Chapter I

MONETARY POLICY TRANSMISSION: AN INTRODUCTION

1.1 Introduction

Monetary policy refers to actions taken by a central bank in order to control the prevailing conditions in the economy especially in the money and other financial markets, with the broader objectives of sustainable growth of real output, higher levels of employment and price stability.

There are alternative views about how the monetary policy affects the real variables in the economy. The schools of thought propagated by the classical economists believe in ‘neutrality’ of money. The monetarist’s view is that monetary policy has no real effect on the economy. More precisely, a change in the supply of money simply changes the price level proportionately. On the other hand the traditional Keynesian theory considers that money supply has non-neutral effects on the real economic variables. In the IS-LM framework, an increase (decrease) in real money stock shifts LM schedule to the right (left). The asset markets adjust correspondingly and interest rate declines in response to the increase in money stock. The lower interest rate stimulates investment, as a result income rises until a new equilibrium is reached. Once all adjustments have taken place, a rise in the stock of money raises equilibrium income and lowers equilibrium interest rate.¹ Based on these two opposing views (viz., the classical and Keynesian views) different schools of thought developed over time (e.g. monetarists, neo-Keynesians etc.). Though, the debate on neutrality of money remains unsettled, difference of opinions between the opposing groups has narrowed down. Today it is more or less accepted in the literature that money is non-neutral at least in the short-run.

¹ Dornbush and Fischer (1997)
The traditional approaches, which identify changes in monetary policy with changes in the stock of money, do not take into account the fact that the growth rate of monetary aggregates depends on a variety of non-policy related influences as well.\(^2\) Furthermore, most of the standard models of aggregate demand, such as the IS-LM model, treat bank assets and bank liabilities asymmetrically\(^3\). A distinct role for bank credit relative to the other debt instruments has not been recognized in these models. Since bank credit vis-a-vis other debt instruments is not perfectly substitutable, separate treatment of bank credit becomes necessary. In this regard, recently advanced theoretical literature based on models with asymmetric information, stresses the importance of financial intermediaries in the provision of credit and the special role of bank loans and distinguished characteristics of various assets\(^4\).

It is argued in this context that the desired effects of monetary policy may not be realized due to the banks response in the face of asymmetric information. In this respect Stiglitz and Weiss (1981) argued that in spite of having excess demand for credit, banks may not prefer to increase the rate of interest since, it is believed that for a given collateral, an increase in the rate of interest causes adverse selection, as only borrowers with riskier investments will apply for a loan at a higher interest rate. Since the borrower has a better idea about the riskiness of his project but a bank does not, this is a problem of moral hazard also. In the

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\(^2\) More precisely we distinguish these approaches as ‘money view’. Under ‘money view’ non-policy related influences like financial innovations have limited importance.

\(^3\) Bank credit has no specific importance in these models.

\(^4\) The distinct role-played by financial assets and liabilities are the major focus under the ‘credit view’. Instead of aggregating all non-money financial assets into a single category called bonds, under the credit view, macroeconomic models tries to incorporate the distinguished characteristics of different non-monetary assets. It is generally made either along the dimension of bank versus non-bank sources of funds or along the more general dimension of internal versus external financing.
process, a bank may not be able to select the borrower for lending in an optimal manner.

More importantly, the traditional literature which asserts that changes in monetary policy are eventually followed by changes in output, is largely silent about the dynamics of the changing process i.e., what happens in the interim or how the transmission mechanism works. In the words of Bernake and Gertler (1995), most empirical analysis of monetary policy has treated the dynamics of such mechanism as a ‘Black Box’. The recent literature witnessed some serious efforts in understanding this transmission mechanism and most authors in this context tried to explore whether information asymmetry and market imperfections can be used to explain the impotency of monetary policy.

1.2 Monetary Policy Transmission Mechanism: The Channels

The transmission mechanism brings to light the dynamics of how the monetary policy works. Tracing the transmission mechanism includes, the identification of macroeconomic variables which respond to the policy changes, their inter linkages, changes and timing of changes (i.e., the lag structure). The monetary impulses pass to real economic variables through a number of channels. The series of links between the policy actions, changes in relative prices, changes in savings and investment, changes in output, employment and inflation can be called as the channels of monetary policy. Due to the inter linkages of macroeconomic variables, the channels are not mutually exclusive. But the relative importance of each channel differs among the economies, because it depends upon a number of factors like the structure of the economy, instruments of monetary policy used, conditions prevailing in the economy, especially in the financial and asset markets.

In order to study the transmission mechanism, identifying the exact channels through which monetary policy works becomes crucial. It also helps to
resolve the evolving complexity in explaining the transmission mechanism. The well established channels of monetary policy transmission are summarised below.

1.2.1 The Interest Rate Channel

Interest rate channel has been used as a standard tool for explaining monetary policy transmission process. Under the traditional Keynesian view, a monetary tightening generally leads to a rise in the general level of interest rate. As the cost of capital (interest rate) increases corresponding rate of change in investments will be negative. The decline in investment in a demand constrained economy would affect the national income adversely. Similar to the case of investment, consumption expenditure also decline as a result of a rise in interest rate. Both ways, aggregate demand declines with higher levels of interest rate. The interest rate mechanism or cost of capital argument is the best method of explaining policy dynamics under the closed economy conditions. Although there are several channels identified for explaining the transmission process, interest rate mechanism forms the basis of all those extensions.

1.2.2 The Exchange Rate Channel

The exchange rate channel operates through exchange rate effects on net exports. In the face of growing internationalization and the system of flexible exchange rates, more attention has been given to this channel while studying monetary policy transmission. A contractionary monetary policy raises the interest rate and when domestic real interest rate rises, domestic currency deposits become more attractive relative to deposits denominated in foreign currencies. This would increase the demand for domestic currency leading to the appreciation of value of the home currency. Appreciation of home currency makes the

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5 Not only the rate of change but also the level of interest rate also has to be considered for any discussion. A higher rate of interest rate may be an indicator of fast growing aggressive economy. Under such circumstances, a growth-hindering rate of interest rate has to be comparatively very high than the generally perceived average rate of interest.

domestic goods more expensive compared to the foreign goods. It will lead to a fall in net exports and hence in output.

While we emphasize the importance of interest rate mechanism in explaining the policy transmission in a closed economy, exchange rate dynamics seeks higher level of attention in an open economy environment. Some of the recent experiences show that changes stock market prices may dominate the interest rate mechanism in an exchange rate channel\(^7\). Foreign institutional investments, especially through hedge funds can be highly influenced by changes in stock prices than in interest rates. Hedge funds generally aim at short-run capital gains. Foreign exchange outflow will be very large if there is bearish trend in the stock market. It is quite possible to see that there exists a negative correlation between stock market prices and interest rate. Under such circumstances, a rise in interest rate could lead to foreign exchange outflow and currency could depreciate as against our earlier conclusions.

Recent empirical works show that importance of exchange rate channel is increasing with the globalisation process.

1.2.3 The Other Asset Price Effect Channel

Monetary policy can affect the real variables by changing the asset prices (stock prices) and the value of wealth. ‘Tobin’s q theory’ of investment and wealth effects is useful in explaining the working of this channel. Tobin (1969) defines q as the market value of firms divided by the replacement cost of capital. A higher level of q means the market value of the firm is high compared to the replacement cost of capital. So the firm with higher q can afford higher level of investment as they can raise the funds by issuing new equities. And with a higher q, the firm needed to issue only less number of equities and it can raise comparatively large amount of funds. A contraction in money supply will increase

\(^7\) Nath and Samantha (2003), Capital flight and corresponding currency depreciation during the South East Asian crisis is a conclusive example of this phenomenon.
the interest rate and make bonds more attractive than shares. This in turn will lead to a decrease in the demand for equities. As a result equity prices will come down leading to a lower q ratio. As mentioned earlier, lower the q, lower will be the investment spending and eventually income.

The wealth effects on consumption also give some explanation for the transmission mechanism. While the stock prices fall, the value of financial wealth decreases and the consumers, who have invested in those stocks, will certainly feel the heat. As a result, the level of consumption will be reduced and it will lead to a fall in the aggregate demand and income.

1.2.4 The Credit Channel

Two basic channels of monetary transmission mechanism arise in the context of credit markets: the bank lending channel and the balance sheet channel. The problems associated with asymmetric information (adverse selection and moral hazard) can be viewed as a typical feature of these markets. Though there are several sources of credit, banks play a special role, because they are well suited to deal with certain types of borrowers, especially small firms. A contractionary monetary policy decreases bank resources and it will have an adverse impact on the borrowers investment plans as the lending capacity of the banks reduces. As the small borrowers are generally unable to access other kinds of resources (like commercial paper or certificate of deposits) for their investment spending, it will lead to a cut in their investment and eventually their income.

The balance sheet channel works through the net worth of business firms. As mentioned earlier a contractionary monetary policy deteriorates the equity prices and hence the net worth of the firms. Lower net worth means that borrower can afford only less collateral for their loans. Contractionary monetary policy that raises interest rates also causes deterioration in firm’s balance sheet. It reduces cash flow because the burden of interest on the existing liabilities increases when the interest rate increases.
1.3 New Economic Policy Regime and Monetary Policy Transmission

Macroeconomic policy regime has changed significantly during the last two decades. From an orthodox policy regime, most of the economies adopted a more liberalized and market oriented policy framework during the period. A Change in the policy regime was an outcome of changing economic relations in the economy. More precisely we can say that it was an alternative choice towards a more effective policy framework under the changed economic scenario.

While considering the conduct of monetary policy, the money demand function has a crucial role in explaining the relationship between money and real variables. It is believed that stability of money demand function is a prerequisite for effectiveness of monetary policy. But, globalization, financial sector reforms and financial innovations have had a fundamental impact on the stability of money demand function, both in the parametric and in the predictive senses. As a consequence, there was a breakdown in the observed relationship between monetary aggregates, inflation rate and the real activity (Friedman (1988), Bhalla (1997)). Empirical evidence on these changes led to the restructuring of monetary policy framework in recent times. As a result, instead of monetary aggregates, short run interest rate has been considered as a major policy instrument in policy frameworks in most of the countries.

The effectiveness of monetary policy also depends on the institutional framework available for transmitting impulses that result from the central bank policy actions. Particularly in the decade of nineties, the institutional setting for monetary policy underwent radical changes in several countries and a number of countries have put in place institutional settings for directly achieving the targets.

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of monetary policy.\textsuperscript{9} It is, therefore necessary to identify the crucial changes in the institutional framework to understand the transmission mechanism.

1.3.1 Monetary Policy Transmission under Alternative Policy Frameworks

Choice of alternative policy instruments is mainly decided according to the effectiveness of the policy instruments. The switch over from monetary aggregate towards short-run interest rate is mainly happened because the control over monetary growth has loosened in several countries especially with the opening up of the economies. Relative contributions from the alternative sources of money supply have been changed drastically during the last two decades in several economies.\textsuperscript{10} Another reason for this switch over is the efficiency of indirect instruments over direct instruments. Cost of direct measures on financial intermediation is very high. The monetary policy transmission under alternative policy instruments is given below.

1.3.1.1 Monetary Policy Transmission under Money Base Control

A sudden increase in money supply will be in excess of the existing demand for money. Excess supply of money reduces the cost of holding it (interest rate). As the interest rate decreases, consumption and investment expenditure increases. It will raise the aggregate demand. The aggregate demand will increase the demand for money until the increase in demand equals the initial increase in supply of money. Apart from this route there is a direct effect on the demand for money for a decrease in interest rate. i.e., money demand increases with decrease in interest rate. This may be caused by speculative and precautionary demand for money.

\textsuperscript{9} RBI Report on Currency and Finance 2003-2004. Institutional changes refer to the market orientation of financial institutions, changes in level of their autonomy, privatization, internationalization, diversification etc.

\textsuperscript{10} In Indian case, relative contribution from foreign investment as a major source of money supply has multiplied several times during the period See Palakkeel (2009).
1.3.1.2 Monetary Policy Transmission under Interest rate Control

A change in official rate of interest has a direct effect upon the market rate of interest, asset prices, exchange rate, expectations and confidence level of the people. Generally short-term market interest rates respond very quickly to the changes in official rate in the same direction. Apart from the direct effect, there is an indirect effect of the changes in the official rate due to the inter linkages among the asset markets and economic activities. For example, apart from the official rate, changes in market interest rate also affect the asset (stocks and bonds) prices. An increase in market interest rate will decrease the bond prices. Changes in interest rates and asset prices influence the expectation and confidence of the people. Expectations about future decline will take long-term investors away from bonds. But at the same time people seeking profit from selling and buying operation, may by more bonds if they expect a future rise in the prices of bonds. Similarly, increased interest rate will increase the demand for home currency and will lead to its appreciation. Changes in these market prices and expectations influence the consumption and investment decisions of the people. Increase in interest rate will generally reduce the credit-based expenditure. Reduction in expenditure will reduce the inflationary pressure.

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1.4 Asymmetric Impact of the Monetary Policy and the Sectoral Impacts

Across the world many economies have transformed into advanced economies in the last few decades. Agrarian production relations lost its predominance during the years and industrial and service sectors gained importance in the structure of the economies by contributing large number of employment opportunities and major shares of national income\textsuperscript{12}. Correspondingly, policy dynamics under the changed economic, political and institutional environment became an important area of concern in the policy research\textsuperscript{13}.

In most of the diversified economies, the ideology of balanced growth was predominantly practiced through sector specific and program specific policies. However, it has been observed that sector specific and program specific policies

\begin{itemize}
  \item \textsuperscript{12} Relative contribution expected from various factors of production in an agrarian production function and corresponding demand for factors of production could substantially vary from an industrial one.
  \item \textsuperscript{13} New economic policy regime (Liberalization, Privatization and Globalization), formation of European Monetary Union and disintegration of Soviet Union are the examples.
\end{itemize}
reduce the efficiency of the financial system in these economies. Following, under the new generation policy regime, most of the economies dismantled many of the sectors specific and program specific policies. Although it has been observed that efficiency of the financial system has improved with the new generation policies, there was very minimal effort made to understand the impact of the new generation policies on the balance of sectoral growth.

In order to verify the real contributions of the new generation policies, it is necessary to understand the policy transmission mechanism under the changed scenario. Moreover, a real exercise in this respect has to scrutiny the sectoral impact of the monetary policy under both types of policy frameworks.

1.5 The Indian Scenario after Liberalisation

In the Indian context too the conduct of monetary management has undergone significant changes in the 1990’s in terms of objectives, framework and instruments, reflecting broadly the progressive liberalisation of the Indian economy. The Reserve Bank of India announced a multiple indicator approach in 1998-99, which provides the necessary flexibility to respond to changes in domestic and international economic and financial market conditions more effectively. For India, the crucial changes can be identified in the case of fiscal-monetary relationship, pre-emption of resources through reserve requirement, structure of interest rate, innovation of financial products and development of capital markets and opening up of the economy. With the liberalisation of the financial markets and introduction of flexible interest rate, monetary policy tends to play a more important role in any economy like India.

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14 Commercial banks are claimed to be the highest losers in this regard. Complicated structure of interest rates and credit programs reduced the operational efficiency of the banking system.
15 Ahluwalia et. al (2002)
16 Reserve Bank of India(2001-2)
The new generation monetary policy framework in India follows a multiple indicator approach. The indicators include financial and asset market prices, general macro economic variables etc. Monetary Policy instruments in India mainly comprises of three kinds of measures. They are—Monetary Measures that deal with Cash Reserve Ratio (CRR), Bank Rate and Statutory Liquidity Ratio (SLR); Interest Rate Policy deals with interest rate flexibility, repurchasing offering rates, prime lending rate and spreads, interest rate on saving account, interest rate on export credit, minimum lending rates for banks etc; Credit Delivery Mechanism deals with priority sector lending, credit facilities for small-scale industries etc. Apart from these measures monetary policy also consists of rules and regulations that concern the money market.

The abolition of automatic monetisation of fiscal deficit through ad hoc treasury bills, autonomy of the central bank has been improved to a greater extent. Instead of relying upon quantitative controls, central bank now utilizes indirect controlling procedures. Deregulation of credit, abolition of administered interest rate regime and greater operational freedom for commercial banks etc.- are some examples of market oriented central bank policies, which aim at the overall development of financial sector in the economy.

1.6 Monetary Policy Transmission in India

Literature on channel based monetary transmission mechanism is not very large in case of the Indian Economy. Most of the studies concentrated on the causal relations among monetary and real variables and stability of money demand functions. Few of them are the by product of macroeconomic models constructed mainly for some other purposes. These studies have reported diverse
findings. Causal inferences have varied according to lead-lag specification, type and form of test used and also depending on the definition of money.\textsuperscript{18}

Recent studies related to the Indian economy reveal the emergence of interest rate channel as an important one in the transmission process. In addition there is growing importance of the exchange rate channel with the opening of the economy. RBI studies report that in the liberalized regime interest rate channel is becoming more prominent and at the same time the credit channel is becoming weak in the Indian economy due to the financial sector reforms.\textsuperscript{19}

These new developments call for more rigorous study of the monetary policy transmission to understand the relative importance of the channels under changed conditions. However, in the Indian context there are limited numbers of studies that look at the impact of monetary policies under the changed, more liberalised scenario. Moreover, only a very few studies have looked at the transmission mechanism and the impact of monetary policy on different sectors of the economy. Given this background the present research work attempts to bridge these gaps by examining the effects of monetary policy more rigorously.

1.7 \textbf{Motivation behind the Study and Objectives}

The review of literature shows that most of the papers on Indian economy examine the existence of channels in an isolated fashion. Indicators relating to different channels are not integrated in one model. As a result relative importance of one channel against other has not been established in a conclusive manner. Clearly, information on relative importance of different channels has significant policy implications. Furthermore, a comparative study of the significance of different channels in the pre and post liberalisation era can throw light on the workings of the monetary policies and the effect of policy changes. Sectoral impacts of monetary policy shocks are another area, which is not well

\textsuperscript{18} Kamaiah.\textit{et al} (1992-93)
\textsuperscript{19} RBI Report on Currency and Finance 2001-2002
explored, in the Indian context. To fill these gaps, there is a need for further research in this direction and this has motivated the current research work. In concrete terms, there is a need to establish the significance of channels in monetary transmission and determine the relative importance of one channel over other. In this connection it is necessary to study the lag structure of different related variables also it is useful to examine varying impacts of monetary policy on different sectors of the economy. This would help understand the different levels of influence exerted by different channels on specific sectors.

Apart from these issues some of the recent developments need further consideration. They are,

⇒ How the changes in monetary policy framework (e.g., interest rate control instead of monetary base control) affect the working of the transmission channels?

⇒ How the structural and institutional changes in the economy affect the working of the transmission channels?

With this background the major objectives put forward for the present study are

1) To describe the monetary policy interventions by the RBI at different points of time since liberalisation. This would enable us to have an idea of the direction and thrust of the monetary policy changes in India.

2) To assess the relative significance of different monetary policy transmission channels in Indian economy.

3) To examine the sectoral impacts of monetary policy and differential influence of the channels.

4) To examine the impact of economic liberalization on the monetary policy transmission mechanism.
1.8 Organisation of the Thesis

The thesis is organized in seven chapters. First chapter is an introduction to the issues related to monetary policy transmission in India. It also introduces context, relevance, major objectives and basic approach of the study. The second chapter reviews the theoretical and empirical literature on monetary policy transmission. The third chapter reviews the changes in monetary frameworks in India especially after 1990’s. The fourth chapter give a brief introduction to the state of the economy. Following the fifth chapter try to find out the significance of various channels of monetary policy in the Indian economy. Apart from analysing the relative significance of the channels the impact of liberalised policy framework is also discussed in this chapter. The sixth chapter mainly deals with the differential impact of monetary policy on various sectors of the economy. The seventh chapter concludes the findings and put forward the policy implication of the findings. Moreover, it gives the overall summary of the study.