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Article

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A Policy Rate Channel Testing of Monetary Policy Transmission Mechanism

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ABSTRACT

Against the backdrop of invariant financial and economic reforms, there are presumptive changes in the confines and speed with which target variables respond to Reserve Bank of India (RBI) policy signals. The result of transmission lags from monetary policy to the real sector is unmistakable. The empirical approach used in this study is a natural progression from the VAR model videlicet, co-integration, and error correction techniques used to overcome the problem of spurious regression associated with non-stationary time-series data. After a shock induces disequilibrium, the speed and degree of adjustment return to a balanced state but with some time lag. The results indicate that in the two-step verification model, it takes approximately 2.851 months for WACMR to fully respond to a change in policy rates, whereas in the second step, it takes approximately 10.33 months for base rates to reach their complete pass-through following changes in call money market and deposit rates.

KEYWORDS

Cointegration, Monetary Policy Transmission Mechanism, Structural Breaks, Weighted Average Call Money Rates

1. INTRODUCTION

The central bank, together with fiscal authorities, affects real economy growth through the monetary policy transmission mechanism (Taylor 1995), which describes the process through which monetary policy decisions effect economic growth and inflation. Monetary policy decisions affect asset values and the economy via the monetary transmission mechanism (Aksoy & Basso, 2014). The Patel Committee Report to the Reserve Bank of India (RBI) detailed a roadmap toward a more robust monetary policy framework, building on the foundation laid in the mid-1990s. The success of monetary policy is measured by how quickly and significantly it fulfils its goals. However, there is debate about the policy's impact mechanism.

By establishing the policy rate and establishing the terms under which borrowed and unborrowed reserves are made available to the banking system, the Reserve Bank of India (RBI) exerts a hegemonic influence over the operating procedure. It is this provision that forces a bank to resort to the money market in order to satisfy its short-term funding needs. That is why money markets are pegged to

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policy rates: they provide stability. When funds are tight, banks can borrow money daily at overnight rates or issue certificates of deposit; whatever method provides the lowest interest rate is chosen. Because of this kind of discretionary arbitrage by banks, the money market is highly dependent on the direction of the Reserve Bank of India's (RBI) policies toward policy target variables (Kuttner, 2001). To measure the magnitude of monetary shocks, these market instruments attempt to predict the path of future monetary policy. In order to put a number on policy shocks, it is necessary to use a proxy for policy expectations, such as the weighted average of call money rates. Considering the foregoing, it is crucial to study the impact of bank capital on the transmission of monetary policy in India. Recent research suggests that the state of the banking industry and the actions of its participants impact the growth and inflationary outcomes of monetary policy (Gambacorta and Shin 2018; Markovic 2006; Van den Heuvel 2002; Muduli, S., and Behera, H.) (2021). Several authors have presented convincing explanations for the magnitude, timeliness, and distributional effects of policy on an economy via bank credit lending channels: Bernanke and Blinder (1992), Kayshap and Stein (1995), deBondt (1999), Favero et al. (1999), and Kishan and Opiela (2000). They show how bank loans facilitate the spread of monetary policy. The United States' unstable banking sector and the role of banks as a possible source of friction in the transmission mechanism of monetary policy were again highlighted during the 2007–2010 financial crisis.

The following is the organisation of the paper: Section 2 is a review of the literature, Section 3 is a data source and empirical analysis with discussion, Section 4 is the conclusion, and Section 5 is the practical implications and recommended policies.

2. LITERATURE REVIEW

Over the last decade, the Indian money market has grown significantly in terms of depth, variety of instruments, and efficiency. It serves as a mechanism for balancing demand and supply of short-term funds, and this process enables central banks to influence both the quantum and cost of liquidity in the financial system, consistent with the monetary policy stance as a whole (Fabris, 2018). The evolution of the money market over time and the relative stability of the call money market have enabled the Reserve Bank to shift away from quantity-based instruments and toward price-based instruments since 1998, as part of its multiple indicator approach. Thus, the overnight call rate, which had been implicitly used as an operating target since the establishment of the liquidity adjustment facility (LAF) in 2000, became explicit in May 2011 with the adoption of a new operating procedure.

The Indian financial system is bank-centric, with banks accounting for a disproportionately large share of total financial assets and interacting closely with other financial system components. As espoused in textbooks and on a more general level, banks are perceived to play a minor role in the transmission of monetary policy. However, the works of Bernanke, Blinder, Wilcox, Stein, and others have generated considerable interest in the literature and debate over the importance of the credit channel in the transmission mechanism of monetary policy. Thus, financial constraints on banks impair their ability to neutralise hostile innovation on deposits with optional financing elements, creating supply side effects in the credit market and encouraging economic insecurity.

Cecchetii (1994, 1999) asserts that two distinct systems dominate the performance of the monetary policy transmission mechanism: the monetary approach[1] and another credit–oriented technique[2] Atique and Malik (2012). Numerous economists have been identified in the literature who have concentrated on the operation of monetary transmission onto financial factors and the relationship between the financial and real sectors. Sukmama, Kassim (2008) and Tobias, Hyun (2010) examined monetary policy impulses while taking into account the banking sector's unique intermediary role. The study adopted similar concepts to Cecchetti (1994, p:22) regarding the distinctive characteristics of geographical areas that vary by country, such as the degree of health of the banking system and the depth of financial markets, Auclert, Dobbie, and Goldsmith-Pinkham (2019)

Recent mutations have created a chasm between "structural changes in the economy, particularly in credit markets, and the interaction between changes in monetary policy actions and the manner in which expectations are formed" (Mishkin, 2010). In this context, economists in the league have broadened their visions through their efforts to effectively measure the effectiveness of monetary policy. Papadamou and Kandil (2006), as well as Mohanty, Mukherjee, and Bhattacharya (2011), found that emerging market economies have an impaired institutional framework, a shallow financial market, and a high cost of credit, all of which contribute to a degree of development-related impediments in traditional channels. Additionally, the monetary regime that a country adopts is examined as a relevant factor in monetary policy analysis. Mishkin, Schmidt-Hebbel (2006), and Krusen (2011) discovered that adopting inflation targeting is beneficial for macroeconomic performance improvement.

The RBI 2011 report reflected an international perception that transmission is improving, i.e. money market instruments are becoming increasingly reactive when a country's liquidity situation is in deficit mode. Additionally, due to liquidity shocks from foreign inflows, RBI found it difficult to forecast the liquidity market accurately on a daily basis, and thus modified LAF into deficit mode. The 2017 Monetary Policy Report details the sustained movement between the WACMR and repo rate during a period of stable financial markets and persistent surplus liquidity following the implementation of the GST and remonetization.

Bolton and Freixas (2006) identify a more complex and difficult transmission channel that operates via bank equity constraints rather than bank reserve constraints. This channel operates not only through an equilibrium funding composition of direct and intermediated financing, but also through a bank incentive to raise equity capital. Equity has an endogenous cost due to asymmetric information and information dilution costs (Myer and Majluf, 1984). As a result, the bank equity base is a critical factor in determining the total volume of bank credit. However, this introduces the consequences of multiple equilibrium resulting from self-fulfilling market belief and market belief hysteresis. This multiplicity can result in significant monetary policy effects if a change in monetary policy stance causes a shift in equilibrium. Their model demonstrates how banks can lend via the bank equity capital market even when they have perfect access to the CD or bond markets, allowing for the coexistence of the bank credit and securities markets. From a corporate perspective, the two modes of financing are distinguished by their flexibility—bank debt is easily restructured, whereas bank credit is scarce and thus has endogenous costs and is subject to capital regulation. In this case, monetary authorities' control over bank lending is no longer possible through regulation of bank reserves, and liquidity has no effect on bank lending until capital adequacy remains mandatory.

Khundrakpam (2011) identifies the nature and agility of transmission lag under equilibrium conditions of credit demand and supply at the aggregated level of all banks in his study. His study acknowledges that the effective policy rate in India fluctuates between repo and reverse repo rates, depending on the level of liquidity. As a result, the author uses the weighted call rate to approximate the policy rate. His model of credit supply is a function of deposits, nominal interest rates on credit, and the monetary policy rate, supplemented with a demand-determining variable to account for demand shocks. The study's findings revealed that a corresponding adjustment of the credit portfolio occurred in response to policy-induced contraction or expansion of deposits, with inflation and exchange rate appreciation having an adverse effect on bank credit growth with a nine-month lag. More importantly from a monetary policy perspective, it took seven months for the policy rate to be transmitted to bank credit.

Ashima Goyal and Deepak Kumar Agarwal examined the comparative rendition of price and quantum channels in the transmission of Indian monetary policy in their paper "Monetary transmission in India: Working of price and quantum channels" using simple OLS regression. They discovered the Repo rate to be the most effective medium for influencing money markets, implying that the interest rate channel is effective and capable of achieving dominance. However, the measure of the Repo rate's increased impact alludes to the quantity channel having an indirect effect. Additionally, they refute the RBI's practise of using WACMR as an intermediate target instrument, as well as its recommendation that transmission is rapid in a deficit mode. As a result of the complex nature of

the transmission channel, the precise effects of monetary policy actions on the economy are difficult to predict. Differential delays are not the only source of asymmetric responses in quantitative policy responses to goal variables in different stages of the business cycle and liquidity conditions. Research in this area is focused on finding proof of an active policy rate channel in India.

The purpose of this study is to examine the extent and variability of credit market behaviour in response to shocks induced by RBI monetary policy since the mid-1990s, which heralds the era of financial liberalisation, mergers, and acquisitions. The entire process begins with the central bank adjusting its policy rate to the interbank lending rate, then to bank deposits rates, and finally to bank lending rates as the final knot, thereby terminating its impact on inflation and growth. The purpose of this paper was to examine the reality and sensitivity of the so-called credit lending channel; however, the researcher's focus remained on short-term liquidity instruments such as interbank call money rates and bank base rates during the policy-controlled years of 2004–2015. The objectives are as follows

✓ To test the relation between policy rate and operating target.
✓ To test the relation between RBI policy rates and bank's base rate.

Similarly, the issue confronting a developing country like India is a lack of clarity regarding how RBI policy actions affect the economy; however, just because a policy affects the economy does not mean it does not react to it. While there is no doubt that monetary authority performance reflects policymakers' expectations for economic development, the findings also incorporate feedback from the real sector. To begin, a remunerative analysis of the thirty-two years of monthly data was conducted to decipher the pass-through from the monetary policy rate to the WACMR, which was segregated into two time periods. This is considering the regime shift in the monetary policy operating procedure, which divides time periods into two halves, skewing the study toward a more focused approach. Second, by examining a constellation of 18-year time periods spanning 1999 to 2017, it aims to examine the pass-through of bank interest rates to the money market, both in terms of speed and attainment. The research is structured in two stages, with the first examining the transmission mechanism in the policy rate channel and the second examining the transmission mechanism in the interest rate channel. This channel combines the most traditional channels, namely interest rates and credit lending. The two-step modelling process took into account a critical factor that convincingly vanquishes the monetary policy process when it comes to a potentially reformative Indian environment. The financial environment tells a compelling story about a country's liquidity health and serves as a critical platform for facilitating or impeding the effective transmission of monetary policy.

3. DATA SOURCE AND EMPIRICAL ESTIMATION

3.2 Data

This study is based on secondary data collected from Reserve bank of India. The empirical approach used in this study is a natural progression from the VAR model videlicet, co-integration, and error correction techniques used to overcome the problem of spurious regression associated with non-stationary time series data (Pradhan et al., 2020).After a shock induces disequilibrium, the speed and degree of adjustment returns to its balanced state, but with some time lags.

We specify the following equation to investigate the effects of RBI's decision making on financial market's weighted average call money rate. In our research work, we refer call-rate analysis as model Alpha and base-rate rate model Beta,

3.2.1 First step- model Alpha:

$$\Delta callrate_t = \beta_0 \sum_{i=1}^{q} \beta_{1i} \Delta callrate_{t-i} + \sum_{i=1}^{q} \beta_{2i} \Delta repo_{t-i} + \sum_{i=1}^{q} \beta_{3i} \Delta revrepo_{t-i} + \beta_4 callrate_{t-1} + \beta_5 repo_{t-1} + \beta_6 revrepo_{t-1} + U_t \quad (1)$$

3.2.2 Second-step-Model Beta:

$$\Delta baserate_t = \sum_{i=1}^{q} \beta_{1i} \Delta baserate_{t-i} + \sum_{i=1}^{q} \beta_{2i} \Delta WACMR_{t-i} + \sum_{i=1}^{q} \beta_{3i} \Delta depositrate_{t-i} + \beta_4 baserate_{t-1} + \beta_5 WACMR_{t-1} + \beta_6 depositrate_{t-1} + U_t \quad (2)$$

3.3 Methodology (Empirical Estimation)

Initially we begin our estimation by preliminary analyze the structural breaks in the time series of used variables. Considering that fact that, outliers can sabotage the results. Therefore, we need to cope up with the issue otherwise we may get a spurious regression result due to the existence of structural break. When an event has affected the trend of a particular series, or a movement in particular series is distorted or truncated or when there is a visible difference between the past and future movements in a particular series, that change is considered a structural break.

For this model, both the Global Information Criteria and the Sequential Criteria suggests one breaks and both are the same. The model (table 1) has been worked with 2008M06 (as this period concurs with the global financial crisis) to 2015M06 and the break and the dummy has been introduced for the same. The other break dates have not been incorporated. Similar Studies are done by (Li & Liu, 2017).

For this model, both the Global Information Criteria and the Sequential Criteria suggest one breaks and both are the same. The model (table 2) has been worked with 2002M04 to 2010M07 (as this period concurs with the global financial crisis) and the break and the dummy has been introduced for the same. The other break dates have not been incorporated. The data suffers from outliers and to deal with it requires first finding out the break points and then an attempt to remove it from the datasets. The following graph proves the extreme points in the datasets which is true for both the steps of VAR models

Table 1. Structural Breaks

Model Alpha				
Criteria	Relevant Statistic	Statistic Value/ Critical Value	No. Of breaks	Years of breaks
Global Information	Schwarz Criterion	-	1	2008M06
	LWZ criterion	-	0	-
L+1 vs. L sequentially	Sequential F-Stat	31.044/11.47	1	2008M06
Quandt Andrews	Max LR-F statistic	15.5221*** (0.000)	1	2008M06
	Max Wald F-statistic	31.0441*** (0.000)	1	2008M06
Global L vs. None	UD stat/ critical value	31.044/11.70	1	2008M06
	WD stat/ critical value	31.326/12.81	4	2004M11 2007M5 2010M06 2014M09

Table 2. Structural Breaks

Model Beta				
Criteria	Relevant Statistic	Statistic Value/ Critical Value	No. of Breaks	Years of Breaks
Global Information	Schwarz Criterion	-	4	2010M7-2002M04, 2010M7-2002M9,2006M3,2010M7 2002M9,2006M3,2010M7, 2014M8
	LWZ criterion	-	3	2002M9,2006M3,2010M7,2014M8 2002M9, 2005M3, 2007M11 2010M7, 2014M8
L+1 vs. L sequentially	Sequential F-Stat	134.063/11.47	3	2010M7 2002M4 2006M3
Quandt Andrews	Max LR-F statistic	134.063	0	2010M7
	Max Wald F-statistic	268.127	0	
Global L vs. None	UD stat/ critical value	673.635/11.70	3	2010M7 2002M04, 2010M7 2002M9,2006M3,2010M7
	WD stat/ critical value	924.233/12.81	3	2002M9,2006M3,2010M7,2014M8 2002M9, 2005M3, 2007M11 2010M7, 2014M8

The figure 1 clearly substantiates that there are breaks in the data set. And as we know the outliers can sabotage the results. Therefore, we need to cope up with the issue otherwise we may get a spurious regression result. Here comes to forefront the term structural break. When an event has affected the trend of a particular series, or a movement in particular series is distorted or truncated or when there is a visible difference between the past and future movements in a particular series, that change is considered a structural break. To tackle this upshot, an endogenous detection method is used in the study. Testing for Structural Breaks for both the steps: Initially we have used Bai-Perron Multiple Breaks test are presented in the Table 3.

For this model, both the Global Information Criteria and the Sequential Criteria suggests one breaks and both are the same. The model (table 3) has been worked with 2008M06 (as this period concurs with the global financial crisis) to 2015M06 and the break and the dummy has been introduced for the same. The other break dates have not been incorporated. Similar Studies are done by (Li & Liu, 2017).

Figure 1. Structural Break

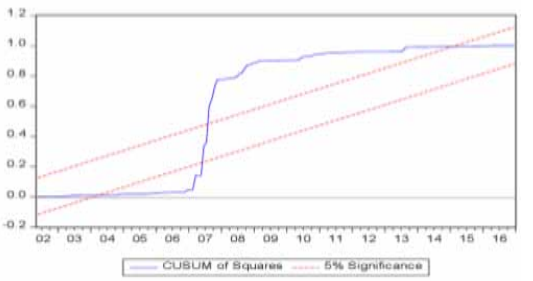


Table 3. Structural Breaks

Model Alpha				
Criteria	**Relevant Statistic**	**Statistic Value/ Critical Value**	**No. Of breaks**	**Years of breaks**
Global Information	Schwarz Criterion	-	1	2008M06
	LWZ criterion	-	0	-
L+1 vs. L sequentially	Sequential F-Stat	31.044/11.47	1	2008M06
Quandt Andrews	Max LR-F statistic	15.5221*** (0.000)	1	2008M06
	Max Wald F-statistic	31.0441*** (0.000)	1	2008M06
Global L vs. None	UD stat/ critical value	31.044/11.70	1	2008M06
	WD stat/ critical value	31.326/12.81	4	2004M11 2007M5 2010M06 2014M09

Table 4. Structural Breaks

Model Beta				
Criteria	Relevant Statistic	Statistic Value/ Critical Value	No. of Breaks	Years of Breaks
Global Information	Schwarz Criterion	-	4	2010M7-2002M04, 2010M7-2002M9,2006M3,2010M7 2002M9,2006M3,2010M7, 2014M8
	LWZ criterion	-	3	2002M9,2006M3,2010M7,2014M8 2002M9, 2005M3, 2007M11 2010M7, 2014M8
L+1 vs. L sequentially	Sequential F-Stat	134.063/11.47	3	2010M7 2002M4 2006M3
Quandt Andrews	Max LR-F statistic	134.063	0	2010M7
	Max Wald F-statistic	268.127	0	
Global L vs. None	UD stat/ critical value	673.635/11.70	3	2010M7 2002M04, 2010M7 2002M9,2006M3,2010M7
	WD stat/ critical value	924.233/12.81	3	2002M9,2006M3,2010M7,2014M8 2002M9, 2005M3, 2007M11 2010M7, 2014M8

For this model (table 4), both the Global Information Criteria and the Sequential Criteria suggest one breaks and both are the same. The model has been worked with 2002M04 to 2010M07 (as this period concurs with the global financial crisis) and the break and the dummy has been introduced for the same. The other break dates have not been incorporated. The Chow test is also run to check whether the break date chosen is significant or not (table 5).

Table 5. Chow Test

Model Alpha	
Break Date	F-Value
2008M06	15.5221(0.000)***
2015M06	11.672 (0.039)**
Model Beta	
2002M04	9.672 (0.020)**
2010M07	11.123 (0.500)**
***,** and * represents result to be significant at 1%, 5% and 10%.	

3.3.1 Unit Roots (Augmented Dickey Fuller Test)

Before testing whether any co-integration exist between call-rate and other regressors, the standard ADF test is applied to check the order of integration of variables in table 6.

An analysis of the Table 4 proves that we clearly fail to reject the hypothesis of unit root for both trend and intercept for all the independent variables except the dependent variable, i.e., call rate which is stationary at level. All the non-stationary variables become stationary I (0) at first difference at either 1% or 5% level of significance.

3.3.2 ARDL Estimation

Considering the fact, the outcome of unit root analysis shows that none of the variables are I (2), which is imperative condition for ARDL modelling. We also ascertain that the variables are a mix of I (0) and I (1), to which ARDL stands to be suitable for assessing the long-run co-integration. ARDL model offers several advantages. Initially due to fact by applying ARDL the potential issues related with

Table 6. Results of Augmented Dickey Fuller Test of both the datasets

Variables	Critical Values at 1 per cent level of significance	Augmented Dickey Fuller Test (At level)	Augmented Dickey Fuller Test (At first difference)
Model Alpha			
Callrate	-3.465	-4.015	-
Repo rate	-3.465	-2.311	-9.962
Reverse Repo rate	-3.465	-1.700	-9.761
Dummy	-3.465	-1.010	-13.638
Dumrepo	-3.465	0.9211	-13.379
Dumrevrepo	-3.465	0.7467	-13.020
Model Beta			
Baserate	-3.4602	-2.3643	-13.3651
WACMR	-3.4604	-3.8049	-
Depositrate	-2.3011	-3.4603	-16.1175
DumWACMR	-3.4603	-1.0596	-15.3085
Dumdepositrate	-3.4603	-0.8238	-13.8771

Table 7. Optimum Lag Selection

Variables	No. Of Lags (4,0,0,0,0)
Callrate	1
LnReporate	2
LnRevreporate	2
Dumlnrepo	1
Dumlnrevrepo	1

endogeneity can be solved by selection of appropriate lags (Pesaran and Shin, 1999). Furthermore, ARDL estimation also offer long-run and the short-run components by reducing potential problems of autocorrelation. Similarly, ARDL estimation offer cointegration analysis of the single equation, comparatively Engle and Granger (1987) estimation also offer such equation but their estimation unable to overcome issues related with endogeneity and serial correlation.

a) Model Alpha estimation

In terms of dynamic time series model estimation, the optimal lag selection is always critical step. Considering the fact if optimal lags are not selected under the shadow of right statistical approach the derived estimation might be biased. The maximum dependent and dynamic regressors lag limit according to Schwarz Bayesian Criteria for monthly samples data is chosen 2. The table 7 shows the optimal lag both for dependent and independent variables.

3.3.3 Bound Test Approaches to Co-integration (Model Alpha)

The F-statistics in the table postulates for the model that the statistics crosses the upper bound of the critical values as referred by Pesaran et al. (2001). This assertion thereby rejects the null hypothesis of no co-integration in the model. This enfolds that there exists a long run relationship among the variables in the concerned model see table 8.

Based on the results indicated the Table 8, the outcome suggest that there is existence of co-integration among the variables. The estimated derived value is greater the upper and lower bound value thus 13.611>(upper bound and Lower bound) .After validating the evidence of long run relationship with the Bound Test, we carry on to settle for the Estimated Long-run results. Long-run specification for model Alpha is give below,

$$Callratet = a01 + b11 callratet - i + b21 repot - i + b31 revrepo + b41 dummt - i + b51 dumrepot - i + b61 dumrevrepot - i + e1t \quad (3)$$

Table 8. Bound test results (Model Alpha)

Model Alpha: Callrate = f(Repo rate, Reverse Repo Rate) Callrate(2001M3-2017M4), (1,1,0,0,0)			
F statistics =13.611 (K=4) (K indicate the number of independent factor)	Critical Values	Upper Bound (1)	Lower Bound(0)
	10% level	3.09	2.2
	5% level	3.49	2.56
	1% level	4.37	3.29

And for ECM the specification is given below,

$$a_0 + \sum_{i=1}^{p} a_{1i} \triangle callrate_{t-1} + \sum_{i=1}^{q} a_{2i} \triangle repo_{t-1} + \sum_{i=1}^{q} a_{2i} \triangle repo_{t-2} + \sum_{i=1}^{q} a_{3i} \triangle revrepo_{t-1} + \sum_{i=1}^{q} a_{3i} \triangle revrepo_{t-2} + \sum_{i=1}^{q} a_{4i} \triangle dumm_{t-1} + \sum_{i=1}^{q} a_{5i} \triangle dumrepoo_{t-1} + \sum_{i=1}^{q} a_{6i} \triangle dumrevrepo_{t-1} + \lambda ECT_{t-1} + e_t \quad (4)$$

For the study period, the equilibrium correction coefficient is -0.7311 for the model. The ECT is both negative and less than one and so is also significant at 1 per cent. As shown in the table 9, 73.11 per cent of disequilibria from previous period converge back to the long run equilibrium in the current period. According to the long-run results, in the model, Repo rate and Reverse Repo rate realize a direct relationship with the weighted average call money rate. But the relationship of Repo rate is insignificant while that of the Reverse Repo rate is significant at 1% level of significance. The dummy variables are positive and significant. The positive coefficient values of both the regressors intend an increase in weighted average call money in respect to an increase in policy rates. This result is as per the expectation. The Reverse repo rate seems to exert the highest impact over the financial market rates as compared to repo rates. The Dummy for repo agreements is negative and significant implying the mild but adverse of global financial crisis, the intercept values of repo rates fall by an approx. 0.3 units due to the worldwide commotion. Contrary are the dummy results of reverse repo rates which got incremental to the financial crisis by an approx. 0.3 units as sufficiently captured by the dummies for the month 2008M06. The disequilibrium of repo rate and reverse repo rate is corrected in 2.85 months and 2.3 months to converge back to equipoise respectively.

The above Table 10 substantiates the co-integrating vector between dependent variable and the independent variable -0.73114. This cinches from looking over the adjustment parameters and the coefficients when there is a departure from the equilibrium between WACMR and RBI's repo rates, the WACMR adjust 73.114% each month towards the policy rates to re-establish equilibrium. Table 10 reports a 2.845% of long-run elasticity of WACMR with respect to repo rate and 1.592% with respect to reverse repo rate. Thus, reverse repo rate insures sufficient capturing to better the monetary policy stance of RBI. From the above discourse about error correction term being 0.7311, it would take 2.851 months and 2.3 months for WACMR to fully respond to the change in policy rates, thus consummating 100 percent of the pass-through.

b) Model Beta estimation

Similarly, table 11 indicate the optimal lag selection for beta model according to the Schwarz Bayesian Criteria for monthly samples data. According to the outcome the chosen lag is 2.

3.3.4 Bound Test Approaches to Co-integration (Model Beta)

Likewise Alpha model give below table 12 indicate the bound test for co-integration for Beta model. The F-statistics in the table postulates for the model that the statistics crosses the upper bound of the critical values as referred by Pesaran et al. (2001). This assertion thereby rejects the null hypothesis of no co-integration in the model. This enfolds that there exists no long run relationship among the variables in the concerned model.

Implicating from the figure 2, the short run response of base rate to one standard deviation is indirect to policy rates innovations. In the first period, no other variables than its lagged value of itself impacted up to 30 per cent of the dependent variable. These lagged variables of base rates gradually diminished with its effect up to 20 per cent by the end of tenth month. It was only after second month that the other regressors started affecting the base rate. Particularly, WACMR with an influence of just

Table 9. Long run estimation model Alpha

Variable	Coefficient	Standard Error	p-value
Callrate(-1)	-0.40245	0.189464	0.0351**
LnRepo rate	-0.731146	0.081179	0.0000***
LnReverse Repo rate	0.508133	0.255772	0.0485**
Dumlnrepo(-1)	0.462295	0.201824	0.0232**
Dumlnrevrepo(-1)	-0.554066	0.247235	0.0263**
CointEq(-1)	-0.73114	0.079779	0.0000***
Note = *** refer to significance at 1% and ** reference to significance at 5%			

Table 10. WACMR and Repo rate: Long Run VECM result (2001-2017)

Variable	WACMR (2001-2017)
Repo Rate	-0.73114
Reverse Repo-Rate	0.50813
Pass-through elasticity (Repo rate)	2.845
Pass-through elasticity (Reverse Repo rate)	1.5929
Mean of Dependent variable	1.8191
Observations	189

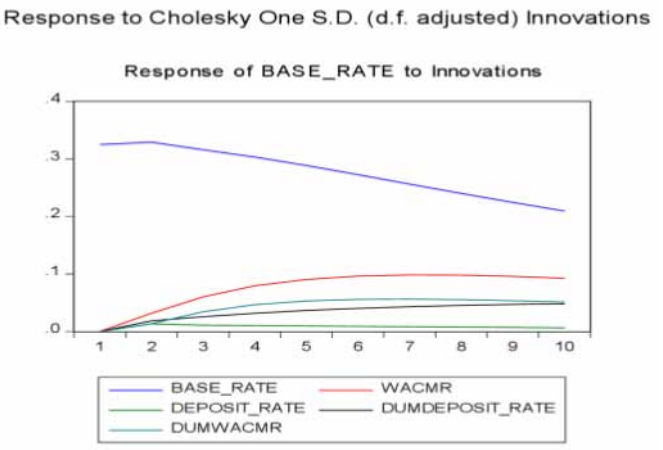
Table 11. Optimum Lag Selection

Variables	No. Of Lags (1,2,1,1,1)
Baserate	1
WACMR	2
Depositrate	1
DumWACMR	1
Dumdepositrate	1

Table 12. Bound test results (Beta Alpha)

Model Beta: Baserate = f(WACMR, depositrate) Baserate(1999M2-2017M3), (1,2,1,1,1)			
F statistics =1.0123 ***(K=2)*** ***(K indicate the number of independent factor)***	Critical Values	Upper Bound (1)	Lower Bound(0)
	10% level	3.09	2.2
	5% level	3.49	2.56
	1% level	4.37	3.29

Figure 2. Response of Baserate to Innovations



3.1 per cent extending to maximum of 9.25 per cent, being the most significant factor in influencing among the rest of independent variable. Deposit rates have 0.6 per cent impact only by ten S.D.

4. CONCLUSION

This study found a correlation between the operational status of the Monetary policy and the changes in the MPTMs. Following deregulation in the 1990s, the RBI's approach to monetary policy became worrisome because of the underlying market interference. Evidence suggests that India's situation is like the early 2000s in America (Kishan and Opiela 2006). Bank lending in India can be estimated using monthly data on monetary policy instruments, which supports India's bank lending channel presence, though not comprehensively but clearly and ostentatiously. After a period, a change in the short-term interest rate causes a dovetailing of medium-term interest rates. The link between the policy rate and the subsequent changes in other interest rates is well established. There was a clear link between the Pass Through from WACMR into Policy rate and the Monetary Policy Regime's repo and reverse repo rates. Despite the pre-crisis period of 2003-2007 of "Great Moderation" globally, the Monetary policy transmission climax out-reach with lags of less than three months during the immediate world liquidity crisis. A short-term alliance account was discovered during the second test of the effectiveness of pass through. Short-term indirect instruments are now being used by the Reserve Bank of India (RBI) to manage the market. Testing the presence and effectiveness of credit lending channels in terms of timing relationships relying on short term responses, the study deals with the drawbacks of loans being sticky contracts. During monetary tightening's, they sell off securities to raise cash reserves. After a few quarter lags, banks reduce their loans and interest rates, and the real economy immediately follows suit. Because of this, the elasticity degree does not pass through at 100%. After a shock induces disequilibrium, the equilibrium returns to its normal state, but it takes some time.

5. PRACTICAL & POLICY IMPLICATIONS

The study's cumulative objective is to calibrate the level of trust that individuals can place in India's Monetary Policy Transmission Mechanism. Against the backdrop of invariable financial and economic reforms, increasing global market integration across various segments of the domestic financial market, an increase in real-time market access, and an onrush of information multiplier, there are

presumptive changes in the confines and speed with which target variables respond to RBI's policy signals. The link between policy decisions and bank lending behaviour in India's banking sector is a composite structure of long- and short-run associations between variables. The two-step modelling process considered a critical factor that convincingly vanquishes the monetary policy process when it comes to a potentially reformative Indian environment. Furthermore, this study focuses on the Indian economy's monetary sector, keeping the demand function of the real sector unchanged. This means that future research in the area of monetary policy transmission mechanisms will be possible.

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COMPETING INTERESTS

The authors of this publication declare there are no competing interests.

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ENDNOTES

[1] Money View
[2] Credit view

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