# Factors Effecting the Call Money Rates in Bangladesh

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*Abstract: Call money market was developed in Bangladesh under a challenging environment but it could not develop that much as it was expected to be rather it experienced a higher fluctuations. This paper aims to examine the reasons of why the overnight money market rate (call money rate) changes in Bangladesh using several factors. Here to attain a sound outcome a regression analysis has done where the call money rate is used as a dependent variable and the bank lending rate, deposit rate, share market index, bank Rate, and treasury security rate are used as independent variable. The sample has collected for over the ten (2009-2018) years period. The summarized findings of this paper shows that bank rate and treasury security rate has less enough impact over the call money rate but the other the factors such as bank lending rate , deposit rate and share market index have a significant index over the call money market. The outcome of this paper suggests that if the regulatory authority becomes more concerned about these variable then the fluctuations will come to decrease and a stabilize condition of the market could have a significant contribution over the country's economy.*

*Keywords: Call money market, call money rate, bank lending rate, deposit rate, share market index.*

## I. Introduction

Call money market or interbank-bank money transaction is considered as one of the vital source for short-term financing both for bank and nonbank financial institutions. In financial institutions it is known as money at call. Arranging the fund from call money market plays an important role for the bank fund management. At the same time it has an impact in the credit crisis of the economy. Using the call money market banks manage their short-term financial deficit and the interest rate charged for interbank borrowing is known as call rate. The rate is determined by the free movement of the banks without involving the central bank based on the demand and supply of the funds and it is charged on a daily basis which fluctuates continuously. Various reasons are responsible for the fluctuations of the call rate for a period of time. In recent years, several commercial banks faces the liquidity crisis, as a result demand for call money increased which leads to increase the call rate abnormally.

This interbank transaction is very popular now-a-days in Bangladesh. When any commercial bank faces any sort of short term liquidity crisis they borrow from call money market. From the experience it can be seen that both borrowing and lending both increases in the call money market during in the religious festivities. Because in that time most of the people draw their money from the banks and banks fall in the position of liquidity crisis. But overall transactions in call money market remains all of the year. The call money rate is not remaining same every time. It fluctuates in different period of times. This fluctuations is responsible due to fluctuations of some other variables like deposit rate, bank lending rate, bank rate, share market index and treasury security rate. It is seen that due to increase or decrease of some variables call money rate also changes. Identifying the variables and their impact on the call money rate fluctuation is the main theme of this paper.

## II. Objective of the Study

This paper aims to study, measure and analyze the influential factors having impact on call money rate that came in the period 2009-2018. This paper mainly focuses on,
1. The statistical analysis of the influential factors having impact on call money rate that came in the period 2009-2018.
2. It summarizes the statistical results showing how much impact the independent variables have over the dependent variable call money rate.
3. It also gives an overview of "Call Money Market" and its performance under those factors.

## III. Data Source

To come up with a sound outcome several types of data such as bank lending rate, deposit rate, share market index, bank rate and Treasury bill rate has collected which was obtained on 10 years (2009-2018) data of each.

In this regard, the whole data set were collected from Bangladesh Bank website and some other articles published by Bangladesh Bank.

**3.1 Methodology**

To get a sound outcome, secondary sources of data has used. Firstly data has collected and then analyzed with the help of SPSS software and developed the regression model. With the regression model, "Factors influencing Call Money Rate in Bangladesh" has been measured and explained. Different statistical test and techniques are also used in this paper.

**3.2 Hypothesis**

Reliability of this paper has ensured through conducting a hypothesis testing. Hypothesis testing has done to get a sound output. A hypothesis testing has mainly two parts. 1) Null hypothesis 2) Alternate hypothesis. Null hypothesis deals with the negative statement and with alternate hypothesis deals positive statement. This paper has used the following hypothesis testing:

$H_o$: $\beta_1=\beta_2=\beta_3=\beta_4=\beta_5=0$

$H_1$= Not all the $\beta$'s are zero

The above hypothesis was valid only for global test.

Another hypothesis was used. This is as follows:

For "Bank Lending Rate"

$H_o$: $\beta_1=0$

$H_1$: $\beta_1\neq0$

For "Deposit Rate"

$H_o$: $\beta_2=0$

$H_1$: $\beta_2\neq0$

For "Share Market Index"

$H_o$: $\beta_3=0$

$H_1$: $\beta_3\neq0$

For "Bank Rate"

$H_o$: $\beta_4=0$

$H_1$: $\beta_4\neq0$

For "Treasury Bill Rate"

$H_o$: $\beta_5=0$

$H_1$: $\beta_5\neq0$

The above hypothesis is valid only for individual test.

## IV.    An Overview of Call Money Market in Bangladesh

Out of various players in the money market the call money market is one of the very sensitive where both the bank and nonbank financial institutions regularly participate. It was established to meet up the interbank liquidity crisis on a temporary basis. After liberation banks were in the public sector in Bangladesh and at the beginning of 1980 Bangladesh Government provided with more refinance opportunities.  At that time uses of call money market was very rare. But as time goes lack of administrative formality and easier way to obtained funds encourage the institutions to involve in this market. Banks are involving in this market mainly to manage their short term liquidity mismatch and at the same time by lending they can also earn some profit.

As most of the financial Institution's head office is in Dhaka and all the branches in all over the country remit their money to the head office for this the call money market transactions are also Dhaka based.  The head office uses a portion of the fund for their liquidity management and invest the surplus fund to the call money market.

Because of the outdated information systems of Bangladesh Bank most of the market players are unaware about the actual demand and supply of the fund. This imperfections allows some financial institution having surplus fund to take an illegal advantage.

Although Bangladesh Bank has guidelines for lending, borrowing and operating in the call money market but as it is not mandatory for all the banks to participate in the call money market for this the rate depends mostly on the market demand and supply of the fund. The demand and supply of the funds fluctuates throughout the year for various reasons such as, Treasury bill market, seasonal demand for bank loans, monetary policy, discount rate, open market operations, liquidity position etc.

History says that with a sufficient excess reserve of fund allows the interbank rate to come down and the rate increases with the insufficiency with the reserve fund of the banks. In 1997 the highest call money rate was recorded is 21% in November. In 1998 it was 27% in February because of the extreme pressure in the call money market. In that year up to April private commercial banks and foreign banks borrowed at 20% or above.

Following a restrictive monetary policy by the central bank was considered one of the major reasons for that. Another reasons was considered for government borrowing of fund due to preparing a deficit budget in 1997-1998. To meet up the deficit government collected the fund from the market. At the end of the June 1997, the total outstanding T-bills holding by the scheduled bank was 11.48 billion. It increased to 25.11 billion at the end of the January and again it increased to 27.94 billion at the end of June 1998. As it is said that government demand for loanable fund in interest inelastic so government will borrow fund at any rate and that will leads to the crowding out effect. Exactly that was the scenario on that time. Latter in 1998-1999 the rate came down.

Because of following a relaxed monetary policy in 1998-1999 the rate came down substantially. In that year the maximum rate was recorded 17% which allows the participants for an easy access to the market. At the same time Bangladesh Bank also supported those banks to maintaining a liquidity position at a comfortable level. On that time commercial bank's borrowed amount from the Bangladesh Bank was Tk 9.15 billion which as compared to a much lower than the amount of Tk 1.13 billion during 1997-98. Besides that the excess reserve position of the banks increased by Tk 4.96 billion during the year which was Tk 9.78 billion in the previous year. All these things leads the call money market perceived a downward pressure during 1998-99.

## V.     Literature Review

Several researches were conducted regarding the functions of the call money market in recent years where the researchers showed various reasons for the fluctuations.

Alam and Jahan made a study in 1996. The output of the study was borrowing and lending areas are significantly affected by the volume and the number of transactions in the call money market. The study showed that foreign commercial banks (FCBs) got the advantages of interbank transaction over the private commercial banks (PCBs) and nationalized commercial banks (NCBs).

Sarker carried out study on "Fluctuations in interbank Call Money Market" in 1999. He used econometric analysis came with an outcome that the performance of the call money market severely affect the economic activities. He showed that banks having marginal reserve faces severe liquidity crisis in an expansionary economy, which leads to borrow fund from the call money market. At the same time supply of loanable fund is inversely related with the call money rates.

Sarno and Thornton made a study in 2002 which bring out an outcome that federal funds rate and T-bill rates are positively co-related. As a result in increase in federal fund rate increases T –bill rates.

Another study is conducted by Palombini in 2003 based on the Italian interbank market that directs the modification of a financial market. Here the level of interest rate depends on available information and the market for overnight liquidity. The volume of trading is affected by the institutional factors.

In 2005, Bhatt and Virmani discussed about how Indian Money Market is integrated with USA money market. The Inspiration of the paper rises out the capital mobility instigated by globalization. There they showed how the money market instruments are used for maintaining liquidity rather than capital funds.

Another research worked by Jain and Bhanumurthy in 2005 based on the India and US money market where he found that Indian money market is progressively integrated with those in the US money market in short term. The outcome of the research says that rather than uncovered interest parity, it is the covered interest parity that was found to hold.

In 2011 a study conducted by Bech, Klee and Stebunovs based on the link between the federal funds and repo markets. The outcome of the study says that the initial conduction of monetary policy is related money market. He also showed that how it relate when the Federal Reserve removes of liquidity from the market.

Based on the above studies, it can be said that call money rate fluctuates with changing the monetary policy, and sudden demand for cash for payment. In examining the foundations of the fluctuations, this paper has drilled on some causes of changing the call money rates and their impact on call money rates. At the same time, it exposes some new marvels in the call money market that states some influences on the economy of Bangladesh.

## VI.     Variables

In hypothesis testing this paper uses two types of variables. One was dependent variable another is independent variable. Dependent variable means the variable that depends on of another variable. On the other hand independent variable means the variable that doesn't depend on other variables.
Here the dependent variable is call money rate that depends on some other independent variables. Here the independent variables are as follows:
1.    Bank lending rate
2.    Deposit rate
3.    Share market index
4.    Bank Rate
5.    Treasury Security Rate

It is assumed that the call money rate will depend on these five independent variables.

## 6.1 Explanation of these independent variables

**Bank Lending Rate:** It is the rate at which commercial banks lend money to consumers and business. Mainly there are two types of loans offered by commercial banks. These are consumer loan and business loan. The interest rate of consumer loan is higher than business loan. Every bank has their own system to set their bank lending rate, so bank lending rate of different banks is not same. There are no such strict regulations from the central bank to set the bank lending rate.

**Deposit Rate:** It is the rate at which commercial banks collects deposits from the general people. Commercial banks collect deposit from the surplus unit by offering them a significant interest rate. As there is no such regulations from the central bank to set the deposit rate for this commercial banks have flexibility to set the deposit rate by themselves

**Share Market Index:** It is a number that represents the relative price level of the securities in a market on a particular day compared with a base-day. Where measuring the market performance is the main objective. It provides information's about the market's behavior.

**Bank Rate** It is the rate at which a commercial bank borrows fund from the central bank. In the time of liquidity crisis the bank can borrow money from the central bank and the interest that central bank charges is called bank rate. A commercial bank borrows from the central bank only when the bank is in deeply trouble due to liquidity crisis although the bank rate is comparatively lower than the call money rate.

**Treasury Security Rate:** It is the rate of offering government securities to the general people for collecting funds from the market. Generally the validity of treasury security rate is one year or less. This is used as a benchmark for setting the risk free rate.

## VII. Analysis

The paper analyze 10 years data (2009-18) of call money rate, bank lending rate, deposit rate, share market index, bank rate, treasury security rate and we find that whether at 5% significance level these factors does have any impact over call money rate or not.

| Data | Y | X1 | X2 | X3 | X4 | X5 |
|------|------|-------|------|----------|------|------|
| 2009 | 6.82 | 12.62 | 8.85 | 4005.06 | 7.00 | 6.80 |
| 2010 | 8.26 | 13.02 | 9.12 | 4120.56 | 6.00 | 5.30 |
| 2011 | 9.49 | 12.24 | 7.51 | 3746.46 | 6.00 | 8.90 |
| 2012 | 6.88 | 11.16 | 6.38 | 3860.92 | 5.00 | 5.00 |
| 2013 | 4.93 | 10.52 | 5.51 | 4055.17 | 5.00 | 4.90 |
| 2014 | 9.57 | 11.06 | 5.77 | 4266.55 | 5.00 | 7.02 |
| 2015 | 11.92 | 12.28 | 6.51 | 4864.96 | 5.00 | 7.52 |
| 2016 | 7.37 | 12.63 | 7.23 | 40629.64 | 5.00 | 7.63 |
| 2017 | 10.36 | 13.36 | 7.97 | 5036.05 | 5.00 | 7.90 |
| 2018 | 4.39 | 12.75 | 7.34 | 6153.68 | 5.00 | 2.30 |

Where
y= call money rate
X1= bank lending rate
X2= deposit rate
X3= share market index
X4= bank rate
X5= treasury security rate
Year= 2009-2018

**Regression Result**
**Regression**

| Model | Variables Entered | Variables Removed | Method |
|-------|-------------------|-------------------|--------|
| 1 | tbr, dr, smi, br, blr(a) | . | Enter |

a. All requested variables entered.
b. Dependent Variable: cmr

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|--------|----------|-------------------|----------------------------|
| 1 | .967(a) | .935 | .854 | .91048 |

a. Predictors: (Constant), tbr, dr, smi, br, blr

**ANOVA (b)**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 47.873 | 5 | 9.575 | 11.550 | .017(a) |
| | Residual | 3.316 | 4 | .829 | | |
| | Total | 51.189 | 9 | | | |

a. Predictors: (Constant), tbr, dr, smi, br, blr
b. Dependent Variable: cmr

**Coefficients (a)**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | -54.951 | 16.772 | | -3.276 | .031 |
| | blr | 9.404 | 2.424 | 3.690 | 3.879 | .018 |
| | dr | -6.809 | 2.002 | -3.453 | -3.400 | .027 |
| | smi | -.003 | .001 | -1.877 | -4.049 | .015 |
| | br | 1.481 | 1.241 | .434 | 1.194 | .299 |
| | tbr | -.727 | .457 | -.592 | -1.592 | .187 |

a.    Dependent Variable: cmr

**Conducting Hypothesis Testing**
**Hypothesis for the global test:**
$H_o$: $\beta_1=\beta_2=\beta_3=\beta_4=\beta_5=0$
$H_1$= Not all the $\beta$'s are zero
$\alpha$= .05
F test statistic will be used.
**Decision Rule:** Reject $H_o$ if $F_{comp}$>6.26 (This 6.26 value has been found from' distribution table of statistics. Residual df is used as denominator df and regression df is used as numerator df).

**Calculations: ANOVA (b)**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 47.873 | 5 | 9.575 | 11.550 | .017(a) |
| | Residual | 3.316 | 4 | .829 | | |
| | Total | 51.189 | 9 | | | |

a. Predictors: (Constant), tbr, dr, smi, br, blr
b. Dependent Variable: cmr

**Explanation:** Since $F_{comp}$ (11.550)>6.26, so $H_o$ is rejected and $H_1$ is accepted. Not all the $\beta$'s are zero. So it can be said that these five independent variables has enough impact over call money rate.
It is also seen that the significance value is 0.017 which is lower than .05, so we can say that at .05 significance level these five independent variables has enough impact over call money rate.

**Interpretation of $R^2$**
This five independent variables are explaining the dependent variable, call money rate by 93.5%. It means 93.5% of the total variation in the dependent variable (Call Money Rate) is explained by the five independent variables and rest 6.5% is unexplained variation. They are not explained by the five independent variables.

**Regression Equation**
From the regression output we can easily generate a regression equation.

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | -54.951 | 16.772 | | -3.276 | .031 |
| | blr | 9.404 | 2.424 | 3.690 | 3.879 | .018 |
| | dr | -6.809 | 2.002 | -3.453 | -3.400 | .027 |
| | smi | -.003 | .001 | -1.877 | -4.049 | .015 |
| | br | 1.481 | 1.241 | .434 | 1.194 | .299 |
| | tbr | -.727 | .457 | -.592 | -1.592 | .187 |

$Y' = -54.951 + 9.404_{x1} - 6.809_{x2} - .003_{x3} + 1.481_{x4} - .727_{x5}$

Where

$\quad x_{1=}$ Bank Lending Rate
$\quad x_{2=}$ Deposit Rate
$\quad x_{3=}$ Share Market Index
$\quad x_{4=}$ Bank Rate
$\quad x_{5=}$ Treasury security Rate

**Logical Arguments about the Regression Equation**
**Bank Lending Rate:** From the equation it is seen that if bank lending rate increases by 1% then call money rate increase by 9.40%. So there is a positive relationship between the bank lending rate with the call money rate. A commercial bank lend only when the bank has idol money and huge demand of loans loanable funds. So some portion of their money they invest in call money market and earn a rate of return.
**Deposit Rate:** From the equation it is seen that if deposit rate increases by 1% then call money rate decreases by 6.8%. A commercial bank collects deposits when they are in a liquidity crisis. When a bank is in liquidity crisis then there is no question to invest in the call money market. So deposit rate has a negative relationship with call money rate.
**Share Market Index:** From the equation it is seen that if share market index increases by 1point then call money rate decreases by .003%. When stock market is bullish then rather depositing the money in the bank people invests their money in the stock market. So in that case banks are in a liquidity crisis and there is no question to invest in the call money market. So share market index and call money rates are negatively associated.
**Bank Rate:** From the equation it is seen that if bank rate increases by 1% then call money rate increase by 1.481%. When a bank is in deeply liquidity crisis then the bank borrows from the central bank. After getting the money from the central bank they invest it in the call money market and earn a rate of return. So bank rate has a positive relationship with call money market.
**Treasury Security Rate:** From the equation it is seen that if Treasury security rate increases by 1% then call money rate decreases by .727%. When govt. offers attractive rate over treasury securities banks invest their money in treasury security, and not interested to invest in call money market. As a result call money rate declines. So there is a negative relationship between the call money rate and treasury security rate.

**6.2 Individual Test**
As global Test is not the only way to find out that which independent variable has significant impact over the dependent variable so to find which independent variable has significant impact over dependent variable an individual test has to be conduct.

**Conducting Individual Test**
For "Bank Lending Rate"
$H_o: \beta_1 = 0$
$H_1: \beta_1 \neq 0$
For "Deposit Rate"
$H_o: \beta_2 = 0$
$H_1: \beta_2 \neq 0$
For "Share Market Index"
$H_o: \beta_3 = 0$
$H_1: \beta_3 \neq 0$
For "Bank Rate"
$H_o: \beta_4 = 0$

$H_1$: $\beta_4 \neq 0$

For "Treasury Security Rate"

$H_o$: $\beta_5 = 0$

$H_1$: $\beta_5 \neq 0$

$\alpha = .05$

t test statistic will be used.

**Decision Rule:** Reject $H_o$ if $t_{comp} > 2.776$ or $< -2.776$

**Coefficients (a)**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | -54.951 | 16.772 | | -3.276 | .031 |
| | blr | 9.404 | 2.424 | 3.690 | 3.879 | .018 |
| | dr | -6.809 | 2.002 | -3.453 | -3.400 | .027 |
| | smi | -.003 | .001 | -1.877 | -4.049 | .015 |
| | br | 1.481 | 1.241 | .434 | 1.194 | .299 |
| | tbr | -.727 | .457 | -.592 | -1.592 | .187 |

a. Dependent Variable: cmr

**Decision for Bank Lending Rate:** Since $t_{comp}$ (3.879) > 2.776, so $H_o$ is rejected and $H_1$ is accepted. It means that bank lending rate has enough impact over the dependent variable (call money rate).

**Decision for Deposit Rate:** Since $t_{comp}$ (-3.400) < -2.776, so $H_o$ is rejected and $H_1$ is accepted. So it means that deposit rate has enough impact over the dependent variable (call money rate).

**Decision for share market index:** Since $t_{comp}$ (-4.049) < -2.776, so $H_o$ is rejected and $H_1$ is accepted. It means that share market index has enough impact over the dependent variable (call money rate).

**Decision for bank rate:** Since $t_{comp}$ (1.194) < 2.776, so $H_o$ is not rejected. It means that the bank rate has not enough impact over the dependent variable (call money rate).

**Decision for treasury security rate:** Since $t_{comp}$ (-1.592) > -2.776, so $H_o$ is not rejected. It means that the treasury security rate has not enough impact over the dependent variable (call money rate).

From the individual test it can be seen that bank rate and Treasury bill rate has not enough impact over the dependent variable. So it can be removed from the regression analysis.

**6.3 Modified Regression Equation:**

$Y^/ = -54.951 + 9.404_{x1} - 6.809_{x2} - .003_{x3}$

Where

$X_{1=}$ Bank Lending Rate

$X_{2=}$ Deposit Rate

$X_{3=}$ Share Market Index

So bank lending rate, deposit rate and share market index have significant impact over the call money rate.

## VIII. Conclusion

Usually commercial banks involve in call money market when they face a short term liquidity crisis. But when the crisis is serious or the required amount is huge then to continue the operations central bank is another option to collect the fund. Central bank is considered as the final resort for any commercial bank to borrow fund. In time of financial crisis central bank comes forward to rescue the bank. Although central bank charges lower interest rate compared to call money market but a frequently borrowing from central bank creates a negative impression for the bank which indicates that the bank is in a position of permanent liquidity crisis. For this reason rather going to central bank directly it is better to go call money market to meet up the short term liquidity crisis.

## IX. Recommendations

In Bangladesh as there is a large number of commercial banks so the call money market is becoming more and more popular day by day. So it can be said easily that this market has good and bright prospect in future. But as there is no proper monitoring by the central bank for this the demand and supply factor determines the call rate which allows some bank to take some additional advantage. To ensure the fairness of the market an improved monitoring policy is required by the central bank. At the same time central bank should take proper initiative to control the independent variables that has impact on call money rate. Ensuring the proper

functioning of the market is important because a developed call money market can plays a dynamic role in the economy of Bangladesh.

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