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**Transmission mechanism of monetary policy in India - An Expost Study**

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**Abstract**

*The transmission mechanism of monetary policy is correlated to lending which expands aggregate demand in the economy. The banking system form an important place in the monetary policy transmission. The channels of monetary policy transmission are: Interest Rate Channel, Credit or Loan Supply Channel, Exchange Rate Channel, and Asset Price Channel. The financial prices include interest rates, exchange rates, yields, asset prices, and equity prices, and the financial quantities consists of money supply, credit aggregates, supply of government bonds and foreign denominated assets. RBI uses various monetary policy frameworks over the years which is classified as pre-monetary targeting (1947 to 1984-85), monetary targeting (1984-85 to 1997-98), Multiple Indicators approach (1998-99 to 2014), Inflation Targeting (from 2013 onwards), and Flexible Inflation Targeting (FIT). MCLR also drastically decreased for all these banks from 2019 to 2021. The external benchmark has increased for the three types of banks from 2019 to 2021. The repo rate gives a contrast data between pre and post FIT periods. The financial system is not fully developed which is a hindrance to the transmission mechanism. The cost of lending, issues in bond market, and pandemic situation related problems requires an appropriate transmission mechanism in the monetary policy of our country.*

Keywords: Transmission mechanism, monetary policy, inflation, repo rate, FIT, WADTDR and WALR, output, prices.

**Introduction**

In India, subtle change in the objectives, instruments and operating mechanism of monetary policy have been observed during the last 10 years. The shift is from tightening to easing monetary

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policy in accordance with the need, structure, financial system and the monetary situation of our country. The transmission mechanism of monetary policy deals with lending as it expands aggregate demand and provides root for an expansion in market which directly drives investment demand upwards in the country. Banks' lending depends upon the liquidity position and borrowing position of the firms. The repo rate fixed by the RBI also carries corresponding change in interest rate. The bank's balance sheet channel reflects the efficacy of monetary policy transmission. Altogether, the banking system form an important place in the monetary policy transmission of our country. In this article, an attempt is made to study on the 'efficacy of transmission mechanism of monetary policy in India. This study is designed on three aspects: (1) relevant literature on the theme, (2) monetary transmission mechanism, and (3) analysis of transmission mechanism of monetary policy in India.

### **Literature review**

Keynesian have opined on transmission of monetary policy through interest rate mechanisms with a monetary tightening which is transmitted to the real economy. According to them a contractionary monetary policy leads to increase in real interest rates, increase the cost of capital, causes fall in investment spending, leads to downturn in aggregate demand and output. It is equally applicable to consumer spending and its causation effects on the above parameters.

James Tobin's (1969) "q theory provides a mechanism through which monetary policy affects the economy through its effects on the valuation of equities. According to him q as the market value of firms divided by the replacement cost of capital. If q is high, the market price of firms is high relative to the replacement cost of capital, and new plant and equipment capital is cheap relative to the market value of business firms. Companies can then issue equity and get a high price for it relative to the cost of the plant and equipment they are buying. Thus, investment spending will rise because firms can buy a lot of new investment goods with only a small issue of equity. On the other hand, when q is low, firms will not purchase new investment goods because the market value of firms is low relative to the cost of capital. If companies want to acquire capital when q is low, they can buy another firm cheaply and acquire old capital instead. Investment spending will be low".

Franco Modigliani (1971) propounded an alternative channel for monetary transmission through equity prices occurs through wealth effects on consumption. His MIT-Penn-SSRC (MPS) model is currently in use at the Board of Governors of the Federal Reserve System. In his model, consumption spending is determined by the lifetime resources of consumers, which are made up of human capital, real capital and financial wealth. A major component of financial wealth is common stocks. When stock prices fall, the value of financial wealth decreases, thus decreasing the lifetime resources of consumers, and consumption should fall.

Friedman (1991) is of the view that "traditionally, most economists have regarded the fact that banks hold capital as at best a macroeconomic irrelevance and at worst a pedagogical inconvenience". Mishra and others have opined that the transmission is partial for the lending rates and very weak for the exchange rates (Mishra et al., 2016). The transmission is slow and incomplete and also asymmetric in nature. It is more significant for fresh loans but not so much for outstanding loans. This is stronger in the tightening phase and weaker in the easing phase of the monetary policy (Acharya (2017), Bhaumik et al. (2011), and Das, (2015)).

John Taylor's (Frederic S. Mishkin, 1995) in his model articulated that a contractionary monetary policy increases the short-term nominal interest rate which led to decline in fixed investment, residential housing investment, consumer durable expenditure and inventory investment, and decline in aggregate output. The higher value of the domestic currency makes domestic goods more expensive than foreign goods, thereby causing decrease in net exports and aggregate output.

Frederic S. Mishkin (1996) is of the view that “understanding the transmission mechanism for monetary policy under multiple different perspectives among economists on this issue, especially on the importance of each channel. Under different conditions or different development levels of financial markets, the impacts of monetary policy on the economy through each channel are not the same”.

Partha Ray, Himanshu Joshi and Mridul Sagar (1998) have explored new dimensions in the monetary transmission mechanism in the context of reform measures initiated during 1990s. They have analysed Chakravarty Committee paradigm on two main variables i.e., interest rates and exchange rates. The authors have studied the relationship among money, prices, output, exchange rate and the money market disequilibrium on interest rate.

It is monetary transmission mechanism that process through an appropriate monetary policy decision are administered in our country. Such policy decision affects the economy in general and the price level in particular. The financial system of a country determines the transmission mechanism of the monetary policy and the factors influencing this are banks, financial institutions, households, firms, etc., the extent of interest rate deregulation, the substitution between foreign currency and local currency denominations in the composition of loan and deposits, the access to finance from outside the banking system, the extent of disintermediation and the depth and liquidity of secondary markets for debt and equity (Venugopal Reddy, 2000).

In India, the monetary transmission has four channels i.e., the quantum channel, especially relating to money supply and credit; the interest rate channel; the exchange rate channel, and the asset prices channel. Monetary policy in the quantum channel affects the real output and price level directly through changes in either reserve money, money stock or credit aggregates. The remaining channels are essentially indirect as the policy affect real activities through changes in either interest rates or the exchange rate or asset prices. Since none of the channels of monetary transmission operate in isolation, considerable feedbacks and interactions, need to be carefully analysed for a proper understanding of the transmission mechanism (Venugopal Reddy, 2002).

The monetary transmission of recent years is quicker to respond to monetary policy, prices display inertial behaviour and remain largely unaffected in the short run. The changes in real output are not only substantial but also for long term that is up to three years. The recent vector autoregression (VAR) literature confirms these results. The monetary management in India depends upon the indirect instruments like open market operations and fine-tuning of liquidity conditions through the Liquidity Adjustment Facility. The interest rate is a principal instrument of monetary policy stance. The dynamics of output and prices to monetary policy signals and the interaction between exchange rate and interest rate are empirically examined in an attempt to explore channels of monetary transmission in India (Reserve Bank of India, 2004).

The transmission mechanism under the globalization is also interesting to study. As per the Policy Statement of RBI the deregulation of financial markets in the recent years has improved the competitive environment in the financial system and strengthened the transmission mechanism of monetary policy. Sequencing of interest rate deregulation has been an important component of the reform process which has imparted greater efficiency in resource allocation. The process has been gradual and predicated upon institution of prudential regulation of the banking system, market behaviour, financial opening and, above all, the underlying macroeconomic conditions (Reserve Bank of India, 2005-06).

The transmission mechanism deals with the official interest rates which affects directly money-market interest rates, lending and deposit rates. The changes in interest-rate affect medium and long-term depending on market expectations. The impact on the economy and market expectations triggered by monetary policy actions lead to adjustments in asset prices like stock market prices, and the exchange rate. The exchange rate can affect inflation directly when imported goods are directly used in consumption (European Central Bank, 2005).

Saran and Raunaq (2009), are of the opinion that central banks have become more flexible in their operations with stronger interest rate channels of monetary policy. In the global market economy, it has sharpened the debate on how monetary policy affects the economy. As a result, significant changes have altered transmission channels over the decades. The monetary policy is evolved independently in all the countries with emphasis in regulating inflation, financial markets, structure of the economy, steady increase in trade and financial openness. They opined that nature and effectiveness of the transmission mechanism for monetary policy varies according to the size, structure and openness of the economy.

Bhattacharya et al., (2011) have suggested that the weakness in the financial system and the presence in large-scale of the informal sector led to inefficiency of monetary policy of developing countries. However, in the developing countries, the transmission mechanism of monetary policy is ineffective due to the underdevelopment of bond markets and also due to the low level of competition in banking system, the influence of the unofficially financial sector.

The challenges to effective transmission of monetary policy include policy induced abrasions like interest rate subventions, loan waivers, slow adjusting savings instruments and credit allocations (Lahiri and Patel, 2016). Similarly, Banerjee and others have observed that large dominance of informal credit sector is found to be the hindrance in the process (Banerjee et al., (2018).

Shelja Bhatia (2019) in her work has observed that an expansionary monetary policy produces negative and significant impact on the Tier-I capital asset ratio of banks. Such policy shocks also affect the capital structure indirectly through interest margins and profitability. Negative relationship between call money rate, interest differential and profitability of the banks are also notable points. The profits of banks increase after expansionary policy shocks in India. This is being reflected in equity capital of the banks and in structure of capital of the banks. As a result, any deviation in monetary policy by the Reserve Bank of India has a significant impact on the capital structure of commercial banks.

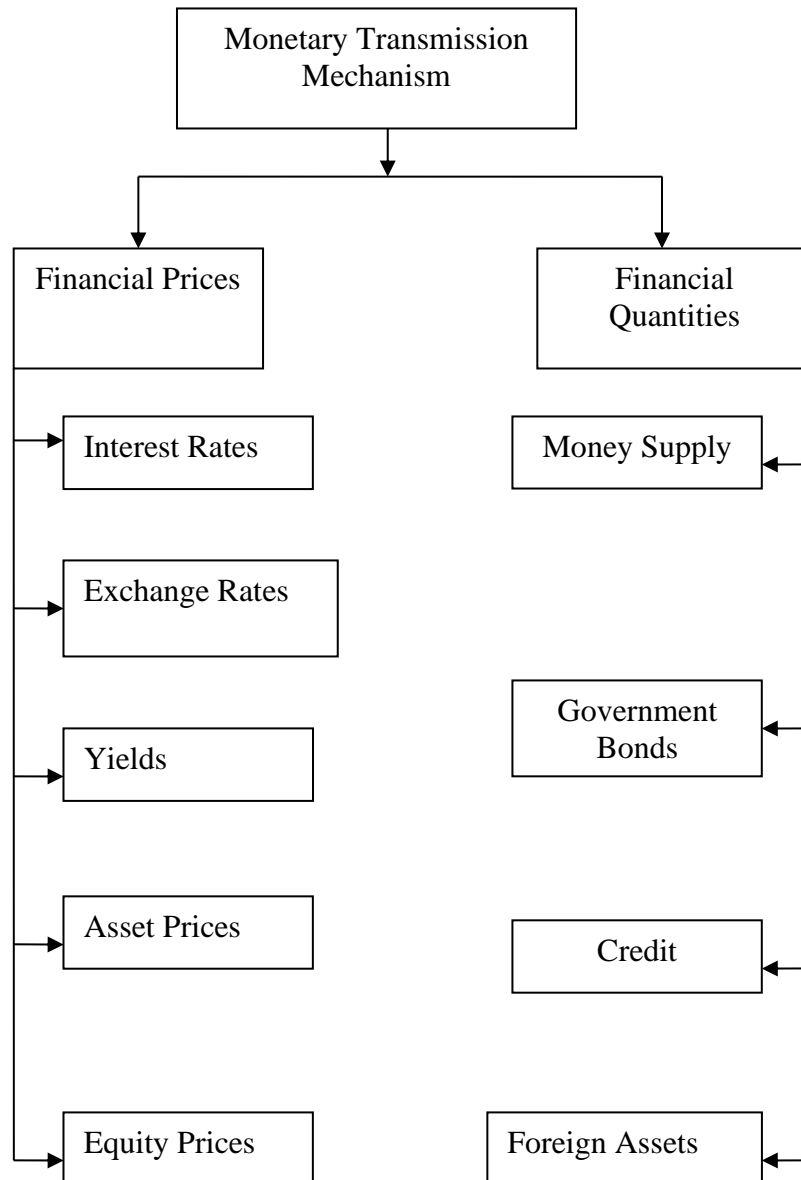
Ghosh and Ghosh (2006) viewed that monetary policy contraction particularly reduces investment of highly leveraged firms. With regard to transmission channels, Prabu and Ray (2019), Aleem (2010), and the Reserve Bank of India (RBI) (2014) indicated that direct transmission through exchange rate and asset price channels has been generally muted in India. Chetty and Szeidl (2007) found evidence of demand-driven transmission that works through firms' creditworthiness (balance sheets), and is independent of the bank-lending channel. According to Popov (2016) easy monetary environments increase bank credit and to ex-ante risky firms, particularly banks with lower capital ratios. Acharya has noticed the important assumption behind an effective transmission mechanism is a strong balance sheets of firms and banks which will enable the agents to react rapidly and optimally to policy changes (Acharya, 2017). Jiménez and others (2017) have analysed the balance sheet strength that influence credit availability and underlined the importance of the strength of corporate balance sheets to enhanced credit availability of firms.

The RBI has taken many steps on transmission of the monetary policy to the bank lending rates like transitioning from the prime lending rate (PLR) system in 1994, benchmark prime lending rate (BPLR) system in 2003, the base rate system in 2010, and the current marginal cost of funds-based lending rate (MCLR) system in 2016. The asset resolution and bank recapitalisation are expected to strengthen bank balance sheets. India is taking proactive measures to create a robust financial infrastructure. An active monetary transmission increases the credibility of the Central Bank and also strengthen the financial structure (Arun Singh, 2021).

### **Monetary Transmission Mechanism**

As discussed, there are four channels of monetary policy transmission to the real economy, that is (1) Interest Rate Channel, (2) Credit or Loan Supply Channel, (3) Exchange Rate Channel, and (4) Asset Price Channel. The Interest Rate Channel explains how interest rate impact on business investment, cost of capital, and consumption. The Credit or Loan Supply Channel operates through two channels, (1) Bank Lending Channel, and (2) Balance Sheet Channel. The Bank Lending Channel deals with the impact of RBI's tight monetary policy decision on higher reserve requirements, and purchases of commercial bank reserve assets which unfavourably affect deposits as well as economic activities. The Balance Sheet Channel also dwells upon the unfavourable impact of tight monetary policy with higher interest rates with reduced cashflows, prices of financial assets, net worth of firms, investment, and borrowings by firms. The Exchange Rate Channel encompass how an increase in the interest with a flexible exchange rate, and open capital account enhances deposits in domestic currency than foreign currencies. It also deals with foreign and domestic interest rates, inflation, policy changes, GDP, price, exports and imports. The Asset Price Channel analyses about the efficacy of contractionary monetary policy and its adverse impact on financial assets and real estate than bonds. It dwells upon how an increase in interest rates in the long run influences decreasing value of housing and financial assets, falling financial wealth of households with reduced consumption. The firm's lower financial assets also impact the cost of capital and investment.

#### **Flow chart of transmission mechanism**



The flow chart of transmission mechanism given above shows two broad items i.e., financial prices and financial quantities. The financial prices include interest rates, exchange rates, yields, asset prices, and equity prices, and the financial quantities consists of money supply, credit aggregates, supply of government bonds and foreign denominated assets. The financial price is reflecting on stability of money demand functions. The interest rate is the key channel of transmission in the monetary system of a country. The increase in interest rates reduces profits of the firms and it makes new investments not very attractive. As a result, it derives cascading effects with reduced consumption, investment, and also pulldown prices. The transmission of monetary policy through interest rates is amplified by changing exchange rates and balance sheets of the firms and banks.

### **Analysis of transmission mechanism of monetary policy in India**

The efficacy of transmission mechanism of monetary policy in India has been analysed using the variables that influences the demand for and supply of stocks, demand for credit and



credit creation of banks. Lending decision and its level, investment mechanism and situation, banking relationship with firms, liquidity level of creditor institutions, balance sheets of firms and banks, exogenous factors, heterogeneous effect on firms etc., have direct bearing transmission mechanism due to monetary policy.

RBI uses various monetary policy frameworks over the years which is classified under five major categories viz., (1) pre-monetary targeting (1947 to 1984-85), (2) monetary targeting (1984-85 to 1997-98), (3) Multiple Indicators approach (1998-99 to 2014), (4) Inflation Targeting (from 2013 onwards), and (5) Flexible Inflation Targeting (FIT). The fourth one was introduced in 2013 and this policy deals with the monetary policy transmission mechanism which incorporates parameters on major economic indicators like GDP and inflation. In inflation targeting, RBI is answerable to the government if inflation goes above 6 percent or goes below 2 percent for three consecutive quarters. However, FIT was adopted from May 2016 onwards by amending the Reserve Bank of India (RBI) Act, 1934 which empowers the Central Government and in consultation with the RBI, can determine the inflation target in terms of the Consumer Price Index, once in every 5 years.

Table 1: Transmission from the Repo Rate to Banks' Deposit and Lending Rates  
(Variation in basis points)

Period	Repo Rate	Term Deposit Rates		Lending Rates		
		Median TDR (Fresh Deposits)	WADTDR (Out-standing Deposits)	1 - Year Median MCLR	WALR (Out-standing Rupee Loans)	WALR (Fresh Rupee Loans)
February 2019 - September 2019 (Pre-External Benchmark Period)	-110	-9	-7	-30	2	-43
October 2019 – September 2021 (External Benchmark Period)	-140	-187	-174	-125	-120	-147
March 2020 - September 2021 (COVID period)	-115	-154	-135	-103	-102	-121
February 2019 – September 2021 (Current Easing Cycle)	-250	-213	-181	-155	-118	-190
Memo						
April 2021 – September 2021	0	0	-18	-5	-12	1

Note: Latest data on WALRs and WADTDR pertain to August 2021.

WALR: Weighted average lending rate; WADTDR: Weighted average domestic term deposit rate; MCLR: Marginal cost of funds-based lending rate; TDR: Term deposit rate.

Source: Monetary Policy Report - October 2021, RBI.

Table 1 portrays the monetary transmission to term deposit rates and lending rates of banks. The impact of transmission from February 2019 to September 2019 (Pre-External Benchmark

Period) when the repo rate was -110 in the median term deposit rates for fresh deposits was -9 and the weighted average domestic term deposit rate (Out-standing Deposits) was -7. During this period the marginal cost of funds-based lending rate for 1 year median was -30, the weighted average lending rate for out-standing rupee loans and fresh rupee loans was 2, and -43 respectively. It is observed that “abundance of systemic liquidity, forward guidance of the monetary transmission is continuing with the accommodative stance, and subdued credit demand” (RBI, 2021) during the External Benchmark Period, the COVID period, and the Current Easing Cycle.

Internal benchmark system deals with how banks have relied upon their cost of funds which is responsible for sluggish transmission. In order to attend this issue RBI periodically refine the interest rate setting and resetting for the existing borrowers with effect from 01.10.2019. Contrarily RBI’s external benchmark system dwells upon by making interest rate outside the control of a bank and it is not linked to internal costs for loans like floating rate personal or retail loans and floating rate loans to micro and small enterprises with effect from 01.04.2020. The benchmark rate is applicable to “lending rates for new and existing borrowers on a one-to-one basis and banks are prohibited from adjusting their spreads for existing borrowers for a period of three years in the absence of any significant credit event” (RBI, 2021). The external benchmark dealing with outstanding floating rate linked loans has increased from 2.4 percent in September 2019 to 32 percent in June 2021 to perpetrate faster and fuller transmission in the country.

Table 2: Outstanding Floating Rate Rupee Loans of SCBs across Interest Rate Benchmarks (percent to total)

Bank group	Base Rate				MCLR				External Benchmark			
	Sep-19	Mar-20	Mar-21	Jun-21	Sep-19	Mar-20	Mar-21	Jun-21	Sep-19	Mar-20	Mar-21	Jun-21
Public sector banks	15.0	12.3	7.9	8.1	82.7	80.9	69.1	66.5	0.4	4.9	20.3	23.9
Private banks	8.3	6.8	3.9	3.6	86.7	74.9	52.6	49.6	4.6	17.3	42.7	46.1
Foreign banks	6.8	5.2	2.7	2.7	67.3	56.7	30.7	33.5	25.7	37.9	66.6	63.7
All SCBs	12.7	10.5	6.5	6.5	83.6	78.5	62.9	60.2	2.4	9.4	28.5	32.0

Note: Data pertain to 74 SCBs. Figures in table may not add up to hundred due to residual BPLR-linked loans.

Source: Monetary Policy Report - October 2021, RBI.

Table 2 brings out the outstanding floating rate rupee loans of SCBs across interest rate benchmarks from 2019 to 2021. The base rate is more to public sector banks than the private and foreign banks. It is falling for all the three types of banks and it is more in the case of public sector banks from 15 percent in September 2019 to 8.1 percent in June 2021, as shown in Chart 1. Similarly, MCLR also drastically decreased for all these banks from 2019 to 2021 and the details are given Chart 2. The external benchmark has increased for the three types of banks from 2019 to 2021 and the particulars are presented in Chart 3.



Chart 1: Outstanding Floating Rate Rupee Loans of SCBs for base rate

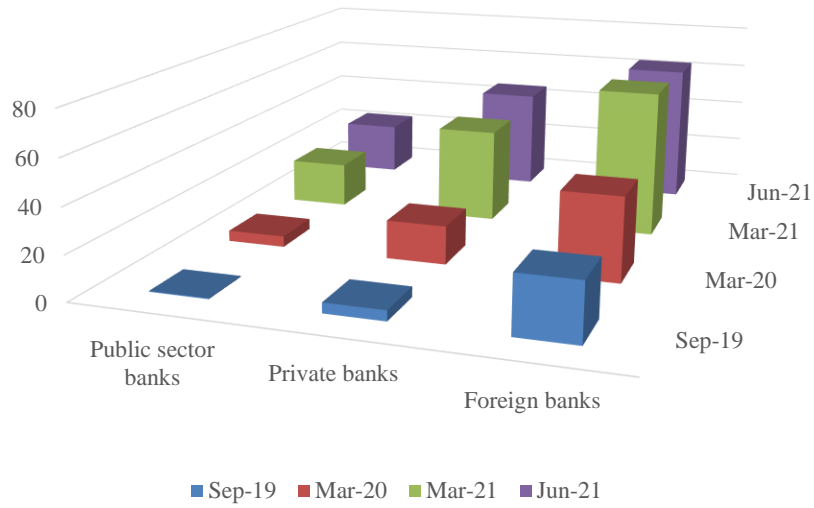
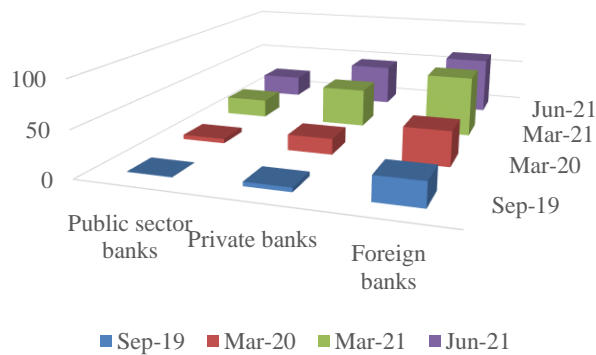
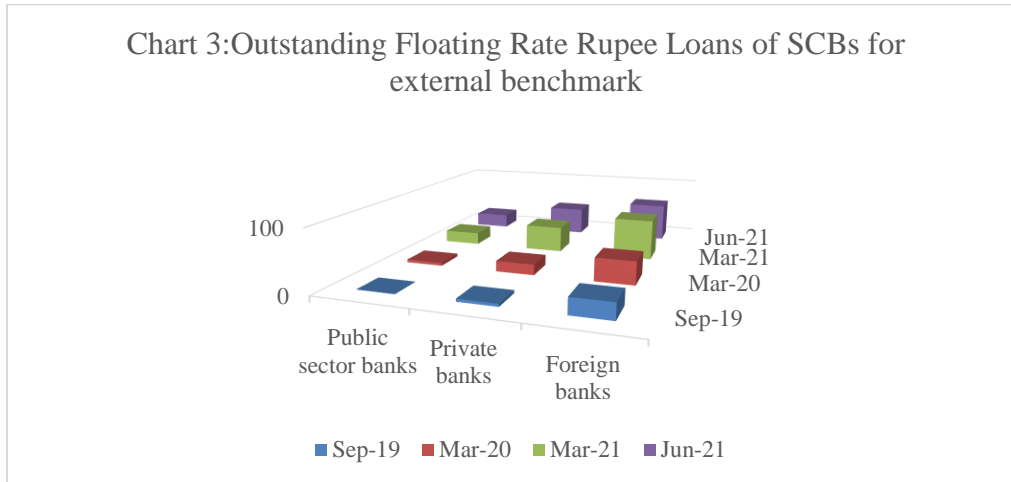


Chart 2: Outstanding Floating Rate Rupee Loans of SCBs for MCLR





In India, due to Covid-19 “unconventional monetary policy (UMP) instruments such as long-term repo operations (LTRO) and targeted long-term repo operations (TLTRO) were introduced to reach out to specific sectors, institutions and instruments, which helped in easing market stress and softening financing conditions (RBI, 2020)”.

Table 3: Liquidity Management Instruments in (₹ Crore)

Financial Year		Net OMOs Purchases (+) / Sales (-)			Export Credit Refinance	LTROs / TLTROs	USD/INR Swap	
		Auction	NDS-OM	Total			Auction	Buy/Sell
Pre-FIT	2011-12	1,24,724	9,361	1,34,085	23,640			
	2012-13	1,31,708	22,892	1,54,599	18,200			
	2013-14	52,003	0	52,002	28,500			
	2014-15	-29,268	-34,150	-63,418	-9,100			
	2015-16	63,139	-10,815	52,324	-			
	2016-17 (up to Sept. 30, 2016)	1,00,014	490	1,00,504	-			
FIT	2016-17 (Oct. 01, 2016 onwards)	10,000	-10	9,990	-			
	2017-18	-90,000	1,225	-88,775	-			
	2018-19	2,98,502	730	2,99,232	-	34,561		
	2019-20	1,04,224	9,345	1,13,569	-	1,50,126	34,874 - 20,232	

Source: RBI.

Table 3 provides liquidity management instruments, which shows that OMOs have more purchases than sales and hence it is considered as a favoured instrument in India in FIT.

Table 4: Transmission from Repo Rate to Banks’ Deposit and Lending Interest Rates (Basis points)

	Repo rate	Median Term	WADTDR	WALR - Outstanding	WALR - Fresh

			Deposit Rate		Rupee Loans	Rupee Loans
Pre-FIT	Apr 2004 – Sep 2008	300	229	253	-23	-
	Oct 2008 – Feb 2010	-425	-227	-174	-181	-
	Mar 2010 -June 2010	50	0	-	-	-
	July 2010 - Mar 2012	325	226	222	203	-
	Apr 2012 – June 2013	-125	-4	-46	-44	-
	July 2013 - Dec 2014	75	7	-9	-28	5
	Jan 2015 – Sep 2016	-150	-96	-123	-67	-110
FIT	Oct 2016- May 2018	-50	-62	-70	-92	-95
	June 2018 – Jan 2019	50	16	20	2	57
	Feb 2019 – Mar 2020	-135*	-48	-53	-27	-115

\*: The 75-bps policy rate cut on March 27, 2020 is not included.

WALR: Weighted Average Lending Rate; WADTDR: Weighted Average Domestic Term  
Source: RBI.

Table 4 shows the transmission from repo rate to banks' deposit and lending interest rates which explains the nuances of the the marginal cost of funds-based lending rate (MCLR) and the internal benchmark have coincided with the adoption of FIT. The repo rate gives a contrast data between pre and post FIT periods. Similar data is observed for median term deposit rate, WADTDR and WALR for outstanding rupee loans. WALR - Fresh Rupee Loans was introduced during January 2015 to September 2016 with 5 basis points and continues in the FIT regimes.

Table 5: Policy Transmission to Financial Market Segments

	FIT (Per cent)				Variation during FIT (bps)
	03-Oct 2016	06-Jun 2018	06-Feb 2019	10-Mar 2020	
I. Policy Repo Rate	6.50	6.25	6.50	5.15	-135
II. Money Market					
(i) WACR	6.39	5.88	6.42	4.96	-143
(ii) Tri-party Repo	6.19	5.71	6.34	4.86	-133
(iii) Market Repo	6.38	5.78	6.33	4.86	-152
(iv) 3-month T-bill	6.45	6.51	6.56	4.80	-165
(v) 3-month CD	6.61	7.54	7.17	5.23	-138
(vi) 3-month CP (NBFCs)	7.00	8.18	7.78	5.83	-117
III. Corporate Bond Market					
(i) AAA -5-year	7.52	8.70	8.55	6.53	-99
(ii) AAA-10-year	7.62	8.74	8.67	7.13	-49
IV. G-sec Market					
(i) 5-year G-sec	6.77	8.02	7.32	5.93	-84
(ii) 10-year G-sec	6.77	7.92	7.36	6.07	-70

Source: RBI and Bloomberg.

Table 5 portrays the policy transmission to financial market segments. The policy repo rate was decreasing from 3<sup>rd</sup> October 2019 and the FIT variation -135 bps. The government securities

market and the corporate bond market with AAA-5-year, AAA-10-Year G-sec market are showing downturn from 3<sup>rd</sup> October 2019 and wide variation in FIT (bps) is observed.

## CONCLUSION

In the interest rate channel, the long-term rates are not reactive to variations in short-term rates. The inflation rates are alarming due to vary many issues and the monetary policy also brings little impact on output and prices due other issues emerging in our country. The financial system is not fully developed which is a hindrance to the transmission mechanism. The exchange rate volatility, variation in external benchmark, and internal benchmark also requires concerted effort from the RBI. In addition, the RBI has to deal with liquidity concerns urgently as credit crunch exploded in banks due to NPA. The credit growth moved to NBFCs as they could generate funds from banks and bond market. However, increasing default from many NBFCs have been found after Infrastructure Leasing & Financial Services (IL&FS) crisis. Adding to this, the buyers of NBFCs commercial paper has been drastically cut by mutual funds, provident funds and pension funds. The cost of lending, issues in bond market, and pandemic situation related problems requires an appropriate transmission mechanism in the monetary policy of our country.

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