Chapter-5

Conclusions and Policy Implications

This chapter begins by addressing each of the research questions posed at the outset of the study in the context of the empirical model results. Through the discussion of the findings, this chapter aims to provide a comprehensive understanding of the research questions and how they relate to the larger body of literature in the field. The analysis undertaken in the previous chapters is reviewed, and the implications of the results are evaluated. In addition, this chapter provides a summary of the thesis, drawing on the key findings of the study to provide insights into the broader implications of the research. Finally, the chapter concludes with a discussion of policy recommendations based on the findings and limitations of the study, outlining potential areas for future research to further explore the questions addressed in this thesis.

5.1 Overview of the study

The objective of this study was to examine the interaction between monetary and fiscal policies in India from 1991 to 2016 using quarterly data. The year 1991 marked a crucial period in the Indian economy when significant economic reforms were introduced and the economy was opened up. During this period, the monetary policy regime shifted towards a multiple indicator approach. Additionally, in 2013, the Fiscal Responsibility and Budget Management Act, 2003 was established to guide fiscal

policy towards a rule-based framework. The study focused on the period when the monetary policy was following a multiple indicator approach.

The study utilized key macroeconomic variables such as interest rate, inflation, government expenditure, government taxes, output gap, and exchange rate. The call money rate was used as a proxy for interest rate, which is a money market variable. Inflation was calculated based on the Wholesale Price Index (WPI), while government expenditure and net taxes were converted into real terms using the Gross Domestic Product (GDP) deflator. The output gap was extracted using the Hodrick-Prescott (HP) filter from the GDP series, and the real effective exchange rate was used as a measure of the exchange rate. The interest rate was considered the monetary policy instrument, while government expenditure and taxes were regarded as the fiscal policy instruments.

The study employed the Structural Vector Autoregression (SVAR) methodology sign and zero restrictions. The impulse response obtained from the model was used to analyze the interactions between the macroeconomic variables. The Variance decomposition obtained from Cholesky decomposition was used to identify the variation in the macroeconomic variables on which sign restrictions were placed. Prior to the SVAR analysis, the variables were transformed into stationary form using the difference method.

5.2 Result analysis according to research objectives

Research Objective 1 :To understand the reaction of monetary and fiscal policy variables to each other.

This study investigates the response of fiscal policy to a monetary policy shock in India. Specifically, we examine the impact of interest rate changes on government expenditure and tax policies. The findings indicated that a positive interest rate shock lead to a decrease in government taxes and an increase in government expenditure, suggesting a differential response from fiscal policy tools.

Additionally, our study revealed that the impact of monetary policy on fiscal policy is not consistent. In some cases, contractionary monetary policy leads to expansionary fiscal policy, while in other cases, the opposite occurs. This pattern is especially pronounced when the monetary policy response aims to control inflation, while the fiscal policy aims to promote growth. India has experienced several instances where monetary policies were contractionary in response to inflationary pressures in the economy, while fiscal policies aimed at promoting growth responded with an expansionary effect.

The study also found that in response to a positive tax shock not accompanied by an increase in government spending, the monetary policy responds with an expansionary action, while in cases of increased government spending not accompanied by tax rise, the monetary policy response is contractionary.

The study clearly showed that the interaction between monetary and fiscal policy varied in response to different shocks. In the case of an interest rate shock, a contractionary monetary policy was followed by an expansionary fiscal policy due to increased government expenditure. In the case of a tax shock, a contractionary monetary policy action was followed by an expansionary fiscal policy response. Conversely, in the case of an expenditure shock, an expansionary fiscal policy was followed by a contractionary monetary policy response.

India has experienced several instances where monetary policies were contractionary in response to inflationary pressures in the economy, while fiscal policies aimed at promoting growth responded with an expansionary effect. These findings highlight the complex and nuanced relationship between monetary and fiscal policy in India, and underscore the need for policymakers to carefully consider the potential consequences of their actions.

Research objective 02: Examine whether the policies are complementary or substitutes to each other under different macroeconomic shock.

The study analysed the concept of policy complementarity and substitutability as it is important in understanding the interactions between fiscal and monetary policies and ultimately define their efficiency. The relationship between the two policies can have significant implications for macroeconomic stability and the achievement of policy objectives such as price stability, output stabilization, and sustainable economic growth.

In the economic literature (see Muscatelli et al.,2004), the two policies can be considered substitutes if there is a positive relationship between the interest rate and the net fiscal stance. On the other hand, if the two policies have a negative correlation, they are said to act as complements. The results according to the impulse response are summarised below in the table

Table 5.1 Types of shocks and Policy Behaviour

Type of shock	**Nature of reaction**
Monetary policy shock	Substitutes
Tax shocks	Complements
Expenditure shock	Subsititutes
Aggregate demand shock	Complements
Aggregate supply shock	Complements
Source: Based on empirical result reported in Chapter-4	

In the case of substitutability, the two policies work against each other, with the expansionary fiscal policy leading to a contractionary monetary policy, and vice versa. This implies that the effectiveness of one policy is offset by the other policy, making it difficult to achieve desired policy outcomes. For example, if the government increases spending to boost economic growth, the central bank may increase interest rates to control inflation, thereby limiting the impact of fiscal policy on output and employment.

In contrast, in the case of complementarity, the two policies work together to achieve a common policy objective. This implies that the effectiveness of one policy is enhanced by the other policy, leading to greater impact on the economy. For example,

if the government implements expansionary fiscal policy by increasing spending, the central bank may reduce interest rates to support this policy and boost economic growth.

Table 5.1 presents the results of the study, which suggest that in the case of tax shock, aggregate demand and aggregate supply shocks, both fiscal and monetary policies act as complements. This means that these policies can work together to achieve the goals of price stability and economic growth. However, in the case of monetary policy shock and expenditure shock, the two policies behave as substitutes. In such cases, the effectiveness of one policy is affected by the other, which can be detrimental to overall macroeconomic stability. It is important to note that the relationship between fiscal and monetary policies is complex and depends on various factors, including the specific shocks to the economy and the policy response to them. Therefore, policymakers should carefully consider the interactions between these policies to ensure macroeconomic stability and achieve their policy objectives.

Research objective 03: To study the impact of monetary policy shock (interest rate) on macroeconomic variables.

This study investigates the impact of interest rate shock on output and inflation variables. The findings suggest that an increase in monetary policy is effective in reducing the inflation rate and stabilising the output gap. However, the expansionary fiscal policy stance has a prolonged effect on stabilising the output gap. The results also indicate that the effectiveness of monetary policy in reducing inflation and

stabilising output is influenced by fiscal policy actions. These findings suggest that policymakers should take into account both monetary and fiscal policy actions when designing policy interventions to achieve macroeconomic stability.

Research objective 04: To study the impact of fiscal policy shock (taxes and expenditure) on macroeconomic variables.

This study examined the effectiveness of two instruments of fiscal policy, namely tax and expenditure shocks, on output and inflation variables.The results demonstrated that tax shock is more effective in stabilizing the economy compared to expenditure shock. As in case of tax shock, monetary and fiscal policy tend to act as complements and has achieve the macroeconomic objective. The fluctuations observed in expenditure and tax were identified as responsible for the output fluctuations. Additionally, the study found a positive relationship between expenditure and inflation in the initial stages, whereas a negative relationship between taxes and inflation was observed.

Further, the variance decomposition analysis revealed that most fluctuation in output gap in long run is caused due to expenditure and least due to interest rate. Additionally, the most fluctuation in long run in case of inflation is also due to expenditure.

Research objective 05: To study the impact of macroeconomics situation (aggregate demand and aggregate supply shocks) on monetary policy variable.

The study examined the impact of aggregate and aggregate supply shocks in the economy using sign restriction to identify the respective shocks on SVAR model. aggregate demand shock was identified on basis of positive impact on both inflation and output gap while aggregate supply was identified on basis of positive impact on inflation and negative on output. The finding revealed that response of monetary policy to aggregate demand and supply shocks has important implications for macroeconomic stability. In the case of an aggregate demand shock that increases output and inflation, the monetary policy responds with a contractionary policy action by increasing the interest rate. Conversely, in the case of a positive aggregate supply shock that increases output but decreases inflation, the monetary policy responds with an expansionary policy action by lowering the interest rate. This suggests that the monetary policy in response to supply and demand shocks is counter-cyclical in nature.

Research objective 05: To study the impact of macroeconomics situation (aggregate demand and aggregate supply shocks) on fiscal policy variable.

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inflation and negative on output. The results revealed that the response of fiscal policy to aggregate demand and supply shocks can be characterized as initially contractionary, with different magnitudes of impact depending on the nature of the shock. In the case of an aggregate demand shock that led to increased output and inflation, fiscal policy responded with an initial increase in taxes and decrease in expenditure. However, the monetary policy response was contractionary, with an increased interest rate.

In contrast, a positive aggregate supply shock that increased output but decreased inflation was met with a fiscal policy response of increased taxes and a slight increase in expenditure. Overall, the impact of fiscal policy was contractionary, as the increase in taxes outweighed the increase in expenditure. The result can be summarised in the table 5.2.

Table 5.2 Policy reactions in different macroeconomic situations

Shocks \ Policy	Monetary Policy	Fiscal Policy
Aggregate demand shock	Contractionary	Contractionary
Aggregate supply shock	Expansionary	Contractionary
Source: Based on empirical result reported in Chapter-4		

Research objective 07: To study whether the monetary policy variable respond differently to tax shock vis-a-vis expenditure shock.

The tax shock was identified on the basis of a positive impact on taxes and output gap, whereas the expenditure shock was identified on the basis of a positive impact on expenditure and output gap.

The results of the study showed that in the case of a positive tax shock, where there is no accompanying increase in government expenditure, the monetary policy responded with an expansionary policy action by decreasing the interest rate. On the other hand, in the case of a positive expenditure shock where there is no accompanying increase in taxes, the monetary policy acted in a contractionary way.

The findings suggested that the monetary policy prioritized the inflation goal and moved in line with that. When the tax shock was positive, low inflation allowed the monetary policy to reduce interest rate.

Research objective 08: Understanding the fiscal policy variable and exchange rate dynamics and its implication for monetary policy

The study also investigated how fiscal and monetary policy shocks affect exchange rate dynamics. The study finds that a positive interest rate shock and a positive exchange rate shock tend to lead to exchange rate depreciation.

However, further analysis reveals that the actual impact on exchange rate dynamics depends on the combination of fiscal and monetary policy shocks. For example, the expectation that a positive interest rate shock should lead to exchange rate appreciation is contradicted by the empirical evidence when a positive expenditure shock occurs. Despite the positive interest rate reaction, the exchange rate depreciates. Similarly, a tax shock leads to a negative interest rate and exchange rate depreciation. These findings suggest that fiscal shocks have a significant impact on exchange rate dynamics, and highlight the importance of considering the interplay between fiscal and monetary policy instruments in order to better understand the dynamics of exchange rates.

5.3 Efficiency of Monetary and Fiscal Policies

Both monetary and fiscal policies are used by policymakers to influence economic activity in the country, but they work differently and have different tools at their disposal.

Monetary policy is primarily concerned with managing the money supply in the economy and controlling interest rates to achieve price stability and promote economic growth. On the other hand, fiscal policy involves the use of government spending and taxation to influence economic activity and stabilize the economy.

The empirical analysis from the impulse response found that the effectiveness of monetary policy in achieving its goals hinges on the type of fiscal policy shock in

question. Monetary policy serves the objective of economic expansion when tax shocks are prevalent in the system vis-à-vis expenditure shocks.

The study also found that the effectiveness of both monetary and fiscal policies depends on whether they act as complements or substitutes to each other. When these policies act as complements, they work together to achieve macroeconomic stability and promote sustainable economic growth. For example, when there is an aggregate demand or supply shock, monetary and fiscal policies can complement each other to stabilize the economy and achieve both price and output goals.

However, when monetary and fiscal policies act as substitutes, they tend to cancel out each other's effects, which can be counterproductive. In this case, the type of shocks in the system becomes critical for the efficiency of the policies.

Regarding the efficiency of fiscal policy tools, the study found that tax shocks are more effective than expenditure shocks in stabilizing the economy and achieving macroeconomic stability along with monetary policy. Policymakers should, therefore, focus on tax policies to achieve their policy objectives.

Further, the study also found that the two types of fiscal shocks (expenditure and tax) generated different responses in the exchange rate. Given that India follows a managed floating exchange rate regime, where the monetary authority manages the exchange rate, fiscal shocks may transmit through the exchange rate and affect monetary policy variables.showed that the two types of fiscal shock generated

different exchange rate response. India, follows a managed floating regime and exchange rate management us taken care by monetary authority. So fiscal shock may transmit through exchange rate to affect monetary policy variables.

In summary, the study suggests that policymakers need to coordinate their efforts and take into account the interdependence between monetary and fiscal policies to promote economic stability and reduce negative externalities. The type of shocks in the system and the efficiency of different fiscal policy tools also have important implications for the effectiveness of monetary and fiscal policies in achieving their objectives.

5.4 Policy Implications

The study's empirical analysis has revealed multiple channels of interdependence between monetary and fiscal policies. The differential response of monetary policy to distinct fiscal policy variables underscores the residual influence of fiscal policy on monetary policy. Hence, in light of India's recent adoption of inflation targeting and the establishment of a monetary policy committee, it is imperative to adhere to fiscal rules to avoid impinging upon the effectiveness of monetary policy. Specifically, a tax shock may contain the inflationary consequences of an expansionary fiscal policy, freeing up monetary policy space to focus on growth objectives.

Additionally, the study has shown that policy responses are shock-dependent, mandating policy coordination to attain macroeconomic stability. A coordinated response to shock will cause less fluctuations in the economy.

Lastly, Adherence to fiscal policy regulations is crucial for sustainability to ensure that the inflation targeting regime functions optimally. India's populist-driven fiscal policy exemplifies the importance of complying with fiscal rules.

5.5 Conclusion

The objective of the study was to examine the interplay between monetary and fiscal policies in India, given different policy alternatives. Various structural shocks in the economy were identified and evaluated for their impact on policy and non-policy macroeconomic variables. The study found that the relationship between these policies was complex, as there were numerous interactions between their variables. The direction of monetary policy actions depended on the type of fiscal policy shock, which demonstrated the potential supremacy of fiscal policy over monetary policy. The study suggested that policymakers should take into account the impact of fiscal policy shocks when making monetary policy decisions.

The study's results were consistent with prior research (see Raj et al., 2011 and Arora, 2018) that discovered a one-way causality from gross fiscal deficit to monetary policy rate. Despite the enactment of the FRBM Act in 2003 to ensure fiscal sustainability, fiscal policy still exerted some control over monetary policy. In this case, strict

adherence to fiscal policy rule became critical for the effectiveness of monetary policy, particularly as the inflation targeting policy approach was adopted as the monetary framework in India. If fiscal sustainability was not guaranteed, a lax fiscal policy stance would continue to hamper the efficiency of monetary policy.

The study emphasized the importance of policymakers coordinating their efforts to achieve macroeconomic stability and sustainable economic growth. Policymakers were advised to take into account the interdependence between monetary and fiscal policies to promote economic stability and reduce negative externalities.

Understanding the nature of the interaction between these two policies was also critical to reduce negative externalities. The study found that the effectiveness of monetary and fiscal policies depended on whether they acted as complements or substitutes to each other, which was determined by the type of shock. A coordinated response and understanding of the shock type was crucial in achieving macroeconomic stability. When these policies acted as substitutes, they tended to cancel out each other's effects, which could be counterproductive.

Furthermore, the study analyzed the efficiency of two fiscal policy tools and discovered that tax shocks were more effective than expenditure shocks in stabilizing the economy and achieving macroeconomic stability along with monetary policy.

In summary, the study emphasized the importance of policymakers considering both fiscal and monetary policy actions when designing policy interventions to achieve

macroeconomic stability and policy objectives. These findings could inform policymakers and analysts about the interactions and impact of these policies, contributing to a better understanding of the macroeconomic environment in India.

5.6 Limitations of the study

The current study has been conducted specifically for India, covering the time period from 1991 to 2016. It is important to note that the results of this study cannot be generalized to other countries, as differences in institutional frameworks and policy regimes across countries may result in different policy interactions and outcomes.

Additionally, it should be acknowledged that the study used a SVAR approach with sign and zero restriction for identifying the structural shocks, which is an empirical method and subject to certain limitations. While this approach is useful for identifying the direction of policy shocks, it may not capture all the nuances of the policy interactions and their impact due to complexities associated with time series data. Therefore, future research could consider alternative approaches that may provide more robust insights into the dynamics of monetary-fiscal-exchange rate interactions.

It is important to note that the current study is based on a specific set of variables, and the inclusion of additional variables may reveal new interactions and relationships between different policy instruments. However, due to the nature of the SVAR approach used in this study, the number of variables that can be included in the analysis is limited.

5.7 Scope for further research

Future research could focus on further exploring the dynamics between monetary, fiscal, and exchange rate policies to better understand the extent of indirect transmission mechanisms between these policies, particularly through their effect on exchange rates. This is especially important given that this study's findings contradict those of previous research.

In addition, the study's analysis could be improved by exploring the dynamic relationship between the variables using their elasticities instead of just zero magnitudes. This could provide a more detailed understanding of the interactions between the variables and the impact of policy shocks on exchange rate dynamics.