Effectiveness of monetary policy in India: A study of Post-Reform period

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Introduction

Understanding the transmission mechanism of monetary policy is the most needful ingredient for having a better and smooth monetary environment in an economy. In view of the continuously changing macroeconomic framework and the fast changing financial structure, the continuous evolution of the transmission channels of monetary policy this area of study goes on to be more dynamic and intriguing(Smitha T H,2010). As for as the monetary policy literature is concerned there are four important channels through which an economy is influenced by the working of monetary policy.

These channels are

i. Interest rate channel.
ii. Credit channel.
iii. Asset price channel
iv. Exchange rate channel.

Apart from these conventional channels of transmission there are some additional channels which work in the open economies but in the Indian context it is most reliable to focus on the conventional channels only (Pandit B L,2006). A brief discussion on the working of these channels is given below.

1. Interest rate channel

The pathway for the working of this channel is that the monetary policy induces changes in the money supply (M3) which has a direct impact on the nominal interest rate (i) i.e. cost of credit, investment (I) and lastly the level of GNP.

$$\mathbf{M\downarrow \rightarrow i\uparrow \rightarrow I\downarrow \rightarrow Y\downarrow}$$

M = Money supply.
i = Rate of interest.
I = investment.
Y = level of GNP.

2. Credit channel:

Credit channel has two sub channels which are discussed below.

(a) Bank lending channel

This is the most important channel among these two channels of transmission. Its main focus is on the credit availability aspect. The pathway of this channel is given as:

$$\mathbf{M\downarrow \rightarrow \text{Bank deposits}\downarrow \rightarrow \text{Loans}\downarrow \rightarrow I\downarrow \rightarrow Y\downarrow}$$

(b) Balance sheet channel

The balance sheet channel is the one which reflects the changes on asset prices due to monetary policy changes. The pathway how this channel impacts the investment and finally the income is given as:

Monetary contraction → i↑ → Low asset prices→ fall in collateral values→ Low borrowings → Low I → Low Y

3. Asset price channel

This channel operates more prominently in economies where the financial markets are developed or in a blooming state. Changes in the interest rate due to the policy adjustments affects the asset prices mainly bonds, equities and real estate. By this channel we understand that as if short term interest rates go up there may be a decline in the bond prices. Below is the pathway which shows how the transmission of the monetary policy takes place through this channel.

M↓ → i↑ → Discounted cash flow↓ → Tobin q↓ → I ↓ → Y↓

4. Exchange rate channel

In an economy with the flexible exchange rates, the fluctuations in the money supply or rates of interest influence the level of income through exchange rate (e) and the net exports (NX) (Obstfeld M and K. Rogoff,1996).

M↓→ i↑ → e↑ → NX↓ → Y↓

In all these channels of monetary policy transmission we see that the initiating factor or input is always the money supply. This means that money supply plays a very crucial role in the transmission channels of the monetary policy. Hereby it is clear that if this variable is affected by any other external agency apart from the monetary policy tools, it may definitely lead to disharmony in the effectiveness of the monetary policy. For instance, consider the pure form of the interest rate channel i.e.

M↑ → i↑ → I↓ → Y↓

Now assume that there is rise in the government expenditures due to compulsory or routine developmental expenditures as well as debt financing and the non-developmental expenditures which creates the fiscal deficit and government resorts to borrowing from the alternate sources. The above relationship now becomes like this;

GE↑→FD↑→M↑↑ → i↑→ I↓ → Y↓ → y↑→P↑

GE = Government expenditures.

FD = Fiscal deficit.

M = Money supply.

i = Interest rate.

I = Investment.

Y = Real income.

y = Nominal income.

P = General Price level.

In this relationship we see as the expenditures and the fiscal deficit rises, money supply also rises. The double arrow increase indicates that the increase in the money supply is not normal as it is the money injected in the economy by the external sources from which the government has

borrowed to meet its financial demands in a given financial year. This makes the interest rates to rise further and the investments are deterred even more. Since investments are on a declining path income must also decrease but here the scenario turns other way round, there is increase in the income and the sole reason in the increase in the income without increase in the investments is the injection of increased money supply in the economy by borrowing from international credit markets or minting of money i.e. seignorage. Since the monetisation of the budget deficits has been off the roads since 1997-98, the sole reason for the increased money supply is the borrowing of heavy credits from the international markets and the inefficient expenditure pattern i.e. the rise in unproductive expenditures which leads to increased demand, high prices and the result is an inflated economy.

Since fiscal deficits, debt financing and rising public expenditures are the most infamous injectors of increased money supply in the economy. It gives a very good scope to study the pattern of expenditures and its relative impact on the money supply and the price stability in an economy. The theoretical justification to this study is to identify which component of the government's expenditure is the main cause of rising fiscal deficit and which component is inefficient in generating as much funds so as to fulfil the needs of rising public expenditures and finally the narrowing down of the fiscal deficit that could stop the government from borrowing from the international credit markets.

Significance

There is a wide treasure of research done on the macroeconomic functioning of the economy where "effectiveness of the monetary policy" has got a handsome attention. In the Indian context there is ample literature available on the relationship between fiscal deficit, money supply and the price stability. The nature of interface between monetary and fiscal policies has been considered from various angles. From both theoretical as well as empirical literature it is quite evident that rising fiscal deficits has been the major source of increasing money supply in the economy.

Research methodology

The study is based on secondary data. The data sources used in this study are RBI, Ministry of Finance, Budgets of the study period, and various reports of GOI, IMF and World Bank.

For analysis, the focus will be on the overall scenario of the transmission mechanism of the monetary policy. The study period is divided into three different sub-periods and the quarterly data of the constituent variables will be regressed throughout the time period to assess the effectiveness of the monetary policy in the post-reform period.

Literature review

Tiwari A K, Tiwari A P, Pandey B**.** The authors support the concept that even in the absence of policy administered monetization, higher deficit policies lead to higher inflation. Parallel to the studies of Ackay et al 1996 this study refers to the channels through which higher deficits lead to higher inflation. The borrowing requirements of the government normally increase the net credit demands in the economy giving an upward push to the interest rates and finally lead to crowding

out of the private investment. Secondly the government debt is not monetized by the central bank but by the private sector and the inflationary effects of the higher deficit policies that prevail at that point of time. The study shows that financing of the deficit through printing of the new money and creating interest-bearing bonds increases the government expenditure and results in the increase in the fiscal deficit.

Parida P C, Mallick H and Mathiyazagan M K,As the monetarists claim that the widening government deficits result in increasing the money supply, the authors of this study also favour that the higher government deficits financed by the sales of bonds exert upward pressure on the interest rates and finally end up in the increase in money supply. Using Vector Autoregression Model (VAR) and taking the data from 1960-61 to 1999-2000 this study has been aimed to establish the long run relationship between fiscal deficits, money supply and price level in the Indian context. Finding that fiscal deficits and money supply influence the price level the authors suggest that the focus of the government should be more on the productive expenditures.

Fatima. A and Iqbal. A,A macroeconomic policy regime consists of both monetary and fiscal policy rule, but still the controversies among the researchers do not die about the effectiveness of the fiscal and monetary policies. Studying the data on GDP, exports, money stock and government expenditure of five Asian countries, the authors used various econometric techniques like co-integration tests, Granger causality tests, time-series analysis etc. to extract the results. For India the study suggests that there is unidirectional causal inference of monetary policy to economic growth.

Mohan.R,Traditionally, four key channels of monetary policy transmission. are identified, viz, interest rate, credit aggregates, asset prices and exchange rate channels. Turning to an assessment of monetary policy transmission, it would be reasonable to assert that monetary policy has been largely successful in meeting its key objectives in the post-reforms period. There has been a fall in inflation worldwide since the early 1990s, and in India since the late 1990sOverall, the period has been one of substantial ongoing changes in various spheres of the Indian economy as well as in its external environment. Fourth, the period of study has been characterized by significant shifts in the monetary policy operating framework from a monetary-targeting framework to a multiple indicator approach.

Samantaraya.A,In view of the apparent inadequacy of traditional monetary pol- icy indicators to capture monetary policy stance appropriately for the post-reform period in India, the current paper suggested a MPI as a potential alternative. The MPI constructed is a summary measure encompassing traditional policy indicators like monetary aggregates and overnight money market rate as also used policy signals from documented pronouncements. It was used for a preliminary assessment of the influence of monetary policy on important macroeconomic variables relevant for monetary policy in India. It was observed that monetary policy has an immediate impact on interest rates, while that on bank credit, industrial production and inflation was realized with some time lag. However, the index developed in the paper need to be used in formal econometric analysis to confirm the monetary policy transmission.

The review of literature done for studying the pros and cons of this area suggests that there has a shift of the expenditure pattern towards the non-developmental expenditure in the post-reform

period. Also the literature reflects that the rising level of unproductive expenditures has resulted in the rise in the money supply which hasn't proven beneficial and resulted in the problems of inflation in the economy. Also there are enough evidences in the literature that the effectiveness of the monetary policy has suffered in the post-reform period due to the un-administered rise in the money supply and the shifting of the monetary policy framework in the post-reform period.

Theoretical Background

Policies which are concerned with changes in the supply of money are known as the monetary policies. The main issues and objectives of the monetary policy are as: To frame the instruments of monetary control, flawlessness, proper implementation and intermediate targets of the policy etc. India‘s monetary policy since the first plan period was one of 'controlled expansion‘- that is, it was aimed to promote adequate financing of economic growth and also to ensure a favourable price scenario. Through the expansion of money RBI promoted the expansion of the economy and at the same time it attempted to check the upward pressure in the prices through the instruments of the monetary control. It was in the early eighties that a platform or a soft version of the liberalisation process was being initiated first time in the Indian economy. But, it had a number of shortcomings like low coverage and insignificant self-sustaining character. During the end of eighties, the occurrence of the severe macroeconomic crisis turned to be the big setback for the Indian economy and afterwards its effects were evident in the form of the debt and interest payment problems in the economy. In order to overcome this problem, India with no other means left approached to the World Bank and the IMF for getting some big loans and this fiscal crisis gradually developed in the form of foreign exchange crisis. Since India at that time was in a very critical situation, in order to avail the loans from these institutions it had to accept the conditions set by these institutions and then it was provided the remedial loans to realign the macro-economic fundamentals, through a programme of economic stabilization. Keeping these developments in view India was set for its biggest policy refresher and in July 1991 the initiative to establish the new economic policy got the green signal. The implementation of the economic reforms, which was expected to turn the tables for the economy, had some important structural inputs which included fiscal, monetary, financial, and industrial and export-import (EXIM) sector reforms. The reforms in monetary and credit policies aimed at slowing down monetary expansion and thereby controlling inflation. It was on the recommendations of the Narasimham Committee Report that the monetary sector reforms were initiated. In the first phase of reforms in the monetary policy there was a reduction of Statutory Liquidity Ratio (SLR) and Cash Reserve Ratio (CRR) and permitted a degree of flexibility to the banks in the matter of deposit interest rates.

There are a number of factors on which the monetary policy strategy of a Central bank depends and usually these strategies and factors are unique to the context of the economy under consideration.

Objectives Of Monetary Policy

In the Indian context the monetary policies have been undergoing changes in the past two decades because of the changing economic priorities and the fluctuating stability scenario of the Indian economy. Hence the issue of defining the objectives emerged as an issue of extreme concern in order to guide the monetary policy makers to frame the best possible policies for the economy. In India price stability and growth continue to be the main objectives of the monetary policy as for as the broader policy framework is concerned. In the transitional phase, the exchange rate objective seems to predominate for some time but that is because of the added concern for overcoming the pressure of undue volatility due to the exchange market imperfections. In fact, this may lead to be the most important reason for the monetary policy adjustments in the short-term. The main objectives or goals of monetary policy are:-

(1) Price stability
(2) Economic growth
(3) Full employment and
(4) Balance of payments equilibrium

1, Price Stability: Amongst all the policy objectives of the monetary policy, price stability is considered as the most important. Since fluctuations in prices (both upward and downward movements) are bound to bring about instability in the economy, this makes the price stability objective very much important to be taken care of. Rise and fall in the general price level are both harmful for the prosperity of an economy as both of these bring undue advantages to some people at the cost of loss that the other people in the same economy bare, which is in violation with the Pareto-optimality condition of economic growth. Any monetary policy framed with price stability as its main and prime objective aims to stabilise the value of money, reduce or control the cyclical fluctuations in order to ensure economic stability. If the policy is framed and implemented with utmost concern, such type of monetary policies prove beneficial in reducing inequalities, minimization of class segregation and finally the promotion of economic welfare.

Framing a policy for ensuring stable price level is not always a very easy task. There are various problems like which type of price level is to be stabilized, relative or general price level? This problem gets more worse when there is scarcity of criteria for which choice to be prioritised.

A stable price policy could reduce the profits and also bring hindrances in further investments. For avoiding any possible checks in the development of an economy, framing a monetary policy always needs favourable financial and economic environment. It is very essential to put here that defining price stability is also one of the issues to be understood. Price stability does not mean that prices remain unchanged indefinitely. Price changes are the most substantial tool for allocation of resources in the market economy. Price stability refers to an appropriate price index which is to be stabilised in the sense that we can detect no definite upward trend in the index after making proper allowance for the upward bias inherent in all price indexes (Smitha T.H, 2010).

Following a counter- cyclical monetary policy, that is an easy monetary policy during the period of recession and dear monetary policy in the period of boom is considered the way out for ensuring price stability in the economy.

2, Economic Growth: Price stability being the most important objective of the monetary policy but still the whole framework of these policies has one supreme and the ultimate objective which has developed and propagated very fast in the post-reform period is the objective of rapid growth of the economy. By economic growth it is meant that there is an increase in the real per capita income of an economy throughout the period of policy implementation and to create the base for further growth and development. The increase in the amount of goods and services produced within the peripheries of an economy is the termed as the economic growth. In a growing economy the production of goods and services increases with the passage of time but what is most important is the rise in the standard of living along with the reduction in inequalities among the people living in that particular economy.

Even when there exists no difference in the idea of economic growth being the most desirable goal for an economy, still there is a lack of agreement for that what should be the annual growth rate which an economy should aim to achieve and maintain for the long term in order to be on the track of sustainable development.

The matter of concern is that there is no definite extreme for deducing to what extent the monetary policy can give stimuli to the growth of the economy. There are ways and methods by which the monetary authority may influence the growth of an economy like controlling the real interest rates and have it impacts on the investments in the economy. Economic growth can be promoted with raising the level of investments by lowering the interest rates i.e. by adopting an easy credit policy. Maintaining the stability of income and prices adds to the contribution of the monetary policy towards the growth of an economy. Aversion of the deep depressions by controlling economic fluctuations is also the mechanism by which a monetary policy ensures the attainment of the growth objective. Since the growth of an economy is adversely affected by deterring of the investments as a result of variable rates of inflation, monetary policy has a role to play for controlling the hyperinflation. Likewise, growth can be promoted through the encouragement of investments by adopting a judicious monetary policy. For instance, when a tight monetary policy is adopted in an economy it has greater impact on the small firms than that of the large firms and similarly higher rates of interest affect the small investments more than it affects the large industrial investments. So it is very much needed to have a monetary policy that could encourage investments and at the same instance put a check on the rising rates of inflation which is considered the optimum solution for the promotion of growth in the economy.

3, Full employment : Full employment is the also an important objective which remains to be given due consideration on framing a monetary policy. Since unemployment ultimately turns out to be the wastage of potential output and also the loss of social standing which develops into the most hazardous problem of an economy i.e. the poverty, the goal of the full employment is very much needful to be achieved by the monetary policy.

As Keynes has opined that, full employment is a scenario when there is the absence of involuntary unemployment. This means in an economy, if everybody who wants to work gets the work is known as the situation of full employment. Keynes advocates the increase in effective demand as a way out to achieve the 0bjective of full employment.

Burnner (1961) modified the Keynes version and defined the situation of full employment as, a situation where all qualified persons who want to get work at the prevailing wage rates get full time jobs. For now economists suggest that by full employment it is meant that there exists 96 to 97 per cent employment in the economy with 3 to 4 per cent unemployment which will always tend to exist in the economy due to frictional factors. For achieving the objective of full in an economy an expansionary monetary policy is to be adopted.

4, Balance of payment's Equilibrium : Maintaining the equilibrium in the balance of payments has always been an issue since independence. Hence this is the one more objective which has been assigned to the monetary policy. As there has been phenomenal growth in the world trade as against the growth of international liquidity in the last three decades the necessity to achieve this goal has emerged as very much important for the developing economies. Since deficit in the balance of payments acts as a speed breaker in the achievement of the other objectives due to that it leads to the outflow of gold from the economy, this objective is always to be monitored with due considerations. As the satisfactory balance of payments position not being very clear i.e. it is yet to be determined that what should be the balance of payment target of an economy? Is it where imports equal exports? This makes the attainment of a balance of payment equilibrium goal imperative in nature. How can monetary policy achieve it?

Balance of payments deficit refers to the excessive supply of money in the economy. For which people are certain to exchange their excess money for foreign goods and securities.

If there is the fixed exchange rates system in the economy, the central bank will tend to eliminate the excess money supply by selling the foreign exchange reserves and buy the domestic currency. With this the equilibrium in the balance of payments will be restored.

Contrarily if the situation is other way i.e. if there is more demand for money in the economy and the existing money supply falls short at the given exchange rate, there will be a surplus. In this situation people will try to retain the domestic currency by selling goods and securities to foreigners. There may also be a restriction of the expenditures in order to acquire more domestic money balances. In this situation the central bank will buy excess foreign currency in exchange for domestic currency for eliminating the shortage of domestic currency.

On studying the monetary policy framework in India the evolution this set-up in India seems to be seen in phases which kept on developing during the course of time. From 1935–1950, the main focus of the monetary policy was to regulate the supply of and demand for credit in the economy through the bank rate, reserve requirements and open market operations (OMO). During 1951–1970, the shift in that focus of monetary policy moved towards the supporting plan financing. This shift resulted in the introduction of certain quantitative control measures so as to offer resistance to consequent inflationary pressures. During 1971 to 1990, the focus of monetary policy was on credit planning. The statutory liquidity ratio (SLR) and the cash reserve ratio (CRR) were both used to stabilise the government financing and the mounting inflationary pressures.

On the same lines there was a shift in the financing paradigm for the government and commercial sectors with increasingly market-determined interest rates and exchange rate due the structural reforms and financial liberalisation in the 1990s. During the latter half of the nineties, considering

the liquidity management operations, the Reserve Bank was got into a position to abstain from the direct instruments to indirect market-based instruments. In April 1999, the Reserve Bank in came up with a full-fledged liquidity adjustment facility (LAF). It was operated through overnight fixed rate repo and reverse repo in November 2004. This process benefitted for it stimulated to develop interest rate as an instrument of monetary transmission. This framework was reinforced in May 2011 when the weighted average overnight call money rate was explicitly recognised as the operating target of monetary policy and the repo rate was made the only one independently varying policy rate (Mohanty, 2011).

Effectiveness of monetary policy in the post-reform period

The Reserve Bank of India Act, (1934) in its very structure has set certain objectives for the central bank which are as, "to regulate the issue of currency and ensuring monetary stability in India along with operating the currency and credit system of the country to its best optimum." This broad specification makes it clear that, maintaining price stability and ensuring adequate credit to productive sector are the foremost objectives of the monetary policy. Among the objectives of monetary policy, price stability and ensuring credit flow for growth promotion, have remained same over the period of time, but there has been significant transformation as for as the underlying operating environment for monetary policy is studied.

In the late eighties, the Indian economy was going through a macroeconomic crisis which had to be overcome in order make the economy going in a smooth fashion. For this in 1991, India initiated the New Economic Policy. The economic reforms included fiscal, monetary, industrial and EXIM sector reforms. With this the efficacy of broad money M3 which was very much effective since the mid-eighties up to 1997-98 as an intermediate target of monetary policy came under doubt.

There is a wide lobby of growing economists who have and are studying the monetary policy but still the literature on the working and efficiency of the monetary policy is very much limited. The efficiency of the monetary policy is assessed by the efficiency of transmission mechanism which the monetary policy follows. As mentioned earlier in this study, monetary policy transmission takes place through four major channels viz. interest rate channel, credit flow channel, Asset price channel and the exchange rate channel. Interest rate channel and the credit flow channel being the most important among these, in this study we are most concerned with studying the mechanism of these two channels for evaluating the efficiency of the monetary policy in the post-reform period. The data regarding all the constituting variables of these two channels has been converted into quarterly data and then put through regression analysis. Further the period of the study has been subdivided under three different sub-periods viz. sub-period I (1991-1997), sub-period II (1998-2004) and sub-period III (2005-2012). The results derived from the regression analysis of all the components of both the channels are given below and henceforth the explanations are put forth.

4.5 Effectiveness of the interest rate channel

The available literature on the transmission of the interest rate channel implies those changes which are induced in the money supply and influence the rate of interest and then the adjusted rate of interest influences the investments and ultimately the changes are reflected in the level of GNP thereby. It is a three step pathway where under a pre-framed monetary policy, the money supply is administered and the nominal rate of interest is adjusted thereby. Since rate of interest has a direct impact on the investments in an economy therefore there are changes in the level of investments and ultimately the attempt is aimed to get the desired level of GNP. In the table below the regression analysis has been run on the variables which comprise this channel for which data has been taken from the year 1990-91 to 2012-13. The data has been divided under three sub-periods where sub-period I covers the period from 1990-91 to 1997-98, sub-period II is from 1997-98 to 2004-05 and the sub-period III is from 2004-05 to 2012-13.

Table 4.1

variables	Sub-period I	Sub-period II	Sub-period III
M3 / ROI	-656.8321***	-4790.402***	-7397.698***
ROI /Investment	-0.003058***	-0.000424***	-0.000247***
Investment/GDP	0.104286***	0.297276***	0.297137***

*** indicates 1 % level of significance

In the table above we see that the effectiveness of the interest rate channel is effective in its first stage of transmission i.e. money supply and the rate of interest stage of transmission where money supply (M3) is the dependent variable and the rate of interest is the explanatory variable. In the first sub-period the coefficients are the highest and keep decreasing and reach a drastic low figure in the sub-period II which indicates that the effectiveness of the monetary policy has kept increasing at this stage in all the three sub-periods since there is a negative relationship between money supply and the rate of interest. This trend continues in the third period also and the transmission has risen to the maximum among all the three sub-periods, in the recent years also the situation is keeping good at this stage of transmission with some good signs in the last two three years of the post-reform period. The next two stages of transmission are not too fully satisfactory in the sub-period II but to some extent the investment-GDP stage of transmission have performed better. Here it is clear that the transmission is very less efficient in the second sub-period where the second stage of the transmission process does not respond well to the policy framework. The values of the coefficients at the second stage of the transmission where rate of interest is the dependent variable and investment is the explanatory variable depict that there has been a decrease in the responsiveness of the investments against the adjustments in the rate of interest which implies that the effectiveness of the monetary policy has decreased in the sub-period II and also in the sub-period III but in the recent years i.e. the later years of the sub-period III there are signs of recovery from this Stage of transmission also.

4.6 Effectiveness of the credit rate channel

The credit rate channel is one of the most prominent channels of the monetary policy transmission. For analysing this channel in the post-reform period we know this channel is further subdivided into two sub-categories the bank-lending channel and the balance sheet channel. Since bank-lending channel is very much essential in terms of the development of the financial markets, here we consider this sub-channel for assessing the effectiveness of the credit rate channel . The pathway of this channel comprise of the changes in money supply to its impact on the bank deposits and then the amount of loans. The changes in the amount of the loans have a direct impact on the level of investments in the economy and ultimately the level of GNP. In the table below the analysis has been made by taking the data on all these variables considered in the post-reform period and the results of the empirical analysis is given below.

Table 4.2

variables	Sub-period I	Sub-period II	Sub-period III
M3/ Deposits	1.254159***	1.214610***	1.186928***
Deposits/Loans	1.797525***	1.386365***	1.233087***
Loans/investment	1.580481***	1.358597***	2.918028***
Investment/GDP	0.104286*	0.297276***	0.297137***

Calculated by the author.

*** indicates 1 % level of significance

In the table above the results from the regression analysis show that the effectiveness of the credit rate channel has decreased in all the three sub-periods in its very first stage of transmission but the decrease is not too much higher, but the situation worsens when we have a look at the second stage of the transmission i.e. the Deposits and loans stage of transmission the coefficients show much more decrease in the sub-period II and the decrease in the values of coefficients continues in the sub-period III also. Same is the case with the third stage of the transmission where Loans are the dependent variable and the investment is the explanatory variable where there is a decrease in the sub-period II, but again the transmission turns effective in the sub-period third with a handsome increase in the value of coefficient in the sub-period III however there had been slight fluctuation all through the post-reform period. The values of the coefficients for the last stage of the credit rate channel given in the table above are satisfactory and have kept improving in all the sub-periods. This implies that the only downward movement of the values in the first three stages of the transmission has been in the sub-period II only i.e. from the year 1997 to 2004. As for the last stage of the transmission is concerned we see that the value of the coefficients has increased in all the three sub-periods and explains that the increase in the investments has very well reflected in the increase in the GDP.

Conclusion

On analysing the interest rate and the credit rate channel and studying the results thereafter we have come to certain important findings about the effectiveness of the monetary policy transmission in the post-reform period. As for as the interest rate channel is concerned, the

transmission has been overall significant but there are variations in the level of effectiveness across different sub-periods. Among all the three sub-periods, the level of effectiveness has been very low in the sub-period II i.e. from 1998-2004. Moreover this channel has repeatedly faced setbacks at the stage II of transmission i.e. the rate of interest and the investment relationship across all the sub-periods but the situation is worse in the sub-period II.

The credit rate channel has come out with a satisfactory figure and proved significant across all the three sub-periods under consideration. With slight variations the level of effectiveness through this channel has also been declining during the first two sub-periods i.e. 1991-1997 and 1998-2004 as for the first three stage of transmission are concerned. In the third sub-period the level of effectiveness has dropped significantly at the first two stages of the transmission channel i.e. money supply: deposits and the deposits: loans stage. The only satisfactory figure which has done well in all the three sub-periods is that the investments have transmitted well into the GDP during the entire post-reform period. Here we come to conclude that the effectiveness of the transmission of the investments into GDP can be automatic and due to the robust economic growth in the last two decades and otherwise the monetary policy instruments have not been effective in the most of the post-reform period as for as the interest rate and the credit rate channel is concerned.

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