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Examining the Interaction between the Policy rate and Lending rate in Bangladesh

Md. Abdul Kayum

Monetary Policy Department

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Abstract

Whether the policy rate influences lending rate in Bangladesh has been an inconclusive area. This paper intends to examine the interaction between the repo rate and lending rate. Using monthly data from June 2011 to June 2016, this paper finds that there is a positive relationship between the lending rate and repo rate. However, there is an asymmetry in this relationship. Banks' lending rate affects the repo rate significantly in the positive direction but the repo rate does not affect lending rate in a significant way. This finding challenges the conventional belief that policy rates of the central bank influence the market lending rates in the same direction.

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I.   Introduction

The repo rate and reverse repo rate have been introduced in Bangladesh in 2003. These are modern tools of monetary policy used in various countries. Primarily these rates would be determined on the market basis in Bangladesh. Later on (2008) these are fixed by the monetary authority of Bangladesh i.e. Bangladesh Bank (BB). The central bank changes these rates depending on the stance of monetary policy which would be followed in the near future. By doing this, Bangladesh Bank tries to give a signal to the money market players.

The repo (stands for Repurchase Agreement) is a money market instrument which enables collateralized short term borrowing and lending through operations in debt instruments. In a repo transaction, there are two legs viz. selling of the security and repurchase of the same. A reverse repo is the mirror image of the repo. For reverse repo, securities are mortgaged with the lender with a simultaneous commitment to pay back. Modus operandi of repo transactions between the central bank and the scheduled banks are different from that between a scheduled bank and another i.e. inter-bank repo. Here we will deal with the first one, meaning repo transactions between BB and scheduled banks along with non-bank financial institutions.

The repo rate is the rate at which banks borrow money from the central bank, BB, for overnight (1-7 days for covering holidays) by mortgaging their securities (financial assets) to BB with an agreement to repurchase it at a maturity date. It is as like as borrowing money from a money lender by keeping something to him as collateral and later on buying it back at a pre-determined rate. The rate at which banks/financial institutions borrow funds from BB to meet short term requirements is called the repo rate. If BB wants to make more expensive for the banks to borrow money, it increases the repo rate and vice versa.

The reverse repo rate is exactly the opposite of the repo rate. The rate at which BB borrows money from the banks (or banks lend money to BB) for policy purposes is termed as the reverse repo rate. BB uses this tool when it feels that there is too much liquidity/money floating in the banking system. If the reverse repo rate is increased, BB has to mop up money from the banks at a higher rate than earlier. As a result, banks will prefer to keep their money with BB (which is absolutely risk free) instead of lending it out. No securities are collateralized. The repo rate, therefore, signifies the rate at which liquidity is injected while the reverse repo rate signifies the rate at which BB absorbs liquidity from the money market/banks.

II.   Monetary Policy Framework in Bangladesh

Every central bank pursues a framework which refers to a logical and sequential set of actions that a central bank has to design, where the instruments and goals are at the two ends with the targets (operating and intermediate) being in between. Actually central banks take policy framework as a strategy so that it becomes easier to reach the final target/goal. Basically there are four types of monetary policy framework which have been pursued by various central banks viz. Exchange rate targeting, monetary targeting, interest rate targeting and inflation targeting.

As stated in the preamble of the Bangladesh Bank Order 1972 amended in 2003, the objective of monetary policy of Bangladesh is to stabilize domestic monetary value (i.e. low inflation) and maintain a competitive external par value of the Bangladesh Taka towards fostering growth and development of country's resources in the best national interest. BB conducts its monetary policy within the monetary policy framework which refers to a logical and sequential set of actions that a central bank has to design, where the instruments and goals are at the two ends with the targets (operating and intermediate) being in between.

Intermediate Target

Bangladesh Bank has been following a monetary targeting framework delineating the broader monetary aggregates in line with an indicative growth target of broad money stock (M_2) for the next fiscal year. Broad money (M_2) growth is the intermediate target of the monetary policy of Bangladesh. The M_2 growth is projected on the basis of Quantity Theory of Money (QTM) where projected real GDP growth, CPI inflation and change in income velocity are mainly taken in consideration. The broader component of M_2 viz. net foreign assets and government borrowings from the banking system are calculated on the basis of projected balance of payments position and the fiscal deficits estimates set in the national budget respectively.

Operating Target

BB uses the reserve money (operational target) program to target a growth path for broad money (intermediate target) consistent with the projected rate of GDP growth and inflation. Annual monetary program is continually monitored and adjusted in light of unfolding events. The actual developments are also closely monitored to keep in line with the program. Tracking the monetary program and its components on a regular basis allows BB to monitor the growth rates of currency in circulation and demand deposits as early indicators of inflationary bias. Similarly, growth of domestic credit against the program target and rate of deposit mobilization indicate prevalence of excess demand induced by inflationary expectation. Apart from these slope of yield-curve, exchange rate, asset prices etc. are also monitored by the BB to assess market demand for liquidity and the inflationary expectation in the economy. Such a regular scrutiny allows BB to follow up with corrective measures as appropriate with a timely manner.

III.   Monetary Policy Instruments

In order to keep the monetary growth in line with the desired path monetary policy instruments presently being used by Bangladesh Bank are: a) open market operation through Treasury Bills & Bonds, Repo, reverse Repo; BB bills (7-day, 14-day and 30-day); b) variation in reserve ratios; d) discount /bank rate; and e) moral suasion. Apart from this, Government backed Islamic Investment Bonds (GIIBs) are also traded for shariah compliant Islamic banks. Through open market operation BB targets available liquidity flow in the market, routinely mop-up excess liquidity and inject it as necessary. Auctions of repo and reverse repo generally held on daily basis while that of BB bills are held on weekly basis. But, now auctions of BB bills are also held regularly on daily basis. Variation in reserve ratios (i.e. CRR and SLR), which are primarily used to influence the quantity of credit available in the banking system, are used infrequently.

Repo rate and its impacts

Various monetary policy instruments or tools used in Bangladesh have already been discussed. To get the full benefit/advantages of policy tools, money market needs to be fully competitive and transmission channels must be strengthened. Besides, all monetary tools need to be used in tandem. Reserve Bank of India changes its policy rates and other tools simultaneously. Policy rates work mainly in two ways: a) by changing the cost of fund of banks and b) by changing the stakeholders' perception i.e. through expectation channel. Sometimes, repo rate is lowered but the banks are not fund receiver from central bank as they are awash with excess liquidity. Under this circumstance, lowering repo rate will not directly influence the cost of banks fund. So, interest rate channel does not work here effectively. However, banks are induced to bring down their lending rate following the decrease of repo rate as it

simply gives a signal of easy monetary policy stance for near-term. Moreover, if all other monetary tools are used simultaneously, changing policy rates could bring about better desired result.

Literature Review

The literature on the pass-through of monetary policy to lending rate is vast. However, some of them are reviewed here. The early contribution by Borio and Fritz (1995) found that the degree of competition and the structural characteristics of the banking systems are key ingredients of the transmission of monetary policy to lending rates.

Leonardo Gambacorta, Anamaria Illes and Marco J Lombardi (2014) worked on the transmission of policy rates to lending rates. They found that the policies implemented by central banks of major advanced economies managed to lower lending rates to non-financial firms in the post Great Recession only to a smaller extent than in the past: a strong increase in the mark-up between the lending rate and the policy rate emerged since September 2008. The lesser pass-through seems to be related in part to the higher premium for risk required by banks and by the worsening of their financial conditions as well.

Anamaria Illes, Marco Lombardi, and Paul Mizen (2015) also tried to investigate the causes for diverging lending rates from policy rates after the financial crisis. The found three reasons as to why lending rates do not reflect the behaviour of policy rates in the post crisis period. First, the policy rate is a short-term rate while the lending rates to business and households normally reflect longer term loans. The spread between the lending and policy rates therefore reflects the maturity risk premium alongside other factors that determines the transmission of policy to lending rates. Second, if the maturity risk premium is corrected using an appropriately adjusted swap rate, the adjusted policy rate is not the marginal cost of funds for banks. Third, banks obtain funds from a variety of sources including retail deposits, senior unsecured or covered bond markets and the interbank markets, and these differ in nature from policy rates since they comprise a range of liabilities of differing maturities and risk characteristics.

Kwapil and Scharler (2006) surveyed empirical evidence on the limited pass-through from policy to retail interest rates suggesting that while the pass-through is incomplete in the euro area as well as in the U.S.A., it appears to be higher in the U.S.A. They said that if the pass-through is incomplete, policy rates have to respond by even more to compensate for the smoothing of retail rates.

Xu and Chen (2011) examined the impact of key monetary policy variables on the real estate price growth dynamics in China and found that the monetary policy is effective in transmitting the policy rates to the real estate price growth through bank lending rates, which in turn influence aggregate domestic demand, investment, and eventually output.

Fuertes, Heffernan, and Kalotychou (2010) had a study on the response of banks to the changes in central bank rates. They found that the policy rates impacted the lending and deposit rates in an asymmetric order and the adjustment speed is time-varying. The size of the policy rate change also impacts the adjustment speed.

Leuvensteijn, Sorensen, Bikker, and Van Rixtel (2013) carried out a study on the impact of loan market competition on the interest rates applied by euro area banks to loans and deposits during the 1994-2004 period. They found evidence that stronger competition implies significantly lower spreads between bank and market interest rates for most loan market products.

De Bondt (2005) worked on interest rate pass-through for the Euro area. The finding of the paper suggests that the pass-through of official interest to market interest rates is incomplete for money market interest rates upto three months, but not for market interest rates with longer maturities. Furthermore, the immediate pass-through of changes in market interest rates to bank deposit and lending

rates is found to be at most 50%, whereas the final pass-through is typically found to be close to 100%, in particular for lending rates.

In most previous studies like Payne and Waters (2008), Wang and Lee (2009), Wang and Thi (2010), and Taj et al (2012) it is found that the bank lending rate tends to adjust faster when there is an increase than when there is a decrease in the policy rates. Put differently, bank lending rates exhibits downward rigidity with respect to a decrease in the money market rates.

Becker et al (2012) suggest that the asymmetric money market rate pass-through is determined by a number of factors such as adjustment costs, volatility and uncertainty conditions about the future market.

Another study by Abbassi and Linzert (2011) showed that the ability of the central bank to steer money market rates via standard channels of monetary policy transmission was weakened as the money market rates had been heavily impacted by risk concerns in the financial crisis.

IV.   Methodology

Figure 1 has been plotted on the basis monthly data sampling for a period from June 2011 to June 2016. Due to unavailability of data on monthly lending rate the period has been chosen as sample. The figure is designed to examine the interaction between policy rate (repo rate) and lending rate. If repo rate is raised, the cost of fund of banks will be raised and banks will be induced to raise their lending rates accordingly. However, policy rate is not the only determinant of lending rate. Credit demand, availability of fund from other sources, banks' operating cost and lending risks strongly affect their lending rate.

Figure 1: Repo rate and Lending rate
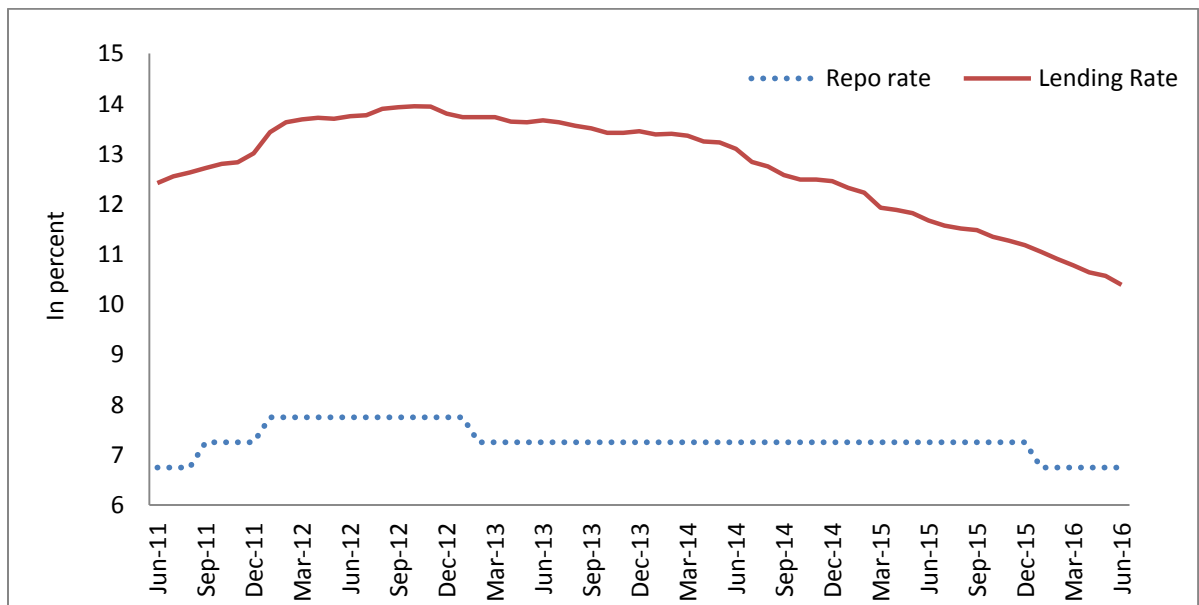
Source: Monetary Policy Department, Bangladesh Bank 2016.

Figure 1 depicts quite normal behavior of the repo rate and lending rate. Although money market was awash with huge excess liquidity, emanating mainly from larger foreign exchange inflows which are bought by BB, increases of repo rate in June 2011, September 2011 and January 2012 induce

banks to raise their lending rate. In February 2013, BB again lowered repo rate by fifty basis points to boost up private sector investment in the face of comfortable inflationary situation and moral suasion was also strengthened. This time, however, lowering repo rate takes time to induce banks to bring down their lending rate as there were huge excess liquidity with the banks and lack of adequate credit demand. This paper thus finds weaker relationship between the repo rate and lending in the later part of the sample.

May be huge foreign exchange inflows; and thereby excess liquidity with the banks impacted this time lag. In addition, downward price rigidity-type mentality also worked in this period. One hundred basis points, instead of fifty basis points, fall of repo rate could have shortened this time lag as the weaker relationship between Repo rate and lending rate. Moreover, other monetary policy tools were not used as there was excess liquidity in the market. However, after FY15 lending rates started falling, credit to private sector goes up; and hence M_2 growth.

From the figure 1 it seems to have a positive relationship between repo rate and lending rate. However, to see whether the series are stationary or not this study carries out a unit root test of both data series. The result of the test is given below in a table.

Table 1: Unite Root Tests

Variables	Level		Decision
	ADF test	PP test	
Lending rate	-3.49*	-3.62*	I(0)
Repo rate	-3.72*	-4.17*	I(0)

Note: The lag length was selected basing on Schwarz"s Bayesian Information Criterion. * represents statistical significance at 5 percent.

Source: Monetary Policy Department, Bangladesh Bank 2016.

As the table shows, both lending and repo rate series have no unit root which means both series are stationary. Then granger causality test is carried out to know the impact of one on another. In order to know whether the data series cause each other pair-wise Granger Causality Tests are carried out.

Table 2: Granger Causality Tests

Repo rate does not Granger Cause Lending rate			
F-Statistic at	Lag 1	20.50 (0.00)	
	Lag 2	4.81 (0.00)	
Lending rate does not Granger Cause Repo rate			
F-Statistic at	Lag 1	5.30 (0.02)	
	Lag 2	6.40 (0.00)	

Note: The p-values of each statistic are in the parentheses

Source: Monetary Policy Department, Bangladesh Bank 2016.

Results of granger causality tests suggest that null hypothesis is rejected in each case. In other words, both variables have granger cause on each other. However, changes in the lending rate strongly cause changes in the repo rate.

As there is granger causality, the study takes Vector Auto Regression (VAR) estimates in consideration. Before estimating VAR the study requires to determine lag length. All lag length criteria like the Akaike information criterion, Schwarz information criterion, and Hannan-Quinn information criterion suggest the lag length of 2 as optimal choice. VAR estimates are as follows:

Table 3: Vector Autoregression Estimates

Sample (adjusted): 2011M03 2016M06
Included observations: 64 after adjustments

	Lending Rate	Repo Rate
Lending Rate(-1)	1.50(0.12)*	0.38(0.15)*
Lending Rate(-2)	-0.46(0.13)*	-0.34(0.15)*
Repo Rate(-1)	-0.16(0.11)	0.59(0.13)*
Repo Rate(-2)	0.03(0.10)	0.18(0.12)
Constant	0.41(0.23)	1.17(0.27)*

Note: Data in parentheses indicate standard errors. The sign of * is labeled when the coefficient is significant at the 5 percent level. Source: Monetary Policy Department, Bangladesh Bank 2016.

The VAR estimates show that lending rate has a positive impact on both repo rate and lending rate itself in a 1 period lag. But after 2 periods lending rate has a negative impact on both repo rate and lending rate itself which appears to be quite contradictory. Similarly, in 1 period lag repo impacts lending rate negatively but repo itself positively. This also seems to be contradictory. As there is inconclusive result reflected in the VAR estimation, impulse response to each other is also checked.

Figure 2: The impulse response function of the repo rate and lending rate
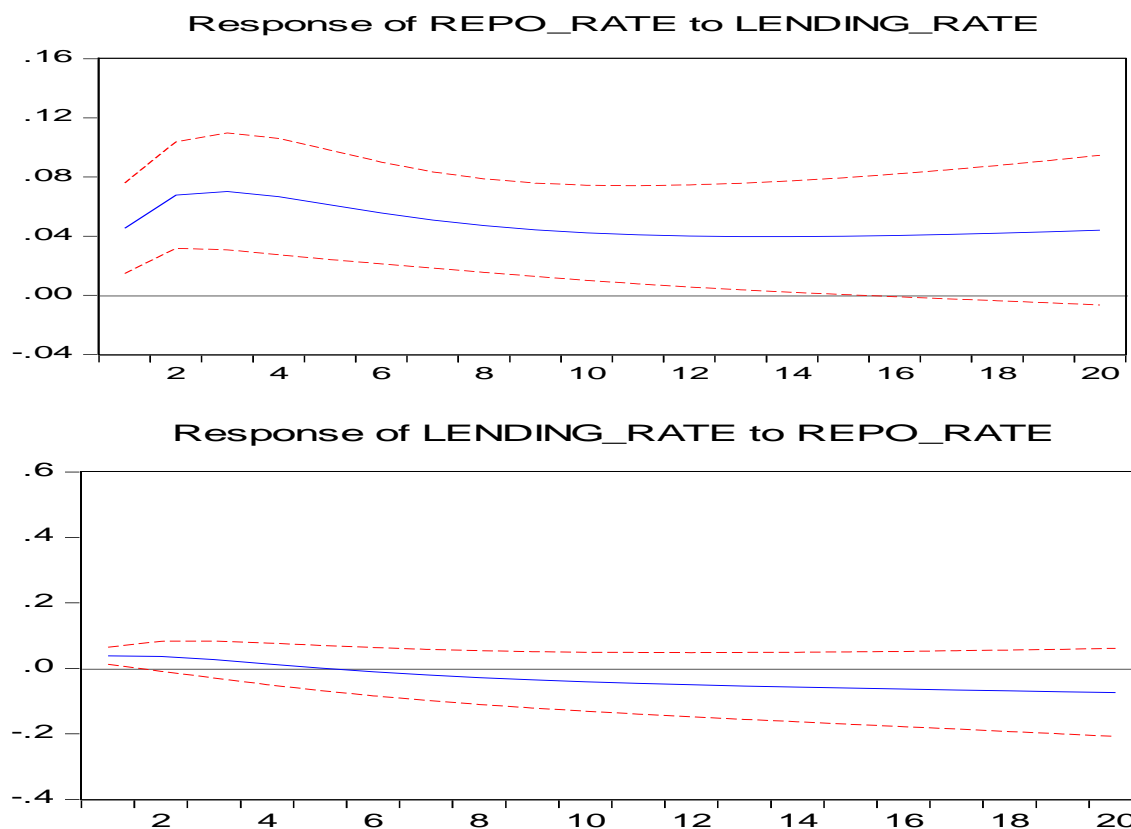
Source: Monetary Policy Department, Bangladesh Bank 2016.

The impulse response function suggests that repo rate responds to lending rates positively. That means if lending rate increases repo rate will be increased and vice versa. However, lending rate does not respond to the changes of the repo rate as seen in the lower part of figure 2. This might be happened due to little contribution of the repo rate in determining lending rate. From February 2013 till to date the repo rate has been lowered only twice (once in February 2013 another is in February 2016) during which banks were awash with excess fund. Credit demand was subdued. The banks hardly borrowed fund from BB. So changing the repo rate does not affect their cost of fund and hence lending rate was unaffected.

V.   Conclusion

Main objective of this note was to examine the interaction between repo rate and lending rate. As discussed above, the repo rate responds to the changes in lending rate though lending rate sometimes does not respond to the changes in repo rate..

The conventional belief states that the policy rates influence banks' lending rate through the interest rate channel. However, the study finds that the lending rates influence the policy rates but the policy rates hardly affect lending rates. This might be happened due to banks were awash with excess liquidity and they did not come to BB for repo transactions for most of the time period of the sample data. Moreover, when the repo rate is increased (contractionary approach), it is done frequently 4 times in a

year, reserve ratios are also increased by fifty basis points in December 2010 and some MOUs (Memorandum of Understandings) are also carried out with state owned commercial banks. As a result of all these efforts, lending rate went up in the early part of the sample as seen in figure 1. The repo rate was decreased once in February 2013 and it was not changed anymore until January 2016. Other monetary tools were not changed and banks hardly took fund from BB through repo transactions. Consequently, the desired impact of the repo rate was not found.

In order to have desired impact of changing the policy rates on lending rates, BB needs to take some factors into consideration:

- Monetary policy stance needs to be more transparent whether it is expansionary, contrationary or in-between the two based on economic fundamentals,
- it needs to be more pro-active, meaning that there should have some forecast targets based on various sophisticated econometric models along with judgment, and to attain these targets, BB should take necessary policy measures in advance, considering time lag between policy action and its responses,
- The Policy rates need to be changed frequently whenever BB thinks to do so and administered interest rates like national savings certificate rate should be market based or at least linked with some market based interest rates such as that of bonds,
- Along with policy rates, other monetary tools need to be changed in the same direction to impact the target values effectively.
- Banks must have fund dependency on BB, and investment demand must be boosted up by fiscal measures in co-ordination with monetary policy.

Reviewing the interaction between the policy rate and lending rate during the sample period, it can be said that further in-depth research is required in this area since this study's finding challenges the conventional wisdom that the policy rate influences the lending rate usually in a stronger way than vice versa.

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