gujrati, 2003). We perform both unit root tests for all variables. If unit root tests show that all variables have no unit roots at the levels i.e. *I(0)*, then the variables are considered as stationary and suitable for applying the ordinary least squares method.

As our capital account is not fully convertible, the impact of any kind of inflows of foreign capital takes time in response to changes in interest rates at home and abroad. Therefore, we consider time lag in equation (2). In this case, we determine lag length

through an unrestricted Vector Auto Regression. There are several criteria for selecting a lag length. Among these, the widely used techniques, we use Schwartz information criterion (SC). We select lag length on the basis of SC. According to Schwartz information criteria (Table 4 in the appendix), the minimum lag requirement for our model is two.

We suppose that the relationship between the gross inflow of foreign loans and interest rate differentials might be affected by changes of policies in both domestic and global economies. It is clear from chart-1 that the inflows of foreign loans got momentum from the first quarter of 2012 onwards. The first quarter of 2012 signifies the liberalisation of external private sector borrowing through approval of buyers' credit for banks. Hence, we will apply the Chow test to see structural change or break (supposing at the first quarter of 2012) in the relationship between inflow of foreign loans and interest rate differentials. If the Chow test endorses us to a structural break at that period, we use a dummy variable for policy implication in the relationship shown in equation (2). From the result Chow test (Table 3 in the appendix) we found that there is a structural break that happened from the first quarter of 2012. Considering lag effects and policy implication, we can specify our second and final estimating equation as follows:

$$log\ G_{FLt} = a + b\ I_{Dt} + c\ I_{Dt-1} + d\ I_{Dt-2} + eD + f\ DI_{Dt} + g\ DI_{Dt-1} + h\ DI_{Dt-2} + u_t \qquad (3)$$

where D is dummy variables taking values1 (i.e. $D = 1$) for the periods from the 1st quarter of 2012 and onwards, and 0 (i.e. $D = 0$) before that periods. DI_{Dt} , DI_{Dt-1} and DI_{Dt-2} are cross-terms of the dummy, D and independent variable, I_{Dt}.

The cross terms of dummy are used in the model to find the behaviour of explanatory variable, I_{Dt} and its two lagged terms (I_{Dt-1} and I_{Dt-2}) with regard to any change in policy. In fact, the cross terms of dummy affect the magnitude of coefficients of the explanatory variable and its two lagged terms.

The data collected for all variables from quarter first of 1997 to quarter two of 2020. The data on gross foreign loans is measured as liabilities side of other investment in the financial account of the BB's annual publication named *Balance of Payments*. On other hand, data on inter-bank call money rate of Bangladesh is collected from BB's monthly publication named *Economic Trends*. Finally, quarterly data on LIBOR is collected from the website of the Federal Reserve Bank of St Louis.

6. Empirical Results

We have found a positive significant correlation between the gross inflow of foreign loans and interest rate differentials (Table 1). From the results of unit root tests with data on the gross inflow of foreign loans and interest differentials (Table 2 in the appendix), we have observed that both variables are stationary at levels. Therefore, we applied the OLS method for estimating our first econometric model stated in equation (2) and regression results are summarised in Table 5 in the appendix. However, the estimated equation of 1st model is shown as follows:

$$logG_{FLt} = 6.37^{***} + 0.04^{*}I_{Dt} \quad (4)$$

where *** and * denote levels of significance at 1% and 10% respectively.

The low value of Adj R^2 of the estimated equation shows that there might be lag effects of the explanatory variable as well as structural break. The results (shown in Table 5 in the appendix) of our second econometric model as expressed in equation (3) are as follows:

$$log\ G_{FLt} = 5.68^{***} + 0.06^{***}I_{Dt} - 0.04^{*}\ I_{Dt-1} + 0.08^{***}\ I_{Dt-2} + 2.01^{***}D$$
$$- 0.07^{*}DI_{Dt} + 0.07DI_{Dt-1} - 0.13^{***}\ DI_{Dt-2} \quad (5)$$

From equation (5) we see that the coefficients of interest rate differentials, one and two quarters lag of interest rate differentials, dummy and cross term of the dummy with two quarter lag of interest differentials are statistically significant and therefore, we made diagnostic tests for this estimated equation. The robustness of this estimated equation has been passed by the four most important diagnostics which are shown in Table 6 in the appendix—Jarque-Bera normality test, Breusch-Godfrey Serial Correlation (LM) Test, White test for heteroscedasticity and stability tests. All these tests revealed that the model provides consistent results except serial correlation. So, we corrected it by applying heteroskedasticity and autocorrelation consistent (HAC) covariance estimation. The result (shown in table 6 in the appendix)of HAC covariance estimation is stated as below.

$$log\ G_{FLt} = 5.68^{***} + 0.06^{***}I_{Dt} - 0.04^{**}\ I_{Dt-1} + 0.08^{***}\ I_{Dt-2} + 2.01^{***}D$$
$$- 0.07^{**}DI_{Dt} + 0.07^{**}DI_{Dt-1} - 0.13^{***}\ DI_{Dt-2} \quad (6)$$

where ** denotes level of significance at 5%.

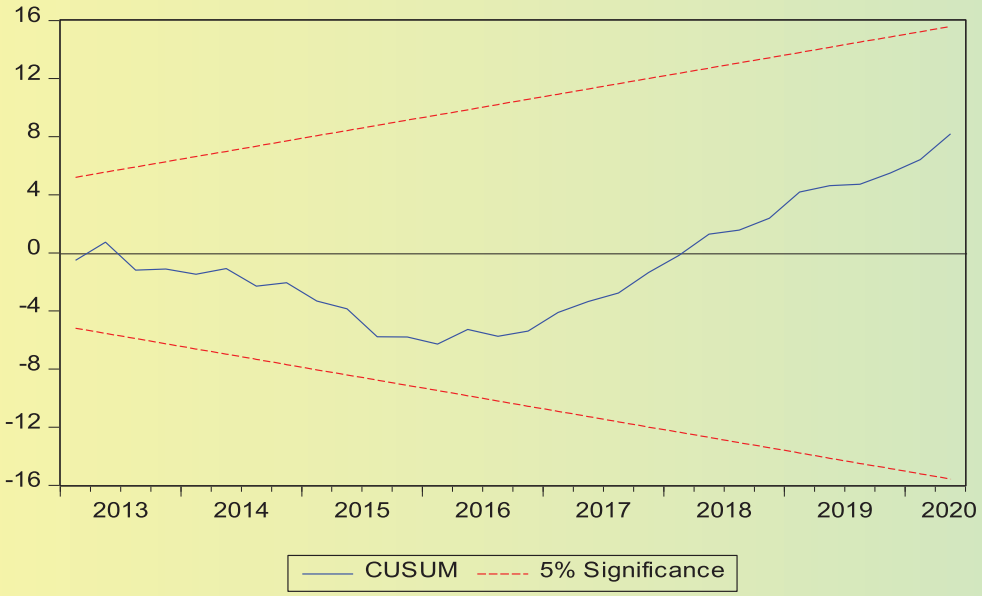
The results of HAC covariance estimation corrected only standard errors and thus t-values.We find that all coefficients of equation (6) are statistically significant. We see

that interest rate differentials, I_{Dt}, has a positive impact on gross inflow of foreign loans. Moreover, the estimated coefficient of I_{Dt} denotes that a one percentage point increase of interest differentials may induce an increase of gross inflows of foreign loans by 0.06 percentage point. The combined impact of coefficients of two lagged variables of the explanatory variable is also positive and significant. This indicates that the responsiveness of gross inflow of foreign loans sometimes takes at least two quarters. But the magnitude of the coefficient of interest rate differentials as well as its combined lagged coefficients is not very high which indicates a weak response of gross inflow of foreign loans if any changes in interest rate differentials take place. The coefficient of the dummy variable is positive and significant which implies that the responsiveness of gross inflows of foreign loans to any change in interest rate differentials is somewhat higher for any quarter from 2012 onwards. However, coefficients of two cross-terms of the dummy with one and two-quarter lag of interest differentials are statistically significant, but their combined effect is not positive. While comparing adjusted R^2 between two estimated equations (4) and (6), we find it is much higher in the second model which is 0.71 showing modest goodness of fit. Moreover, the value of the Schwarz criterion is lower for the second model. Therefore, we chose the second model for economic interpretation.

7. Conclusion and Recommendation

The objective of the study was to identify the relationship between the gross inflow of foreign loans and interest rate differentials. We found that interest rate differentials have a positive impact on the gross inflow of foreign loans. But the responsiveness of gross inflows of foreign loans on changing differentials is weak. However, the response of gross inflows of foreign loans to interest rate differentials is somewhat higher since the first quarter of 2012 onwards which implies that liberalisation of external policy can expedite capital flows in Bangladesh. Major capital inflows in recent years in Bangladesh are in the form of foreign loans which got momentum due to the lower foreign interest rate i.e. LIBOR than the domestic interest rate. This indicates that the foreign investment in the form of FDI or portfolio investment in the country is not driven much by the higher domestic interest rate. Instead, the economy of Bangladesh is getting the benefit of interest rate differentials by borrowing money in foreign currency at a cheaper rate from abroad and giving downward pressure on its domestic interest rate.

Appendix


16
12
8
4
0
-4
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-12
-16
2013
2014
2015
2016
2017
2018
2019
2020
CUSUM
5% Significance

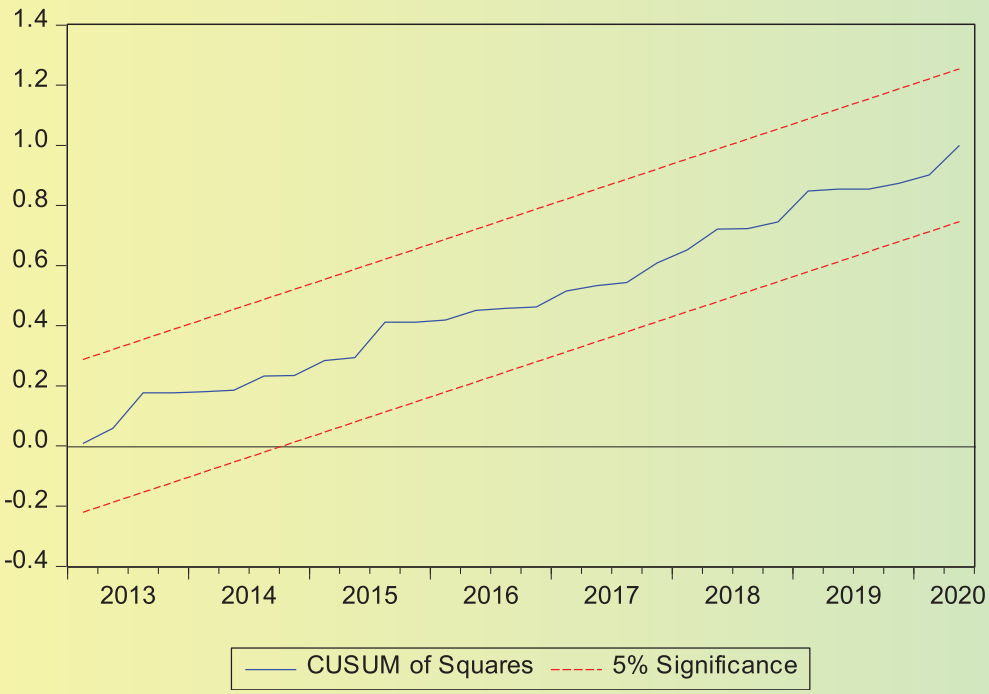
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
2013
2014
2015
2016
2017
2018
2019
2020
CUSUM of Squares
5% Significance

Table 1 : Correlation Analysis

Pair variables	Coefficient	Test Statistic	Probabilities	Conclusion
log *GFL* and *ID*	0.17	1.68	0.09	Positive significant relationship

Table 2 : Unit Root Tests

Variables (in level)	Phillips-Peron Test		Augmented Dickey-Fuller Test		Decision
	With intercept	With intercept and trend	With intercept	With intercept and trend	
Log GFL	-4.19 (0.00)	-9.01 (0.00)	-1.34 (0.61)	-4.40(0.00)	I(0)
ID	-4.24 (0.00)	-4.10 (0.01)	-4.32 (0.00)	-4.32 (0.00)	I(0)
Note: Figures in the parenthesis are p-values used to decide on unit roots at the 5% significance level.					

Table 3: Chow breakpoint test: 2012Q1

Null Hypothesis	Period	Test Statistic	Probabilities	Conclusion
No structural break point	2012Q1	64.69	0.00	Structural breakpoint exists

Table 4: Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-337.2164	NA	9.143125	7.888754	7.945832	7.911725
1	-276.6860	116.8378	2.455661	6.574093	6.745327	6.643007
2	-252.1550	46.20949	1.523694	6.096629	6.382018*	6.211485
3	-248.1429	7.371143	1.523963	6.096347	6.495892	6.257145
4	-236.9836	19.98286*	1.291283*	5.929852*	6.443553	6.136593*
5	-234.1682	4.910614	1.329050	5.957401	6.585257	6.210084
6	-232.4117	2.981984	1.402828	6.009575	6.751587	6.308200
7	-231.4038	1.664157	1.507740	6.079159	6.935327	6.423727
8	-229.1472	3.621205	1.575377	6.119701	7.090025	6.510211

* indicates lag order selected by the criterion, LR: sequential modified LR test statistic (each test at 5% level), FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion, HQ: Hannan-Quinn information criterion.

Table 5: Results of Regression of Log of Gross Inflow of Foreign Loans

Regressors/other estimators	Model 1 (OLS)	Model 2 (OLS)	Model 3 (HAC covariance)
Constant	6.37*** (39.73)	5.68*** (46.36)	5.68*** (30.63)
ID	0.04*(1.69)	0.06*** (2.89)	0.06*** (3.48)
D		2.01***(10.39)	2.01***(8.29)
ID(t-1)		-0.04*(-1.68)	-0.04**(-2.22)
ID(t-2)		0.08***(3.86)	0.08***(3.73)
D*ID		-0.07*(-1.73)	-0.07**(-2.40)
D*ID(t-1)		0.07 (1.39)	0.07** (2.73)
D*ID(t-2)		-0.13***(-3.08)	-0.13***(-3.52)
AdjR2	0.02	0.69	0.69
F-stat	2.85*	29.35***	29.35***

Note: Figures in the parenthesis are t-values. Figures in the parentheses show t-values. * , ** and *** show that coefficients are significant at 10%, 5% and 1% level respectively.

Table 6: Diagnostic Tests for Equation 2

Test for	Test Statistic	Probabilities	Conclusion
1. Normality (JB test)	0.22	0.90	Residuals are normally Distributed.
2. Breusch-Godfrey Serial Correlation (LM Test)	14.30	0.00	Autocorrelation exists.
3. Heteroscedasticity White (cross terms) White (No cross terms)	 0.56 0.73	 0.92 0.65	No heteroskedasticity exists.
4. Stability Test CUSUM CUSUM Squares			Within the bands

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Equilibrium Exchange Rate, Current Account Deficits and Exchange Rate Misalignment in Bangladesh

Dr. Sayera Younus[1]
Md. Maidul Islam Chowdhury[2]
Touhidul Islam[3]

Abstract

The study aims to examine the equilibrium exchange rate in Bangladesh economy applying sustainable current account balance approach and behavioral equation approach during the period of 1980-81 to 2017-18. Using nominal exchange rate, current account balance, GDP and Terms of Trade data the study found that currently Bangladesh currency is overvalued compared to its equilibrium. In addition, the empirical results from the behavioral equation approach showed that the foreign aid and remittances have significant positive impacts on the real exchange rate. Besides, the study found that the investment to GDP, external sector resource and GDP have significant negative impacts on the exchange rate. The policy implications of the findings indicate that an increase in the investment to GDP and GDP itself causes the exchange rate to appreciate while the increase in external resource balance causes depreciation of the exchange rate.

Keywords: Equilibrium Exchange Rate, Current Account Deficits, Exchange Rate Misalignment

JEL Classification: F31, F41

1. Introduction

Exchange rate plays a vital role in a country's international trade and is considered as one of the most important measures of economic health of a country. Exchange rate affects the economy through its impact on the price of the tradable goods and services. It is well known that the performance of a country in terms of international trade, during a specified period is measured by the balance of payments. Current account balance is one of the most important parts of balance of payments. The larger current account deficit leads to the weaker exchange rate of a currency. The same is the true for the terms of trade: the higher ratio between export and import prices results in the improved current account balances. On the other hand, the more heated the economy, the larger the demand for imported goods and services and thus, the worse the current account balance.

[1]Director, [2]Joint Director, [3]Deputy Director, Research Department, Bangladesh Bank. Views expressed in this article are the authors' own which do not necessarily reflect the views of the organization they work. All remaining errors are the authors own.

Therefore, the intention of this study is to estimate the equilibrium nominal exchange rate in Bangladesh and measure the exchange rate misalignment from its equilibrium.

Current account balances in Bangladesh had experienced an upward trend and according to the central bank's balance of payments data for July-May, FY18, the current account deficit stood at $9.37 billion compared to deficit of $2.21 billion in same period of the previous year. The current account deteriorated by USD 2.2 billion (-32%) during the months of April and May, FY18. Exports grew by USD 6.2 billion (+22.9%); remittance grew by USD 2.8 billion (+26.4%), but the steep rise in these two components were not enough to outweigh a robust USD 10.2 billion (+25.4%) rise in imports. This upward trend of current account deficit may create pressure on the exchange rate of the local currency.

In this situation, it is noteworthy to determine the sustainable equilibrium exchange rate or an optimal exchange rate that will help to achieve the sustainable economic growth of Bangladesh. However, it is quite challenging to determine the sustainable equilibrium exchange rate or an optimal exchange rate for an economy like Bangladesh. Existing literatures in Bangladesh and elsewhere mainly focus on the exchange rate misalignment. From the relevant literatures, it is observed that there are a number of empirical models based on economic fundamentals for estimating equilibrium exchange rate and some of these models were applied in Bangladesh for estimating equilibrium exchange rate of Taka/US Dollar and its misalignment. For example, Rahman and Bashar (2001), Hossain and Ahmed (2009), and Akhtaruzzaman and Begum (2015) conducted study on the exchange rate misalignment. However, there are no study in Bangladesh is found estimatinga sustainable equilibrium exchange rate or an optimal exchange rate of Taka/US Dollar.This study made an attempt to fill in the gap of the literature and estimate the sustainable equilibrium exchange rate or an optimal exchange rate for Bangladesh.In addition, this paper will also examine the long-run and short-run dynamics of the exchange rate of Bangladesh. The intention of this paper is to find a “Sustainable Equilibrium Exchange Rate” based on “Sustainable Current Account Balance” for Bangladesh following the study conducted by Mesquita (2016), Aristovnik (2006), Reisen (1998), and Wren-Lewis (2004). Reisen (1998) investigated current account deficits of four Latin American and four Asian economies and ascertained that sustainable current account deficits lied in the range of -1.6 to -3.8 percent of GDP. The current account deficit of transition economies in excess of 5 percent of GDP generally

poses external sustainability problems (Aristovnik, 2006). Summers (1996) developed a benchmark that current account deficits in excess of 5.0 per cent of GDP are excessive. Mesquita (2016) estimated sustainable equilibrium exchange rate for Latin America based on the sustainable current account balance, which is defined as the average of last 20 years' current account deficit.

This paper will magnify the dynamics in exchange rate of Tk/USD by encompassing wider time frame of data set. Thus, our paper is likely to come up with some unique outcome, which will be an improvement over the existing literatures explaining exchange rate behavior of Bangladesh.

2. Previous Studies

Patnaik and Pauly (2001) analyzed the structural changes of the Indian foreign exchange market and examined the equilibrium real exchange rate of the Rupee by using log linear regression model and data from 1993 to 1998. During the study period, they observed that bilateral exchange rate of Rupee to US Dollar appreciated.

Rahman and Basher (2001) estimates long run equilibrium real exchange rate in Bangladesh for the period 1977 to 1998 by using single equation approach and found that Taka was considerably overvalued until late 1980s. Macdonald (2000) discusses a critical overview of different concepts to calculate an equilibrium exchange rate for German mark (DM).

MacDonald and Ricci (2003) investigate equilibrium real exchange rate of South Africa for the period of 1970Q1 to 2002Q1 and found that real exchange rate (11.5 Rand/USD) was about 25 percent more depreciated with respect to the estimated equilibrium level, 8.8 Rand/USD in the first quarter of 2002.

Wren-Lewis (2004) calculates medium term exchange rates of Australian dollar (AUD) and New Zealand Dollar (NZD) conditional on assumptions for 'sustainable' current accounts. The review of the literature guided us to select the variables which are closely related with the exchange rate.

Wren-Lewis (2004) extend 'Five Area Bilateral Equilibrium Exchange Rate' (FABEER) model to include NZD and AUD. Using the model, the paper finds that the equilibrium values of both currencies has been declining for the last ten years and on

average, both currencies were near fair value during 2002. The paper estimated equilibrium exchange rates from 1991 to 2002. Kim and Korhonen (2005) attempts to estimate the real equilibrium exchange rates for advanced transition countries namely Poland, Hungary, the Czech Republic, Slovenia, and Slovakia. The paper finds that exchange rates in the Czech Republic, Poland, and Slovakia converging with real equilibrium exchange rates expressed in the US dollars except in the year 2002 particularly, the largest extent of misalignment took place in Hungarian currency.

Hyder and Mahboob (2005) tried to estimate equilibrium real effective exchange rate and exchange rate misalignment of Pakistan for the period from 1978 to 2005. Authors observed that during FY1978 to FY 2005 estimated exchange rate misalignment ranged -11.1 percent to 20.1 percent in Pakistan.

Koranchelian (2005) estimates a long-run real exchange rate path for Algeria. The data set for the study covered for the period from 1970 to 2003. The paper finds that the real exchange rate either moves progressively toward a new equilibrium level, or returns from its temporary deviation, to the initial equilibrium value depending on the cause of the gap. The paper finds that 50 percent of such a gap would be eliminated within nine months.

Alshehabi and Ding (2008) attempts to identify the possible exchange rate misalignment for Armenia and Georgia using behavioral equilibrium exchange rate approach. Hobdari (2008) assesses whether actual REER is line with the underlying REER for Tanzania. According to the equilibrium real effective exchange rate (EREER) approach, Tanzania's REER has been fluctuating since the early 1990s around its equilibrium value, and currently the REER is undervalued relative to its estimated equilibrium level. Hasan and Dridi (2008) evaluate the impact of oil-related income along with other economic fundamentals on EREER in Syria for the period of 1960 to 2006. The result of the paper shows that EREER of Syria appreciates with higher oil-related income, net foreign asset, and productivity, however, depreciates with higher government expenditures.

Hussain (2008) attempts to analyze the effects of economic fundamentals and associated sustainable levels to gauge the equilibrium real exchange rate and its misalignment in the case of Pakistan for the period of 1970 to 2007. Roudet et al. (2007) examine the long-run equilibrium paths of the real effective exchange rates of countries

(Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo) in the West African Economic and Monetary Union (WAEMU) applying Fundamental Equilibrium Exchange Rate (FEER) approach for the period of 1970 to 2005.Tchaidze (2007) investigates the real exchange rate disequilibrium for Iceland. Author embraces three approaches: Macroeconomic Balance, Equilibrium Real Exchange Rate, and External Sustainability in the methodology of the paper. The result of the paper shows that all three approaches are suggesting different estimates of disequilibrium, but all advocates a depreciation of 10-20 percent under plausible assumption.Coudert and Couharde (2007) calculate real effective exchange rate consistent with the sustainable current account using FEER approach and find undervaluation of China's real exchange rate (RER) during 2002 and 2005 in effective terms against USD.

Imam and Minoiu (2011) have analyzed the equilibrium exchange rate of Muritian Rupee by using two structural models- the macroeconomic balance (MB) approach and the fundamental equilibrium exchange rate (FEER) approach in 2006–07. In the MB approach, the study found that the ERER by the equilibrium or sustainable current account balance. Under the MB approach the study estimate the long-run relationship between the current account balance and its determinants (overall fiscal balance as percent of GDP, net foreign asset position as percent of GDP, relative per capita GDP, per capita GDP growth and population growth) using a dataset for 140 countries over 1980–2005. Based on that relationship, the study projects the behavior of the current account for Mauritius in 2006–07 and over the medium run (until 2012). In FEER approach the study identified the long-run co-integrating relationships between the REER (which is measured based on the GDP deflator) and three variables: terms of trade of goods, trade openness, and government consumption using a time series dataset for the period of 1960-2007. The study found that the Mauritian rupee was aligned with its equilibrium value in 2006–07 and little adjustment appeared necessary over the medium run.

Iossifov and Loukoianova (2017) estimate the equilibrium exchange rate for Ghana by employing behavioral equilibrium exchange rate (BEER) and vector error correction model (VECM) econometric technique. Debowicz and Saeed (2014) assessed the exchange rate misalignment in Pakistan and its general equilibrium distributional implications for the period 1988 to 2010 by employing BEER approach. This study observed that the real exchange rate of Pakistan against the equilibrium real exchange

rate has been overvalued during the study period by large margins, contrasting with the real exchange rates of rapidly growing economies like India and China.

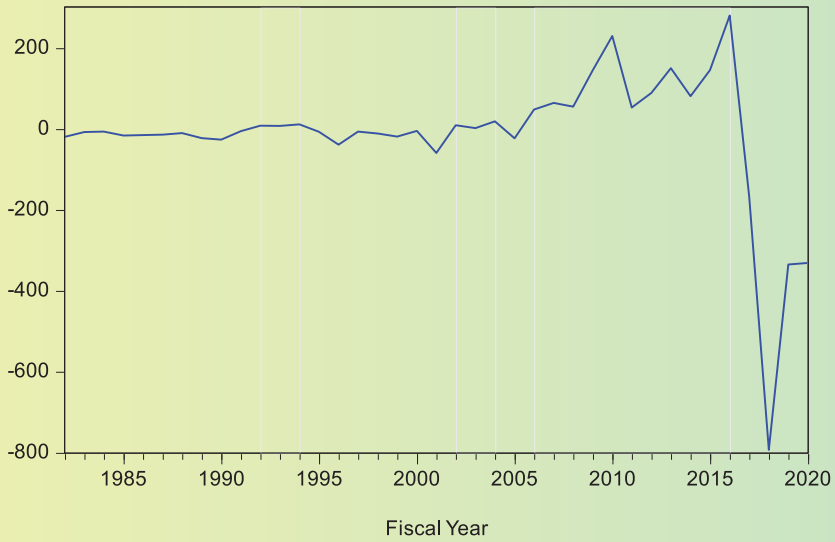
There are growing empirical studies on exploring equilibrium exchange rate and its determinants. There are few literatures available explaining equilibrium exchange rate of Tk/USD in Bangladesh. For instance, Akhtaruzzaman and Begum (2015) found in their study that exchange rate appreciated 16 percent to 21 percent in 1995 and 1996 while Rahman and Bashar (2001) found the rate broadly in equilibrium mid1990s. Hossain and Ahmed (2009) explored that real effective exchange rate (REER)has been overvalued on an average by 3 percent from second quarter of 2004 to 2008 in terms of the macroeconomic fundamentals in Bangladesh and identified the net foreign assets have a significant effect on the REER appreciation while terms of trade, real interest rate differential and government budget deficits were related to the depreciation of REER.All these three studies used Johansen Co-integration test for exploring long-run dynamics in real exchange rate of Bangladesh.

3. Data Analysis

This study includes some key macroeconomic variables such as current account balance, real GDP, exchange rate, terms of trade in pursuit of a sustainable equilibrium exchange rate for Bangladesh economy. Therefore, it would be worthwhile to investigate the trend analysis of the variables leading to useful information to understand the relationship among the variables.

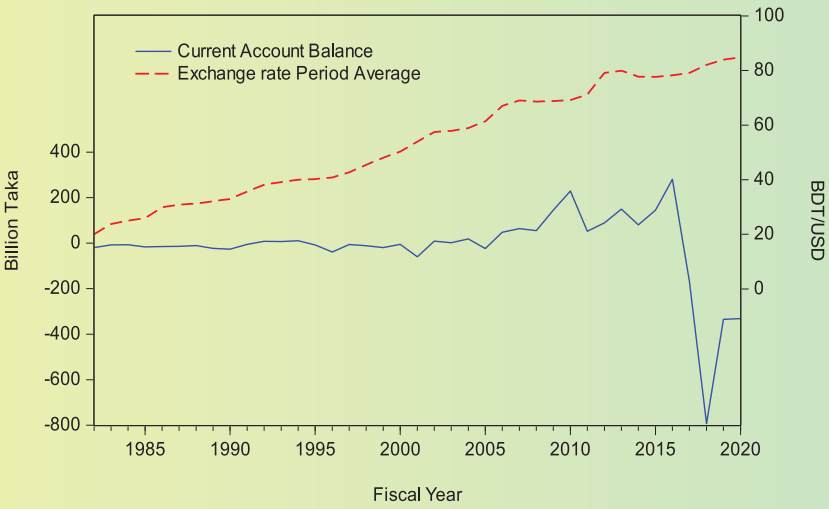
Graph 1 shows the current account balance of Bangladesh over the period of FY 1982 to FY 2020. The bigger picture of the graph allows us to comprehend that Bangladesh experienced mostly current account deficit until 2002 with an exception during FY 92-94. The shaded area shows the current account surplus periods of Bangladesh economy within the length of period considered for the analysis. Bangladesh enjoyed significant current account surplus from mid-2000s to mid-2010s, then the current account balance fell and became deficit, which was mainly contributed by the high import. However, current account deficit improved slightly in last two years though still far away from the surplus region.

Graph 1: Current Account Balance (Billion Taka)



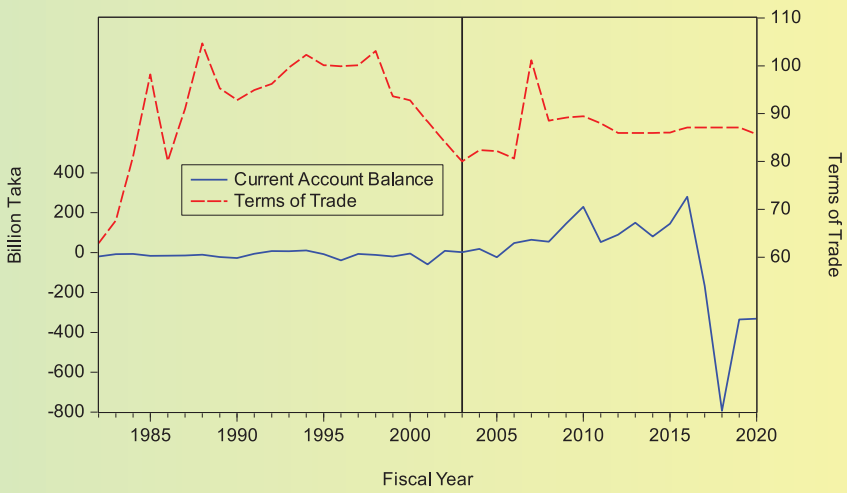
Graph 2 compares the trajectory of current account balance and period average exchange rate. Zoomed out sight of the graph shows that exchange rate of BDT/USD experienced gradual depreciation across the period we are considering here. However, we can easily draw a potential

Graph 2: Overtime trend of current account balance and exchange rate



relationship between current account balance and exchange rate. Closer look of the graph depicts that current account balance maintained same trend until 2006 with some ups and downs, and during the period, when exchange rate had smoother depreciation. However, from 2006 onwards, current account balance caught an upward trend with vivid fluctuations and the exchange rate seemed to respond to that by following less smooth path compared the previous period. The inter-relationship between current account balance and exchange rate makes us curious to dig the issue further through econometric analysis.

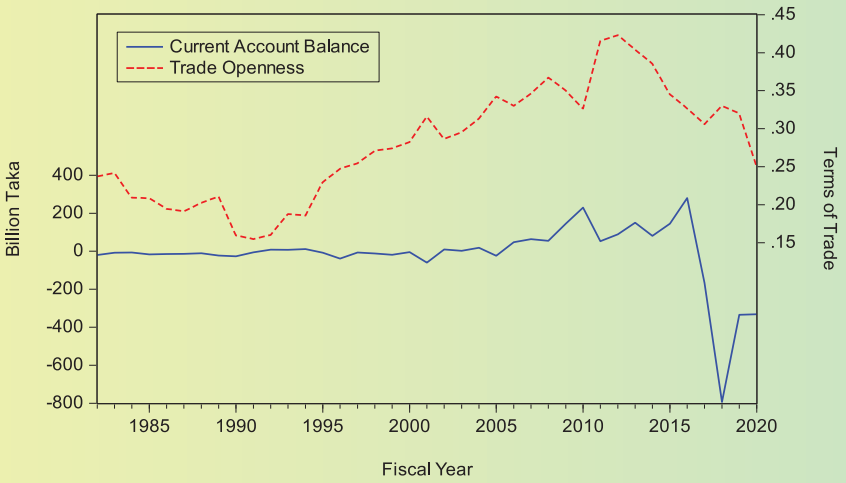
Graph 3: Overtime trend of current account balance and terms of trade



The comparative movement of current account balance and terms of trade presented in the graph 3. The vertical line in the graph shows 2003, the time of policy transformation of Bangladesh from fixed to floating exchange rate regime. Terms of trade maintained a turbulent trend until 2003, but since then, the path followed by terms of trade has been comparatively less fluctuating. Before 2003, it is difficult to find the resemblance between the trajectories of current account balance and terms of trade, but after the policy change, the two variables moved coherently compared the past except the co-movement of the variables in last year which could be a result of COVID-19 pandemic.

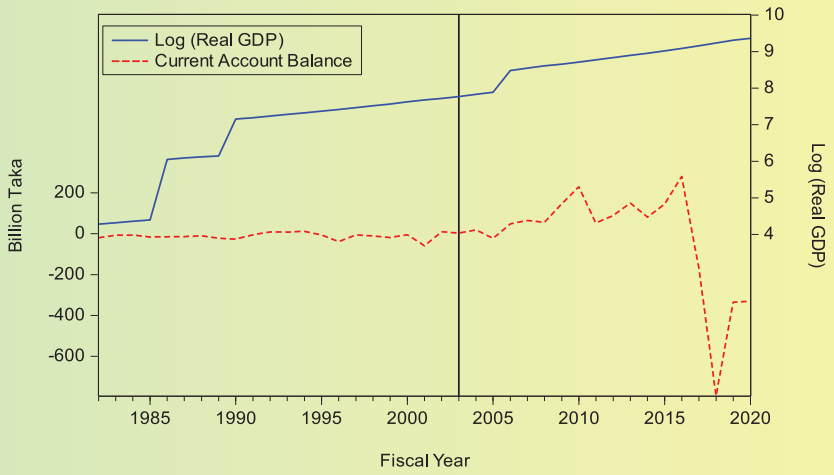
Trade openness is another variable, which is very important in our analysis. Therefore, here we will try to shed light on the course followed by the trade openness overtime (Graph 4). The plot is an evidence of rising openness of Bangladesh economy. Especially, Bangladesh economy has been embracing greater openness since early 1990s. The impact of openness on the current account balance is also noticeable from the graph 4 where we observe larger movement in the current account balance of Bangladesh with greater openness. This adumbrates potential correlation between trade openness and current account balance of Bangladesh. Slight improvement following sharp fall of current account balance in FY18 accompanied by sharp fall in trade openness is identifiable from the graph which can be an outcome of the COVID-19 outbreak.

Graph 4: Trade openness and current account balance trend over time



Another important variable of our study is real GDP, which represents overall activities of the economy. In order to magnifying the fluctuations in real GDP, we are using natural log of the variable to plot it. Graph 5 delineates the overtime movement of real GDP and compares it with the movement of current account balance.

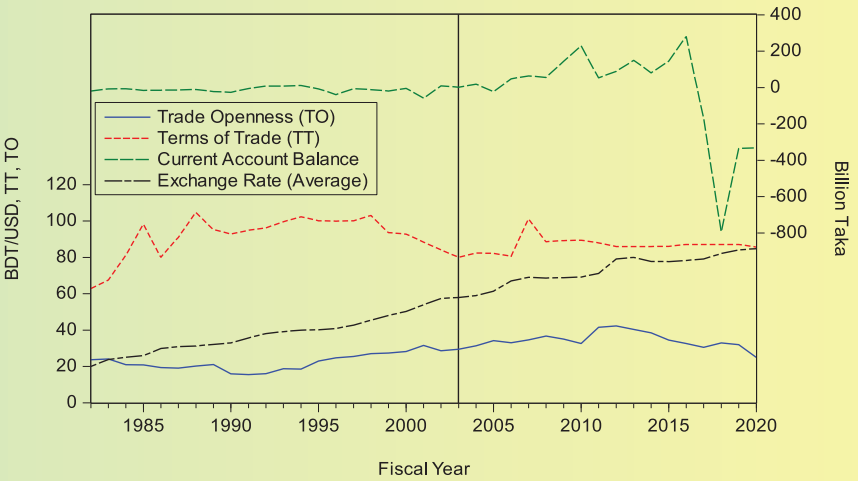
Graph 5: Overtime dynamics of Log(Real GDP) and current account balance



The macro picture of the real GDP shows an increasing trend for Bangladesh. As the economy becomes larger in terms of the real GDP, we can observer greater turbulence in the travel route of current account balance, especially last two years. So, we can perceive that higher real GDP in the future may be accompanied with higher fluctuation in the current account balance until Bangladesh becomes a sustainably developed economy.

Graph 6 encompasses four major variables: Trade openness, terms of trade, current account balance and exchange rate. The plot enables us to explore all four variables in the same canvas. The vertical line indicates the exchange rate policy regime change as the previous graphs. The graph allows us to capture the dynamics in the individual variable and the juxtaposed presentation shows inter play among the variables. Taking the movement of real GDP

Graph 6: Overtime interaction among four key variables



(Graph 4) into consideration, we may make this analysis more informative. Here, current account balance became more volatile as the exchange rate depreciated faster in floating exchange rate regime. However, terms of trade became more stable with increasing openness in new policy regime. We can also observe faster economic growth in the new policy regime. The overall picture of the variables helps us believe that a sustainable current account balance can potentially affect exchange rate and consequently, other macroeconomic variables. This takeaway encourages us further to find a sustainable equilibrium exchange rate based on sustainable current account balance for Bangladesh.

4. Methodology of the Study

The objective of this paper is to estimate the equilibrium exchange rate of Taka/US Dollar based on the sustainable current account balance in Bangladesh with application of latest econometric technique.The study covers annual data for the sample period of1981-82 to 2017-18. In the study the sources of data are Bangladesh Bank, Bangladesh Bureau of Statistics (BBS) and Bangladesh Economic Review.The reason for using sustainable current account deficits approach is mainly because the recent trend of current account balance shows that Bangladesh is experiencing higher currentaccount deficits due to higher imports. The higher the imports the weaker the currency.Although there is no unique definition for sustainable current account balance, literature suggest that if a current account balance remains between 3 to 5 percent of GDPis considered as a sustainable current account deficits. On the other hand, Statistics department of Bangladesh Bank calculates overall balance position for Bangladesh following classification of IMF's Balance of Payments and International Investment Position Manual (BPM). There are several editions of BPM. So, the data calculated based on various editions of BPM are different from each other. Balance of Payment items of Bangladesh for 1981-82 to 1996-97, 1997-98 to 2010-11, and 2011-12 to 2016-17 were calculated following BPM4, BPM5, and BPM6 respectively. So, the overall balance of Bangladesh for 1981-82 to 2016-17 under uniform definition is not available. Here, we tried to derive the overall balance of Bangladesh from the summation of the balances of current account, capital account, and financial account for the period of 1981-82 to 2017-18 to approximate the actual overall balance of Bangladesh.

As mentioned earlier in this study for estimating equilibrium exchange rate, we follow the sustainable current account balance approach developed by Mario Mesquita, 2016. For obtaining equilibrium exchange rate, we started by estimating the annual

current account balance (CAB) as a function of the exchange rate (ER), terms of trade (TOT), and economic activity measured by GDP, i.e.,

$$CAB = f(ER, TOT, GDP)$$

Applying basic economics intuition to the above relationship, depreciation in exchange rate is likely to encourage export and discourage import leading to improved current account status. As terms of trade is the ratio of export price index to the import price index, the rise in TOT is likely to improve CAB. GDP increase may affect current account balance negatively as the increased GDP can raise the demand for import which will eventually exacerbate current account balance of Bangladesh. Now, we may rewrite the above functional form as the following equation,

$$CAB_t = \beta_0 + \beta_1 ER_t + \beta_2 TOT_t + \beta_3 GDP_t \ldots\ldots\ldots (1)$$

Here, we will apply Ordinary Least Square (OLS) method to estimate the coefficients of equation (1) if all the classical assumptions are satisfied. The expected sign of the coefficients β_1 and β_2 are positive, and β_3 is negative. Then by using the estimated coefficients of equation (1), we obtain exchange rate as a function of terms of trade, economic activity, and current account balance. Therefore, the equation of exchange rate would be as follows-

$$ER_t = -\alpha_0 - \alpha_1 TOT_t - \alpha_2 GDP_t + \alpha_3 CAB_t \ldots\ldots\ldots (2)$$

Where,

$$\alpha_0 = \frac{\beta_0}{\beta_1}, \quad \alpha_1 = \frac{\beta_2}{\beta_1}, \quad \alpha_2 = \frac{\beta_3}{\beta_1}, \quad \alpha_3 = \frac{1}{\beta_1}$$

For a given level of terms of trade equation (2) produces an equilibrium exchange rate when both the current account balance and the economy maintain equilibrium state. In addition to the above methodology, our research will look into both long-run and short-run dynamics among the variables. To do this analysis, we will check if the variables are stationary, then we will use Johansen Likelihood Ratio test of cointegration to examine the long-run relationship. Our investigation of long-run relation will also give us an idea of misalignment of the exchange rate from its sustainable level for Bangladesh. Finally,

we will employ Vector Error Correction Model (VECM) technique to find the short-run dynamics among the variables.

Therefore, the plan of the study is as follows after stating introduction and background of the paper in section-I, we will discuss the literature review in Section-II, theoretical background and data analysis in section III followed by the methodology of the study in Section IV. In section V will analyze the empirical results; finally conclusion and recommendation in section VI.

5. Model Specification, Model variables and Data Analysis

An empirical estimation has been done based on equation 1, and 2 using the annual data from 1981-82 to 2017-18. The data on nominal exchange rate, current account balance, terms of trade, openness and nominal GDP are used to estimate the model. The ordinary least square (OLS) method is used to get the coefficients of the variables to calculate the equilibrium exchange rate.The result of estimated coefficients of equation-1 and equation-2 is shown in the following table.

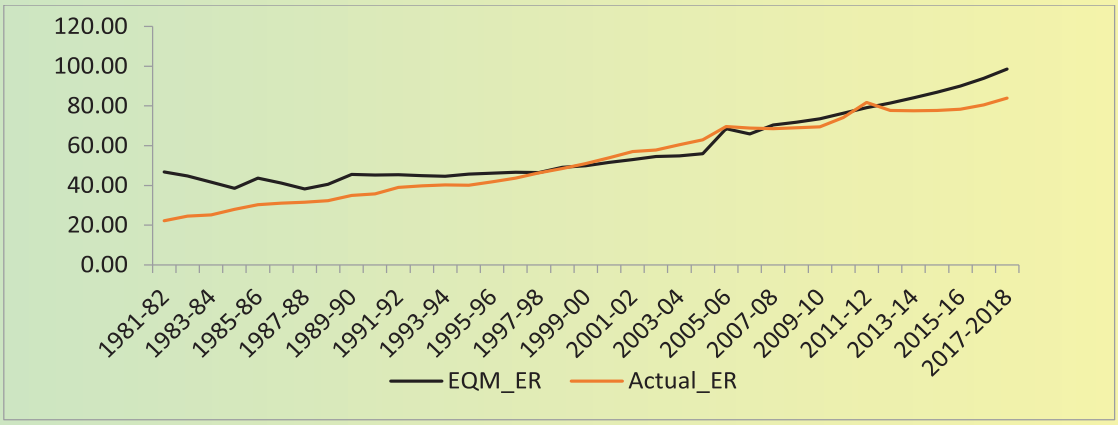
Table-1: Estimated coefficients of equation-1 and equation-2.

Equation-1		Equation-2	
Coefficients	Estimated value	Coefficients	Estimated value
β_0	1044.909	$\alpha_0 = \frac{\beta_0}{\beta_1}$	-58.861
β_1	-17.752	$\alpha_1 = \frac{\beta_2}{\beta_1}$	0.224
β_2	-3.969	$\alpha_2 = \frac{\beta_3}{\beta_1}$	-0.006
β_3	0.102	$\alpha_3 = \frac{1}{\beta_1}$	-0.056

Source: Authors' Calculation.

Based on the value of estimated coefficients of equation-2, we calculate the equilibrium exchange rate for each fiscal year and plotted against the actual exchange rate in graph-7.

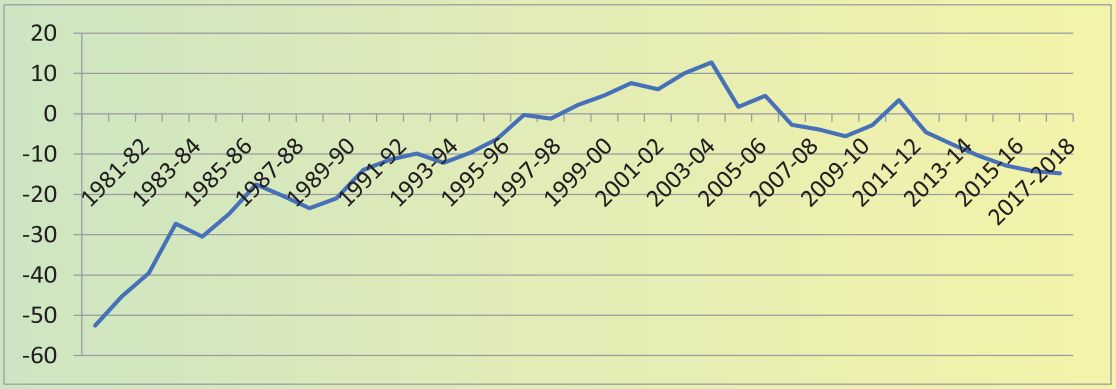
Graph-7: The Trends of Actual Exchange Rate and the Equilibrium Exchange Rate: Sustainable Current Account approach



Data Source: Bangladesh Bank, BBS, Bangladesh Economic Review.

From Graph-7,it is evident that the nominal exchange rate and the equilibrium exchange rate was almost equilibrium for throughout the period particularly at the end of 1990-91 to 2011-12. The exchange rate was overvalued for almost two decades though gradually declining from the beginning of 1980's to 2000. Again, it became overvalued from 2013-14 and remain there until 2017-18.

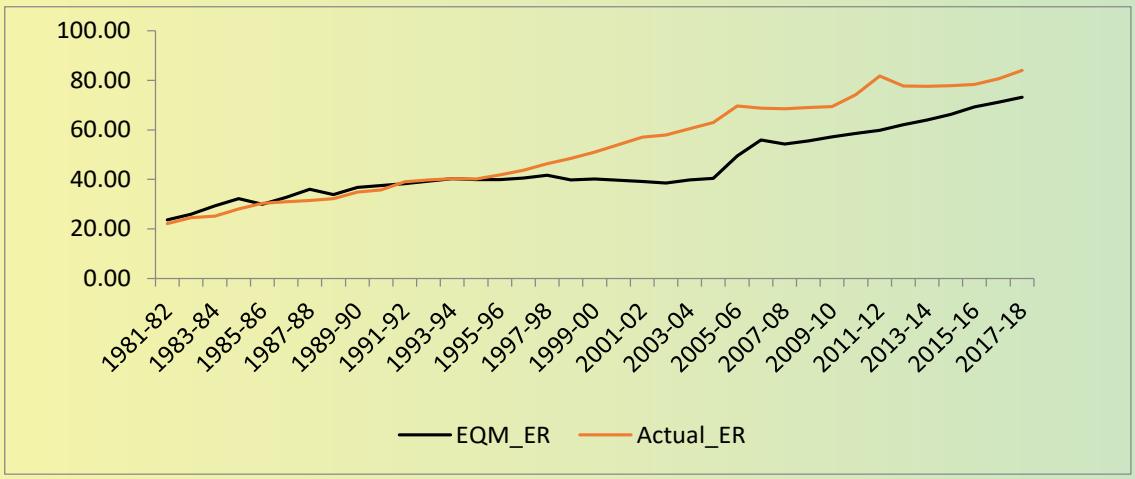
Graph-8: Overvaluation/Undervaluation of the Exchange rate: Exchange rate



Source: Authors' Calculation.

From Graph-8, it reveals that the percentage change of nominal exchange rate deviation from its equilibrium was much higher during the periods from 1980s which reversed during the periods of 2000sand remain there until 2007-08 and became overvalued thereafter.

Graph-9: The Trends of Actual Exchange Rate and the Equilibrium Exchange Rate: Using Overall Balance



Source: Authors' Calculation.

Although, according to the current account balance approach the nominal exchange rate of Bangladesh shows overvalued compared with the equilibrium on the other hand, using overall balance approach the exchange rate appears undervalued. However, it could be mentioned here that we tried to derive the overall balance of Bangladesh from the summation of the balances of current account, capital account, and financial account for the period of 1981-82 to 2017-18 to approximate the actual overall balance of Bangladesh due to non-availability of data.

Alternative Approach

Equilibrium exchange rate is an unobservable variable. Therefore, macroeconomic variables which have close relationship with the exchange rate are used to examine the

relationship between the exchange rate and other closely related macroeconomic variables.

To see the robustness of the model this study used the model used by Montiel (1999), Rahman and Basher (2001).The exchange rate misalignment is calculated. The following equation is used to calculate the exchange rate misalignment in Bangladesh.

Model $_A$ (real exchange rate) =f (external resource balance, terms of trade, investment to GDP, govt. con to total consumption, GDP, debt service to export ratio)

Model$_A$: LRER= LCONGOV, LINVGDP, LTOT, LRESB, LDSEX, LGDP)

As an external sector resource balances, the foreign aid and remittances are used; all the variables are in log linear form.

Preliminary Data Analysis

Before using the data in the estimation, we need to know time series properties of all the variables. Accordingly, a series of unit root tests[2], such as Augmented Dickey-Fuller (ADF, 1981), Phillips-Perron (PP, 1988), and Kwiatkowski-Phillips-Schmidt-Shin (KPSS, 1992) are used to determine the order of integration for each series. The results of unit root tests as reported in Table-1 indicate that all the variables are I(1) i.e., except for terms of trade variable. It implies the external sector resource balance as proxies by the remittances and foreign aid, government consumption to total consumption, investment to GDP, debt service to export and GDP are non-stationary and contain unit-roots I (1).

[2] Note that ADF and PP tests are based on the null of unit-roots while KPSS test assumes the null of stationary are also performed. However, the conclusion doesn't change.

Table-2
Results of Unit-Root Tests

Unit Root Test (Augmented Dicky-Fuller Test)			
Variables	**Level**	**First Difference**	**Order of Integration**
LRER	-2.22	-5.83	I(1)
	(0.20)	(0.00)	
LRESB	0.81	-6.04	I(1)
	(0.99)	(0.00)	
LTOT	-4.08	-	I(0)
	(0.0031)		
LINVGDP	-0.53	-4.12	I(1)
	(0.87)	(0.01)	
LCONGDP	-1.23	-6.41	I(1)
	(0.65)	(0.00)	
LDSEX	-0.28	-4.28	I(1)
	(0.92)	-0.01	
LGDP	0.95	-0.64	I(1)
	(0.99)	(0.00)	

Source: Authors' Calculation.

Engle and Granger (1987) pointed out that a VAR model would be mis-specified if the all non-stationary variables of the model are co-integrated. Therefore, estimating a VAR model with I(1) series are not appropriate if they are co-integrated. The results show three co-integrated relations among the variables imply that there are long run relationships among the co-integrated variables. If a series of non-stationary variables are co-integrated they form the basis for estimating the model using Vector Error Correction approach (VEC).

Estimation Results of Co-integration

In our empirical estimation we have applied the Johansen (1991 and 1995) and Johansen and Juselius (1990, 1992) multivariate co-integrating methodology which jointly

determine empirically the number of *r* (maximum *k-1*) co-integrating vectors from a vector of *k* endogenous variables in the model along with coefficients of the variables and the adjustment parameters to a third order VAR (with maximum lag three) to test for co-integration. In our deterministic trend component specification in co-integrating equations we choose case-4 (linear trend assumption) that is, we assumed that the level series of endogenous variables have linear deterministic trends but the co-integrating equations have only intercepts (constants). The results are based on the assumptions of a constant and a linear trend in the data with optimal lag length 3. Akaike's Information Criteria (AIC) and Likelihood Ratio (LR) test are used to decide the optimal lag length that makes all the residuals White Noise. The results are presented in Tables-2

Table-3: Co-integration Test

Null Hypothesis	Alternative Hypothesis	Trace Test			Maximum Eigen Value Test		
		Statistics	95% Critical Value	Probability	Statistics	95% Criti	Probability
r=0	r=0	154.97*	95.75	0.00	69.89*	40.08	0.00
r≤1	r=1	85.08*	69.82	0.00	35.56*	33.88	0.03
r≤2	r=2	49.52*	47.86	0.03	28.57*	27.58	0.03

*Both Trace test and Max-eigenvalue test indicate 3 cointegrating equation(s) at 5%

Source: Authors' Calculation

In all the bi-variate co-integrating relationships, the critical values of the maximal eigen-value statistics and trace statistics strongly reject the null hypothesis of four (zero) co-integrating vector in favor of three co-integrating vectors both at the 1% and 5 % levels. Several important remarks could be developed from the results of co-integrating equation.

Table-4: Standardized Co-integrating Coefficients of Co-integrating Equation(s)

1 Cointegrating Equation					
LRER	**LRESB**	**LINVGDP**	**LGDP**	**LDSEX**	**LCONGOV**
1.00	-0.695	0.921	3.834	0.240	13.404
	(-9.07)	(1.98)	(15.63)	(1.71)	(11.63)
2 Cointegrating Equations					
LRER	**LRESB**	**LINVGDP**	**LGDP**	**LDSEX**	**LCONGOV**
1.00	0.00	0.55	0.80	-0.22	13.01
		(0.46)	(2.07)	(-0.62)	(4.57)
0.00	1.00	-0.53	-4.36	-0.67	-0.56
		(-0.34)	(-8.69)	(-1.43)	(-0.16)
3 Cointegrating Equations					
LRER	**LRESB**	**LINVGDP**	**LGDP**	**LDSEX**	**LCONGOV**
1.00	0.00	0.00	0.70	-0.43	12.47
			(1.79)	(-2.24)	(6.78)
0.00	1.00	0.00	-4.26	-0.47	-0.04
			(-8.73)	(-1.92)	(-0.02)
0.00	0.00	1.00	0.19	0.38	0.99
			(2.41)	(9.81)	(2.70)

Source: Authors' Calculation

Since we are interested to examine the relationships with the real exchange rate first co-integrating equation for the real exchange rate show that the long run equilibrium relationship exists among the log of real exchange rate, the log of investment to GDP, the log of external resource balance and the log of real GDP.

Vector Error Correction (VEC) Models

A vector error correction (VEC) model is used to see the short run dynamics since the variable are co-integrated. VEC is a restricted VAR representation. The co-integrating relationships reveal the presence of long-run equilibrium relationships among the variables of the model. However, in the short run, deviations from these relations could occur as a result of shocks to any of the relevant endogenous variables. Thus, after testing for co-integration, a VECM is estimated. The VECM is conditional on co-integrating vectors and thus, specified as to regress the first (time) difference of each non-stationary endogenous variable at time-t on one period lag (at time -1) of the co-integrating equation/vector (s) and the lagged (at time-t-i) first (time) differences of all of the endogenous variables in the system. In fact, when we impose number of co-integrating vectors as restrictions among the endogenous variables in the VAR, we move to VEC model whose general form is:

$$\Delta x_{t=} c_o + \sum_{i=0}^{p-1} \gamma_i \, \Delta x_{t-i} + \delta_i ECT_{t-i} + \omega_t$$

In our case the form of VECs will be as follows:

$$\text{Model:}\Delta \ln(rer)_t = c_0 + \sum_{i=0}^{p-1} \gamma 1 \, \Delta lnresb_{t-i} + \sum_{i=0}^{p-1} \gamma 2 \, \Delta ln(invgdp)_{t-i} + \sum_{i=0}^{p-1} \gamma 3 \, \Delta lncongov_{t-i} + \sum_{i=0}^{p-1} \gamma 4 \, \Delta lnGDP_{t-i} + \sum_{i=0}^{p-1} \gamma 5 \ln(dsex)_{t-i} + \sum_{i=0}^{p-1} \gamma 6 \ln(tot)_{t-i} + \delta_i ECTy_{t-i} + \omega 1_t$$

The Vector Error Correction Model (VECM) results

$$\Delta lner_t = 0.02 - \underset{(-2.21)}{1.24}\Delta \ln invgdp_{t-1} + \underset{(-0.94)}{0.02}\Delta lncongov_{t-1} - \underset{(1.17)}{0.18}\Delta lndebt_{t-1} - \underset{(10.23)}{3.64}\Delta \ln gdp_{t-1} + \underset{(2.64)}{0.53}\Delta \ln resb_{t-i} - \underset{(9.27)}{1.05} ECT_{t-1}$$

t-values are in the bracket.

The estimated results from VEC provide same results as in the long run co-integrating relations. The above dynamic estimate suggests that the log of investment GDP, external sector resource and the log of real GDP have significant impact on the exchange rate. The increases in the log of investment to GDP and also the log of GDP have significant negative impact on the exchange rate. In other words increase in the investment to GDP and GDP itself causes the exchange rate to appreciate while the increase in external resource balance causes depreciation of the exchange rate in the short run. The coefficient of ECT_{t-1} is negative and significant, which implies that the model converges. The parameter δ is the speed of adjustment (in case of short run imbalances) in bringing about the equilibrium that is, removing the deviation. In the VEC all the variables in the model are endogenously determined and the parameter δ is the speed of adjustment or the parameter of error correction. From our VEC model estimation results, we can draw several important conclusions; first, the error correction term is significant (at the 1-percent error level) in our specification as implied by the Granger representation theorem. The optimal lags of VECM stands at three as confirmed by the Log likelihood test, Akaike Information Criteria and also by Final Prediction Error. The error correction term found negative and significant for D(rer).

In more general terms, the significance of EC term implies that the error-correction mechanism work effectively to reduce the disequilibrium between the exchange rate and the fundamental variable to adjust to the new equilibrium. However, there are several features to be analyzed. Some of the adjustment coefficients of lagged values of explanatory variables were not significant. The value of adjusted R^2 is reasonably good which0.82.

A negative sign of EC term (coefficient of co-integrating vector) means that if the level of real output is distorted away from long run equilibrium then the distortion was automatically removed by appropriate change of fundamental variables used in the model to estimate the equilibrium exchange rate. The statistically significant error-correction terms implied that lagged values of the invgdp, res, gdp can be used as a guideline for present or future policy direction of equilibrium adjustment. The coefficient on the error correction term is high indicating that prices adjust rapidly to its long-run equilibrium. In VEC specification the estimated coefficient of the EC term is 1.05 implies a more rapid adjustment mechanism at work in correcting the exchange rate disequilibrium.

6. Conclusions and Recommendation

The study used annual data from 1980-81 to 2017-18 to estimate the equilibrium exchange rate and the deviation of the exchange rate from its equilibrium by applying sustainable current account balance approach and behavioral equation. Using nominal exchange rate, current account balance and GDP the study found that currently Bangladeshi currency is overvalued compared to its equilibrium. This implies that the export and the GDP growth might get affected negatively. Therefore, the policy implications of the study would be that Bangladesh needs to adjust its exchange rate slowly with the equilibrium value. The study also examined the impact of the some determinates on the exchange rate and found that external resource balance as proxy by the foreign aid and remittance have significant positive impact implying that an increase of these resource will depreciate the currency. On the other hand, the increases in the log of investment to GDP and also the log of GDP have significant negative impact on the exchange rate. This implies that increase in the investment to GDP and GDP itself causes the exchange rate to appreciate while the increase in external resource balance causes depreciation of the exchange rate in the short run

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The role of Interest rate liberalization on Endogenous Private savings growth on East and South Asian Countries- Staggered Diff and Diff panel data approach.

Ishrat I Mowla[1]

Abstract

Recent Studies in South and East Asian countries have shown that the impact of interest rate liberalization is either insignificant or significantly negative on private savings growth. However, the staggering growth of private savings in the run up of heated Asian Financial Crisis (AFC) followed by Global Financial Crisis(GFC), transformed South and East Asian region into a hub for large capital stock. Historically interest rate has always been a dominant factor in mobilizing the savings growth despite other macroeconomic juggernaut factors. This paper examines the role of interest rate liberalization on private savings in eleven Asian developing countries using panel data for the period 1980 to 2015. For Most of the South and East Asian countries the financial liberalization took place between 1980s and 1990s. However using system Staggered Diff in Diff approach, this paper concludes that there is no significant impact of interest rate liberalization on private savings growth within the specified time. Nevertheless, it was traced that interest rate liberalization significantly stimulated the Asian financial crisis further to drain out the capital from Asian region. Consequently negative economic outflow and positive trade flows took place during global financial crisis in the non shocked economies of Asian region while leaving the mark of casualties in shocked economies.

Keywords: Interest liberalization, Private Saving Growth, Staggered Diff and Diff approach, Asian Financial Crisis, Global Financial Crisis

JEL Classification: B23, C23, E21, F02, G28

1.0 Introduction

Apparently the variation in savings growth rate can explain the variation in the economic growth rates in developing economies. It is generally accepted that interest rate influences aggregate savings of the economy.

[1]Joint Director, Bangladesh Bank. Views expressed in this article are the author's own which do not necessarily reflect the views of the organization she works. All remaining errors are the author's own.

Hence interest rate liberalization is a parallel evolutionary transformation in the savings growth pattern in emerging economies as recommended by Washington Consensus. Interest rate normally has either of the dual impact on savings. Through substitution effect low interest rate provides less incentive to save and higher encouragement to spend and vice versa. Through income effect low interest rate might encourage to save more to equalize previous earning. Theoretically substitution effect outweighs income effect on savings. During 1990 capital market got highly active in South Asia on a short term notice following interest liberalization. Hence the participation of many informal and formal banking intermediaries produced many informal capital markets. Increased credit availability due to interest liberalization was causing low interest rate and this ultimately drove capital outflow or consumption rather than savings .Such circumstance failed many institutions to hold back a large chunk capital during the surge of AFC (Asian Financial Crisis). In East Asian region majority of the countries were liberalized financially during 1980 to different degrees. During mid 90s Most of the East Asian countries badly fell into crisis due to accumulated short-term foreign debts, highly leveraged corporations and dropping export levels. These situations ultimately led to a persistent shrinkage of these emerging economies. The emerging economies of the South and East Asian region were to some extent benefitted in the convergence of low interest rate in USA. The rising commodity price amplified the commodity export and capital inflow towards Asian countries during GFC. In the long run various factors such as intensity of interest liberalization, growth of economy, financial turmoil, stage of development, economic openness, investment environment etc turned Asian region a trusted hub for private savings and investment in the following years.

The main objective of this paper is to find out whether interest liberalization or any other factors that stimulated the private savings growth on Eleven Asian countries.

Hence the paper is organized in the following manner viz The trend of private saving growth in South and East Asian economies during (1980-2015), Literature Review, Data, Model & the Rationality, Econometric Analysis & Result interpretation and Conclusion.

Table 1

Countries	Interest liberalization	AFC
Bangladesh	1993	1997
India	1993	1997
Indonesia	1984	1997
South Korea	1992	1997
Malaysia	1991	1997
Pakistan	1993	1997
Philippines	1983	1997
Singapore	1985	1997
Sri Lanka	1990	1997
Thailand	1994	1997
Vietnam	1991	1997

Source: Bashar, Okmr& Khan, H (2009),Gochoco, MS (1991),.International Monetary Fund (IMF) (2007), *Sri Lanka*, .Munir, S & Chaudhry, I (2014), The World Bank Group (2002)

2.0 The trend of private saving growth in South and East Asian economies during (1980-2015)

During 1990s most of the Asian countries were blessed with major financial development. There was a massive foreign capital inflow following financial liberalization. Hence we see a major kink up of private savings growth during 1990s among these countries (Graph 1). Financial liberalization paved the way towards reduction in reserve liquidity and increased credit demand in India, Bangladesh and Sri Lanka. These South Asian countries attracted lot of capital for investment for being labour intensive economies from Euro zone until AFC. Further investment lead towards rise in income and thereby private savings growth.

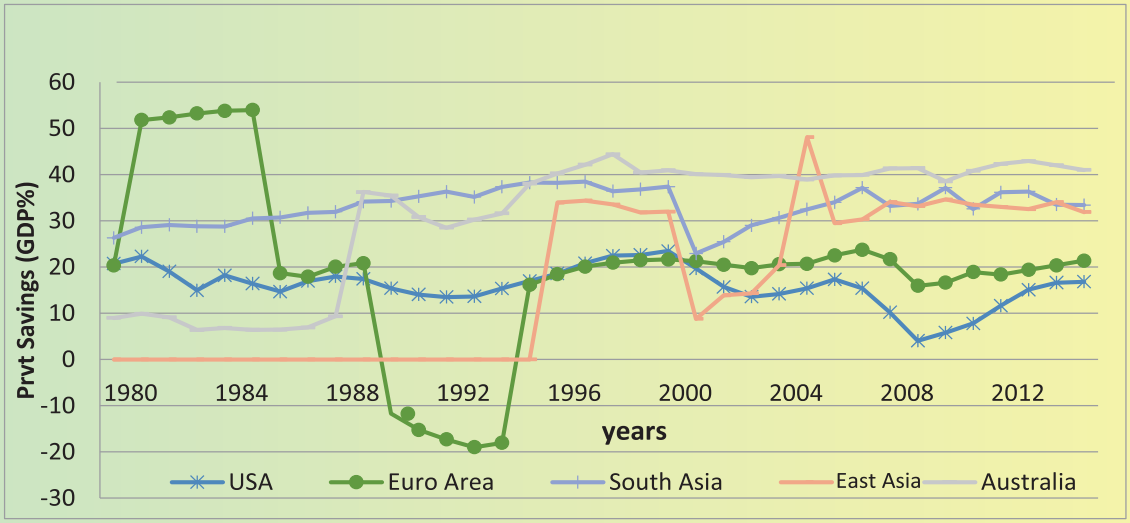
In Euro zone, people started to consume more and save less. Meanwhile equity market got highly active in 1990 (World Bank report). Much of the private credits extended by banks and non banks in South Asia were proved to be unproductive. In Bangladesh when Share market scam 1999 started its purge, huge capital outflow took place following AFC. In East Asia majority of the countries were liberalized financially from 1985 to 1994 to different degrees. During 1980s connected lending within industrial financial conglomerates and government pressures played an important role on credit allocation. Hence a rising trend of private savings growth is noticed in East Asian zone (Graph 1)

until 1996. Before AFC, the rise of interest stimulated huge crowding in effect in South and East Asian Region while creating further leeway for investment. Therefore people started keeping deposits with banks and non banks during income growth. Until AFC, capital in-flight accompanied with labour productivity gave a boost up to the manufacturing sector. During East Asian Financial Crisis(EAFC)Malaysia, Thailand, Korea, Indonesia and the Philippines were badly hit. In the later part of the story Singapore and Hong Kong also joined the flock (fig 2-East Asia). The Accumulated short-term foreign debts, highly leveraged corporations and dropping export levels led a persistent shrinkage of five emerging economies by 7.7% and millions of people lost their jobs while sustaining livelihood losses (Yellen, 2007). Hong Kong Institute of Economics and Business Strategy ascertained that asset prices and currencies in most of the Asian countries dropped by 30% to 40%. By the end of 1990s, most of the countries in Asian region were showing signs of overcapacity. By the end of 1990s these countries depended vulnerably on foreign investment.

It became quite evident that high level short term foreign debts were over accumulated and most of the companies turned to be highly leveraged. Consequently export level started to drop. Currency started to depreciate driving lower interest rate. Ultimately huge capital outflow was in the course of action. Hence we see a rising trend of private savings in USA and Euro zone after AFC.

Literally it was the replenishment of the capital that flowed out too Asian region prior to AFC. On the other hand when AFC shock hit the Asian region government started to cut budget. Subsequently household started to consume instead of saving while looking forward for a future tax cut. Due to lower interest rate remittance changed its channel due to the presence of lower interest rate or it was consumed by the house hold. Therefore by the end of 90s private savings dropped in South and East Asian region (Graph 1). Interestingly during 2007-08 the deregulation, declining demand, freezing financial markets, and loss of confidence Global financial crisis shock caused huge capital outflow towards Asian region from in USA and Euro zone . After GFC (J McKibbin, B Stoeckel,2011) shock, the economic world observed huge capital outflow towards Asian region while export sector in Asian region got a thrust to boost. Asian countries have shown a rising pattern (Graph 2) for private saving.

Fig 1: **Zonal Private Savings growth trajectory pattern**



Source : Graphical Presentation of private savings growth of USA, European Zone , South Asia, East Asia and Australia based on data from World outlook database, IMF and world development indicator (WDI), World Bank.

3.0 Literature Review

Financial liberalization is a process of detaching domestic economy to establish the connection with the globalized financial system (Melvin & Norrbin, 2017). It facilitates the movement of international capital by freeing up financial system through reforming capital control policy, foreign exchange policy and domestic financial market. Financial liberalization may expand international diversification of savings from other countries to be more responsive to foreign interest rates even (Masson et al., 1998). Theoretically it is suggested by Sauve 1999 that financial liberalization benefits the developing countries through opening financial markets for foreign investors leading towards creating room for more savings and investment (Thailand, Hansanti, 2005).

Financial liberalization is always expected to have an impact on interest rates and asset prices while implementing interest rate liberalization. The more countries are liberalized the volatility of interest rates are reflected in the dynamic behavior of developing countries. Generally financial liberalization has short term impact in both real and nominal money market interest rates (Honohan, 2000). Interest rates liberalization raises domestic savings at macroeconomic level. In case of Kenya, we see mild consequence

countries with serious macro economic and financial imbalances or inadequate regulatory and supervisory framework are likely to run into severe problem if they liberalize interest rate.(Mehran & Laurens, 1997)

Famous growth models of Harrod (1948), Domar (1948), Solow (1956), Swan (1956) and Romer (1986) (Roux et al., 2018) advocated for interest liberalization on private savings growth. They have asserted that policies which stage-manage interest rates to be low will not go as planned in the financial sector of the economy. In that case lower interest rate will have negative impact on savings growth and thereby investment. AZ Baharumshah (et al, 2003) have applied VECM and co-integration techniques to find out the determinants of domestic savings of East Asian countries such as Malaysia, S Korea, Thailand, Philippines and Singapore. They concluded that the impact of interest rate is inconclusive on domestic savings. The extent of financial liberalization is reflected by the interest rate (Baharumshah et al., 2003) Demirguc-Kunt and Detragiache (1998), Kamisky and Reinhart (1999) and also Cole and Slade (1998) figured out that bank deposits were highly reduced in 53 countries including Malaysia for 1980 to 1995 while using a Multivariate logit framework. All these countries were liberalized with an imbalanced macroeconomic policies. While Kaminsky and Reinhart reported that 18 out of 25 banking crises occurred in a liberalized economies. (Chow & Eu, 2008).

Another study reveals that interest rate liberalization had negative non significant impact on savings in Nigeria. Therefore interest rate liberalization could not augment savings growth in Nigeria. Many countries such as Angola, Burundi, Congo, Cote d'Ivoire, Gambia, Ghana, Kenya, Madagascar, Malawi, Mozambique, Nigeria, Rwanda, Tanzania, Zambia, Zimbabwe, India, China, Turkey, etc. have made attempts at liberalizing their financial sectors by deregulating interest rates, eliminating or reducing credit controls, allowing free entry into the banking sector, giving autonomy to commercial banks, permitting private ownership of banks and liberalizing international capital flows since 1970 . Odhiambo (2009) posits that of these six dimensions of financial liberalization, interest rate liberalization seems to have been the main center of attention.(Onwumere et al. 2012). AFC is actually appeared to be the outcome of a weak financial system and volatile capital movement which was brought about by the globalization of financial market. Led by technological advancement and communication in the globalized era financial liberalization was inevitable driven by the notion that free capital movement was better than less free capital movement. However this extended naïve belief system is

required to be validated by many qualifiers. Asian economies are presumed to have sound macroeconomic policies which are reflected in pre-crisis write-ups. According to Sheehan 1998 private capital flows were highest between 1993 and 1996 in countries like Thailand, Indonesia, Malaysia and South Korea. These countries have shown higher rate of domestic savings due to capital inflows and further investment (Hansanti, 2005).

With the withdrawal of government intervention financial liberalization were highly active in financial market. These economies are successful in mobilizing large amount of savings and thereby channeling them toward productive investment. Kumar and Debroy mentioned that absence of government role, unwarranted expansion of overcapacity of private firms unproductive savings and investment.(Lee, 2002). Ahmed. S (2015) in Bangladesh Vision 2030 mentioned that among several factors Deregulation drive in financial sector causing high remittance inflow while keeping interest rate within manageable range lead towards expansion of national saving since year 2000.

M.K Mujeri & S. Younus (2009) explained a bank profit maximization model based on empirical industrial organization approach using panel data of 48 banks covering a period of 2004 to 2008 during the tenure of interest deregulation financial system in a developing country like Bangladesh exhibit larger interest rate spread causing lower deposit rate while discouraging savings and limiting resources to finance bank credit. These ultimately creates impediments for small business, house hold enterprises and rural industries those who play important role for creating investment environment in any developing countries. Chowdhury A. R (2001) estimated a saving function to evaluate the impact of determinants of private savings in Bangladesh leading to a conclusion that real interest rate has positive impact on private savings rate where as financial reforms implying interest liberalization had actually reduced savings. According to his views political interference in extending loans to institutions and individuals with high credit risk while non performing assets contributed to high interest margins. These ultimately adversely affected private savings growth ever since financial reform took place from the year 1980

In Latin America financial liberalization took place in 1970 but it was withdrawn and financial repression continued until 1980s with debt crisis, hyperinflation, government deficit and the growth of population (Dornbusch and Edwards 1991, World bank group). In the year 1990 another substantial financial liberalization occurred with interest liberalization in different timing and degrees. Partial rate liberalization generated

pressures for more interest rate liberalization. As soon as borrower channeled their funds in to deregulated instrument and sectors, credit accessibility rose and more loan defaulters were found. Unfortunately, when macroeconomic situation was unstable and interest rates were free, interest rate goes very high. As a result, various banking problem appeared giving rise to a capital market failure.

4.0 Data, Model & Methodology and the Rationality

4.1 Data

My sample involves 11 Asian developing countries viz Bangladesh, India, Indonesia, S Korea, Malaysia, Thailand, Pakistan, Srilanka, Vietnam, Philippines and Singapore. I have included the dummy variable for interest rate liberalization while controlling the Asian financial crisis and Global financial crisis to see the impact on the private savings growth of these eleven Asian countries. This section discusses in detail about the data used in our study and the methodology.

The data for this study is compiled from various sources. I use panel data which comprises of 11 developing countries from the period 1980 to 2015. The savings regression is based on annual data which are compiled from two main data sources and they are World outlook database, IMF and world development indicator (WDI), World Bank.

4.2 Econometric Model

The explanatory variables included in our savings regression are based on analytical relevance and data availability. In addition, these variables have strong literature backing.

$$S_{it} = \beta S_{it-1} + \alpha X_{it} + \gamma I + \mu F + \Omega S + \eta_i + \varepsilon_{it} \quad \text{.....1}$$

Where the subscripts i and t denotes country and time respectively

S is the savings growth rate,
I represents the interest liberalization as dummy variable
F represents as the controlled dummy variable of Asian financial crisis
S represents as the controlled dummy variable of Global financial crisis
X represents the explanatory variables that possibly affect private savings,
η is the set of unobserved, time-invariant country specific effects,
ε is the error term.

4.3 Explaining the econometric methodology

The main objective of this investigation is to test the (null) hypothesis that interest liberalization leads to improve private savings growth in the emerging economies of Asia. Most of the countries were liberalized in the midst of 1980s. The comparison is shown through diff in diff approach in terms of respective country liberalization year while examining the situation of Asian Financial Crisis Impact and Global Financial Crisis Impact.

The treatment group falls before the time of liberalization and Control group fall after the year of interest liberalization execution for analytical purpose I have used dynamic panel diff in diff fixed effect approach to find out the estimate expected impact of interest rate liberalization on private savings growth while controlling the macroeconomic shocks of Asian financial crisis and Global financial crisis. Although these countries have different levels of economic development, the applied econometric approach ensures robustness while overcoming other endogeneity issues along with focusing on the differences of the impact of post and prior macroeconomic shocks. In addition to that, I will be using the lagged values of the endogenous variable as suitable instruments to overcome any endogeneity issues.

4.4 Rationale for the chosen determinants:

***Budget deficit*:** With the increase of government expenditure or low tax, national consumption will be tempted to rise or private savings will increase. (Barro 1974) reports the concept as Recardian equivalence. Barro claims that private savings replenishes the government budget and thereby making public savings irrelevant to fiscal deficit. In summary when public saving falls, private savings increases making budget deficit a causal factor. Therefore there is a negative relation sustains between budget deficit and private savings. According to Corbo and Schmidt-Hebbel (1991) investigated on the evidence that in developing countries the magnitude of crowding out effect is less than 1 implying lack of full Ricardian equivalence. A similar evidence is provided by (Bernheim, 2014), (James P. Cunningham, 2005) and (Masson et al., 1998) for industrial countries.

***Income**:* According to Modigliani's life cycle hypothesis (1966) will be stimulated to rise due to higher growth leading towards rising aggregate savings of working age population.

In disparity, (Dolde & Tobin, n.d.) argues that individual will increase consumption expecting rise in future income which leads to a fall in savings. (Carroll & Weil, 1994), (Edwards, n.d.) and (Hiebert, 2006) reported that income growth has a positive association with private savings. Whereas (Attanasio et al., 2000) discovered that the positive relationship between growth and private savings are sensitive to the additional controls added to the savings regression.

Real interest rates and private savings exhibit an imprecise relationship. Income effects have a positive effect whereas the substitution effects have a negative effect on private savings. Human wealth (individual income) is higher than financial wealth and human wealth negatively affected by real interest rate. While a positive coefficient for real interest rates suggests that the substitution effects are greater than income effect. Empirical research gives mixed results for the relation between real interest rate and private savings. A positive relation is found between private savings and real interest rate by (Bosworth, 2005) and (Ogaki & Reinhart, 1998). (Masson et al., 1998) also find a positive impact but not robust relation. While, (Bandiera et al., 2000)find no effect of real interest rate on private savings.

Inflation has perplexing effect on private savings. Inflation carried out with nominal rate increases savings. However, when inflation surges, there is a fall in real GDP which reduces real income and thereby affecting privates savings indirectly. Hence inflation lays both direct and indirect effect on savings growth. Most studies show evidence of negative or zero effect of inflation on savings (Masson et al., 1998) (Pesaran et al., 2000) (Loayza et al., 2000)

Per capita gross national income is having a positive effect on private savings. According to the economic intuition, per capita increases private savings. This effect is likely to fade away as per capita grows and even becomes negative when countries become rich where growth and investment opportunities are relatively lower. (Ogaki & Reinhart, 1998) provide evidence for diminishing returns of per capita income on savings.

Dependency ratio reflects negatively on private savings. If a country has a high proportion of working age population, then there would be high private savings as the worker's save for retirement. This is highlighted by the life-cycle hypothesis. When the working age retires, then they start to spend their saving to maintain their level of

consumption thus leading to a fall in the savings rate. (Masson et al., 1998) provide negative effect of dependency ration on private savings.

Terms of trade gives rise to savings and improvement in trade balance according to Harberger - Laursen - Metzer effects. Literature suggests that there is a positive relation between terms of trade and savings.

Unemployment has a negative effect on private savings. An increase in unemployment will reduce the per capita income which in turn reduces private savings.

Numerous studies identified various policy and non-policy factors affecting private savings. The subsequent table summarizes the impending determinants of private savings identified in the panel studies.

Table 2: Determinants of private savings identified in the literature

Variable/ category	Specific variables	Expected impact	Empirical Findings
Income	Terms of trade	0 or (↑)	(↑) or (0)
	Growth rate	(↑)	(↑)
	GDP per capita	(↑) or 0	(↑)
Rates of return uncertainty	Interest rate	(↑)	(0) , (↑) [unclear]
	Inflation	(↑)	(↓) or (0)
	unemployment	(↓)	(↓)
Financial deepening	Private credit flows	(↓)	(↑)
	Broad money flows	(↓)	(↑) [unclear]
Foreign borrowing constraints	Current account deficit	(↓)	(↓)
Fiscal policy	Public savings	(↓)	(↓)
	Public consumption	(↓)	(↓)
	Public surplus	(↓)	(↓)

Note: The qualitative results listed in column (4) of the above table review significant signs of saving regression corresponding to various panel studies. Masson (1995) study investigated about the determinants of private savings for industrial and developing countries using panel data while numerical empirical studies have been carried out for developing countries

5.0 Econometric Analysis and Result interpretation

5.1 Correlation test

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) PVTsavings	1.000														
(2PVTsavings_L	0.814	1.000													
(3) Interestlib	0.102	0.109	1.000												
(4) GFC	0.113	0.085	0.325	1.000											
(5) AFC	-0.084	0.073	0.629	0.406	1.000										
(6) TOT	0.209	0.169	0.354	0.052	0.380	1.000									
(7) BB	-0.284	0.213	0.288	0.068	0.293	0.130	1.000								
(8) GDPgrowth	0.197	0.162	0.055	0.023	0.112	0.027	0.022	1.000							
(9) CAB	0.145	0.125	0.222	0.235	0.375	0.396	0.225	0.111	1.000						
(10) realint	0.183	0.183	0.171	0.016	0.025	0.050	0.108	0.091	0.168	1.000					
(11) dependency	-0.275	0.251	0.469	0.405	0.476	0.436	0.395	0.093	0.350	0.027	1.000				
(12) loggnipc	-0.118	0.158	0.173	0.175	0.168	0.173	0.189	0.070	0.041	0.052	0.422	1.000			
(13) unemp	0.002	0.020	0.566	0.130	0.391	0.231	0.192	0.037	0.097	0.078	0.102	0.125	1.000		
(14) remittance	-0.252	0.268	0.107	0.240	0.200	0.144	0.050	0.013	0.033	0.035	0.164	0.250	0.165	1.000	
(15) mgdp	-0.181	0.181	0.151	0.011	0.055	0.130	0.045	0.158	0.233	0.200	0.151	0.081	0.225	0.373	1.00

PVTsavings_L= Private savings with lagged value, Interest lib- Interest liberalization using dummy variable, Interest lib_L- Interest liberalization using dummy variable with lagged value, AFC- Asian Financial Crisis using dummy variable, GFC- Global financial crisis with dummy variable, Budgetbalance- Budget Balance, GDP growth- GDP growth rate, realint- Real Interest rate; Dependency- Dependency rate, loggnipc-Log of Gross national Income per capita, CAB-Current Account Balance, unemp-unemployment rate, TOT- Terms of Trade (Trade balance-Export/Import), Mgdp- Money Supply /GDP rate indicating financial deepening, , Budgetbalance_L- Budget Balance with lagged value, GDP growth_L- GDP growth rate with lagged value, realint_L- Real Interest rate with lagged value; Dependency_L- Dependency rate with lagged value, loggnipc_L-Log of Gross national Income per capita with lagged value, CAB_L-Current Account Balance with lagged value, unemp_L-unemployment rate with lagged value , TOT_L- Terms of Trade (Export/Import) with lagged value, Mgdp_L- Money Supply /GDP rate indicating financial deepening with lagged value,

In this correlation matrix private savings is highly and positively correlated with the lagged values of private savings. Interest rate liberalization is positively correlated with private savings growth by 10.2%. On the other hand Asian Financial Crisis is 8.4% negatively correlated while Global Financial Crisis is 11.3% positively correlated with private savings growth in these 11 Asian countries. Terms of trade, GDP growth, Current Account balance, real interest rate positively affect private savings growth. Dependency ratio has a negative impact on private savings growth as suggested by life cycle hypothesis. Even Log GNI, mgdp and remittance negatively affect saving. Budget balance (Budget deficit) lowers private savings which happens only for short term.

Unemployment does not have any correlation with private savings growth. However in this correlation matrix it is noticeable that interest liberalization is positively correlated 62.9% with Asian financial crisis while AFC is 40.6% positively correlated with Global financial Crisis impact. Both the correlations are closer to one. To find out the whether there is any causality factor in I take the approach of diff in diff with the panel data

5.2 Descriptive statistics

Table 2

Variable	Obs	Mean	Std. Dev.	Min	Max
PVTsavings	396	23.074	8.925	-5.764	50.236
PVTsavings_L	395	23.046	8.919	-5.764	50.236
Budgetbalance	396	192.389	111.98	1	388
GDPgrowth	396	198.475	114.416	1	392
Realint	393	127.802	94.712	1	303
dependency	396	60.459	15.529	35.796	91.887
loggnipc	387	13.112	1.37	10.616	15.948
Unemp	396	45.311	34.023	1	116
remittace	330	3.458	3.158	.012	13.323

The above table provides that the mean is calculated on the overall observation (including time-series and cross country). Moreover the standard errors are calculated on overall data set and in addition, variance between countries and within countries across time has been calculated for each variable under consideration.

5.3 Model explanation

Table 3 :

	(1)	(2)	(3)	(4)
VARIABLES	OLS-t	OLS-t_L	FE-t_r_new	RE-t_r_new
PVTsavings_L	0.660***	0.702***	0.653***	0.660***
	(0.0655)	(0.0778)	(0.0646)	(0.0416)
Interestlib	-0.319	-0.850	0.250	-0.319
	(1.124)	(1.208)	(1.344)	(0.975)
AFC	-2.052***	-2.906**	-2.083***	-2.052*
	(0.750)	(1.071)	(0.782)	(1.064)
GFC	7.960***	11.67***	7.552***	7.960***
	(1.575)	(1.344)	(1.529)	(2.497)
Budgetbalance	-0.0129***		-0.0131***	-0.0129***

	(1)	(2)	(3)	(4)
VARIABLES	OLS-t	OLS-t_L	FE-t_r_new	RE-t_r_new
	(0.00389)		(0.00393)	(0.00264)
GDPgrowth	0.00322		0.00351	0.00322
	(0.00269)		(0.00272)	(0.00249)
Realint	0.00312		0.00325	0.00312
	(0.00367)		(0.00366)	(0.00292)
Dependency	-0.0842***		-0.0839***	-0.0842***
	(0.0297)		(0.0299)	(0.0273)
Loggnipc	-0.461*		-0.488**	-0.461*
	(0.229)		(0.225)	(0.243)
CAB	0.00464*		0.00459*	0.00464*
	(0.00257)		(0.00254)	(0.00273)
Unemp	0.00243		0.00314	0.00243
	(0.00930)		(0.00921)	(0.00949)
Remittance	-0.152		-0.158	-0.152
	(0.117)		(0.117)	(0.100)
TOT	0.0172		0.0150	0.0172
	(0.0211)		(0.0211)	(0.0194)
Mgdp	-0.000947		-0.00119	-0.000947
	(0.00342)		(0.00348)	(0.00291)
TOT_L		-0.00213		
		(0.0166)		
Budgetbalance_L		-0.00234		
		(0.00433)		
GDPgrowth_L		-0.00142		
		(0.00297)		
CAB_L		0.00164		
		(0.00391)		
realint_L		0.00243		
		(0.00309)		
dependency_L		-0.0641**		
		(0.0294)		
loggnipc_L		-0.285*		
		(0.159)		
unemp_L		0.00393		
		(0.00913)		
remittace_L		-0.111		
		(0.114)		
mgdp_L		-0.00222		
		(0.00390)		
Interestlib_L			-0.662	
			(1.146)	
Constant	13.01**	7.670*	14.25**	13.01**
	(5.695)	(4.440)	(5.785)	(5.647)
Observations	325	325	324	325
R-squared	0.759	0.670	0.761	0.752
Number of Time	36	36	36	36

Robust standard errors in parentheses
***** p<0.01, ** p<0.05, * p<0.1**

The covariates of Model 1 explain it by 75.9% points with 325 numbers of observations. In this model I ran a regression with the lag of private savings growth variable while applying the shock of interest liberalization, Asian financial crisis and global financial crisis. The lag value of private savings growth has a positive significant impact on the private savings with a magnitude of 0.66 while the shocks have a significant impact on private savings growth rate. The Asian financial crisis (AFC) has a significant negative impact with a magnitude of 2.052 on private savings growth. The Global financial Crisis (GFC) has significant positive impact with a magnitude of 7.960 on private savings growth. I have included the covariates of Terms of Trade, Budget Balance GDP growth, Current Account Balance, Real interest rate, dependency, Log Gross National Income, Unemployment and Remittance. Among them Budget Balance has negative impact of 0.0129 , dependency with a negative impact of 0.0842, log GNI (Income)with a negative impact of 0.461, CAB with a positive impact of 0.00464 affect private savings significantly.

OLS regression model no 2 covariates explain the model by 66.9%. Model 2 considered the lag values of the macroeconomic variables. I have included the lagged values of the covariates of Terms of Trade, Budget Balance GDP growth, Current Account Balance, Real interest rate, dependency, Log Gross National Income, Unemployment and Remittance. In this model the lagged values of Dependency and Gross national income had negative impacts on private savings growth with a magnitude of 0.0660 and 0.312 respectively.

Short run Impact evaluation : In the short run, interest rate liberalization was causing rise in real interest rate and thereby increase in reserve liquidity and lower credit demand took place.

Long run Impact evaluation: However with the pace of time while interest liberalization exists, `Asian financial crisis is significantly and negatively affecting the private savings growth with a magnitude of 2.906 due to huge and uncontrollable capital flight. There after the Global financial crisis is positively affecting the private savings growth with a magnitude of 11.67 significantly due to huge capital inflow towards South and East Asian region. As like before the lag value of private savings is significantly positive on the private savings growth with a magnitude of 0.702 with a long lasting persistence. Surprisingly log of Gross National Income are significantly negative.

In regression model 3 (base model) I have applied staggered fixed effect diff in diff approach. The covariates have defined the model with an R-sq of 76.1 percentage points. In this model the lag value of private saving growth, GFC crisis are significantly raising private savings growth with a magnitude of 0.653 and 7.552 respectively in South and East Asian region.

In the short run: Interest liberalization never played a significant role to increase private savings growth directly. Whereas Asian financial crisis shock, Budget balance, dependency, log of Gross National Income significantly decrease private savings growth with a magnitude of 2.083, 0.0131, 0.0839, 0.488 respectively. On the other hand CAB increases private savings growth 0.00459. It is noticeable that the budget balance is significantly decreasing private savings. Here Budget balance indicates the budget deficit.

In the long run: When budget deficit is rising which indicate the government of south and East Asian countries are aggregately increasing the fiscal stimulus. This will depreciate exchange rate due to lower interest rate in the short run. Hence in the long run export will rise. Eventually investment will fall in the countries. When the crowding out takes place due to government step the private sector crowd in will take place in a large scale. They will take the benefit by increasing asset pricing which is likely to induce private saving. During Asian financial crisis when stock market failed the price of asset dropped immensely. Large capital outflow took place for catching up with higher interest rates. Capital flew to USA and other advanced economies. So overall the private savings were showing a downward trend until 2007. Similar to previous model, the income representing log GNI and remittance are significantly lowering the private savings growth. This can again be explained by Ricardian behaviour. Ogaki et al 1995 reported that the middle and higher middle income countries can show up with diminishing returns to per capita income on savings.

Table 4:

VARIABLES	(1) OLS- intlib to AFC	(2) OLS- AFC to Sub
Interestlib	0.147**	
	(0.0661)	
AFC		0.01**
		(0)
Constant	0.167*	-0
	(0.0972)	(0)
Observations	329	330
R-squared	0.958	1.000

In the above two regressions, (Table 4)it can be observed that in the first model, interest liberalization is highly significant in causing Asian financial crisis with the presence of other significant covariates. In the second regression model 2 Asian financial crisis appears to be highly significant on impact of Global Financial crisis in South East Asian Region. Therefore interest liberalization appears to pave way to AFC and AFC to GFC.

75.91% of the Regression model 4 is explained by the covariates. In this model I have applied Random effect diff and diff approach. Most of the countries in Asian region are pegged with US $. During GFC huge capital crowd in caused currency appreciation. Subsequently the central bank relaxed the monetary policy by lowering interest in the short run period. As a result they have a little blip down in private savings in the following period of Global financial crisis. Countries where private sectors were predominantly rising asset price, transmission of capital fund to these countries were very likely to happen. **In the short run** higher investment drives the income of the people goes up. As a result, there is higher demand of goods and services. When income rose due to remittance and current account balance the demand for goods and services rose too. When USA and Euro zone were highly affected by Global financial crisis, government went for fiscal consolidation. Overall GDP of USA and Euro zone were falling down. The exchange rate depreciated due to lower interest rate in the short run. Subsequently a huge capital out flow took place towards Asian region to catch up their autarky (home) interest rate. The exchange rate appreciated. Huge investment took place. As per Keynesian characteristics as income rose, people started to save because of future higher tax. **In the long run** global financial crisis turned out to be a mechanism to stock private savings

significantly for Asian countries. The growth pattern is still enduring with the variation of time. The results appear almost similar like Model 3. To choose between Random effect and Fixed effect I ran Hausmen test.

5.4 Hausman Test

In the end I conducted a Hausman test to choose between Random effect and Fixed effect. As null hypothesis I considered the random effect model is appropriate to reach conclusion. But the P value is greater than 0. Therefore I can not conclude that I reject the null hypothesis

Test: H_0: difference in coefficients not systematic

Hausman (1978) specification test

	Coef.
Chi-square test value	0
P-value	1

Decision: Model no 4 is concluded to be appropriate.

5.5 Covariate balance

Table 5:

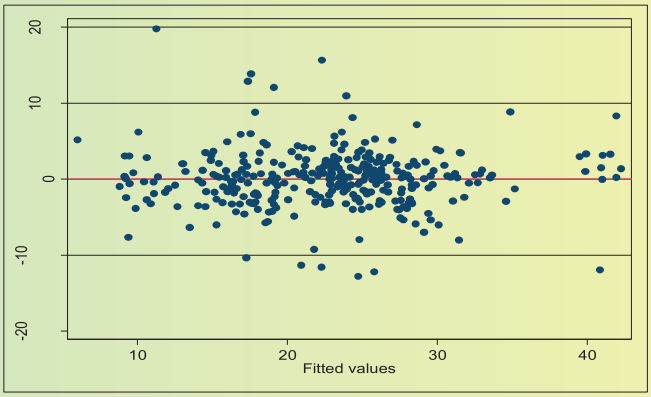
	Treated			Control			Balance	
	Mean	Variance	Skewness	Mean	Variance	Skewness	Std-diff	Var-ratio
PostCrisis~m	0.721	0.202	-0.983	0.031	0.031	5.388	2.020	6.611
subpm	0.371	0.234	0.533	0.052	0.050	4.032	0.846	4.699
PVTsavings	23.138	54.968	0.238	21.409	70.438	0.519	0.218	0.780
PVTsavings_L	23.067	56.363	0.258	21.210	69.543	0.494	0.234	0.810
Budgetbala~e	218.275	12043.180	-0.389	146.521	11534.900	0.681	0.661	1.044
GDPgrowth	198.891	12077.180	-0.086	185.938	10388.780	0.296	0.122	1.163
realint	137.192	8161.770	0.149	102.594	8877.696	0.863	0.375	0.919
dependency	57.068	170.369	0.383	72.019	154.070	-0.280	-1.174	1.106
loggnipc	13.440	1.687	0.604	12.968	1.088	1.108	0.401	1.550
unemp	61.079	841.783	-0.215	18.427	722.205	1.331	1.525	1.166
remittace	3.712	11.256	0.867	2.968	6.851	1.072	0.247	1.643

Here in table 5 most of the covariates 'standard deviation is close to zero. The variances of almost all variables are close to 1. There it appears that panel data before treatment and post treatment appears to have a normal distribution

5.6. Test of Heterogeneity

I have categorized south Asian countries as Bangladesh, India, Pakistan, Sri Lanka and Rest of the countries as East Asian countries.

Graph 3



In the graph 3 it appears that most of the observations are close to zero. To trace heteroskedasticity I ran a regression between two category of observations viz South Asian and East Asia.

5.7 Regression analysis

Table 6:

VARIABLES	(1) het-reg
PVTsavings_L	0.678***
	(0.0410)
Interestlib	-0.370
	(0.974)
GFC	8.229***
	(2.495)
AFC	-1.482*
	(0.996)
Budgetbalance	-0.0126***
	(0.00261)
GDPgrowth	0.00256
	(0.00247)
realint	0.00151
	(0.00281)
dependency	-0.0950***
	(0.0267)
loggnipc	-0.516**
	(0.239)
unemp	0.00275
	(0.00952)
remittace	-0.185**
	(0.0930)
Constant	15.97***
	(5.374)
Observations	324
R-squared	0.754

Interpretation: In the above regression Table 6 the covariates explain 75% of the OLS model with 324 observations. I ran the regression while categorizing between South vs East Asia. In this model it can be observed that interest liberalization is insignificant on private savings growth with significant impact of Asian financial crisis and Global financial Crisis.

5.8 Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

H_0: Constant variance

Variables: fitted values of PVT savings

x_1^2 = **1.63**

Prob > x^2 = 0.2019

Breusch-Pagan / Cook-Weisberg tests the null hypothesis that the error variances are all equal versus the alternative hypothesis states that the error variances are a multiplicative function of one or more variables as the value of dependent variable gets bigger. In test the chi square appears high. Therefore we cannot reject the null hypothesis that there is no heteroskedasticity

5.9 Other Econometric issues:

Firstly, to estimate savings regression and allow inertia caused by lagged value of savings in annual data, I used dynamic specification. This helps in determining the long-run and the short-run effects on savings.

Finally, there can be some unobserved country specific issues which can have an effect on private savings. Under Staggered diff in diff approach the issue of joint endogeneity and control for unobserved country specific effects associated with the regressor are well taken care off.

6.0 Conclusion

An attempt in my paper was made to show whether the impact of interest rate liberalization really worked out to develop the hub for private savings growth across 11 East and South Asian countries with a different history of economic development. In my panel study the applied econometric Diff in Diff approach ensures robustness to reduce endogeneity issues to observe the impact of post and prior macroeconomic shocks. The study figured out that the interest liberalization could not be significant to raise private savings growth in support of Mckinnon-Shaw when Asian financial crisis and GFC laid the shocks consequently. Asian Financial Crisis significantly reduced private savings growth while Global financial crisis significantly increased private savings in the Asian region. However, indirectly interest liberalization paved the way towards financial crisis. Admittedly interest liberalization suggests quality and voluminous savings in the formal financial sector under macroeconomic supervision so that it can provide necessary credit

supply. However, evidence suggests that countries experiencing decreasing budget balance will face a short term slow down and in future a long term gain will be waiting. Countries who are pegging their currencies with US$ accentuate the positive transmission through monetary policy relaxation. Interest rate decided by market causes accessibility of credit which can give rise to non bank intermediary's participation. Consequently it stimulated further capital out flow. Interestingly during 2007-08 the deregulation, declining demand, freezing financial markets, and loss of confidence Global financial crisis shock caused huge capital outflow towards Asian region from in USA and Euro zone . In the long run Asian financial crisis acted as the reminiscent towards Global financial crisis in the 11 South and East Asian countries creating large saving stock in Asian region even though unplanned interest rate liberalization.

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Responses of Domestic Investment to a change in Real Exchange Rate in Case of Bangladesh

Tahmina Akhter[1]
Mala Rani Das[2]
Mohammad Amzad Hossain[3]

Abstract

Private sector in Bangladesh along with government plays a prominent role in economic development through production, investment and export. The purpose of this paper is to investigate the response of private domestic investment to a change of real exchange rate. Here, it is considered whether investment responds differently to real depreciations versus real appreciations. In this paper The Johansen Co-integration likelihood approach and VECM were employed to examine the long run relationship and to detect the short-run and long-run causality among the variables (Domestic investment, Real Exchange rate and real income) using annual data over 1976 to 2015. The result shows that the domestic investment is positively affected by real income and real exchange rate which is statistically significant. Result of VECM shows that domestic investment and real income reaches in equilibrium after 12.5 years and 33.33 years respectively where exchange rate is already in equilibrium. Moreover there is long-run causality among the variables and short-run causality running from real income to domestic investment but no short run causality from exchange rate to domestic investment.

Keywords: Domestic investment, Exchange rate, Real income, Responses Johansen Co - integration, VECM.

JEL Classification: A10, E62, F31, G11

[1]Asst. Professor, Dept. of Economics, Bangladesh University of Business and Technology, Rupnagar, Mirpur-2, Dhaka-1216. email: tah_rania@hotmail.com. [2]Asst. Professor, Dept. of Economics, Jahangirnagar University, Savar, Dhaka-1343 email: mrdas@juniv.edu. [3]Professor, Dept. of Economics, Jahangirnagar University, Savar, Dhaka-1343 email: amzad104@gmail.com

1. Introduction

Private investment is treated as the driving force for economic development and growth. In FY2017-18, the total investment of GDP was 31.23 percent, out of which 23.26 percent was from private sector. In FY2016-17 a total of 1,745 private projects were registered in Bangladesh Investment Development Authority (BIDA) with a recommended amount of Tk.18, 52,618 million, which stood at Tk.20,72,925 million in FY2017-18 for 1,643 projects. In order to attract the private sector investment both from local and foreign investors, the government has taken different effective initiatives like construction of infrastructure facilities, endurance of uninterrupted supply of electricity, development of congenial environment for private investment, tax holiday, tax exemption etc. (BER 2017-18).

Private domestic investment may be affected by many factors (like GDP, inflation, savings, research, infrastructure, political stability, exchange rate etc) among those real exchange rate and real income are the two factors. Exchange rate is the rate at which one currency is exchanged to another currency i.e. it is the domestic price of a unit of foreign currency. Exchange rate can be real and nominal. When the influence of inflation is not considered then it is real exchange rate and when the influence of inflation is considered then it is nominal exchange rate (Uddin et al 2004). There are different exchange rate regimes. Bangladesh is an emerging country of the South Asian region that has been floated its exchange rate for taka with effect from 31 May 2003. Before that there were various types of pegged exchange rage regimes. Under floating exchange rate system, exchange rate is determined by the demand for and supply of respective currencies in the market. Now banks are free to set their own rates for interbank and customer transactions. After the genesis of floating regime, the scenario of exchange rate in Bangladesh experienced a depreciation of domestic currency (Mamun et al 2013).

Table-1: BD: Official Exchange Rate (OER): Average: per USD

Year	OER	Year	OER	Year	OER	Year	OER
2006	68.933	2009	69.039	2012	81.863	2015	77.947
2007	68.875	2010	69.649	2013	78.103	2016	78.468
2008	68.598	2011	74.152	2014	77.641	2017	80.438

Source: Ceicdata.com / World Bank

Currency depreciation or appreciation has countervailing impact on investment. It is expected that domestic investment will increase when currency depreciates since export become relatively cheap and raises the domestic and foreign demand. It leads to a sound economic environment. When the domestic currency depreciates, the marginal profit of investing an additional unit of capital is also likely to increase, because there are higher revenues from both domestic and foreign sales. Real depreciation could have a positive or negative impact on domestic investment, depending if more forms in a country are export oriented or import oriented. Clearly, a real depreciation that makes exports more attractive will boost exports and through multiplier effects it will also boost real income and eventually domestic investment. On the other hand, a real depreciation that raises the cost of imported inputs will hurt profit margins and discourage investment by firms that rely heavily on imported inputs, though this effect could be tempered due to slow adjustment of wages to inflationary effects of depreciation. If wages do not keep up with inflationary effects of depreciation, income and profits are redistributed from workers to producers (Bahmani-Oskooee and Hajilee, 2018). However investment is often modeled as the following function

$$I = f(Y, r)$$

Where I= investment, Y= income and r = interest rate

Investment is negatively related to interest rate because of the cost of acquiring funds with which to buy investment goods and positively related to income as higher income signals greater opportunities to sell the goods that physical capital can produce (https://en.wikipedia.org/wiki).

Therefore the main objective of this study is to:

(i) Examine whether there is any long run relationship among the examined variables (domestic private investment, real exchange rate and real income)

(ii) Examine whether there is any causal relationship among the examined variables.

(iii) Examine the short-run and long-run dynamics among the variables.

This study contributes to the existing literature by conducting an analysis of the effects of real exchange rate and real income on the private domestic investment of Bangladesh for the period 1976 to 2015. The next section considers the review of existing literature both inside and outside the country on this area. Third section focuses on data and methodology that are used in this paper. Fourth section deals with the discussion of the

results and fifth section presents the conclusion, limitation and recommendation of this study.

2. Theoretical Background

From Keynesian era investment has achieved more importance as it affects economic growth of a country. Among many investment theories, according to the Accelerator Theory of Investment, if either demand or income increases then investment expenditure also raises (Knox, 1952).

When firms expect demand for their products to rise then they want a large capital stock. As investment is the flow into this capital stock, it will respond to changes in this expected demand for output. So accelerator models are built upon the insight that investment will be determined by output growth (Baddeley, 2003). The Flexible Accelerator Theory or Lags in Investment states that there are lags in the adjustment process between the level of output and the level of capital stock. The neoclassical flexible accelerator model proposed by Jorgenson (1967) associates the user cost of capital (interest rate, depreciation and price of capital goods), where the firm boosts its market value by adapting its capital stock up to an equilibrium point of the market interest rate and marginal value product of capital, and the accelerator effect to elucidate investment performance. Tobin's *q* theory, (Tobin, 1969) is also a familiar model of investment which asserts that investment will be beneficial until the firm's value in the stock market is larger than the charge of acquiring the firm in the product market. From these models, it can expect that national income affects investment. Bahmani-Oskooee (2016) tried to incorporate exchange rate which is expected to have relationship with investment to understand the large import content of intermediate and capital goods. In the short run and long run, it is expected that real depreciation positively affect investment in case of high import content of capital goods and the traded goods sector respectively (Sioum, 2002).

3. Literature Review

Chowdhury (1993) choosing G-7 countries over the period 1973 to 1990 and employing a multivariate error-correction model, the study simplified that exchange rate volatility had negative significant effect on the volume of exports in G-7 countries.

Jayaraman (1996) wanted to find the major factors that affect the private investment in six South Pacific Developing member Countries (SPDMCs) and informed that real exchange rate instability had adverse impact on private investment.
Soleymani & Akbari (2011) adopted GARCH (1,1) approach to calculate the uncertainty of exchange rate for fifteen Sub-Saharan African countries. The estimated result suggested that there was a negative link between exchange rate uncertainty and investment as well as the share of investment from growth of GDP was very small in those countries.

Kogid et al. (2012) utilized ARDL bounds test and ECM based ARDL approach to depict the impact of exchange rate on the economic growth. Study referred that both nominal and real exchange rate had positive impact on economic growth of Malaysia but only real exchange rate had significant impact.

Mamun et al. (2013) used (OLS) method to explore the effect of depreciation on domestic output growth and price level and the study expressed that depreciation had an expansionary impact on output level and price level. Covering 36 countries Bahmani-Oskooee & Hajilee (2013) traced that real exchange rate volatility had significant impact on domestic investment in 27 countries out of 36 in short run. Exchange rate uncertainty raised the domestic investment in 14 countries while decreased domestic investment in 13 countries.

Zardashty (2014) used GARCH models on time series data 1961-2008 to identify the uncertainty in exchange rate. Then result indicated that the real exchange rate uncertainty had a negative significant impact on private investment to GDP ratio, besides this import of capital commodity and inflation had also negative impact on private investment to GDP ratio in Iran. Uddin et al. (2014) investigated a positive significant correlation between exchange rate and economic growth which was supported by the long run equilibrium relationship between exchange rate and economic growth and there was a bi-directional causality between the two variables (exchange rate and economic growth) over the period 1973 to 2013. Yusoff & Febrina (2014) analyzed the short run and long run relationship among the variables like economic growth, domestic investment, real exchange rate (RER) and trade openness and found that all the variables had positive

impact on the economic growth of Indonesia. Trade openness and gross domestic investment both led economic growth unidirectionally. From variance decomposition trade openness and RER found important while domestic investment identified as unimportant factor for explaining the variation in GDP. Mujahid & Zeb (2014) applying Granger Causality test on time series data 1980 to 2012 found a long run relationship between exchange rate and GDP and no causal relationship between the examined two variables in Pakistan.

Maepa (2015) conducted a study with the help of VAR multivariate Johansen Co-integration and Granger Causality approach to illustrate the relationship between the exchange rate and various types of investments in South Africa. In short run, there was insignificant relationship between the exchange rate and various types of investments and in long run, there was negative long run relationship between these.

Cambazoglu & Günes (2016) using ARDL model to data from January, 2007 to January, 2015 the researchers found that there were a cointegration relationship between the exchange rate level and FDI inflows in Turkey in query of exchange rate fluctuations and private domestic investment. Oniore et al. (2016) from Nigeria mentioned that, the depreciation of the currency and interest rate did not promote private domestic investment activities. While private domestic investment was positively affected by infrastructures, government size (proxied by the ratio of government spending to Gross Domestic Product) and inflation rate.

Canbaloglu & Gurgun (2017) selecting 25 emerging markets and developing economies (EMDEs) the researchers referred that the exchange rate uncertainty and economic growth had positive significant effect on domestic investment while the impact of global financial crisis and real exchange rate had negative impact on domestic investment. Utilizing annual data from 1980 to 2015 NjindanIyke & Ho (2017) explained that exchange rate uncertainty had differential effects on domestic investment in the short run. In short run current level of uncertainty promoted investment and previous levels of uncertainty vagued investment. Where in the long run, exchange rate uncertainty had a positive effect on domestic investment

Segun & Adedayo (2018) explored that exchange rate had positive significant impact on the industrial output of Nigerian economy during the time 1986 to 2016. Selecting seven

SARRC countries and collecting panel data over the time 1995 to 2016 Latief & Lefen (2018) traced that exchange rate volatility had negative significant that is adverse impact on international trade and FDI inflows in One Belt and One Road associated countries. Ruzima & Boachie (2018) applied ARCH based measure to get exchange rate volatility and related cross-country (BRICS) data for 1997 to 2015 and concluded that exchange rate volatility had a negative impact on private investment as confirmed by both random and fixed effects as well as GMM estimations.
Considering six emerging markets over 1980 to 2014, Bahmani-Oskooee et al.(2018) revealed that the effect of exchange rate on domestic investment is ambiguous and country specific.

Kilicarslan (2018) from Turkey counted the real effective exchange rate volatility with the help of GARCH model and concluded that increase in domestic investment, money supply and trade openness raises the real effective exchange rate volatility where increase in FDI, output and government expenditures decreases the real effective exchange rate volatility using FMOLS method

Adekunle et al. (2019) approaching with (ARDL) Model the researchers disclosed that FDI had positive significant impact on domestic investment where exchange rate and energy infrastructure had a positive but insignificant impact on domestic investment. Reviewing the existing literature we find the gap of conducting this study in as there are few studies in this area in Bangladesh.

4. Data and Methodology

In this study the annual data on Private Investment, Real income and Exchange rate in Bangladesh has been taken for the period 1976 to 2015. The main source of data is the data bank of the World Development Indicator published by the World Bank. In this paper, the dependent variable is private real domestic Investment which is measured by gross capital formation in real terms. The independent variables consist of real income, Y which is measured by real GDP, and the real exchange rate, REX (where an increase in exchange rate indicates currency depreciation and vice-versa). All the data are expressed in logarithms in order to include the proliferate effect of time series.

4.1 Unit root test

To check the stationary criteria of the selected time series data, this paper investigates unit root test (Augmented Dickey Fuller, Phillips-Perron test and KPSS test). Unit root tests used to detect that either any variable -the private investment, I (as a dependent variable) and real income, exchange rate (as independent variables) are integrated or have any causal relationship. Usually time series analyses consider stationary time series in empirical studies. A series is said to be stationary if mean and auto-covariance of the series do not depend on time. In order to examine whether each variable in the time series is integrated and has a unit root, this study has considered the widely used popular unit root test ADF and PP. Both of this tests use the null hypothesis that the series does contain a unit root (non-stationary variable) against a stationary variable in the alternative hypothesis while KPSS test uses the null hypothesis that the series does not contain a unit root (stationary variable) against a non-stationary variable in the alternative hypothesis. If the computed value of the F-statistic exceeds the critical values that are tabulated by Dickey-Fuller (1981) then the null hypothesis is rejected, it means the series is stationary. If the computed F-statistic falls below the critical values, the null hypothesis is not rejected; it means the series is non-stationary (Gujarati 2012) and the opposite situation is applicable for KPSS test. The test is based on the following regression equation.

$$\Delta Y_t = \beta_1 + \beta_2 + \alpha Y_{t-1} + \Omega i \sum^{m}_{i=1} \Delta Y_{t-1} + u_i \ldots\ldots\ldots\ldots\ldots (1)$$

Where, $\Delta Y_t = Y_t - Y_{t-1}$ and Y is the variable under consideration, m is the number of lags in the dependent variable and u_i is the stochastic error term. The null hypothesis of a unit root implies that the coefficient of Y_{t-1} is zero.

4.2 Co-integration test:

For testing the co-integration, Engle–Granger (EG) or Augmented Engle–Granger (AEG) Test is used. In first step how the variables are co-integrated is shown & second step Ordinary Least Square (OLS) is calculating the residuals. Variables such as LnI (Natural Log of investment), LnY (Natural Log of real income), LnECH (Natural Log of Exchange rate) are co-integrated if they are integrated in the similar order. To verify co-integrated relationship among the variables, Johansen Co-integration test (Johansen, 1988; Johansen and Juselius, 1990) unlike the Engle –Granger has been performed only on integrated of order one, i.e. Johansen and Juselius (1990) specify two likelihood ratio test statistics to

test for the number of co-integrating vectors. Critical values for both test statistics are tabulated by Johansen and Juselius (1990).

Both two test (max& trace) possess nonstandard distribution under the null hypothesis that provide nearly resembling critical values for the statistic exhibit Monte Carlo methods. The alternative hypothesis of trace test requires that the co-integrating vector is either equal or less than r+1, whereas r+1 are hold for the maximum Eigen value test. For carrying out Johansen, Investment is replaced to lnI, real income to lnY and exchange rate to lnECH.

4.3 Vector Error Correction Model (VECM): If non-stationary time series is integrated of order I(1) and found to be cointegrated we can proceed with VECM to examine the short-run and long-run dynamics of the series. Conventional ECM for cointegrated series is given below:

$$\Delta y_t = \beta_0 + \sum_{i=1}^{k} \beta_i \Delta y_{t-i} + \sum_{i=1}^{k} \delta_{1,} \Delta x_{t-i} + \Phi Z_{t-1} + \mu_t \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Z is the ECT and is the OLS residual from the following long-run cointegrating regress:

$Y_t = \beta_0 + \beta_1 X_t + \varepsilon_t$……(3)

and is defined as $Z_{t-1} = ECT_{t-1} = y_{t-1} - \beta_0 - \beta_1 X_{t-1}$ ……..(4)

The coefficient of ECT Φ is the speed of adjustment because it measures the speed at which y returns to equilibrium after a change in x.

4.4 Econometric Model:

The study specifies the following econometric model:

Domestic Investment $= \beta_0 + \beta_1$ real income $+ \beta_2$ real exchange rate $+ \varepsilon_i$ …….(5)

Where ε_i = error term which represent the variables that affect private domestic investment but are not taken into consideration.

5. Result Discussion

According to the methodology mentioned above, sets of data are examined & empirical results are presented in this section. All variables are tested for the unit root to find out whether they are stationary or non-stationary. Here test is applied in series in level and first differences with lag parameter determined by Akaike information criterion. The

results are obtained by using econometric software EViews version 7 and are reported in following table.

Unit root test (ADF, PP, KPSS) for lnPrivate Investment, lnIncome, lnExchangerate: Here the following table represents the results of unit root test among the variables

Table-2: Unit root test (ADF) intercept & trend with intercept presented below

Variables	**Augmented Dickey Fuller (Intercept)**		**Augmented Dickey Fuller (Trend and Intercept)**	
	Level	1st Diff.	Level	1st Diff.
LnInvestment	-2.787548	-5.544863***	-2.924868	-4.080556***
LnIncome	4.506631	-4.914243***	0.464947	-8.407136***
LnExchange rate	-4.527940	-9.471096***	-4.561393	9.365945***
Notes: ***, ** and * indicate rejection of the null (variables are unit root/ non stationary) at the 1%, 5% and 10% level respectively.				

Table -3: Unit root test (PP and KPSS) intercept & trend with intercept

Variable	**Intercept**		**Trend and intercept**	
	PP	**KPSS**	**PP**	**KPSS**
	1st difference	**1st difference**	**1st difference**	**1st difference**
LnInvestment	0.0000	0.201028	0.0006	0.132874
L Income	0.0001	0.631832	0.0000	0.114730
L Exchange rate	0.0000	0.460445	0.0000	0.486842

The results of unit root test are presented in table(1) and in table (2) (AD, PP and KPSS) indicate that, at first differences of the variables Private Investment (LnI), Real Income (Ln Y), Exchange Rate (LnECH) are statistically significant at 1% significance level I(1). All the data are stationary at their first difference. With estimates the value with trend (trend + intercept) & without trend (intercept) both are stationary in the first differences but not in level. From the point of view of the entire test, first difference is accepted for all the variables (lnI, lnY, lnexchange rate).

5.1 Co-integration test

Johansen co-integration test is used to estimate the long-run relationship among the Private Investment, Real income & Real Exchange rate. For co-integration test we use lnI, lnY and lnECH. The Johansen test statistics show rejection for the null hypothesis of no co-integrating vectors under both the trace and maximal eigen-value forms of the test. For the trace test or max eigen-value test, the null of no co-integrating vectors is rejected if the trace statistic or max statistic is greater than the 5% critical value.

Table-4: Unrestricted Johansen Co -integration Rank Test (Trace and Max-Eigen)

Maximum Rank	Eigen Value	Trace Statistic	Critical Value	Max-Eigen statistic	Critical Value
None*	0.608209	59.16848	29.79707	36.54401	21.13162
At most 1*	0.331042	22.62448	15.49471	15.67932	14.26460
At most 2*	0.163125	6.945164	3.841466	6.945164	3.841466
* denotes rejection of the hypothesis at the 0.05 level					

For trace test the null of no co-integrating vectors is rejected since the trace statistic of 59.16848 is greater than the 5% critical value of 29.79707. Moving next test to the null of at most 1 co-integrating vectors, the trace statistic is 22.62448 while the 5% critical value is 15.49471, so the null hypothesis of the existence of at most 1 co-integrating vectors is rejected at 5%. Moving on to test the null of at most 2 co-integrating vectors, the trace statistic is 6.945164, while the 5% critical value is 3.841466, so the null hypothesis is rejected at 5%. Finally, from trace statistic the above results indicate the existence of at least three co-integrating equation among the variables in the series. Similarly, the max-Eigen value test results also indicate the existence of at least three co-integrating equations among the variables in the series at 0.05 levels.

Table-5: The values of the normalized co-integrating coefficients

Long-run impact of Ln private Investment, Real income and Exchange rate of Bangladesh (1976 – 2015)			
Variables	**Normalized Co-integrating Coefficient**	**Standard Error**	**T-Stat**
LnI(Private investment)	1.000000		
LnY(real income)	-2.397565	(0.13346)	-17.96467**
LnREX(real exchange rate)	- 0.227548	(0.07526)	-3.02349**

The values of the normalized co-integrating coefficients indicate that in the long run real private investment is positively related with real income and real exchange rate. Here, the outcome demonstrates that when exchange rate enhances (real depreciation for local currency) by 1% private investment will increase by 0.22% and if real income increases by 1% then private investment increases by 2.39% which are statistically significant.

5.2 Vector Error Correction Model (VECM):

VECM is constructed only if the variables are cointegrated and it is formed to examine long run and short run dynamics of the cointegrated series. Here in presence of cointegration, we can apply VECM to examine the causality between the examined variables. Estimated VECM with LNINV as target variable

$\Delta LNINV_t = -0.084678\ ect_{t-1} + 0.358754\ \Delta LNINV_{t-1} + 0.195345\ \Delta LNINV_{t-2} - 1.384618\ \Delta LNGDP_{t-1} - 0.557381\ \Delta LNGDP_{t-2} - 0.010184\ \Delta LNEX_{t-1} - 0.012772\ \Delta LNEX_{t-2} + 0.125214$ ……..(6)

Table 6: VECM (Speed of Adjustment)

Cointegrating equations	Coint Eq1	SE	T-STAT
D(LNINV)	-0.084678	(0.03461)	[-2.44648]
D(LN_GDP)	-0.030433	(0.01326)	[-2.29530]
D(LNEX)	1.936662	(0.96407)	[2.00883]
C	25.90981		

The estimated error correction coefficient in above table indicates that about 8 percent error is corrected in each year for LNINV. So LNINV becomes in equilibrium after 12.5 years in case of any shock. About 3 percent deviation of the LNGDP from its long run equilibrium level is corrected each year and LNEX is in already equilibrium.

5.3 Granger Causality under VECM:

We already have run the VECM test to derive the long run and short run causality under VECM model, we use the system equation originated from the VECM result. This will help us to determine long run and short run causality.

Table 7: (Given in Annex-1): Estimating Long-run Causality

From table 6 we see the probability value is 0.0207 which is less than 0.05 critical value. As the probability value is significant and the coefficient sign is negative, so we can say that there is a long run causality running from LNGDP, LNEX to LNINV. That is independent variables have an influence on dependent variables which means that income and exchange rate have influence on domestic investment in the long run. Now we want to check whether there is short run causality or not. For this to check we will proceed with Wald Test Statistics and we have the following null hypothesis:

1. Null: there is no short run causality running from LN GDP TO LN INV [(i.e. C(4)= c(5) =0]
2. Null: there is no short run causality running from LNEX to LNINV [(i.e. C(6)=c(7)=0]

Table 8: Estimating Short Run Causality Wald Test Result

Null Hypothesis	df	F statistic	Chi-square	Prob.	Decision
C(4)= c(5) =0	(2, 29)	3.398635	6.797269	0.0334	Causality from LNGDP TO LNINV
C(6)=c(7)=0	(2, 29)	2.226806	4.453612	0.1079	No causality from LNEX TO LNINV

Note: Normalized Restriction (=0). Restrictions are linear in coefficients.

The above table reveals that there is short run causality running from LNGDP to LNINV but no short-run causality running from LNEX to LNINV

6. Conclusion

The paper tried to investigate whether there is a link between investment and exchange rate in Bangladesh. In this study theoretical and empirical literature was assessed. Annual time series data for the period 1976-2015 was used for the purpose of running the analysis. It is known that when Currency depreciates, export as well as local output through multiplier effects increases. As a result to meet up the higher local and foreign demand firms accelerate their investment. On the contrary, the firms, which depend largely on imported inputs, reduce their investment on account of high cost of production. Here, the outcome demonstrates that when exchange rate enhances (real depreciation for local currency) by 1% private investment will increase by 0.22% and if real income increases by 1% then private investment increases by 2.39% which are statistically significant. Result of VECM shows that domestic investment and real income reaches in equilibrium after 12.5 years and 33.33 years respectively where real exchange rate is already in equilibrium. Furthermore there is long-run Causality among the variables and short-run causality running from real income to domestic investment but no causality from exchange rate to domestic investment in short-run. So, it can be stated that if exchange rate increases (real depreciation for local currency) private investment of the export oriented firms will improve. Thus it is necessary for the firms to become export oriented & depend on domestic inputs. Here, we focused on the effect of real exchange rate only on the private investment. But the foreign investment is also affected by exchange rate. Besides real exchange rate, interest rate and other variables also have effect on investment. In this paper, we use gross capital formation to represent investment. According to World Bank (2017), the quality of data of gross capital formation depends on the accounting system of government. But the government accounting system of developing countries has a tendency to be feeble.

Above all, here we tried to represent the original relationship between the real exchange rate and domestic private investment of Bangladesh as its economic growth largely influenced by private investment and exchange rate.

As Bangladesh is trying to graduate towards developing country status, it is urgent to increase investment both in home and abroad. Fiscal policy affects private investment through budgetary imbalance (Jayaraman1996).If it is possible to increase the investment then both employments and output will increase which lead to increase economic growth. So it is necessary to give proper attention on fiscal policy and stabilize the exchange rate as it affects domestic investment, increase the incentives and propose more policies to decrease production cost. The banking sectors are also need to keep stable to ensure free flow of capital to raise investment.

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Annex-1

Table 6: Estimating Long-run Causality

Dependent Variable: D(LNINV)
Method: Least Squares (Gauss-Newton / Marquardt steps)
Sample (adjusted): 1979 2015
Included observations: 37 after adjustments
D(LNINV) = C(1)*(LNINV(-1) - 1.95147563619*LN_GDP(-1) - 0.20689769656*LNEX(-1) + 25.9098116178) + C(2)*D(LNINV(-1)) + C(3)*D(LNINV(-2)) + C(4)*D(LN_GDP(-1)) + C(5)*D(LN_GDP(-2)) + C(6)*D(LNEX(-1)) + C(7)*D(LNEX(-2)) + C(8)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.084678	0.034612	-2.446481	0.0207
C(2)	0.358754	0.167403	2.143054	0.0406
C(3)	0.195345	0.148307	1.317166	0.1981
C(4)	-1.384618	0.532339	-2.601010	0.0145
C(5)	-0.557381	0.513368	-1.085733	0.2865
C(6)	-0.010184	0.007002	-1.454463	0.1566
C(7)	-0.012772	0.006142	-2.079571	0.0465
C(8)	0.125214	0.037722	3.319396	0.0024

R-squared	0.366261	Mean dependent var	0.081008
Adjusted R-squared	0.213290	S.D. dependent var	0.034046
S.E. of regression	0.030197	Akaike info criterion	-3.973318
Sum squared resid	0.026444	Schwarz criterion	-3.625011
Log likelihood	81.50638	Hannan-Quinn criter.	-3.850524
F-statistic	2.394313	Durbin-Watson stat	2.148784
Prob(F-statistic)	0.046139		

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Measuring Efficiency of Commercial Banks: Empirical Evidence from Bangladesh

Nazneen Jahan Chaudhury[1]

Abstract:

Efficient functioning of banks plays a decisive role in bringing stability and growth of an economy. This study investigates the managerial factors that resolve bank's efficiency. Only secondary data have been utilized in the present research work. The data have been gathered from sample banks' yearly reports from 2012 to 2016 based on a purposive sampling technique. These balanced panel data sets of 45 observations have been evaluated using some descriptive statistics (average, range, SD, CV), financial ratios, pair wise correlation, regression analysis, Analysis of variance (ANOVA), the natural logarithm and statistical software (SPSS 20). The factor-Bank Efficiency is identified by Net Asset Value per share (NAV); Managerial Factors are identified and calculated by Cost Efficiency Ratio (CER), Liquidity Ratio (LR), Credit Composition Ratio (CCR), Credit Risk Ratio (CRR), Capital Adequacy Ratio (CAR), and the Bank Size (BSZ). The key finding of this study is that CRR, CER and BSZ are the major managerial factors that resolve bank efficiency. Among the variables, both CRR & CER have significant but negative effect and BSZ has significant & positive effect on the efficiency of Bangladeshi commercial banks.

Keywords: Managerial factors, Bank Efficiency, Commercial Banks

JEL Classification: D53, D61, E02, G21, O16

[1] Associate professor, Department of Business Administration, International Islamic University Chittagong.

1.0 Introduction

Omankhanlen (2012) acknowledged that efficient functioning of banks is the foundation of the economies of all market-oriented nations. Andries (2010); Aikaeli (2008) also found that it is the best indicator of effective monetary policies. Delis & Papanikolaou (2009) stated that efficiency of banks will be capable to resist financial distress and provide firmness in the financial system. According to Athanasoglou, Delis & Staikouras (2008a), bank efficiency not only contributes to the economy's growth but also ensures the capability of an economy to resist financial crisis. Mohan (2005) observed that the more efficient the banking system, the greater the contribution in the growth of an economy.

Suzuki & Sastrosuwito (2011) stated that banking performance is judged by using two measures-"financial ratio measures and efficiency measures." Measures of efficiency guides to more innovations, better profitability, and liquidity for banking system while productivity development guide to capital intensification to absorb shock. Mester (2003) acknowledged that efficiency is measured considering the objective of an organization such as "maximization of output, maximization of profit, or minimization of cost." Accordingly, the significance of this research is to explore commercial banks' efficiency in general and Bangladeshi commercial banks in specific.

1.1 Overview of the Banking Sector in Bangladesh

After the independence, banking sector of Bangladesh began its journey with 06 nationalized banks, 02 specialized banks, 03 foreign banks and has become a vital instrument for the financial system. The doorway of private commercial banks in 1980s witnessed a noteworthy expansion of the banking industry. According to Chowdhury (2002), in Bangladesh, banking sector consists of "nationalized, private and foreign banks". In the opinion of Chaudhury (2015), banking sector consists of 56 Scheduled Banks in the categories of "06 State Owned Commercial Banks, 02 Specialized Banks, 39 Private Commercial Banks and 09 Foreign Commercial Banks." Of the 39 PCBs, 31 are interest-bearing and 08 are interest-free. Chaudhury (2018) articulated that in the banking industry there are 29 listed commercial banks under the Dhaka Stock Exchange in Bangladesh. Among them, the number of 3rd generation bank is 12, 2nd generation bank is 08 and 1st generation bank is 09. Sufian & Kamarudin (2013) observed that in 1986, the National Commission on Money, Banking and Credit was formed and bank efficiency

became a major issue. It is also observed that in 1991, under the direction of the World Bank, Bangladesh Bank builds up the rules and regulations to look into the problems of the banking sectors. Consequently, the effective operation of banks becomes critical in defending the banking system's dependability, which has an indirect impact on the entire economy of the country.

2. Literature Review

Tesfay (2016) stated that liquidity in terms of deposit has affirmative and important effect whereas size of bank has pessimistic but important impact on the bank efficiency. Other variables like profitability, quality loan, expenses and portfolio have no major effect on the efficiency of bank. As Sharma, Gounder and Xiang (2015) observed, default risk has optimistic and major effect whereas individual bank operating expense and credit risk has pessimistic but noteworthy effect on efficiency of foreign bank. Řepková (2015) found that the volume of capitalization, riskiness of liquidity and portfolio risk have optimistic and momentous consequence while ROA, interest rate have negative but important consequence on the bank efficiency. Ferreira *(*2012) initiated that operating cost efficiency of bank has constructive influence on the growth of gross fixed capital formation. On the other hand, concentration banking has negative but notable influence on gross fixed capital structure and export-import business of bank. Singh and Fida (2015) found that bank size has constructive but immaterial effect while adequate capital, profitability and liquidity have optimistic and momentous effect on efficiency. Alrafadi, et al (2014) identified that ROA, bank size and capital adequacy has encouraging and substantial effect while risk, size of operation, merger and ownership structure has pessimistic but major effect on overall efficiency. In another study Ikhide (2008) unravelled that banks can improve their efficiency through augmenting their scale of operations i.e the more efficient is the mixture of inputs, more will be the reduction in operating costs. According to Vitta (1991), lack of appreciable description of bank productivity makes it difficult to measure efficiency. The supply of deposits and credits is an appropriate directory of productivity. Furthermore, the value addition of banks by their profits determines the efficiency of banks.

The study has undertaken an attempt to address particularly the managerial factors and their impact on the efficiency of Bangladeshi commercial banks. It has been observed that a very negligible number of researches have been conducted considering both dimensions together. From this standpoint, the present study has been undertaken aiming

at identifying some managerial factors and evaluating the significance of those factors on the Commercial Banks' efficiency in Bangladesh.

3.0 Objective of the Study

The key objective of the study is to evaluate the effect of managerial factors on the efficiency of commercial banks in Bangladesh. However, the specific objectives of this research are:

1. To analyze the managerial factors that affecting the efficiency of sample banks;
2. To measure the association between managerial factors and efficiency of the sample banks;
3. To assess the effect of managerial factors on the efficiency of sample banks.

4.0 Research Design and Methodology of the Study

4.1 Research Design

This research is quantitative as well as qualitative in nature. It is quantitative in the sense that it carried out a panel data analysis of the variables that are cited in the model. This research is qualitative as it demonstrated the effect of managerial factors on banks' efficiency in Bangladesh. Essentially, the goal of this study is to develop a suitable strategy for the efficient operation of banks in Bangladesh.

4.2 Hypothesis of the Study

***H0*:** There is no significant effect of managerial factors on banks' efficiency in terms of NAV

H1: There is a significant effect of managerial factors on banks' efficiency in terms of NAV

4.3 Specification of the Model

The econometric model in this particular is outlined as follows:

$$NAV = A + \beta 1\ CER + \beta 2\ LR + \beta 3\ CCR + \beta 4\ CRR + \beta 5\ CAR + \beta 6\ BSZ$$

Table 1: Determining variables (dependent and independent) and their proxies

Variables	Ratios	Symbols	Formulas
Dependent Variable			
Bank Efficiency	Net Asset Value per Share	**NAV**	(Assets–liabilities)/Number of common shares outstanding
Independent Variables			
Cost efficiency	Cost to Income Ratio	**CER**	Operating costs/Income
Liquidity	Liquid Asset to Deposits Ratio	**LR**	Liquid asset/Deposits
Credit composition	Loans and Advances to Assets Ratio	**CCR**	Loans and Advances/Assets
Credit risk	Capital Requirement for Credit Risk to Risk Weighted Assets Ratio	**CRR**	Capital requirement for credit risk/Risk weighted assets
Capital adequacy	Eligible Capital to Risk Weighted Assets Ratio	**CAR**	Eligible capital/Risk weighted assets
Size of the bank	Logarithm of Total Assets	**BSZ**	Natural logarithm of total assets

Source: Compiled by the researcher

4.4 Selection of Population, Sampling method and Sample Size

The number of listed banks in Bangladesh is 30 (dsebd.org). Among them the number of 3rd generation private bank is 12 including 03 islamic banks. Considering the study, the researcher opted for 09 3rd generation private commercial banks except Islamic banks because of their special-features. A sample of 09 banks (45 observations) out of 12 listed conventional banks which consist of 75% of 3rd Generation banks over the 2012-2016 intervals via purposive sampling techniques are chosen to determine the influence of managerial factors on bank efficiency in Bangladesh.

4.5 Collection and Analysis of Data

Secondary data from the yearly reports of the sample banks and their connected websites have been used to support this empirical research. Relevant articles and literatures have also been consulted for gathering data. This balanced panel data set of 45 observations is

examined using descriptive statistics (average, range, SD, CV), financial ratios, pairwise correlation, regression analysis, Analysis of variance (ANOVA), the natural logarithm and statistical software (SPSS 20) for the years 2012-2016.

5.0 Findings and analysis

5.1 Descriptive Statistics Analysis

Table 2: Features of the variables

Features	CER	LR	CCR	CRR	CAR	BSZ	NAV
Mean	54.52%	10.14%	65.87%	87.28%	11.88%	5.16	20.39
Std. Deviation	.11	.03	.05	.04	.01	.13	3.43
Range	41.68%	12.36%	24.53%	20.64%	5.71%	.49	14.81
C.V.	.20	.28	.08	.05	.10	.02	.17

Source: Yearly Reports, 2012-2016

Notes: i) Data compilation by the researcher

ii) Analytical Mode: SPSS 20

From the assessment of Table 2, it has been observed that average CER, LR, L/D, CCR, CRR, CAR, BSZ and NAV of the sample banks are in turn 54.52%, 10.14%, 65.87%, 87.28%, 11.88%, 5.16% and 20.39% that differs during study periods from 2012 to 2016 @ .11, .03, .05, .04, .01, .13 and 3.43 correspondingly. The uppermost range of the variables signifies the highest variation among sample banks that is demonstrated by CV of .20, .28, .08, .05, .10, .02 and .17

5.2 Analysis of Pearson's Correlation Coefficient

Table 3: Correlation Matrix between Managerial factors and Bank efficiency of sample banks (Panel data)

	CER	LR	CCR	CRR	CAR	BSZ	NAV
CER	1.000						
LR	-.186	1.000					
CCR	.219	-.218	1.000				
CRR	.219	-.321*	.410**	1.000			
CAR	.369*	.005	-.041	-.019	1.000		
BSZ	-.202	.108	.225	-.007	.326*	1.000	
NAV	-.491**	.285	-.020	-.377*	.216	.672**	1.000

Source: Yearly Reports, 2012-2016

Notes: i) Data compilation by the researcher

ii) Mode of analysis: SPSS 20

iii)*Correlation at 1% level of significance

**Correlation at 5% level of significance

Based on the analysis of Correlation Matirx, CER and CRR are significantly but negatively correlated with NAV at 5% and 1% respectively while BSZ is significantly and positively correlated with NAV at 5%. The positive correlation between BSZ and NAV signifies that maintaining more assets indicate an increase in the banks' NAV. On the other hand, the negative correlation between CER, CRR and NAV signifies that the less the CER and the CRR, the more will be the NAV.

5.3 Regression Analysis

Table 4: Analytical outcomes

Variables	B	Std. Error	t value	Sig.
(Constant)	-47.939	18.828	-2.456	1.50%
CER	.267	4.452	.060	95.20%
LR	12.237	13.120	.933	35.70%
CCR	-.736	7.892	-.093	92.60%
CRR	-27.778	10.081	-2.756	.90%
CAR	-2.304	32.621	-.071	94.40%
BSZ	17.834	3.750	4.756	.000
F value	**9.525**			
R^2=60.10%				
Adjusted R^2=53.80%				

Source: Yearly Reports, 2012-2016

Notes: a) Data compilation by the researcher

b) Mode of Analysis: SPSS 20

From the analysis of Table 4, it has been found that the model value of R^2 is 60.10%. It means that the variables are responsible for 60.10% of the overall variation in banks' efficiency in terms of NAV. The statistical value of F is shown to be significant. This signifies that managerial factors have a substantial effect on sample banks' NAV. To the end, the researcher accepts the alternative hypothesis (H_1): the NAV is influenced by managerial factors on the basis of global test. The following hypothesis (H_0): $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 = 0$ has also been tested by the study.

In this respect, the study reveals that only BSZ and CRR are significant at 1% and 0% respectively, while all other factors are shown to be insignificant. It means that not all the betas are equal to zero. The analysis demonstrates that managerial factors can affect NAV of the sample commercial banks.

6.0 Summary of the Findings

Using Correlation and Regression analysis, the study has assessed the effect of managerial factors on the efficiency in terms of NAV of the sample commercial banks. The findings of the study have been summed up as follows:

i. From correlation analysis, it is observed that CER and CRR are significant but negatively correlated with NAV at 5% and 1% respectively while BSZ is significant at 5% and positively correlated with banks' efficiency in terms of NAV;

ii. The R^2 of the Model, 60.10%, indicates that the variables examined are liable for 60.10% of the overall variation in the banks' efficiency in terms of NAV, as shown by the output of Regression Analysis;

iii. The statistical value of F is significant in the Regression model, indicating that managerial factors have a considerable impact on sample banks' efficiency in terms of NAV on the basis of global test;

iv. In the Regression Model, not all the betas are equal to zero. This signifies that the managerial factors have significant impact on the NAV. All the analyses prove that the managerial factors have an impact on NAV of sample banks.

7.0 Conclusion and recommendations

Efficiency is at the core of growth and development of the firms by means of expediting their performances. This is very true in case of banking business in Bangladesh. After employing the regression coefficients analysis, the significant variables influencing bank efficiency in terms Net Asset Value per Share are Credit risk, Cost efficiency and Size of the bank. Consequently, the sample banks should take initiative to increase the size of the bank in terms of asset based on decisively examined approaches to reduce credit risk and operating cost since they have a negative impact on efficiency. Accordingly, banks have to pragmatically develop their risk and cost appraisal ability to reduce inefficiency originated due to the non performing loans and increased operating costs.

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Annexure 1: Ratios of managerial factors

Bank	Year	CER	LR	CCR	CRR	CAR	BSZ	NAV
1. Bank Asia	2012	.3540	.1185	.6578	.8607	.1305	5.1472	20.69
	2013	.3653	.1095	.6406	.8825	.1105	5.2143	21.07
	2014	.4034	.1198	.6392	.8865	.1132	5.2618	22.10
	2015	.4184	.1118	.6080	.8924	.1246	5.3509	21.54
	2016	.4435	.0995	.6462	.9036	.1242	5.4035	21.60
2. BRAC Bank	2012	.5277	.0754	.6314	.8125	.1144	5.2397	26.72
	2013	.5180	.0906	.6517	.7450	.1133	5.2539	26.81
	2014	.4950	.1196	.5960	.8300	.1472	5.3109	25.03
	2015	.4850	.1252	.6567	.8562	.1223	5.3512	26.53
	2016	.4650	.1270	.6983	.8470	.1226	5.3955	30.18
3. Jamu-na Bank	2012	.3932	.1046	.5004	.8393	.1221	5.0401	18.55
	2013	.4732	.1484	.5876	.8301	.1110	5.0613	19.79
	2014	.4961	.1711	.5584	.8226	.1125	5.1456	20.95
	2015	.4798	.1854	.6108	.8182	.1283	5.1549	25.58
	2016	.4850	.1867	.6953	.8587	.1093	5.2264	25.81
4. Mer-cantile Bank	2012	.4517	.0827	.6132	.8674	.1083	5.1837	17.88
	2013	.4166	.1010	.6744	.8690	.1143	5.1609	19.05
	2014	.4484	.0962	.6948	.8701	.1295	5.2265	18.29
	2015	.5046	.1002	.6911	.8594	.1187	5.2620	20.99
	2016	.5603	.1017	.7393	.8724	.1303	5.3099	22.74
5. Mutual Trust Bank	2012	.6210	.0647	.6066	.8575	.1071	4.9692	19.01
	2013	.5614	.0650	.5869	.8760	.1157	5.0051	19.48
	2014	.5761	.0708	.6633	.8783	.1082	5.0656	22.00
	2015	.5720	.0757	.6681	.8918	.1219	5.1645	24.18
	2016	.5510	.0745	.6738	.8987	.1151	5.2185	22.08
6. ONE Bank	2012	.6284	.1016	.7033	.8692	.1046	4.9326	17.91
	2013	.6483	.0991	.7457	.8923	.1209	5.0115	17.99
	2014	.5777	.1020	.7429	.8856	.1347	5.0857	19.50
	2015	.5793	.0882	.6923	.9025	.1093	5.1881	19.63
	2016	.5949	.0842	.7017	.9009	.1389	5.2747	19.46
7. Pre-mier Bank	2012	.6150	.1068	.6428	.8136	.1104	4.9124	15.37
	2013	.6464	.1076	.5950	.8054	.1146	4.9481	15.63
	2014	.6414	.0990	.6291	.8341	.1335	5.0435	15.89
	2015	.6320	.0944	.6949	.8512	.0901	5.1182	17.22
	2016	.5400	.0949	.7357	.8642	.1238	5.1892	17.47
8. Stand-ard Bank	2012	.7438	.1081	.6497	.9320	.1128	4.9763	16.87
	2013	.7708	.1041	.6794	.9354	.1067	5.0379	16.29
	2014	.7395	.1000	.6708	.9331	.1105	5.0789	17.34
	2015	.7601	.1060	.6914	.9514	.1218	5.1216	17.50
	2016	.7535	.1022	.6875	.9484	.1138	5.1841	16.67
9. Trust Bank	2012	.6143	.0785	.5733	.8960	.1386	4.9789	18.83
	2013	.5843	.0670	.6791	.9169	.1174	5.0672	18.04
	2014	.4551	.0650	.7354	.9272	.1147	5.1624	19.07
	2015	.4819	.0631	.7247	.9072	.1084	5.2558	20.29
	2016	.4595	.0646	.6754	.8842	.1470	5.3227	22.07

Annexure 2: Descriptive Statistics

	N	Range	Mean	Std. Deviation
CER	45	.4168	.545153	.1076101
LR	45	.1236	.101378	.0288035
CCR	45	.2453	.658667	.0534594
CRR	45	.2064	.872816	.0417537
CAR	45	.0571	.118836	.0115204
BSZ	45	.4911	5.155842	.1286045
NAV	45	14.8100	20.393111	3.4310698
Valid N (listwise)	45			

Annexure 3: Correlations

		CER	LR	CCR	CRR	CAR	BSZ	NAV
CER	Pearson Correlation	1	-.186	.219	.369*	-.202	-.531**	-.491**
	Sig. (2-tailed)		.221	.149	.013	.183	.000	.001
	N	45	45	45	45	45	45	45
LR	Pearson Correlation	-.186	1	-.218	-.321*	.005	.108	.285
	Sig. (2-tailed)	.221		.150	.031	.974	.479	.058
	N	45	45	45	45	45	45	45
CCR	Pearson Correlation	.219	-.218	1	.410**	-.041	.225	-.020
	Sig. (2-tailed)	.149	.150		.005	.791	.138	.896
	N	45	45	45	45	45	45	45
CRR	Pearson Correlation	.369*	-.321*	.410**	1	-.019	-.007	-.377*
	Sig. (2-tailed)	.013	.031	.005		.901	.964	.011
	N	45	45	45	45	45	45	45
CAR	Pearson Correlation	-.202	.005	-.041	-.019	1	.326*	.216
	Sig. (2-tailed)	.183	.974	.791	.901		.029	.155
	N	45	45	45	45	45	45	45
BSZ	Pearson Correlation	-.531**	.108	.225	-.007	.326*	1	.672**
	Sig. (2-tailed)	.000	.479	.138	.964	.029		.000
	N	45	45	45	45	45	45	45
NAV	Pearson Correlation	-.491**	.285	-.020	-.377*	.216	.672**	1
	Sig. (2-tailed)	.001	.058	.896	.011	.155	.000	
	N	45	45	45	45	45	45	45

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Annexure 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.775[a]	.601	.538	2.3332078

a. Predictors: (Constant), BSZ, CRR, CAR, LR, CCR, CER

Annexure 5: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	311.112	6	51.852	9.525	.000[b]
	Residual	206.867	38	5.444		
	Total	517.979	44			

a. Dependent Variable: NAV

b. Predictors: (Constant), BSZ, CRR, CAR, LR, CCR, CER

Annexure 6: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-47.939	18.828		-2.546	.015
	CER	.267	4.452	.008	.060	.952
	LR	12.237	13.120	.103	.933	.357
	CCR	-.736	7.892	-.011	-.093	.926
	CRR	-27.778	10.081	-.338	-2.756	.009
	CAR	-2.304	32.621	-.008	-.071	.944
	BSZ	17.834	3.750	.668	4.756	.000

a. Dependent Variable: NAV

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The Path designed to exterminate Poverty: PKSF Experiences in Bangladesh

Ruma Akhter[1]

Abstract

Poverty mitigation with microcredit is now growing attention among all evangelists, governments, donors, development agencies and others. The study primarily has been conducted to find out to what extent microcredit can surface the way to alleviate poverty of the Ultra-poor. A large number of hardcore poor are widowed, divorced or abandoned women. The rural poor are largely deserted by formal credit sources. Collateral requirements, complex procedures, poor communications and contemptible banking networks have restricted the availability of credit in the rural areas. Various informal credit sources were accessible to the rural poor, but these sources are still exploitative and inadequate. This paper shows that vulnerabilities and shocks are uncertain and painful phenomenon in the life of the Ultra-poor. The study investigate the impact of Ultra-poor Program of PKSF on increasing income, expenditure, saving, consumption level, wage employment versus self-employment creation, enrollment of the school going children, asset, social dignity, acceptance, vulnerabilities and shocks, crisis coping mechanism, participation of ultra-poor in rural power structure.

Keywords: Ultra-poor, PKSF, PIDIM Foundation, Poverty, Microfinance, Partner Organization

JEL Classification: D24, G21, D03, D82, O12

1. Introduction

The ultra-poor lack social capital, more particularly, the social networks awfully needed to improve their living in rural area of Bangladesh. The ultra-poor fail to benefit from the increase in purchasing power, along with the enrichment of knowledge and confidence that accrues to the poor women who get organized in these microfinance groups. Consequently, PKSF runs Ultra-poor Program (UPP) by its Partner Organizations (PO) who is mostly working in poverty stricken area. PKSF's Partner Organizations are

[1]Assistant Director, Bangladesh Bank Training Academy, Mirpur-2, Dhaka-1216 (e-mail: ruma.akhter@bb.org.bd). Views expressed in this article are the author's own and do not necessarily reflect the views of Bangladesh Bank.

providing a mere microfinance service which is still believed to be helpful to purge acute poverty. The millions of money spend on government, NGO, multilateral, bilateral and private sector led antipoverty programs. Banking, microfinance and asset transfer program figure prominently in efforts to tackle the capital constraint. The amounts of money spent on poverty reduction are gigantic in both developed and developing nations. And yet whether these plethora's of program are actually enabling the poor to permanently exit poverty by allowing them to move into higher productivity occupations is often called into question. One reason to be skeptical is that we do not really know what works and the results from credible evaluations often fall short of the expectations of the agencies that fund this program (Banerjee *et al.* 2010, Crepon *et al.* 2011). In general, Micro-finance Institute (MFIs) have a tendency to avoid risky borrowers usually the ultra-poor in order to maintain the high repayment rate despite the fact that group works as a collateral to enforce borrowers loan contracts. On the contrary, the ultra-poor voluntarily exclude themselves from microcredit at times because of the fear of not being able to repay in time and getting further indebted. The mandatory requirements of microcredit operations like weekly meeting, weekly repayment and weekly savings are also discourage the ultra-poor. Moreover, the ever-increasing emphasis on viability of their microcredit operations particularly dependent on supplying larger volume of loans to the same borrower virtually rule out ultra-poor from the financial system. This reasonably has led to call for a stronger focus on evaluation to guide expenditures on anti-poverty program to be skeptical. To shed light on these issues, this paper made an effort to assess the impact of Microcredit program for ultra-poor launched by PKSF which offers different credit services merely to the poorest women in rural communities, typified by being largely asset less and low skilled, and generally trapped in stumpy return and insecure occupations. **The questions to be addressed are,** "*What are the problems, needs and vulnerabilities of the ultra-poor? And what are the capabilities and limitations of the ultra-poor to manage the crisis and in what extent Microfinance facilities for the ultra-poor are effectual"?*

1.2 Literature Review

The people's republic of Bangladesh is the seventh largest country (Wikipedia, 2021) in the world with a population of 166.3 million people living in area of 147570 square kilometers (www.worldometer.com). Bangladesh is the most densely populated country

with roughly 1265 people per square kilometer (www.worldometer.com). According to human development Index of the 2021 Bangladesh ranks 133th with low achievement in three key areas: life expectancy, health education and standard of living (HDI, 2021). Recent estimates suggest that as much as 28.5% of the population of Bangladesh is extremely poor (South Asian Network on Economic Modeling (SANEM), 2020). In Bangladesh, the proportion of population falling below the lower poverty-line (corresponding to the consumption of 1,805 kcal per capita per day) is variously termed as 'extreme poor', 'hardcore poor', or 'ultra-poor', and this comprises around 28.5% of the population (BBS, 2005 and Matin I, Halder, 2004). The ultra-poor are characterized by their inability to participate fully in social and economic activities and in decision making that has an impact on their daily lives. This social exclusion denies them the consumption of essential goods and services, such as healthcare, that are available to other segments of the population (Santana P: 2002 and Nayakar KR: 2007). These households have a few or no assets, are highly vulnerable to any shock, such as natural disasters, death, or disability of an income- earner, illnesses requiring costly care, and mainly depend on wage-labor for survival. Their disadvantaged condition makes them vulnerable to differential treatment by the health system as well (Woolf SH: 2004 and Rownshon, M: 2005). The income-erosion effect of ill-health for the poor households, especially the bottom 15- 20%, is well-documented in Bangladesh (Sen B: 2007). This may occur through loss of income due to illness, catastrophic health expenditure, and potentially irreversible crisis-coping mechanisms that involve asset and savings depletion (Meesen B and et. al.:2003 and Xu K, and et. al: 2003). The ultra-poor are often left out of the conventional financial services on the presumption that they are vulnerable to loan repayment. Even the conventional microfinance services have also been rigid for decades to include the ultra-poor. For the better understanding of this identifiably vulnerable group, PKSF launched a pilot project titled Financial Services for the Poorest (FSP) in 2002 that encouraged PKSF to mainstream the microcredit program for ultra-poor. From the experience of FSP, it was found that the ultra-poor require higher flexibility in terms of repayment, savings, attendance to group meetings and grace period. Later, PKSF has initiated 'Pathways to Prosperity for Extremely poor people (PPEPP)' project with financial assistance from the UK's Department for International Development (DFID) and the European Union (EU) (Annual Report, PKSF, 2019).

1.3 Aim and Objective of the study

The main purpose is to explore and investigate the existing scenario, needs and problems of the participants of ultra-poor program of PKSF, which are directly related to the socioeconomic development of Bangladesh.

Research Objectives

The present study has been conducted to discern the efficacy of UP Program of PKSF to deal with the problems of ultra-poor.

There are some specific objectives:

a. To distinguish the socio-demographic condition of the ultra-poor;
b. To investigate the problems, needs and vulnerabilities of the ultra-poor;
c. To identify the capabilities and limitations of the ultra-poor to cope with the crisis;
d. To discern the extent of impact of PKSF's existing programs to deal with the problems of ultra-poor ;
e. To look through the recommendation for effectual ultra-poor program.

1.4 Operational Definition of the Concepts: Key concepts are: Microfinance, Ultra-poor, PKSF, Partner Organizations (POs), NGO, Social condition, Economic condition, Socio-economic Development etc.

1.4.1 Microfinance

Microfinance refers a broader range of financial services that create a wider range of opportunities for success. Examples of these additional financial services include savings, insurance, housing loans and remittance transfers.

1.4.2 Ultra-poor

In this research the key term 'Ultra-poor ' used to indicate the People of lower socio-economic strata such as beggars, daily laborers, bonded laborers and domestic helps, floating sex workers, members of female-headed households, and disabled persons with no alternative source of income are the targeted people of UPP.

1.4.3 PKSF

Palli Karma-Sahayak Foundation (PKSF) was established in 1990 by the Government of Bangladesh as a 'not-for-profit' company, registered under the Companies Act 1913/1994. The principal objective of PKSF is to provide funds to various organizations for their microcredit program with a view to help the poor who have no land or any credible material possession. Funds enable them to gain access to resources that lead to employment opportunities and enhancement of their livelihood.

1.4.4 Partner Organizations (POs)

PKSF POs network gives the apex organization an unparalleled strength in implementing its various activities aimed at poverty alleviation through employment generation. The PKSF works with 1.4 million extremely poor, poor, and non-poor (mainly for promotion of micro enterprises).

1.4.5 Social Condition

In this study, social condition includes the roles of society in general meeting one's own basic needs include physical aspects (food, shelter, safety, health care and protection) personal fulfillment (education, recreation, values, esthetics, religion and accomplishment), emotional needs (a sense of belonging, mutual caring, and companionship), and an adequate self-concept (self-confidence, self-esteem, and identity).

1.4.6 Economic Condition

In this research, Economic condition denotes the way of passing life, which on economy. It also might be good or bad in terms of their income and expenditure condition to lead their daily life.

1.4.7 Socio-economic Development

The term Socio-economic Development refers to a gradual growth, which is related with social and economic indicators. Rigidly integrated the scope of such indicator can be narrowed down to aspects such as employment, wage, working conditions, household income, expenditure, savings, indebtedness, distribution of wealth's education and

educational services, health and health services, social welfare services, public orders ant safety etc.

1.5 Methodology and Study Design

In relation to research nature, the researcher was interested to accomplish the research work using mix method (comprising both qualitative and quantitative method). Particularly, the researcher had the plan to dig out the related information practically. The researcher has conducted Focus Group Discussion (FGD) for Qualitative data. The researcher has also used quantitative method for primary data collection and data analysis.

By using quantitative method it was possible to present the result in a structured form and also to do statistical measurements like mean, median, mode, and percentage and the results publish in different tables and charts. This study has been conducted on the selected area of Fulbaria Union of kaliakoir thana at Gazipur District. The study had covered the four villages of Fulbaria union named Kachighata, Pengabohor, Fulbaria, and Chakuria Chala.

The researcher has collected data from these villages and these were very remote area from Kalialoir, Gazipur. All the women who are involved with PKSF's PO's UPP microfinance programs were considered as population and every woman as unit of analysis for data collection and interpretation. Initially the area has been selected purposively and then sample has been taken accidentally. A total of forty women as the main target group of PKSF have been selected from the research area.

A sample of forty women has been divided into three strata as, the women at entry level, women/participants who are involved in UP program below five years and the women/participants more than five years. Required information for the study has been collected from the primary sources. The primary data had been collected from every respondents of the present research. The secondary data for the study have been collected from published research papers, monographs or working papers, annual reports and websites at the relevant area. Interview and observation technique has been applied to collect data. Using the interview schedule, written in lucid Bengali and comprising both structured and unstructured questions, information has been collected by direct interview.

The whole interview session has been recorded by the researcher. The interview schedule has been pre-tested for making it standard. Open ended and close ended questions have been included in the schedule. Besides, in the whole data collection session, a careful observation has been set upon during interview.

1.6 PIDIM Foundation as a Partner Organization of PKSF

Researcher selected PIDIM Foundation one of POs of PKSF to conduct a study for drawing overall information and picture of UP Program. The researcher conducted a study at PIDIM Foundation by taking Interview of 40 respondents and conducted FGD of two groups consist of 18 members respectively. It was founded in the year 1992 by a group of educated and likeminded social workers aiming to improve life and livelihood of the hard to reach people focusing primarily on women and children. A large number of ultra-poor were included in the program for development of their livelihood. (pidimfoundation.org, 2021)

1.7 Scope and Limitation of the Study

Although a great deal of data were collected and analyzed, there are some limits to the study itself. Due to political unrest since long days, data was collected within short period of time. The data appears to have face validity. Researcher tried to collect information from the participants without bias. Web search was undertaken to identify research reports for the literature review. Some limitations can be mentioned underneath:

1. There is no National level and countrywide screening program for targeting ultra-poor
2. Very few academicians had conducted their study on Ultra-poor segment.
3. Inadequate educational materials/equipment along with limited time and cost.
4. Limited public awareness regarding the need and vulnerabilities of the ultra-poor.
5. Less involvement of Government in the field of microfinance for the UP People.
6. The study could cover a large number of areas which was not possible by the researcher.
7. No baseline survey has been found regarding research area.
8. The study will face generalization problems as it conducted in one organization only.

2. Findings of the Study

The researcher had collected data from 40 respondents who were the members of UP at PIDIM Foundation. They were the ongoing members of Fulbaria branch at Kaliakoir, Gazipur. The researcher had tried to incorporate different respondents in terms of age, education, income, assets, expenditure, social acceptance, involvement in rural power structure, level of involvement in microfinance program rendered for them by the national NGOs etc. As a participant in the PIDIM's UP program, the household had to fulfill at least one of the conditions: (i) Monthly income of household less than BDT 1,500; (ii) Primary occupation of household head was daily wage earning; (iii) Land ownership was less than 50 decimals. Meeting these eligibility criteria themselves, however, did not guarantee participation because it is voluntary from the households' point of view. Field officer and households were jointly determined an outcome entailing whether participation took place or not. The households are predominantly living in backward areas in the District of Gazipur, more female headed with less education.

2.1 Findings of the Quantitative Part of the Study

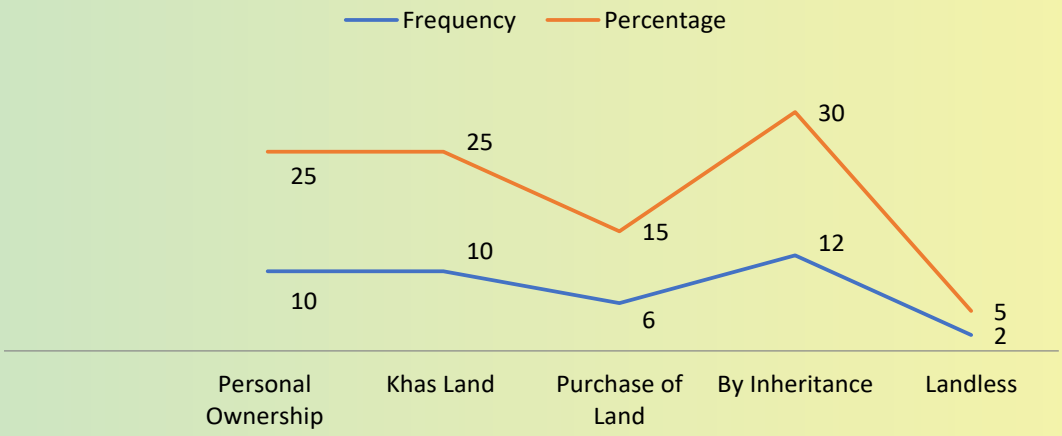
The investigation had conducted to know the socio-economic and demographic characteristic of the ultra-poor families , their income , expenditure and consumption level , their access to rural power structure, social networking , social dignity and social justice, women empowerment situation, school enrollment of the children, access to health and education services rendered by the government, political consciousness, access to education and training, situation ofincome generation activities, access to asset, creation of self-employment etc. The households that participated in PIDIM in 2005 had a high drop-out rate within four years. There are factors associated with such drop-out. For example, female headed households with lesser income opportunity are more likely to drop out from microfinance interventions.

2.2 Village Characteristics of the Participants of PIDIM

The majority of the land of Fulbaria union of Kaliakoir thana (Gazipur District) is under the ownership of Forestry Department of Bangladesh. Bulk of the participants was living in Fulbaria Union. Data had been collected from the different villages of this union named Kachighata, Pengabohor, Fulbaria, and Chakuria Chala. Historically in Bangladesh 'land poor' are the poor in general and there has always been a strong negative correlation

between land ownership and incidence of poverty (BBS, 2007). According to the study, 25% of the respondents had land by personal ownerships and through the contact of khas land (government ownerships). The higher percentage of land of the UP households received by inheritance. Merely 5% of the total participants were found landless whereas 15% of the participants were holding lands by purchasing

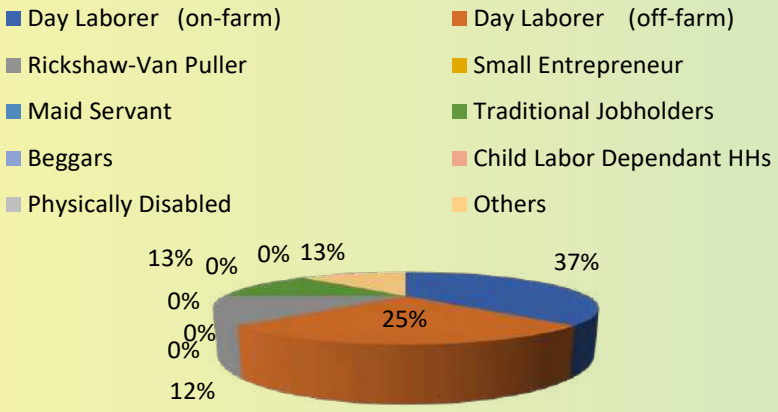
Figure:1 Characteristics of Land Ownership of the Participants at research area



2.3 Distinctiveness of the Participant of PIDIM's UP Program

The study represents that, the highest percentage of respondents work on any agricultural farm as day labor. On the contrary, the lowest percentage of respondents are rickshaw puller, traditional job holder and from miscellaneous occupation. The percentages are 12%, 13% and 13% respectively. A good number of participants involved in off-farm activities as day laborer. It is noteworthy that the occupation relates to small entrepreneur, Maid servant & Bagger are absolutely absent.

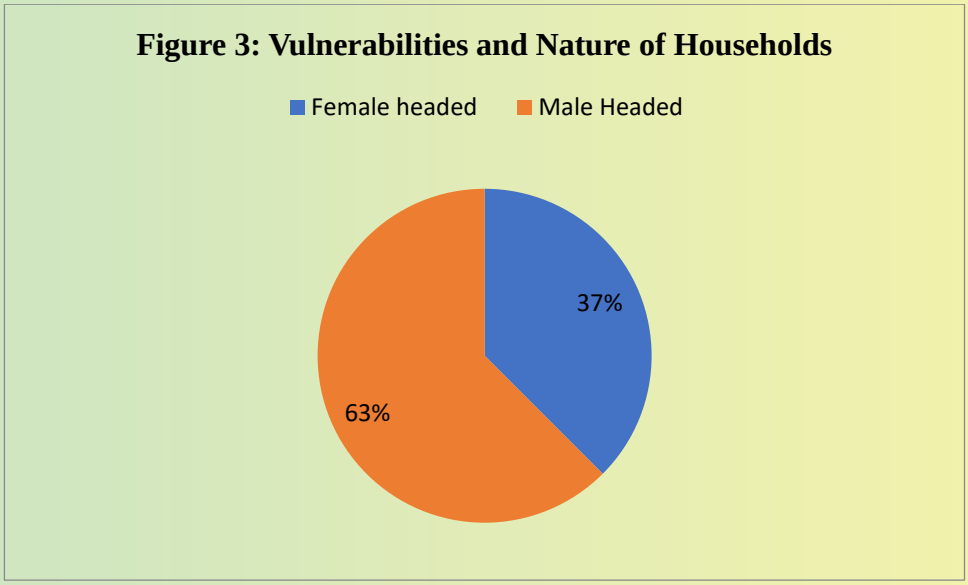
Figure 2 : Distinctiveness of Beneficiaries by Occupation



2.4 Vulnerabilities and Nature of Households

The vulnerable groups are often identified by age, sex, religion, ethnicity, location etc. For example, households with elderly are more prone to health shocks in Bangladesh .The extreme poor are highly vulnerable to health shocks, not only in their exposure to such shocks but also in lack of coping mechanisms. People with disability face different extent of vulnerability. Populations in specific geographical areas are prone to food insecurity or natural calamities. The study illustrates that, the highest percentages of households are male headed and the lowest percentages of households are female headed. The percentages are 63% and 37% respectively. The data shows the male dominance in our society as well.

Figure 3: Vulnerabilities and Nature of Households



2.5 Demographic Information of the Respondents

The majority of the respondents' age ranges between 25 years to 50 years. They could merely sign their name. They either married, widowed, abandoned or older women.

Table 1: Demographic Information of the respondents

Age Range	25-50 (years)
Education	Only Can Sign Name
Ultra-poor Member Status	Married, Widowed, Abandoned, Older person(Women)
Family Type	Single

2.6 Access to Physical Amenities

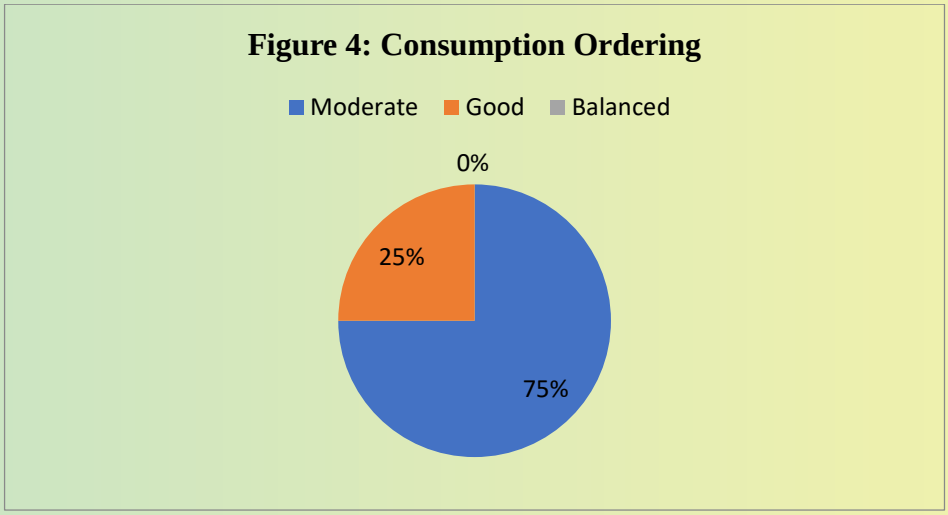
The study reflects that 75% of the households have electricity and 62.5% households are lacking the opportunity to safe drinking water. Surprisingly all the household have access to sanitary toilet access.

Table 2: Access to Physical Amenities

Infrastructure Facilities	**Frequency (Have Access)**	**Percentage** (N=40)	**Frequency (Have not Access)**	**Percentage** (N=40)	**Total Frequency**	**Total Percentage**
Household have access to electricity	30	75	10	25	N=40	100
Household drink from tube-well/tap	15	37.5	25	62.5	N=40	100
Household use sanitary latrine	25	62.5	15	37.5	N=40	100

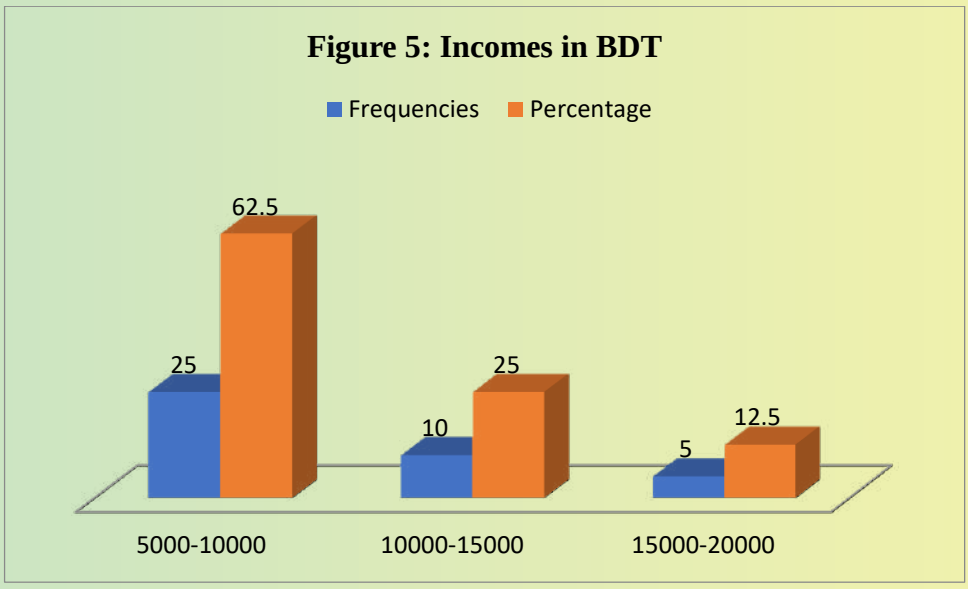
2.7 Food Consumption of the Participant Households

The highest percentage of food consumption by the households shows moderate in amount compared to the recommended intake for Bangladeshis and the mean national rural intake. Shockingly, the study does not found any household having balance of food consumption.



2.8 Employment and Income

This section analyzes employment and income of the diverse wealth groups of households. It shows that the peak percentage of participant's income range is 5000-10000(BDT) which is sharply low. Conversely, the lowest proportions of participants have gain reasonable income range is 15000-2000(BDT).



2.9 Expenditure

The study illustrate that a huge amount of money spends on food item where a relatively small amount of money spends on non-food item such as health, education and entertainment purposes. The proportions of expenditure are 75% and 25% respectively.

Table 3: Expenditure

Expenditure	Frequencies	Percentage
Food	30	75
Non-food	10	25
Total	**N=40**	**100**

2.10 Assets: Natural, Physical and Financial

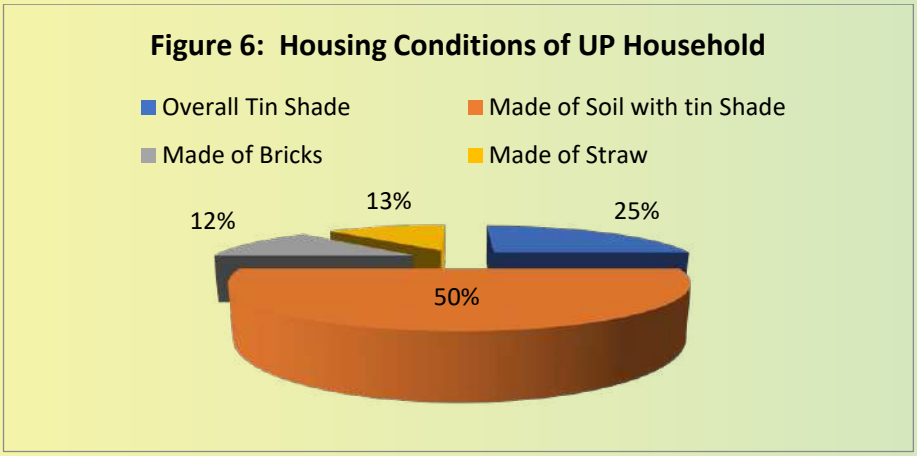
A natural asset like land is not only a source of productivity and livelihood but also a determinant of security and shelter. Physical assets, both productive and non-productive, on the other hand, are essential for maintaining livelihood when natural assets are scarce or not available to the poor. Physical assets like livestock and poultry can help a poor household by augmenting income through selling their products in the market. Moreover, these products can also be domestically consumed creating an expenditure saving mechanism. Other productive assets, like rickshaws and vans, may also be considered as a substitute to land as they provide alternative income generating activities for the poor. The subsequent table demonstrates that, the higher percentage of respondents (50%) holding 10 decimal of land and the lower percentage of respondents (25%) holding 15 and 20 decimals respectively. In case of physical asset, the higher proportions (37.5%) of UP households have poultry and 25% of the total respondents have livestock asset and merely 12.5% have Rickshaw or Van. Shockingly, about 25% of the respondents have mentioned they have no physical asset.

Table: 4 Nature of Asset of Participant Household

Assets Type	Frequency		Percentage
Natural Asset	Total land holds by the households (in Decimal)	Total Frequency**N=40**	Total Percentage **(100%)**
	10 decimal	20	50
	15 decimal	10	25
	20 decimal	10	25
Physical Asset	Livestock	10	25
	Poultry	15	37.5
	Rickshaw,/van	5	12.5
	No Physical Asset	10	25
Financial Asset	Have access to existing Microfinance services	35	87.5
Access to loan from NGOs and other financial institution	No access to microfinance services	5	12.5

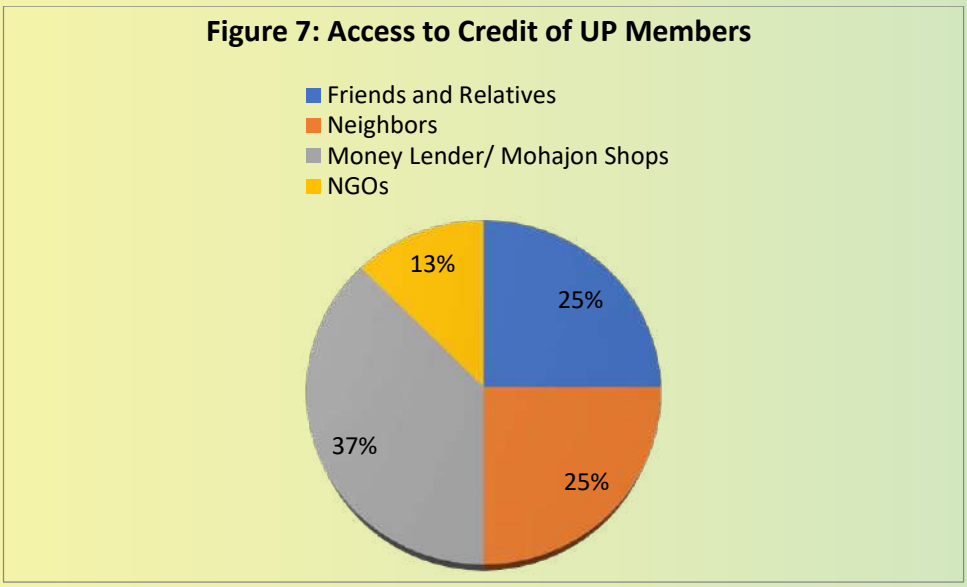
2.11 Housing Condition

In case of building materials, economically better off households have houses with better quality building materials such as brick, tin or wood .Poorer households, in contrast, mostly use inferior quality materials such as clay, hay sticks or leaves for building their houses. As expected it was also found that the condition of the house was better for the economically better off groups compared to the worse off groups. The chart shows that, Majority of the participants' households made of soil, straw and tin. Barely, 12% of household have houses made with brick.



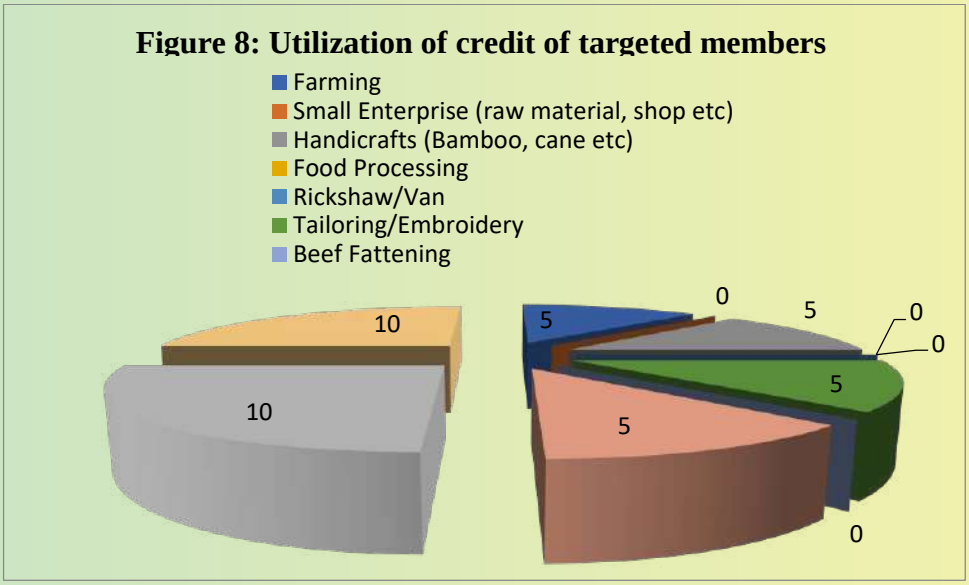
2.12 Access to Credit

Ultra-poor households are often faced by vulnerabilities and shocks. Their vulnerabilities are mainly relating to financial insecurity. Figure 11 shows the access to credit of UP households during financial crisis to cope with vulnerabilities. The higher ratio of respondent have access to credit to money lenders which is highly informal with high rate of interest and the lower ratiohave access to formal financial sector. The figure was 37% and 13 % respectively. Access to credit to friends, relatives and neighbors are remained same and the figure has shown 25%.



2.13 Utilization of Credit of Targeted Member

Following chart reports the actual utilization of microfinance of PIDIM participants. During investigation, it has found that 75% of the borrowers spend their money for Income Generating Activities (IGA) such as poultry rearing, cow-goat rearing, handicraft, and tailoring, farming and small entrepreneur. The chart clearly states that about 25% loan are utilized in unproductive sector.



2.14 Utilization of Credit on following Sector Information Given by PIDIM Foundation

Fulbaria branch of PIDIM Foundation provide following information on utilization of credit. This information created a sharp contradiction with the investigated information. The chart demonstrates that most of the UP respondents utilize their loan on productive and income generating activities like small enterprise, farming and purchasing rickshaw/van.

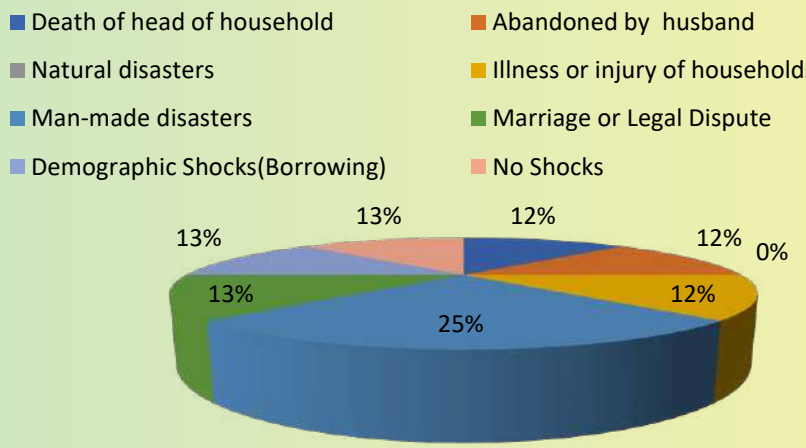
Table 5: Utilization of credit on following Sector information given by PIDIM Foundation

Utilization of credit on Following Sector information given by PIDIM Foundation	Frequencies	Percentage
Farming	10	25
Small Enterprise (raw material, shop etc)	14	35
Handicrafts (Bamboo, cane etc)	3	7.5
Food Processing	0	0
Rickshaw/Van	5	12.5
Tailoring/Embroidery	0	0
Beef Fattening	0	0
Goat Rearing	2	5
Duck and Chicken Rearing	6	15
Others Sector	0	0
Total (N=40)	**40**	**100**

2.15 Vulnerabilities and Shocks Affected by the UP Participants Households

Vulnerabilities and shocks are uncertain and painful phenomenon in the life of the ultra-poor. The following findings represent the vulnerabilities and shocks which affect ultra-poor. Most of the respondent's households are traumatized by man-made disaster such as destitute women abandoned by husband, death of chief income earner, illness or injury, legal dispute etc.

Figure 9: Vulnerabilities and Shocks Affected by the Ultra-poor



2.16 Crisis Coping Mechanism

In numerous cases, the households are left with nothing to do in response to particular shocks (e.g. death of livestock or damaged dwellings) and live with that. Majority of the households, who face any crises, reported doing nothing to cope with it. In cases of disaster where they suffer income erosion or need to incur further costs, households take up different coping mechanisms. Spending from savings shows households' ability to cope with the crisis. Different groups of households in UP areas confirmed greater reliance on savings. Conversely reduction in household expenditure was more common in the UP areas. While the ability to borrow to cope with crisis may reflect financial asset, it can create long-term indebtedness. Informal assistance from friends and relatives is of particular significance to the poorer households. Expenditure cut and informal borrowing as coping strategy are more common for demographic shocks.

Figure 10: Crisis Coping Mechanism of UP Household

2.17 Situation of Education, Health and Training Program of PIDIM

PIDIM intervention can be broadly categorized only by financial intervention, no non-financial intervention has been found to the UP members. Manifold technical training includes livestock, fisheries, agricultural, tailoring etc. Taking healthcare services to the door-steps of the ultra-poor has recently generated much interest. In reality, PIDIM foundation had no policies and programs on education, training and health care program for UP members at all.

2.18 Drop-out of the participants from PIDIM

This section is dedicated to present the current membership status (i.e. as of 2013 calendar year) for the households who reported participating in the PIDIM program 2013. The proportion of households dropping out from microfinance industry (in particular from the PIDIM UP program) is quite large within 2013. Further study explored reasons for such high drop-out rates. Table 6 describes that, PIDIM had higher percentage of drop out of UP members and the figure was 20% on a year consequently. The reason behind this huge drop out is highly associated with weekly repayment of loan.

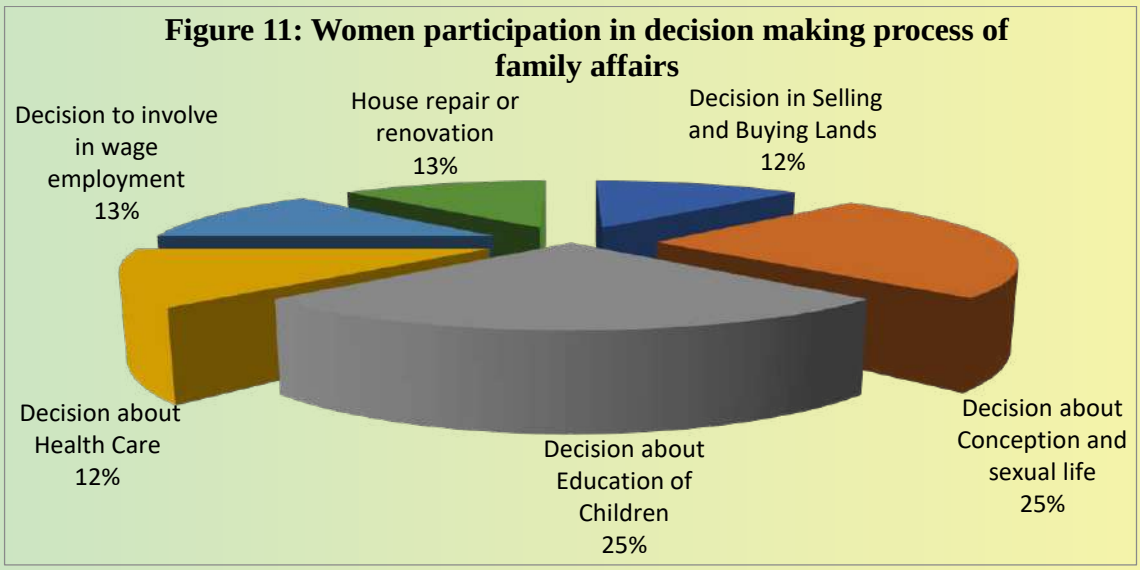
Table 6: Drop out situations from ultra-poor program

Drop Out From PIDIM(UP Program)	Result
Total Inclusion at PIDIM in the year 2013(January - October)	69
On Going Member	49
Drop Out	20
Percentage of Drop out	28.99

2.19 Women Empowerment Position in Family

The study examines the women empowerment situation in terms of perceived ability to influence major decisions of the household regarding domestic, financial, and child development issues, buying land, house repair or renovation, lending money from a different source, getting involved in new activity without seeking permission, influencing husband/son/daughter to take up a new activity, children's education, influence husband on spending more on children's clothing, conception and sexual life.

Figure 11: Women participation in decision making process of family affairs

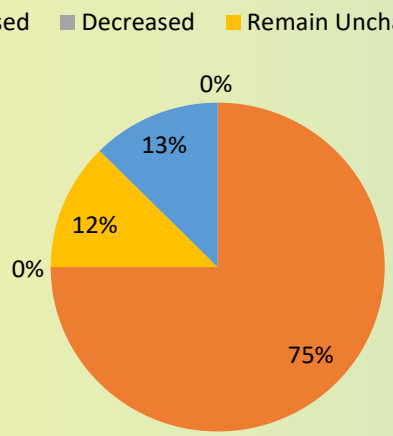


Subsequent chart shows the percentage of Women participation in decision making process regarding family affairs. Surprisingly the higher percentage of women can take decision about conception and sexual life, education of children and the figure is 25%. The lower percentage of women can take decision about treatment; buying or selling land, house repairing, wage employment etc.

2.20 Social Acceptance situation and Social Networking Capacity of the Participant

The study discovers the impact of microfinance on increasing the social acceptance. Social acceptance is highly connected with the economic status of the UP household. Microfinance as well as social linkage has tremendous role in enhancing social acceptance of the UP households. Figure 12 reflects that, a higher percentage (75%) of the respondents are involved with existing microfinance program, their economic status has been increased which resulted in sharp increase of social dignity.

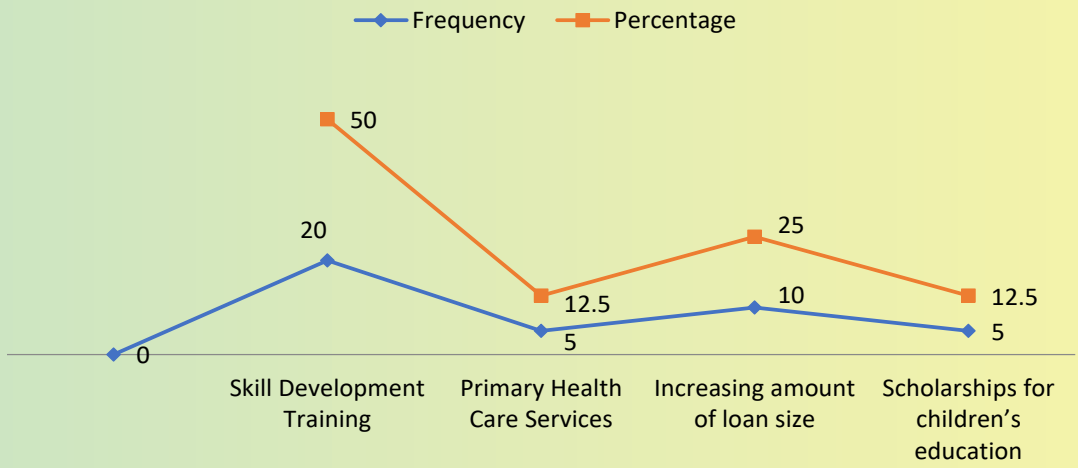
Figure 12: Percentage of Social Acceptance and Social Networking



2.21 Needs and Demands of the Respondents to Make Effective Ultra-poor Program

During data collection, when respondents were asked about their expectation from existing program designed for them they demanded the following needs to facilitate for them which are stated in following ways.

Figure 13: Needs and Demands raised by the Respondents



The researcher has conducted two Focus Group Discussion on the graduated members (UP) and drop out members (UP) of PIDIM Foundation at Fulbaria branch. The key findings have stated bellow.

3. Findings of the Focus Group Discussion

3.1 Methods and procedures of FGD

Researcher had an intention to include different respondents in focus group discussion that's why this study was divided group into two sections i.e. 1. Female headed households 2. Male headed households. First group was from the village named 'Kachighata', second group from village named 'Pengabohor'. Before conducting FGD, an informed content was sent to them whether they were agree or not to participate the discussion session. A checklist was made for focus group discussion and all questions were open ended. The participants were very much enthusiastic and took part in the discussion. The FGD presented through different themes. The table below shows the demographic conditions of the three FGD participants.

Table 7: Characteristics of the participant of focus group discussion

Group No.	Respondent	Nature of the Respondent	Number of respondent	Age Range	Location	Level of Education	Present Profession
01	Women	Graduated from UP	8	30-45 years	Kaliakoir Thana, Gazipur	Only can sign their name	All are housewives
02	Women	Dropout UP	10	30-50	Kaliakoir Thana, Gazipur	Only can sign their name	All are housewives

3.2 Evidence of Graduation from Extreme Poverty to rural microcredit program

In FGD, the three families comprised of five family members, two were six members and the rest were four family members. The income (monthly) of two participants were 20,000 (BDT), 3 three participants had 15000 (BDT) and the rest had 10000 (BDT) approximately. The savings mentality of the participants is praiseworthy. The inclusion rate in primary school and Secondary School are excellent. Most of the families had school going children and they enrolled in primary and secondary school. In terms of physical asset, three participants have two ponds for fisheries, two respondents have nursery, and the one have tailoring shop. Along with, they are also generating income through livestock rearing, and poultry in a limited scale. Most of the members of FGD participant are self-employed.

FGD participants are excluded from rural power structure. Though they mentioned that they have good linkage with village leader, elite persons, imam of the mosque and with other resource person of the village. During crisis, shocks or capital requirement, Participants families have tendency to go to informal sources of lending money. As one participant said, "*formerly, I had financial crisis and could not accumulate money to do anything that could generate income. We had to go to Mohajon (local elite person) and had to pay interests in a high rate. PIDIM Foundation helped us to accumulate money for capital formation."*

Social acceptance, participation in social gathering and power structure, education of the children, improvement in living conditions and household's environment, social dignity were the major factors of the participant's asset based information. Most of the participants in FGD had shared that their household income sources are varied; it appears that most of households generate a higher proportion of their income from farm self-employment. This is because; the households have more access to cultivable land. The households also generated their income from non-farm for instances home based cottage industry, home side gardening, poultry rearing, dairy etc.

Among the eight graduate participants, five members told that PIDIM foundation played essential role for the graduation from ultra-poor program to Rural Microcredit and the rest mentioned different story of graduation.

3.3 Drop out situation of the Members from Ultra-poor program

Different experiences and significant results have been gathered from focus group discussion regarding the multiple responsible causes of drop out of the ultra-poor members from UP program of PIDIM Foundation.

1. Among the respondents, around 4-5 respondents claimed that weekly loan repayment was challenging for them as they did not able to make the money effective within very short time. It had also found that someone had bought a goat by the money and it became productive after six or seven month later. So it was tough for them to repay the loan instantly. Another respondent opined that, "*I had taken the loan for vegetable cultivation, it took three months for being income generative, beyond this time , we had to pay the loan by borrowing money from others and of by selling labor."*

2. FGD shows that, one single participant was the member of more than one lending organization (BRAC, Grameen Bank, ASA) simultaneously. Involving with different organizations, they could not get back from the cycle of credit as a result they were taken decision of dropping out from PIDIM. As one respondent commented that, "*I had no alternative, I took loan from one organization initially, when I could not repay the installment then I decided to take credit again from another organization to repay previous debt."*

3. PIDIM foundation only concern to render credit services to the UP members. Most of the respondents mentioned that**,** *"we are not provided with any training on how to utilize the money effectively, no health awareness program had provided for us. PIDIM were merely concerned to get back loan on weekly basis. If we were not able to give installment in a week by any means, they stayed at our house until to pay the installment".*

4. PIDIM Foundation didn't pay any attention to the needs, demands and problems of the ultra-poor. The needs of the ultra-poor are divers as respondent mentioned that, "*we needed training, educational support for the children, assistive supports such as; seeds, fertilizer, pesticide, providing productive assets like cows, goats, poultry etc. we also wanted primary health support as well as vocational training for the children who are unemployed and desired to be trained."*

5. In beneficiaries selection, PIDIM foundation have tremendous indifference and accountable for miss targeting. Among the ten members, three participants were included in UP program who were really not worthy of getting this loan. Even, PIDIM did not follow the policies rendered by PKSF to select ultra-poor members.

6. It is worth mentionable that, PKSF' spolicies of UP program were not followed by the PIDIM foundation correctly. They select the beneficiaries and provide loan to those members who are able to repay the loan.

7. Most of the respondents claimed that we got the UP loan for two years, at the amount of 4000 BDT only, after that it was stopped. Then we had become the member of another NGO, named Grameen Bank. The participants blamed that during FGD, the amount of loan was insignificant to demand and continuation of loan war highly irregular which lead the members to quit.

4. Recommendation and Conclusion

PKSF and its POs should agree to following proposal and proposition for getting effectual output from the UP program.

1. PIDIM Foundation is needed to correct targeting of beneficiaries.

2. PIDIM Foundation is to take obligatory steps to recognize the barriers which are restraining the way of graduation from UP to mainstream program.

3. More intensive monitoring and supervision is required by PKSF about overall microfinance activities for UP at PIDIM Foundation.

4. Training need is a prior concerned for UP as they are unskilled, less confident and even does not know how to utilize the loan amount.

5. It is needed to provide holistic services like education, health care and clinical support besides microfinance.

6. PIDIM Foundation should inspire the UP members for voluntary savings.

7. Financial support should be regular, effective and sustainable for livelihood development of the Ultra-poor households.

8. PIDIM Foundation should take compulsory steps for capacity building program for the ultra-poor members.

9. PKSF should redesign the UP program by combining of development. Strong collaboration, co-ordination and true partnership are necessary for PKSF and its POs.

10. Before providing credit professional skill training should be given, if the borrowers are unskilled or semi-skilled. A consultation services should be provided to the borrowers to select the appropriate profitable enterprises.

11. Sufficient amount of loan should be given to start up the selected enterprises at a lower interest rate. A strong monitoring and follow-up support and services should be given in executing the enterprises especially in the first few months.

12. Steps should be taken for liquidation of all of UP members previous indebtedness borrowed from the moneylenders with the help local government and Upazila administration. Government should come forward to eliminate the traditional exploitative moneylenders to rescue the poor people.

13. It is highly needed to monitor the enterprises taken by the borrowers at least once a week and prepare a progress report, provide suggestions regarding further improvement.

14. Steps should be taken to facilitate social networking and linkage with the UP household during crisis intervention to engaging ultra-poor segment at rural power structure.

5. Conclusion

The study has been conducted within restricted time and during continuous political turmoil all over the country. Inadequate time restrained the researcher to go for in-depth discussion. However, the present learning must bring noteworthy findings for policy makers of PIDIM and the funding organization (PKSF). They have to be concerned that sheer microcredit cannot change the life of ultra-poor. There is needed rigorous education, vocational training and primary health care facilities for them. Microcredit without manifold services can make their life despondent. Appropriate monitoring and evaluation is desirable so that these initiatives can get its outgrowth successively. The program must focus on the special need of the ultra-poor. So far 126 POs are implementing this program of PKSF. PIDIM is one of partner organization of PKSF and it is running ultra-poor program at different districts in Bangladesh. PKSF supposed to be honest, dedicated as well as required to be committed to serve the poorest segment of the society. PIDIM should focus on miss targeting and dropout rate. PKSF should take necessary ladder to guide and stimulate the POs like PIDIM to go ahead toward objectives and policies of UPP. Besides, PKSF should be endeavored as a big role model for eradicating extreme poverty by its existing POs. There is authentic need of true partnership provisions between PKSF and POs at national and local levels.

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People's Perception towards Life Insurance: Risk Management Tool or Expectation of Fixed Return

Fahad Zeya[1]

Abstract

The study covers people's perception towards purchasing different life insurance policies in Bangladesh. Analysis has been done into two parts; demographic factors (gender, age and income) and people's perception towards purchasing life insurance policies (either risk management motive or expectation of fixed return). Hence, risk management factors are set into five sub-categories; financial stability, coverage for unexpected loss, risk burden transfer, dependency on life insurance, knowledge about life products. Furthermore, fixed return expectation factors are also developed into five sub-categories; fixed return generated scheme, higher return generating scheme, tax exempted return, premium back when policy lapsed, surrender value equivalent to accumulated total premium. Analysis showed that people consider buying different life insurance policies being influenced by their gender, age and income level. Furthermore, the study revealed that risk management and fixed return expectation factors individually have not much influence over people's buying life insurance. Conversely, when both factors are put together, the study concluded that people purchase life insurance considering risk management factors above fixed return expectation.

Keywords: Life Insurance, Risk Management Factors, Fixed Return Expectation Factors, Money Back Policy
JEL Classification: G02; G22; G32

1. Introduction

Insurance sector in the developing country like Bangladesh has a long way to reach at an optimal level. The principal barrier of the full-fledged application of the insurance sector in Bangladesh is people's perception. Most of the people in Bangladesh think that buying insurance or investing into insurance policy is unproductive as they believe in short term gain. They basically prefer acquiring assets or depositing money into banks rather than purchasing insurance policy.

[1]Assistant Professor, Department of Finance and Banking, Cumilla University, Cumilla, Bangladesh. email: fahadzeya31@gmail.com

Those who somehow invest into insurance by purchasing policy consider insurance policy as a fixed return featured product rather than a risk management tool or hedging against unexpected future losses. Such misconceptions which are against insurance objectives are prevailing in the market. These myths have to be exonerated to accelerate the growth of the insurance business in Bangladesh. The paper is mainly designed to address the people's perception towards purchasing different life insurance covers. In the study, main focuses have been given to two main factors; either people consider life policy cover as a risk management tool or they consider it as a fixed return generating scheme. Chaudhary (2016) made some comments on the needs for life insurance. They are meeting family's financial requirements in future; clearing outstanding loans and expenses; diversifying investment options; availing tax benefits; availing loans against insurance policy documents. These are the features mainly motivating investors to invest into purchasing insurance as features are more like investing into banks in the form of depositing money. Some other influencing features are that directly relate the insurance products into its inherent features. These are assurance and security; debt issue; long term goal above risk factors; risk coverage and savings; family welfare and protection in case of any unexpected events, etc. Though insurance product generates yield in the long term, it is mainly a risk management tool that caters its characteristics only when risk or uncertainty arises.

1.1 Objectives of the Research

The main objective of the study is to examine the factors around people's perception towards life insurance and analyse these factors which influence people to buy different life policy covers. Specific objectives of the study are:

- To study the risk management factors that influence people to consider insurance services as risk hedging tool
- To study the fixed return expectation factors that influence people to consider insurance services as other saving instruments
- To assess the people's perception considering different life products either to minimize risk or to expect fixed return

1.2 Literature Review:

Literature showed few studies on people's perception toward life insurance that they purchase it to minimize the risk, to get better service and relaxed future or to generate fixed income. Most of the studies have been conducted on developing countries. The studies concentrated on the areas like purchasing decision, income and savings, security level and consumer behavior regarding life insurance policy.

Beckett et al (2000) showed concern about consumer behavior. They emphasized that new technology has made highly competitive market conditions that have immense impact on consumer behavior in buying financial products and services. A model has already been built that can read consumer behavior in buying financial products and services and in the later stage it will help service providers to cater services towards investors accordingly so that they can retain customers and make profit.

Chaudhary (2016) conducted a study on 100 respondents into three suburbs of Indian state. The study which examined the factors influencing to buy life insurance policy has identified six indicators that influence consumer behavior about investing into insurance products. These include better service provider, customized and timely services, convenience, service quality, tangible benefits and effective customer relationship management.

Islam and Mamun (2017) conducted their survey concentrating on four life insurance company (accumulating market share almost 80%) and traced 14 buying factors that discourages people from buying life insurance policy. The most important factor for not continuing life policy in the long run is the economic insolvency of the people. The second factor is after maturity service followed by general belief of the people, family plan, controversial idea, government policy, behavior of the insurance agents, awareness of the people, income of the household, attachment with insurance, peer group influence, occupational risk, age of the potential insured, and lack of insurance information.

Fukakawa (2002) showed concern about the possible occurrence ethically questionable consumer behavior from the data collected on 72 UK customers. The study discusses the theory of planner behavior which includes attitude, social influence and opportunity and perceived unfairness. They tested four of them through some parameters. Binary logistic model suggests that social influence and attitude constantly impact on ethically

questionable behavior. Analysis of variance suggests that opportunity and perceived unfairness, though context specific, show marks of significant influence on the acceptance and practice of this behavior.

Karim (1999) stated that compared to other countries in the South Asia, Bangladesh has a low penetration into life insurance. Reasons for low penetrations are weak saving instruments, poor client service, lack of innovation and shortage of trained man power. They focused on these areas to improve and help people to be bolstered into purchasing life insurance policies.

In his research on consumer decision making process while buying life insurance policies, Mahajan (2013) discussed about five phases decision for opting any tax saving instrument or financial instruments like life insurance involves need recognition, search of alternative, evaluation of alternative, purchase decision and post purchase evaluation. Furthermore, in his research, he showed life insurance has been preferred based on number of products, knowledge about customer, timely issuance of policy and after sale service.

Tripathi (2008) showed consumer buying patterns with a focus on market segmentation. He divided the market in terms of insurance needs, age groups, satisfaction levels etc. He basically focused on the large insurance company's (LIC) customers and made a survey of 150 respondents. The study concludes with that the demographic factors play vital roles in purchasing decision of life insurance policy.

Insurance need of the people of Bangladesh has arisen and people now a days consider it as an indispensable need for long run. Need arisen of insurance has created a positive impact over the minds of the people. Hence, they should treat insurance policy as hedging against risk(s) and not equalize with banking type products.

1.3 Research Design

Research Type- Descriptive and Inferential

Data Type- Both primary and secondary

Study Period- September 2019 to June 2020

Target Population- Residents and life policyholders in Dhaka and Cumilla, Bangladesh

Sampling Technique- Purposive Sampling

Sample Size- 300 respondents

Method of Data Collection- Both Personal Interview and Online Survey and questionnaire are designed with Likert Scale counting from strongly disagree (1) to strongly agree (5)

1.4 Research Methodology and Hypothesis Development

The methodology used in this study is given as follows-

i. Descriptive Statistics- In this study mean, median, mode, standard deviation, correlation and regression of demographic profile, people's perception towards life insurance cover purchasing has been analyzed

ii. Hypothesis Formulation- Following hypotheses have been developed by the author for analysis.

iii. Hypothesis 1- influence of people's demographic profile on people's perception to buy life insurance

iv. The main demographic factors to show influence of perception of the people are gender, age and income.

v. H_1- Demographic factors have influence on people's perception to buy life insurance

vi. To support the above hypothesis, three simultaneous hypotheses have been developed.

vii. $H_{1.a}$- Gender has influence on people's perception towards life insurance

viii. $H_{1.b}$- Age has influence on people's perception towards purchasing life insurance

ix. $H_{1.c}$- Income has influence on people's perception towards purchasing life insurance

x. Dependent variable- Perception of different life policy cover among 300 respondents

xi. Independent variables- gender, age and income (annual) of the respondents

xii. Hypothesis 2- influence of risk management factors on people's perception to purchase life insurance

xiii. Sub hypotheses to support the above statement are as follows-

xiv. $H_{2.a}$- Financial stability perception has influence on people's perception towards life insurance

xv. $H_{2.b}$- Coverage of unexpected loss has influence on people's perception towards life insurance cover purchase

xvi. $H_{2.c}$- Risk burden transfer perception has influence on people's perception towards life insurance

xvii. $H_{2.d}$- Dependency on life insurance perception has influence on people's perception towards life insurance

xviii. $H_{2.e}$- Knowledge on different life insurance cover perception has influence on people's towards life insurance

xix. Dependent variable- Perception of different life policy cover among 300 respondents

xx. Independent variables- financial stability, coverage of unexpected loss, risk burden transfer, dependency on life insurance and knowledge in life insurance perception

xxi. Hypothesis 3- influence of fixed return expectation on people's perception towards purchasing different life insurance cover

xxii. Sub hypotheses to support the above statement are as follows-

xxiii. $H_{3.a}$- Fixed return generating scheme perception has influence on people's perception towards life insurance

xxiv. $H_{3.b}$- Higher return generating scheme perception has influence on people's perception towards life insurance

xxv. $H_{3.c}$- Tax exempted return perception has influence on people's perception towards life

xxvi. $H_{3.d}$- Returning all the premium if policy lapsed perception has influence on people's perception towards life insurance

xxvii. $H_{3.e}$- Surrender value equivalent to accumulated premium perception has influence on people's perception towards life insurance

xxviii. Dependent variable- Perception of different life policy cover among 300 respondents

xxix. Independent variables- fixed return generating scheme, higher return generating scheme, tax exempted return, returning all the premium if policy lapsed, surrender value equivalent to accumulated premium perception.

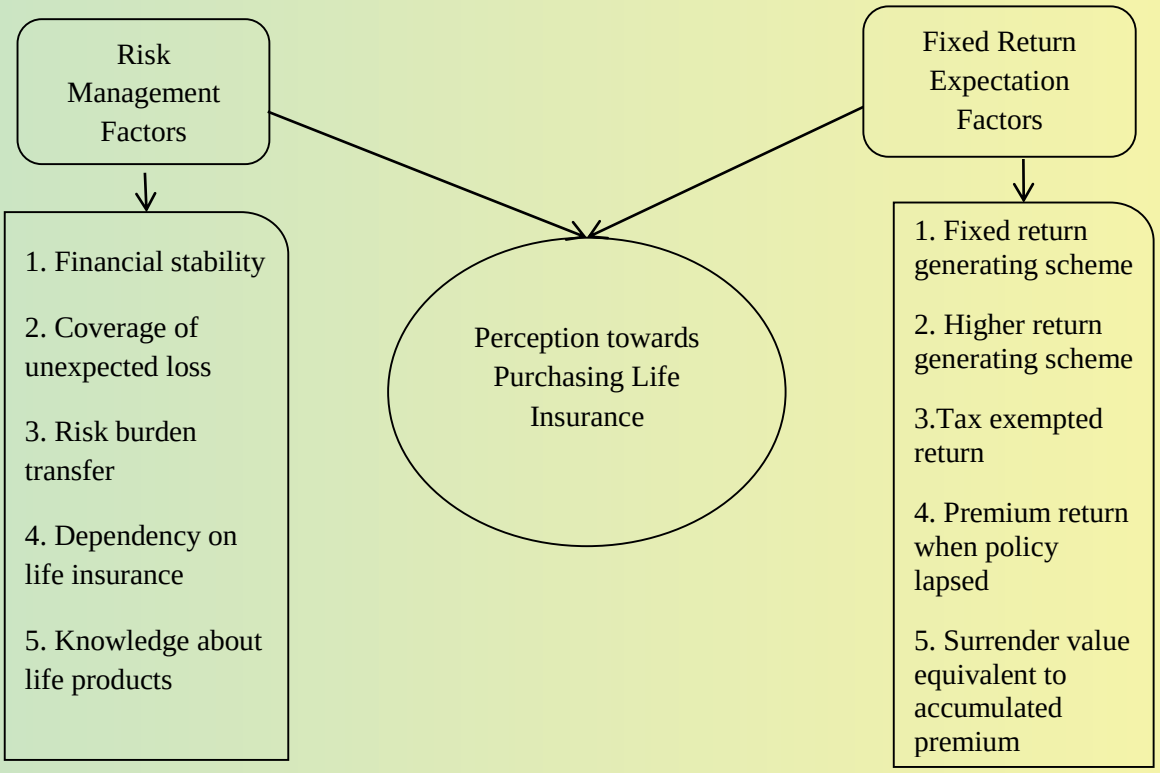

Figure: Perception towards Life Insurance Purchase

Data Analysis

Data are analyzed using SPSS version-23 to draw relationship between dependent variable and independent variables. Hypotheses are developed to show the influence of demographic factors and people's perception on purchasing different life insurance cover. Data has been tested considering significance level 5 percent.

Regression Analysis

Demographic factors and risk management as well as fixed return expectation factors have been regressed to show the effect on purchasing life insurance cover. Data set has found no multicolliniarity problem.

1.5 Theoretical Framework

Perception of the people towards buying different life cover- in this context, two main factors have been focused.

1. Risk management factor; and 2. Fixed return expectation factor

Risk Management Factors:

Life insurance mainly caters with protection against uncertainty and risk(s). To reduce or minimize risk factors involved in human life, people buy insurance. Risk management concept has been splited into five sub categories.

I) Financial Stability: In this study, financial stability means people assume life insurance cover can heavily reduce the financial instability during hardship. A person will buy any type of policy cover if s/he thinks the cover that s/he chooses will provide with sufficient ground in case of uncertainty arises.

II) Coverage of Unexpected Loss: Here, coverage of unexpected loss means insurance covers the unexpected loss of business/personal life. A person buys life insurance cover if s/he satisfies that the insurance cover will help by compensating in case of any unexpected loss of business/personal life.

III) Risk Burden Transfer: Risk burden transfer means having life cover promotes to take novel risk(s) and explore new dimensions transferring the risk onto the shoulder of insurance company. People's perception regarding this arises when they are satisfied provided life insurance cover is able to take the risk.

IV) Dependency on Life Insurance: Dependency on life insurance means only having life insurance cover is enough to cover and manage risk. People will buy life cover if they are assured that life insurance can be relied for covering and managing risk.

V) Knowledge on Life Insurance Cover: Knowledge on life insurance cover means many people presume all types of life policy cover are same. There are different covers designed for different needs. People will buy insurance having sufficient knowledge on different covers.

Fixed Return Expectation Factors

Fixed return or benefit expectation concept means people choose life insurance over other saving instruments to get the fixed and higher return. Sometimes, people are hardly convinced that life insurance coverage is purchased for being compensated in case of any uncertainty or risk(s) arises. They sometimes assume life insurance provides return as other saving tools offered by banks or any financial institutions. Fixed return expectation concept has been broken down into five sub categories.

I) Fixed Return Generated Scheme: Fixed return generated scheme means people assume life insurance cover generates fixed return to the insured. Sometimes people consider life

insurance policy as a fixed return generating scheme like banking products rather than considering as a risk management tool.

II) Higher Return Generating Scheme: Higher return generating scheme means people consider buying life insurance as a tool of higher return which they may not gain from investing into banking products and other financial institutional schemes.

III) Earned Return are tax exempted: Tax exempted return means people presume the return generated from insurance policy is tax exempted and they do not get the same advantage from investing into banking schemes.

IV) Return Premium in case of Policy Lapsed: It means people many time do not want to continue the policy willingly or facing shortage of disposable money to be invested into insurance. Therefore, the policy becomes lapsed and people believe all the premium they invested should be got back. This is misnomer in the practice of insurance industry. People misunderstand this as they think insurance and banking services are same.

V) Surrender Value equivalent to Accumulated Premium: Here, it means after policy surrendering, people believe they would get back all the premium accumulated and invested into insurance cover not considering the surrender charge which is large for the insurance company.

For getting the clear concept about the perception of the people as regard to having life insurance considering cover types, life insurance policy covers have been categorized into five types.

1. Endowment Policy
2. Term Policy
3. Whole Life Policy
4. Money Back Policy
5. Other Policies

Table 1.1: Perception of Different Life Insurance Cover

Types of Life Insurance Cover	Perception	
	Response	Percent
Endowment Policy	52	17.3%
Term Policy	90	30%
Whole Life Policy	27	9%
Money Back Policy	120	40%
Other Policy	11	3.6%
N=	300	100.0%

In a nutshell, it can be said that majority (40 percent) of the respondents preferred to have money back policy followed by term policy (30 percent) and endowment policy (17.3 percent). It can be concluded that most of the people look forward to having money back policies in their insurance basket and to some extent considered this insurance tool as fixed return generating service only. On the contrary, other people have pure knowledge on having insurance and they carefully selected their scheme before purchasing life policy.

2. Data Analysis and Discussion

2.1 Analysis of Descriptive Statistics

Table:2.1 Age-wise People's Perception

Age Group	Frequency	Percent
18-35	169	56.3
35-50	88	29.3
Above 50	43	14.3
Total	300	100.0

Table 2.1 shows among all the respondents, a major portion of group occupies the age group between 18-35 where the percentage of respondents are 56.3 percent. It reflects that the majority of the people who understands about insurance is of young age group.

Table:2.2 Gender Wise People's Perception

Gender	Frequency	Percent
Male	165	55.0
Female	135	45.0
Total	300	100.0

Table 2.2 drawn by using the results of frequency distribution shows that male respondents are 55 percent and females are 45 percent. It clearly shows that both male and female parallelly participated in the survey.

Table:2.3 Income (Annually)

Income	Frequency	Percent
Less than Tk. 100000	86	28.7
Tk. 100000 to Tk. 300000	148	49.3
Tk. 300000 to Tk. 500000	37	12.3
Tk. 500000 and above	29	9.7
Total	300	100.0

Table 2.3 drawn by using the results of frequency distribution shows that among 300 respondents 49.3 percent people belong to the income group where they earn Tk. 1 lac to Tk. 3 lac annually. For buying life insurance policy, good income as well as disposable income is required.

People's perception towards life insurance here contains two variables; risk management tool and fixed return expectation.

Risk management tool in this research focuses here five questions which raise five straightforward perception of the people.

Table 2.4 Risk Management through Financial Stability

	Frequency	Percent	
Strongly Disagree	8	2.7	
Disagree	46	15.3	Mean 3.61
Neutral	43	14.3	Median 4.00
Agree	160	53.3	Mode 4.00
Strongly Agree	43	14.3	S.D. 0.997
Total	300	100.0	

In response to the statement '**Insurance can heavily reduce the risk of financial instability during hardship'** 53.3 percent of the respondents showed their agreement. Their perception concentrates on the fact that buying life insurance policy ensures them to be financially stable in case of hardship. The standard deviation of 0.997 shows comparatively less dispersion in response to the statement.

Table 2.5 Risk management through coverage of unexpected loss

	Frequency	Percent	
Strongly Disagree	9	3.0	
Disagree	49	16.3	Mean 3.5633
Neutral	43	14.3	Median 4.0000
Agree	162	54.0	Mode 4.00
Strongly Agree	37	12.3	S.D. 1.001
Total	300	100.0	

In response to the statement '**Insurance covers the unexpected loss of your business/personal life',** 54 percent of the respondents showed their agreement. Majority of the people in Bangladesh are of either low or middle income group. Unexpected losses bearing is much painful for them so the mechanism they prefer to minimize the contingencies by having life insurance. The standard deviation of 1.001 shows little dispersion regarding the perception over unexpected loss.

Table 2.6 Risk management through transferring risk burden

	Frequency	Percent	
Strongly Disagree	22	7.3	
Disagree	64	21.3	Mean 3.23
Neutral	64	21.3	Median 3.50
Agree	123	41.0	Mode 4.00
Strongly Agree	27	9.0	S.D. 1.108
Total	300	100.0	

In response to the statement **'Having insurance promotes you to explore new area by taking risk without the tension of negative financial outcome',** majority (41 percent of the respondents) showed their agreement. People need something that can transfer their risk burden. Exploring new opportunities involves much risk in the socio-economic environment of Bangladesh. People earnestly considers life insurance as resort with the help of it they can explore new arena of business. The standard deviation of 1.108 shows little dispersion regarding the perception over risk burden transfer.

Out of 300 respondents that have been chosen, who have or wish to have policy cover, highlighted their perception towards having life cover.

Table 2.7 Risk management through dependency on life insurance

	Frequency	Percent	
Strongly Disagree	40	13.3	
Disagree	126	42.0	Mean 2.66
Neutral	42	14.0	Median 2.00
Agree	79	26.3	Mode 2.00
Strongly Agree	13	4.3	S.D. 1.132
Total	300	100.0	

In response to the statement **'Only having insurance is enough to cover and manage risk',** majority (42 percent of the respondents) showed their disagreement. This kind of perception grows much dependency over life insurance. Only life insurance purchase cannot fix a person's all type of risk. It depends upon the benefits and coverage of the policy which clearly defines the policy coverage limit. The standard deviation of 1.108 shows little deviation regarding the perception over life insurance dependence.

Table 2.8 Risk management through knowledge of life insurance cover types

	Frequency	Percent	
Strongly Disagree	63	21.0	
Disagree	148	49.3	Mean 2.29
Neutral	38	12.7	Median 2.00
Agree	42	14.0	Mode 2.00
Strongly Agree	9	3.0	S.D. 1.043
Total	300	100.0	

In response to the question **'Are all types of life cover same?',** 49.3 percent of the people disagreed and 21 percent of the respondents strongly showed their disagreement. Basically, categories of life insurance implies their benefits and coverage. Term life insurance policies pay only death of the insured occurs during the term of the policy and whole life insurance policies pay whenever one dies. So, people should understand their need and select what type of insurance policy they actually need to have. The standard deviation of 1.043 shows little dispersion to this statement.

Fixed Return Expectation focuses here five questions which raise five unequivocal perception of the people.

Table 2.9 Fixed return expectation through considering Insurance as fixed benefit scheme

	Frequency	Percent	
Strongly Disagree	22	7.3	
Disagree	58	19.3	Mean 3.34
Neutral	53	17.7	Median 4.00
Agree	129	43.0	Mode 4.00
Strongly Agree	38	12.7	S.D. 1.144
Total	300	100.0	

In response to the statement **'Insurance is purchased to earn certain fixed return',** almost 43 percent respondents showed their agreement. Being interviewed, they opined the insurance products and services are quite similar to banks products and services. They consider life insurance as a fixed return generating scheme. The standard deviation of 1.144 shows little dispersion regarding the perception over fixed benefit scheme.

Table 2.10 Fixed return expectation through considering life insurance as comparatively highest benefit

	Frequency	Percent	
Strongly Disagree	22	7.3	
Disagree	62	20.7	Mean 3.21
Neutral	72	24.0	Median 3.00
Agree	118	39.3	Mode 4.00
Strongly Agree	26	8.7	S.D. 1.095
Total	300	100.0	

In response to the statement, **'The return on insurance products is high enough as compared to the other saving instruments',** almost 39.3 percent of the respondents

showed their agreement and 20.7 percent of the respondents showed their agreement. 24 percent of the people stayed in neutral position answering this question. Most of the people purchase life insurance product thinking as the next best alternative to other saving instruments. They think that they get highest return which any other saving instruments do not serve. The standard deviation of 1.095 shows little deviation to this statement.

Table 2.11 Fixed return expectation considering return earn from insurance is not taxed

	Frequency	Percent	
Strongly Disagree	10	3.3	
Disagree	52	17.3	Mean 3.38
Neutral	83	27.7	Median 4.00
Agree	124	41.3	Mode 4.00
Strongly Agree	31	10.3	S.D. 0.996
Total	300	100.0	

In response to the statement '**The return earn from the insurance policy is not subject to tax',** 41.3 percent respondents agreed to the statement. Being interviewed, majority respondents uttered that if they invest into other schemes rather than buying life insurance, their return from the scheme would be subject to tax. So, they consider life insurance as return generated from this is not subject to tax. The standard deviation of 0.996 shows little dispersion to this statement.

Table 2.12 Insurance company should reimburse all the premium in case of policy lapsed

	Frequency	Percent	
Strongly Disagree	9	3.0	
Disagree	47	15.7	Mean 3.61
Neutral	41	13.7	Median 4.00
Agree	158	52.7	Mode 4.00
Strongly Agree	45	15.0	S.D. 1.017
Total	300	100.0	

In response to the statement **'Insurance company should reimburse all the premium in case of policy lapsed',** 52.7 percent respondents showed their agreement to this. People mix life insurance with conventional banking products and they think their full given premium should be reimbursed by the insurance company. The concept of the people is not right, as life insurance schemes provide assurance in case of any contingency where bank products do not do so. The standard deviation of 1.017 shows little dispersion regarding the perception over lapsed policy.

Table 2.13 Should surrender value be equivalent to given accumulated premium?

	Frequency	Percent	
Strongly Disagree	18	6.0	
Disagree	57	19.0	Mean 3.31
Neutral	62	20.7	Median 4.00
Agree	140	46.7	Mode 4.00
Strongly Agree	23	7.7	S.D. 1.054
Total	300	100.0	

In response to the statement **'Should surrender value be equivalent to given accumulated premium?',** almost 47 percent respondents agreed to this. The perception is quite vague as cash value should be less than the surrender value. Insurance company adjusts the premium payment for initial year or next to that with a major service charge. The people surrenders within year one or two, have to be considered a lump sum amount of service charge i.e. surrender value. Some insurance company charge low amount of surrender value if the surrender by the policyholder occurs after three or later period. The standard deviation of 1.054 shows little dispersion regarding the perception over surrender value.

2.2 Perception towards Choosing Life Insurance Cover: Demographic Profile

2.2.1 Pearson Correlation and Regression Analysis of Demographic Profile

Hypothesis 1:

Hypothesis 1 is developed to show the influence of people's demographic profile on purchasing life insurance based on cover types. Using the data of dependent and independent variables of 300 respondents, the result has been interpreted.

In the study, Gender, Age and Income have been considered as major demographic factors influencing people to purchase life insurance based on types of policy cover. Correlations of gender, age and income are -.336, -.063 and .418 respectively which show weaker strength between dependent factor and independent factors individually. Here R^2 value is 0.280 which is so poor to determine the dependent variable caused by independent variable. P-values of gender, age and income all are individually less than 0.05 as well as the value of F=38.372 is higher which show strong evidence against alternative hypothesis to be accepted and concludes with the significant notion that demographic factors have association or impact on the people's choosing life policy considering types of cover. **(details are given into Appendix 1)**

In conclusion, it can be said that moderate relation (R=0.529) between the demographic profile of the people and perception regarding choosing policy cover and poor ($R^{2=}$0.280) have been observed. In addition, all the three factors showed significant relation (p value less than 0.05) which infers strong evidence of accepting alternative hypothesis; there is an association between demographic factors and people's buying tendency of life insurance considering types of cover.

2.3 Perception towards Choosing Life Insurance Cover: Risk Management Factors and Fixed Return Expectation Factors

2.3.1 Perception towards Choosing Life Insurance Cover: Analysis of Risk Management Factors

Hypothesis 2:

Hypothesis 2 is developed to show the influence of risk management factors on purchasing various life insurance cover. In the study, Risk Management factors are developed into five sub categories; I) Financial Stability, ii) Coverage of Unexpected Loss, iii) Risk Burden Transfer, iv) Dependency on Life Insurance, v) Knowledge on Life Insurance Cover Types.

Using the data of dependent and independent variables of 300 respondents, the following result has been interpreted.

Pearson Correlation has been conducted on these five factors individually and it showed financial stability (0.092), coverage of unexpected loss (0.066), risk burden transfer (0.076), dependency on life insurance (-.052) and knowledge in life insurance cover types (0.073). Correlation showed here weaker strength between dependent factor and independent risk management factors.

Conducting regression analysis, here R^2 value is 0.027 which is very poor to determine the perception towards different life insurance cover purchase caused by risk management factors. P-values of financial stability (0.177), coverage of unexpected loss (0.512), risk burden transfer (0.308) and knowledge in life insurance cover types (0.143) are highly non-significant which can be concluded that there are no influence of these factors on people's purchasing life insurance cover. The remaining factor dependency on life insurance of which the p-value is .077 which is close to .05; giving the signal of having association with purchasing life insurance cover and it can be explained in a way that majority of the people here do belong to Tk 1-3 lac income (annually) group. They invest in life insurance cover thinking that the only thing that can save them in contingency is life insurance cover regardless of any terms and condition given by insurance company. **(details are given into Appendix 2)**

In summary, it can be concluded that all the five factors except dependency on life insurance factor showed insignificant relation (p value much greater than 0.05) which infers strong evidence of accepting null hypothesis; there is no association between risk management factors and people's buying tendency of life insurance considering types of cover. Nonetheless, dependency on life insurance factor has little association with the perception of buying life cover.

2.3.2 Perception towards Choosing Life Insurance Cover: Analysis of Fixed Return Expectation Factors

Hypothesis 3:

Hypothesis 3 is developed to show the influence of fixed return expectation factors on purchasing various life insurance cover. In the study, Fixed Return Expectation factors

are also developed into five sub categories; I) Fixed Return Generated Scheme , ii) Higher Return Generating Scheme, iii) Earned Return are tax exempted, iv) Return Premium in case of Policy Lapsed, v) Surrender Value equivalent to Accumulated Premium.

Using the data of dependent and independent variables of 300 respondents, the following result has been interpreted.

Pearson Correlation has been conducted on these five factors individually and it showed fixed return generating scheme (-0.083), higher return generating scheme (-0.010), tax exempted return (0.018), returning all premium if policy lapsed (-.043) and surrender value equivalent to premium accumulated (-0.038). Correlation showed here weaker strength between dependent factor and independent risk management factors.

Through regression analysis, value of R^2 is .008 which shows very poor variation that can explain the perception towards different life insurance cover purchase influenced by fixed return expectation factors. P-values of individual factors i.e. fixed return generating scheme (0.245), higher return generating scheme (0.990), tax exempted return (0.611), returning all premium if policy lapsed (0.633) and surrender value equivalent to premium accumulated (0.922) showed highly insignificant relation which can be concluded that there are no influence of fixed return expectation factors on people's purchasing life insurance cover. **(details are given into Appendix 3)**

In conclusion, it can be inferred that all the five factors showed insignificant relation (p value much greater than 0.05) which infers strong evidence of accepting null hypothesis that there is no association between fixed return expectation factors and people's buying tendency of various life insurance cover.

2.3.3 Perception towards Choosing Life Insurance Cover: Combining Risk Management Factors and Fixed Return Expectation Factors

The study revealed individual factors of risk management and fixed return expectation have insignificant relation with people's purchasing perception of various life insurance cover. However, the study needs to be more specific whether two main factors are insignificant in the same level or not.

For the purpose of the study, all sub factors are compiled into two major factors; I) risk management factors, ii) fixed return expectation factors to compare the significance level with the perception of purchasing life insurance cover.

Through conducting regression analysis, the result showed R^2=0.013; 1.3 percent variation that can be predicted by independent factors (Risk Management and Fixed Return Expectation) on dependent factor (Purchasing Perception of Life Insurance Cover) which is very low. P-values of both risk management (.088) and fixed return expectation (.185) factors are insignificant (greater than 0.05) but risk compared to fixed return expectation factors, risk management factors are close to .05; the explanation can be made with this is that risk management factors have little influence on purchasing perception of life insurance cover compared to fixed return expectation factors.

Analyzing the multi-collinearity among the predictors, VIF (variance inflation factor)=1.042 and Tolerance Level 0.960 said that there is no multicollinearity problem remains among the predictors. **(details are given into Appendix 4)**

3. Conclusion:

Insurance policy is a mechanism of risk management or an investment that can hedge risk(s). Perception of the most of the people of Bangladesh is to consider insurance products as a fixed return generating scheme just like banking product. The study could work as a catalyst for those who purchase insurance not to hedge risk(s) against their lives and assets but invest to get the fixed return back. To carry out the research, the author has conducted statistical analysis with the help of SPSS. The output showed that the demographic factors may influence people's buying tendency of different life insurance covers. The output also showed that risk management factors compared to fixed return expectation factors have little influence over the people's perception towards purchasing different life insurance covers. Insurance industry has a great future in the context of Bangladesh, the thumb rule is to let people know that the life insurance should be considered as a risk management tool and not as a mechanism of fixed return generating scheme.

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Appendix 1

Correlation among Perception (Types of Policy Cover) -

Correlations

		Perception	Gender	Age	Income
Perception	Pearson Correlation	1	-.336	-.063	.418
	Sig. (1-tailed)		.000	.139	.000
	N	300	300	300	300
Gender	Pearson Correlation	-.336	1	-.104	-.256
	Sig. (1-tailed)	.000		.036	.000
	N	300	300	300	300
Age	Pearson Correlation	-.063	-.104	1	.338
	Sig. (1-tailed)	.139	.036		.000
	N	300	300	300	300
Income	Pearson Correlation	.418	-.256	.338	1
	Sig. (1-tailed)	.000	.000	.000	
	N	300	300	300	300

Regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.529[a]	.280	.273	1.050

a. Predictors: (Constant), Income, Gender, Age

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	126.840	3	42.280	38.372	.000[b]
	Residual	326.146	296	1.102		
	Total	452.987	299			

a. Dependent Variable: Perception
b. Predictors: (Constant), Income, Gender, Age

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.914	.253		11.523	.000
Gender	-.616	.126	-.249	-4.887	.000
Age	-.397	.088	-.235	-4.487	.000
Income	.598	.074	.434	8.048	.000

a. Dependent Variable: Perception

Appendix 2

Correlation among Perception and Risk Management Factors

Correlations

		Perception	Financial Stability	Coverage of Unexpected Loss	Risk Burden Transfer	Dependency on Life Insurance	Knowledge of Life Insurance Cover Types
Perception	Pearson Correlation	1	.092	.066	.076	-.052	.073
	Sig. (1-tailed)		.055	.128	.095	.186	.105
	N	300	300	300	300	300	300
Financial Stability	Pearson Correlation	.092	1	.162	.135	.142	.146
	Sig. (1-tailed)	.055		.002	.010	.007	.006
	N	300	300	300	300	300	300
Coverage of Unexpected Loss	Pearson Correlation	.066	.162	1	.214	.056	.075
	Sig. (1-tailed)	.128	.002		.000	.168	.096
	N	300	300	300	300	300	300
Risk Burden Transfer	Pearson Correlation	.076	.135	.214	1	.169	.154
	Sig. (1-tailed)	.095	.010	.000		.002	.004
	N	300	300	300	300	300	300
Dependency on Life Insurance	Pearson Correlation	-.052	.142	.056	.169	1	.394
	Sig. (1-tailed)	.186	.007	.168	.002		.000
	N	300	300	300	300	300	300
Knowledge of Life Insurance Cover Types	Pearson Correlation	.073	.146	.075	.154	.394	1
	Sig. (1-tailed)	.105	.006	.096	.004	.000	
	N	300	300	300	300	300	300

Regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.165[a]	.027	.011	1.224

a. Predictors: (Constant), Knowledge of Life Insurance Cover Types, Coverage of Unexpected Loss, Financial Stability, Risk Burden Transfer, Dependency on Life Insurance

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.305	5	2.461	1.642	.149[b]
	Residual	440.682	294	1.499		
	Total	452.987	299			

a. Dependent Variable: Perception

b. Predictors: (Constant), Knowledge of Life Insurance Cover Types, Coverage of Unexpected Loss, Financial Stability, Risk Burden Transfer, Dependency on Life Insurance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.152	.385		5.583	.000
	Financial Stability	.099	.073	.080	1.353	.177
	Coverage of Unexpected Loss	.048	.073	.039	.656	.512
	Risk Burden Transfer	.068	.067	.061	1.021	.308
	Dependency on Life Insurance	-.122	.069	-.112	-1.772	.077
	Knowledge of Life Insurance Cover Types	.109	.075	.093	1.469	.143

a. Dependent Variable: Perception

Appendix 3
Correlation among Perception and Fixed Return Expectation

Correlations

		Perception	Fixed Return Generated Scheme	Higher Return Generating Scheme	Return Generated are Tax Exempted	Return Premium in case of Policy Lapsed	Surrender Value equivalent to Accumulated Premium
Perception	Pearson Correlation	1	-.083	-.010	.018	-.043	-.038
	Sig. (1-tailed)		.075	.434	.375	.226	.254
	N	300	300	300	300	300	300
Fixed Return Generated Scheme	Pearson Correlation	-.083	1	.134	.055	.279	.336
	Sig. (1-tailed)	.075		.010	.170	.000	.000
	N	300	300	300	300	300	300
Higher Return Generating Scheme	Pearson Correlation	-.010	.134	1	.106	.078	-.005
	Sig. (1-tailed)	.434	.010		.033	.089	.463
	N	300	300	300	300	300	300
Return Generated are Tax Exempted	Pearson Correlation	.018	.055	.106	1	.289	-.046
	Sig. (1-tailed)	.375	.170	.033		.000	.215
	N	300	300	300	300	300	300
Return Premium in case of Policy Lapsed	Pearson Correlation	-.043	.279	.078	.289	1	.191
	Sig. (1-tailed)	.226	.000	.089	.000		.000
	N	300	300	300	300	300	300
Surrender Value equivalent to Accumulated Premium	Pearson Correlation	-.038	.336	-.005	-.046	.191	1
	Sig. (1-tailed)	.254	.000	.463	.215	.000	
	N	300	300	300	300	300	300

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.091[a]	.008	-.009	1.236

a. Predictors: (Constant), Surrender Value equivalent to Accumulated Premium, Higher Return Generating Scheme, Return Generated are Tax Exempted, Return Premium in case of Policy Lapsed, Fixed Return Generated Scheme

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.786	5	.757	.496	.779[b]
	Residual	449.200	294	1.528		
	Total	452.987	299			

a. Dependent Variable: Perception

c. Predictors: (Constant), Surrender Value equivalent to Accumulated Premium, Higher Return Generating Scheme, Return Generated are Tax Exempted, Return Premium in case of Policy Lapsed, Fixed Return Generated Scheme

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.124	.421		7.420	.000
	Fixed Return Generated Scheme	-.080	.069	-.075	-1.166	.245
	Higher Return Generating Scheme	-.001	.066	-.001	-.012	.990
	Return Generated are Tax Exempted	.038	.076	.031	.509	.611
	Return Premium in case of Policy Lapsed	-.037	.077	-.030	-.478	.633
	Surrender Value equivalent to Accumulated Premium	-.007	.073	-.006	-.098	.922

a. Dependent Variable: Perception

Appendix 4

Combining Both RM and FR

Correlation

Correlations

		Perception	Risk_Management	Fixed_Return
Perception	Pearson Correlation	1	.085	-.058
	Sig. (1-tailed)		.071	.159
	N	300	300	300
Risk_Management	Pearson Correlation	.085	1	.200
	Sig. (1-tailed)	.071		.000
	N	300	300	300
Fixed_Return	Pearson Correlation	-.058	.200	1
	Sig. (1-tailed)	.159	.000	
	N	300	300	300

Regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.114[a]	.013	.006	1.227	.013	1.970	2	297	.141

a. Predictors: (Constant), Fixed_Return, Risk_Management

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.932	2	2.966	1.970	.141[b]
	Residual	447.055	297	1.505		
	Total	452.987	299			

a. Dependent Variable: Perception
b. Predictors: (Constant), Fixed_Return, Risk_Management

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	2.747	.496		5.535	.000	1.770	3.724		
Risk_Management	.203	.119	.101	1.712	.088	-.030	.437	.960	1.042
Fixed Return	-.161	.122	-.078	-1.327	.185	-.401	.078	.960	1.042

a. Dependent Variable: Perception_towards_Life_Policy_Cover

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Effect of Stress on Employees Job Performance: A Study on Banking Sector of Bangladesh

Mohammad Masudul Haque[1]

Abstract

Job stress is a common problem across occupations and it impacts job performance. Contemporary studies highlight the negative effect of stress on job performance; mild stress is known to enhance an employee's performance. This study examines the relationship between job stress and job performance on bank employees of Bangladesh. The data obtained through structured questionnaire from 256 employees of commercial banks. The PLS-SEM technique was employed for analyzing data. The study found that job related factors, organization related factors and individual factors are statistically significant and negatively correlated with employee job performances. Therefore, the results of the study confirms that job stress significantly reduces the performance of bank employees in Bangladesh. The results suggest that organization should facilitate supportive culture within working atmosphere of the organization to reduce stress level of employees.

Keywords: Job stress, Job performance, Banks, Employees, Bangladesh.

JEL Classification: M12

1. Introduction

Purpose of this research is to analyze the impact of job stress on employee performance. Numerous studies and research has been done on this subject in the last few years'. Job stress has become one of the most popular 'occupational diseases' of the century to mankind and it has affected individuals' physically and psychologically, causing such impactful pressure on employees' performance (Leka et al. 2004), role ambiguity, organizational change, job demands, bullying and violence are some of the common stress factors happening in the workplace today.

[1]Senior Vice President, One Bank Training Institute

Job stress and employee performance should be recognized, as a collective issue with massive implications of the overall wellbeing of an employee, the organization, society and the economy of the country as whole(ILO, 2016).

Stress is a Common element in any kind of job and persons have to face it in almost every walk of life. Stress is presumed to be a complex and dynamic concept. Undesirable level of stress affects overall performance of the organization. Invariably, organization or manager should properly manage the level of stress, in order to get the work done effectively and efficiently. To achieve this organizational objective all the factors which influence stress should be properly identified and evaluated.

Stress is a state of mental or emotional strain or tension resulting from adverse or demanding circumstances (Austin, 2014). Stress has become major problem for employer particularly in developing nations where the employer does not realize the impact of stress on employee performance. It is important to recognize and address properly job stress because it badly affects the employee's mental and physiological health. As there are so many resources for employees to perform excellent in their jobs but there is also some factors that hinders in their way. These factors lead to negative employee performance. Stress at work is seen as one of the major psychosocial risks of work. Work-related stress is one of the problems confronting employees. It is of great concern to employees, employers and psychologists, because of its high growing rate in ill- health, as a result of long working hours of some employees (Joseph, 2007).

The Health Safety Executive (HSE) UK defines stress is an undesirable response people have to tremendous pressures or other types of demands placed upon them. It arises when they worry they cannot deal with. Some stress can be good, and some can be bad. HSE distinguishes between stress and pressure. Pressure is seen as positive and something that actually helps improve our performance. We all need a certain amount of pressure to perform well. However, the problems arise when the sources of pressure become too frequent without time to recover, or when just one source of pressure is too great for us to cope with. Bankers are also under a great deal of stress and one of the affected outcomes of stress is job performance.

The banking sector of Bangladesh comprises four categories of scheduled banks- State-Owned Commercial Banks (SOCBs), State-owned Development Financial Institutions

(DFIs), Private Commercial Banks (PCBs) and Foreign Commercial Banks (FCBs). There are **61 scheduled banks** in Bangladesh who operate under full control and supervision of Bangladesh Bank which is empowered to do so through Bangladesh Bank Order, 1972 and Bank Company Act, 1991. Thus, banking sector of Bangladesh is very competitive. Banking job is now one of the challenging and attractive professions in Bangladesh. Large number of bank officials serves customers at competitive pressure. To face intense competition to retain customers or to serve them efficiently bankers of Bangladesh have to work hard beyond their official working hour. Some of the bank officials, who are working in a busy branch, need to work six days a week. This type of excessive workload leads to higher job stress.

Therefore, the conceptual framework of the study which is formulated based on the objective of the study is shown in figure 1. Here job related stress include work over load, time pressures, role conflict, role ambiguity and responsibility. Organization related stress include relationship at work, restriction on behavior, organization design, difficulties in delegation, Organizational climate and individual related stress include Income level, family members of financial deepeners, family members characteristics etc.

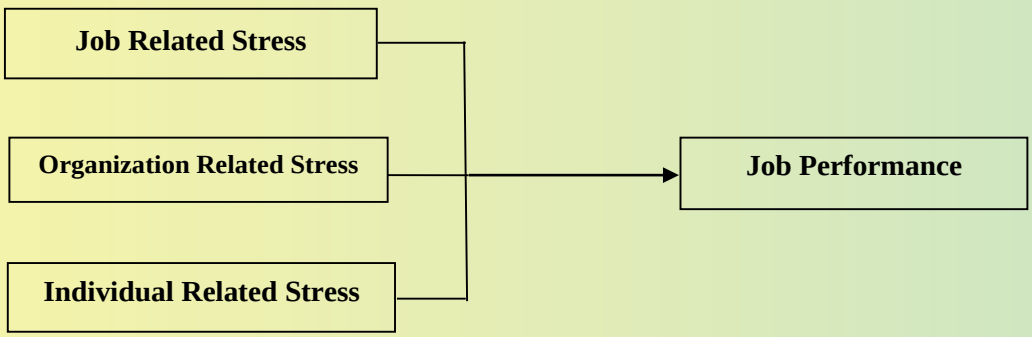

Figure1: Conceptual Framework of the Study

2. Objective of the Study

The main objective of this study is to examine the impact of stress on the performance of bank employees in Bangladesh. However, the specific objectives of the study are as follows:

I. To identify the impact of bank employees job related stress on their job performance.
II. To identify the impact of bank employees organizational related stress on their job performance.
III. To identify the impact of bank employees individual related stress on their job performance.

3. Literature Review

The word or term stress was taken from one of the renowned stress researcher, Hans Selye, (Institutuniversitaireen santé mentale de Montréal 2012). Emotional disruption, physically injurious that happens when the job does not require or connect with the worker's skills, resources and needs, is defined as 'work stress' (Mark, 2017), hence it is identified as a challenge mentally and physically of a person, and even organization (ILO 1986).

Imrab et al. (2013) found that stress is responsible for decreasing the performance of bank employees. Ahmed & Ramzan (2013) too found a negative correlation between stress and job performance i.e as the stress increases the job performance goes down and vice-a-versa. Usman Ali et al. (2014) found that workload, role conflict, and inadequate monitory reward are the prime reasons of causing stress in employees that leads to reduced employee efficiency.

Jamshed et al., (2011) suggested "The workplace is potentially an important source of stress for bankers because of the amount of time they spent in their respective banks." And that stress often decreases their performance. "Therefore occupation of human could be a major source of stress. When employees face stress due to various conditions of their occupation and fail to cope with stress, it results into burnout." Work stress is defined as the harmful physical and emotional responses that occur when job requirements do not match the worker's capabilities, resources, and needs (National Institute of Occupational Safety and Health 1999).

Stressed workers are also more likely to be unhealthy, poorly motivated, less productive and less safe at work. And their organizations are less likely to succeed in a competitive market.

According to Viswesvaran and Ones (2000), job performances are work behaviors relevant to organizational goals, within the individual's control, and measurable, observable, scorable, etc. Besides, the total output that employees recognized contribute to the organization is another definition of job performance.

Work overload significantly affects job stress (Wilkes *et.al.* 1998). Workload stress as feeling of constant pressure and not willing to come to work accompanied by the general physiological and behavioral stress foretoken. Al-Aameri AS. (2003) has mentioned in his studies that work overload is one of six factors affect job stress. A large number of workers were dissatisfied when they were required to work overtimes and deal with big workloads while meeting production targets and deadlines (Townley, 2000).

Role ambiguity is another factor that has influence on job stress. When employee lacks information about the requirements of their role, how to meet those role requirements, and the evaluating process to ensure the role performed successfully, and role ambiguity will happen (Cords & Dougherty (1993).

Good performance of employees leads to good organizational performance which is an indicator of their success (Armstrong & Baron, 1998). Ultimate success or failure of an organization is determined majorly by the performance of their employees (Ahmed and Ramzan, 2013). Stress has significant impact on company and people performance and it terribly affects health of employees (Mimura and Griffiths, 2003 in Shah et al, 2012). The studies conducted in western countries have shown that the sources of stress that we name as Occupational Stress Inducers (OSI) are negatively related to well-being and job satisfaction of employees. (Robertson, Cooper, & Williams,1990). Shah et al. (2012) in their study on impact of stress on employee performance among teaching faculty, found a negative relationship between organizational structure and employee efficiency while rewards were found to be positively correlated to employee efficiency as expected.

(Cobb et al; 1975) has the opinion that, "The responsibility load creates severe stress among workers and managers." If the individual manager cannot cope with the increased responsibilities it may lead to several physical and psychological disorders among them. (Brook, 1973) reported that qualitative changes in the job create adjust mental problem among employees. The interpersonal relationships within the department and between the departments create qualitative difficulties within the organization to a great extent.

Eleven forces are used as an antecedents of stress by researches (Overload, Role vagueness, Role conflict, Responsibility for people, Participation, Lack of feedback, Keeping up with quick technological change, Being in an innovative role, Career growth, Organizational structure and environment, and Recent episodic events.,) Overload: excessive work or work that is outside one's capability (Franch and Caplan ,1972).

Ivancevich & Donnelly, (1975) studied the link between anxiety stress with satisfaction and performance of employees, that lower anxiety stress improves performance of employee's which he studied in different managerial level of an organization.

Stress exists in every organization either big or small work places and organizations have become so much complex due to which it exists, work place stress has significant effects over the employees job performance, and the organizations in Uk are trying to cope with this scenario, (Anderson, 2003).

In every organization and at every level of management and workers an elevated average level of stress is to be found which mostly has an effect on employee's job satisfaction. Rose, (2003) According to Rose, (2003) employees have tendency towards high level of stress regarding time, working for longer hours which reduces employees urge for performing better. Management support helps in reducing or increases stress in employees, (Stamper & Johlke, 2003) apparent organizational assistance, management support work as a cushion which acts positively in decreasing work related stress in employees.

Beehr & Jex (2000) found the relationship between occupational stressors and the performance of employees of an organization as well as it can affect the employees psychologically. Jamal, (1984) studied an association between job stress and job performance of managers and blue-collar employees. Stress on job can be stated as the outcome of an individual due to the working environment from which he feels unsecured. Different relationships are projected between job stress and performance: U-shaped and curvilinear, positive linear, negative linear and no relationship between the stress and performance. A random sample of 305 blue-collar and 325 managerial workers in Canadian firm were surveyed through structured questionnaire. Variables used for this study were job stress, job performance, and organizational commitment. A negative linear relationship between job stress and job performance was found. Very limited evidence is

seen for curvilinear or no association.

Employees with higher levels of affective commitment and higher levels of job experience channeled felt stress more effectively into sales performance. Felt stress had neutral to negative effects on performance for employees with lower levels of commitment and job experience (Larry W. Hunter, 2007). There is an adverse relationship with stress and health of employee's wellbeing in commercial banks in Bangladesh. Long working hour and workload have perceived as top most stressor of both public and private commercial banks in Bangladesh (Hasebur, 2013).

Jamal (1984) conducted a study to examine the relationship between job related stress and employees' performance and withdrawal behavior among nurses in two hospitals in a metropolitan and he finds a negative linear relationship between stress and performance than for positive linear or curvilinear relationship.

Organizational related stress is of growing concern because it has significant economic implications for the organization. Even if some stress is a normal part of life, excessive stress can influence one's productivity, health and emotions, (Mirela Bucuren, 2011).

Based on the literature review and the objectives of the study, the following hypotheses are formulated:

H_1: Job related stress has a negative relationship with employee's job performance
H_2: Organizational related stress has a negative relationship with employee's job performance
H_3: Individual stress has a negative relationship with employee's job performance

4. Methodology of the Study

Based on the researches done by Karunanithy (2013) and (Ferris et al., 1998), the independent variables in this study are further subdivided in dimensions such as job related, organization related, individual related stress and the dependent variable is the job performance of commercial banks employees in Bangladesh.

The study is based on primary data. The main data collection technique used in this study was questionnaire to find out the impact of stress on bank employees performance. The

questionnaire comprises 30 questions to measure four variables of job stress such as, job related factors, organizational related factors, individual factors and performance factors. The study used 30 items, 8 items for job related factors, 8 for organizational related factors, 8 items for individual factors and 6 items for job performance (see appendix IV).

A 5- point Likert scale has been used to identify the opinion of the bank employees on different job related issues. In this scale, 5 refers to never and 1 refers to always. As there is no data about total number of bank employees and lack of complete data of bank employees in Bangladesh, the study used purposive sampling. Bank employees from different parts of Bangladesh such as Dhaka, Chittagong, Khulna, Rajshahi, and Sylhet have been covered. A total number of 256 bank officials from 26 commercial banks from Officer to Senior Vice President have been interviewed, as these levels of bank officials deal with operational activities of banks (Covering 3 state owned, 15 local private commercial banks, 5 Islamic, 3 foreign banks). Banks had been selected based on purposive sampling technique. A total of 500 questionnaires have been distributed and the researcher received 272 questionnaires from the respondents (respond rate 54%). Out of 272 questionnaires, a total of 256 questionnaires have been used for analysis and 16 questionnaires have been rejected due to incomplete answers and for missing data. The data obtained through questionnaire was analyzed by **PLS-SEM version 2.0.**

Table 1 shows the demographic profile of the respondents. Out of 256 respondents 225 are male and 31 are female. In this study 141 respondents age is within 25-35 years, 96 respondents age is within 36-45 and rest of the respondent's age is above 45 years and 196 respondents live in urban area, 34 respondents live in semi urban area and 26 respondents live in rural area.

Table 1: Demographic Profile of the Respondents

Demographics		Frequency (N=256)	Percentage
Gender	Male	225	87.80%
	Female	31	12.20%
Education	Graduate	22	8.60%
	Masters	215	83.99%
	Masters with Certification	19	7.41%
Age	25-35	141	55.10%
	36-45	96	37.50%
	46 and Above	19	7.40%
Location	Urban	196	76.57%
	Semi Urban	34	13.28%
	Rural	26	10.15%

Source: Questionnaire Survey

PLS-SEM version 2.0 has been used in the study to analyze data. The study used a cross sectional survey method that may create the problem of common method bias. The study examined Harman's single factor test to recognize the potential problem. For achieving such goal, an un-rotated factor analysis was conducted for all measurement items that extracted 7 factors with eigenvalues equal to one. The total 7 factors contribute 62.12 percent of the total variance. The first factor accounted for 33.23 percent of the variance. Therefore, it is concluded that the common method bias is not the major concern for this research. Appendix I showed the result of common method variance.

Table 2 shows the descriptive statistics of the study. There are four types of factors analyzed in the study such as job related factors, organization related factors, individual related factors and performance factors and N denotes sample size which is 256. Minimum value of JRF factors is 1 and maximum is 4.25 with a mean value 1.9067 and standard deviation .61350 which indicates a relatively high stress of bank employees with job related factors. Accordingly, organization related and individual factors stresses of the bank employees are also high because mean values of these two variables are 2.1035

and 2.4497 respectively. For performance factor mean value is 3.8698 which also indicates high job stress of the bank employees.

Table 2: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
JRF	256	1.00	4.25	1.9067	.61350
ORF	256	1.00	4.13	2.1035	.69268
IF	256	1.00	4.38	2.4497	.77331
PF	256	1.67	5.00	3.8698	.68835

JRF = Job Related Factors, ORF = Organizational Related Factors, IF = Individual Factors and PF = Performance Factors

5. Results

The study evaluated measurement model through convergent and discriminant validity. Besides, the study performed the item correlations and found that all the measurement items are highly correlated within the variable. Appendix-III showed all the items correlations with each other within the same variable. Convergent validity is evaluated by using factor loadings, average variance extracted (AVE) and composite reliability (CR). For items loading, the study considered minimum loading value of 0.6 as recommended by Chin (1998). All the loadings were found more than 0.6. The cut-off value for AVE should at least 0.5 and higher that indicates a acceptable convergent validity (Hair et al, 2014). The convergent validity in terms of AVE shows the acceptable result as all the constructs showed more than 0.5 of minimum threshold. The study found CR value higher than the recommended value of 0.7 (Hair et al., 2014) for all the constructs. Finally, it can be said that the measurement model fulfilled all the requirements of convergent validity that is shown in Table 3 and Figure 2.

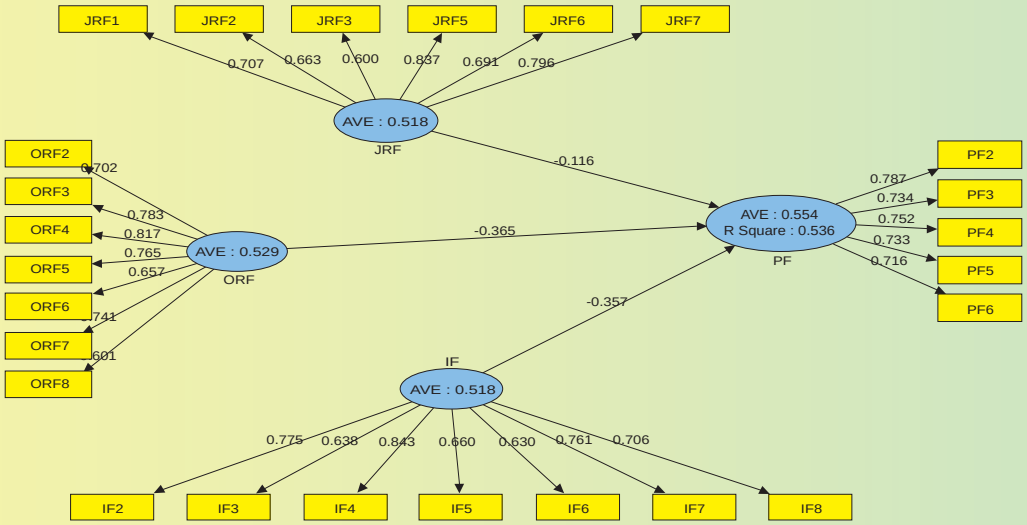

Figure 2: Measurement Model

In order to assess the discriminant validity, Fornell-Larcker criterion and cross loadings have been put forwarded. According to Fornell and Larcker criterion, the correlations between constructs should be compared with the square root of the AVE for that constructs and all the diagonal value of the constructs must be larger than the corresponding off-diagonal constructs. The results of the discriminant validity (exhibited in Table 3) showed that all the diagonal values of the constructs were greater than the corresponding off-diagonal constructs. Therefore, the results offer the adequate discriminant validity of the measurement model.

Table 3: Convergent Validity

First order constructs	Item Type	Items	Loadings	AVE[a]	CR[b]
JRF	Reflective	JRF1	0.707	0.5184	0.8645
		JRF2	0.6629		
		JRF3	0.6		
		JRF5	0.8371		
		JRF6	0.6905		
		JRF7	0.7959		

First order constructs	Item Type	Items	Loadings	AVE[a]	CR[b]
ORF	Reflective	ORF2	0.7025	0.5291	0.8863
		ORF3	0.7831		
		ORF4	0.8174		
		ORF5	0.7651		
		ORF6	0.6573		
		ORF7	0.7414		
		ORF8	0.6012		
IF	Reflective	IF2	0.7749	0.5179	0.8815
		IF3	0.6365		
		IF4	0.8427		
		IF5	0.6598		
		IF6	0.6303		
		IF7	0.7607		
		IF8	0.7058		
PF	Reflective	PF2	0.7865	0.5544	0.8614
		PF3	0.7337		
		PF4	0.7519		
		PF5	0.7329		
		PF6	0.7157		

[a]AVE = (summation of squared factor loadings)/(summation of squared factor loadings) (summation of error variances)
[b]Composite reliability = (square of the summation of the factor loadings)/[(square of the summation of the factor loadings) + (square of the summation of the error variances)]

The study also examined cross loading for assessing discriminant validity. According to the criteria, the loading of each indicator should be greater than others cross loading to ascertain discriminant validity. The cross loadings were assessed by running PLS-algorithm analysis. The result of cross loadings is shown in Appendix-II. The results showed the satisfactory results and no items needed to be deleted for cross loadings.

Structural Model Evaluation

The value of R^2, (r-squared tells how well the data fit the regression model) beta and the level of significance (t-values) of the path coefficients are the main output for assessing

structural model. The study considered 1000 re-sampling for bootstrapping procedure in order to examine the statistical significance of the path coefficient. In addition to that, the study also showed the predictive relevance (Q^2) and the effect size (f^2).

Table 4: Discriminant Validity of Measurement Model

	JRF	ORF	IF	PF
JRF	**0.720**			
ORF	0.582	**0.727**		
IF	0.491	0.661	**0.719**	
PF	-0.475	-0.651	-0.661	**0.745**

Diagonals (bolded) represent the square root of the average variance extracted while the off-diagonals are correlations among constructs. Diagonal elements should be larger than off-diagonal elements in order to establish discriminant validity.

The R^2 of the job performance was found 0.536 that indicates that 53.6 percent of the variance in job performance is explained by the three independent variables (JRF, ORF AND IF). The study found that JRF (β= -0.116, p<0.01), ORF (β= -0.364, p<0.01) and IF (β= -0.357, p<0.01) have significant negative relationship with job performance. Therefore, hypotheses H1, H2 and H3 were supported that summarizes in Table 4.

Table 5: Structural model

Hypothesis	Direction	Std. Bta	Std. Err.	t-value	Decision	R^2	f^2	Q^2
H_1	JRF -> PF	-0.116	0.0267	4.357**	Supported		0.0172	
H_2	ORF -> PF	-0.364	0.0302	12.083**	Supported		0.1379	
H_3	IF -> PF	-0.357	0.0261	13.649**	Supported	0.536	0.1401	.329

**p<0.01

The substantive significance assessed through calculating the effect size (f^2). Cohen (1988) suggested that 0.02, 0.15 and 0.35 represent small, medium and large effect sizes respectively. According to this guideline, both ORF and IF showed (Table 5) small effect and JRF showed very insignificant effect.

The study also determined the predictive relevance (Q^2) for additional assessment of model fit. For the Blindfolding setting, the study considered omission distance (OD) of 7. The value of Q^2 larger than zero (0) designates that the model has predictive relevance for the specific endogenous construct. Therefore, the result (Table 5) of Q^2 0.329 indicates that the model has significant predictive relevance.

6. Policy Implication

The findings of the study reveal that stress reduces the performance of the bank employees. Therefore, if the bank employee can work without or less stress, they will be able to perform better, which will ensure benefit for the organization as well. However, management of commercial banks should try to reduce the job stress level of the employees to get higher output from their employees. Making this work requires right training, imparting information to the bank employees to make smart decisions. Accordingly, clearly communicating supervisor's expectations from the employees, it helps them to do a better job. It is better to make the employees feel part of something great. When they feel in this way then they feel comfortable with their work place and which ultimately reduces job stress.

7. Discussion and Conclusion

The study reveals that employees of commercial banks of Bangladesh do stressful job. From the study it was observed that overall stress which is measured through job related stress, organizational related stress and individual stress has a negative and significant impact on job performance of the bank employees of Bangladesh. As per hypothesis, job related stress had a negative relation with job performance which indicates that when stress occurs related to the job, it affects the performance of bank employees negatively. Therefore, it is clear that lower job stress increases the performance of employees. Similarly, organization related stress negatively influence the job performance of employees which mean that when the employee does not receive better support from their management and co-workers and lack proper authority to perform, they fail to achieve

better performance. In addition to that, individual factors also negatively affect the job performance of an employee. When an individual do not compensated as per their work load, cannot balance job and family life and do not get promotion on time, they perform poorly. Although the results of the study confirmed the findings of previous studies, still the study suffers from some limitations such as small sample size, and narrow scope. However, the study suggests in-depth study on this issue in future taking large sample size with wider scope.

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Appendices

Appendix 1: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.970	33.232	33.232	9.970	33.232	33.232	4.051	13.502	13.502
2	2.352	7.841	41.073	2.352	7.841	41.073	3.503	11.678	25.181
3	1.540	5.134	46.207	1.540	5.134	46.207	2.911	9.703	34.884
4	1.372	4.572	50.779	1.372	4.572	50.779	2.702	9.007	43.891
5	1.193	3.977	54.756	1.193	3.977	54.756	2.115	7.052	50.942
6	1.134	3.779	58.535	1.134	3.779	58.535	1.993	6.644	57.586
7	1.077	3.590	62.125	1.077	3.590	62.125	1.361	4.538	62.125
8	.959	3.198	65.322						
9	.902	3.005	68.328						
10	.870	2.901	71.229						
11	.805	2.683	73.912						
12	.725	2.417	76.329						
13	.712	2.372	78.701						
14	.653	2.177	80.878						
15	.632	2.108	82.986						
16	.580	1.934	84.920						
17	.549	1.828	86.748						
18	.532	1.773	88.522						
19	.467	1.557	90.079						
20	.419	1.397	91.475						
21	.407	1.356	92.832						
22	.368	1.225	94.057						
23	.336	1.121	95.178						
24	.298	.994	96.172						
25	.274	.912	97.084						
26	.242	.807	97.890						
27	.219	.729	98.620						
28	.210	.701	99.321						
29	.135	.451	99.772						
30	.069	.228	100.000						

Extraction Method: Principal Component Analysis.

Appendix II: Cross Loading

IF2	0.7749	0.2715	0.4226	-0.4238
IF3	**0.6365**	0.51	0.4334	-0.4768
IF4	**0.8427**	0.3855	0.5512	-0.5458
IF5	**0.6598**	0.3387	0.418	-0.4091
IF6	**0.6303**	0.2489	0.4784	-0.4108
IF7	**0.7607**	0.4414	0.4745	-0.5422
IF8	**0.7058**	0.3168	0.5192	-0.4566
JRF1	0.393	**0.707**	0.4352	-0.4004
JRF2	0.3879	**0.6629**	0.4147	-0.4181
JRF3	0.254	**0.6000**	0.2742	-0.2597
JRF5	0.368	**0.8371**	0.5003	-0.3483
JRF6	0.3982	**0.6905**	0.4097	-0.4064
JRF7	0.3266	**0.7959**	0.4375	-0.2967
ORF2	0.404	0.3816	**0.7025**	-0.3718
ORF3	0.4872	0.3828	**0.7831**	-0.511
ORF4	0.5403	0.5273	**0.8174**	-0.5426
ORF5	0.5458	0.524	**0.7651**	-0.5825
ORF6	0.3905	0.2075	**0.6573**	-0.3916
ORF7	0.5287	0.4637	**0.7414**	-0.5519
ORF8	0.4023	0.4262	**0.6012**	-0.3675
PF2	-0.5164	-0.3139	-0.5247	**0.7865**
PF3	-0.4243	-0.3447	-0.457	**0.7337**
PF4	-0.5361	-0.423	-0.6191	**0.7519**
PF5	-0.4386	-0.2963	-0.3782	**0.7329**
PF6	-0.5018	-0.4964	-0.4604	**0.7157**

Appendix III: Item Correlation (JRF)

		JRF1	JRF2	JRF3	JRF4	JRF5	JRF6	JRF7	JRF8
JRF1	Pearson Correlation	1							
	Sig. (2-tailed)								
JRF2	Pearson Correlation	.274**	1						
	Sig. (2-tailed)	.000							
JRF3	Pearson Correlation	.307**	.440**	1					
	Sig. (2-tailed)	.000	.000						
JRF4	Pearson Correlation	.135*	.129*	.090	1				
	Sig. (2-tailed)	.031	.039	.151					
JRF5	Pearson Correlation	.552**	.340**	.404**	.153*	1			
	Sig. (2-tailed)	.000	.000	.000	.014				
JRF6	Pearson Correlation	.352**	.386**	.239**	.081	.459**	1		
	Sig. (2-tailed)	.000	.000	.000	.198	.000			
JRF7	Pearson Correlation	.500**	.315**	.372**	.151*	.921**	.411**	1	
	Sig. (2-tailed)	.000	.000	.000	.016	.000	.000		
JRF8	Pearson Correlation	.219**	.328**	.235**	.106	.356**	.308**	.299**	1
	Sig. (2-tailed)	.000	.000	.000	.090	.000	.000	.000	
**. Correlation is significant at the 0.01 level (2-tailed).									
*. Correlation is significant at the 0.05 level (2-tailed).									

Item Correlation (ORF)

		ORF1	ORF2	ORF3	ORF4	ORF5	ORF6	ORF7	ORF8
ORF1	Pearson Correlation	1							
	Sig. (2-tailed)								
ORF2	Pearson Correlation	.306**	1						
	Sig. (2-tailed)	.000							
ORF3	Pearson Correlation	.331**	.470**	1					
	Sig. (2-tailed)	.000	.000						
ORF4	Pearson Correlation	.420**	.713**	.571**	1				
	Sig. (2-tailed)	.000	.000	.000					
ORF5	Pearson Correlation	.274**	.418**	.549**	.485**	1			
	Sig. (2-tailed)	.000	.000	.000	.000				
ORF6	Pearson Correlation	.168**	.324**	.466**	.402**	.475**	1		
	Sig. (2-tailed)	.007	.000	.000	.000	.000			
ORF7	Pearson Correlation	.374**	.437**	.477**	.536**	.443**	.442**	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		
ORF8	Pearson Correlation	.272**	.278**	.404**	.429**	.417**	.310**	.347**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

Item Correlation (IF)

		IF1	IF2	IF3	IF4	IF5	IF6	IF7	IF8
IF1	Pearson Correlation	1							
	Sig. (2-tailed)								
IF2	Pearson Correlation	.303**	1						
	Sig. (2-tailed)	.000							
IF3	Pearson Correlation	.381**	.424**	1					
	Sig. (2-tailed)	.000	.000						
IF4	Pearson Correlation	.371**	.823**	.513**	1				
	Sig. (2-tailed)	.000	.000	.000					
IF5	Pearson Correlation	.301**	.356**	.277**	.441**	1			
	Sig. (2-tailed)	.000	.000	.000	.000				
IF6	Pearson Correlation	.315**	.425**	.192**	.459**	.342**	1		
	Sig. (2-tailed)	.000	.000	.002	.000	.000			
IF7	Pearson Correlation	.241**	.456**	.414**	.530**	.496**	.346**	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		
IF8	Pearson Correlation	.203**	.399**	.319**	.414**	.465**	.491**	.492**	1
	Sig. (2-tailed)	.001	.000	.000	.000	.000	.000	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

Item Correlation (PF)

		PF1	PF2	PF3	PF4	PF5	PF6
PF1	Pearson Correlation	1					
	Sig. (2-tailed)						
PF2	Pearson Correlation	.379**	1				
	Sig. (2-tailed)	.000					
PF3	Pearson Correlation	.317**	.568**	1			
	Sig. (2-tailed)	.000	.000				
PF4	Pearson Correlation	.283**	.550**	.380**	1		
	Sig. (2-tailed)	.000	.000	.000			
PF5	Pearson Correlation	.305**	.411**	.450**	.397**	1	
	Sig. (2-tailed)	.000	.000	.000	.000		
PF6	Pearson Correlation	.243**	.365**	.395**	.356**	.573**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix IV: Items for Measuring Variables

Job Related Factors	Expectation from job
	Decide when to take break
	Job deadlines
	Work load
	Job duties and responsibilities
	Able to finish job within working hour
	Rely on boss
	Need to satisfy boss
Organizational Related Factors	Support from colleagues
	Job freedom
	Supportive feedback from organization
	Respect from colleagues
	Authority to perform job
	Consulted about change
	Competence of the boss
	Follow rules and regulation
Individual Related Factors	Income from job
	Support from the family members
	Balance job and life
	Career development
	Working locations
	Promotion on time
	Job security
	Congenial working environment
Performance Related Factors	Achieve profit target
	Performance appraisal
	Quality of work
	Feedback from boss
	Good relationship with co-workers and customers
	Confidence at work

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Telephone: 48040816, 01716480146

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

Introduction to Bangladesh Bank Training Academy (BBTA)

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

BBTA's Mandate

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

BBTA's Strategic Objective's

Bangladesh Bank has adopted its 5-year Strategic Plan 2020-2024 and bestowed responsibilities upon BBTA (Strategic Goal # 7) to adopt all-out efforts to enhance professional excellence and grooming of the officers of Bangladesh Bank. To fulfill the target of the plan document, BBTA has been. employing its full capacity to provide need-based training to the officials both from central bank and commercial banks; continuously striving to diversify the contents of its courses in order to ensure their consistency with evolving training needs; facilitating the practical application aspects of knowledge of economics, banking and finance; and developing training as a scientific discipline.

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

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

Organization

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

Location

The Academy is located in Mirpur2, Dhaka1216, Bangladesh.

Mailing Address

Bangladesh Bank Training Academy
(BBTA) Mirpur-2, Dhaka-1216, Bangladesh
Telephone: +88-02-48040816
Fax: +88-02-803211
Web: www.bb.org.bd

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