IS MONETARY POLICY AN EFFECTIVE STABILIZATION TOOL AGAINST EXTERNAL SHOCKS IN INDIA?

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ABSTRACT

As an open economy, the Indian economy is vulnerable to the exogenous shocks from external events. Therefore, its Central Bank (RBI) has to consider the impact of the external shocks on the domestic economy in formulating its monetary policy. This study examines how effective is domestic monetary policy in mitigating the negative effects of external shocks (for example, oil price, foreign monetary policy, and foreign income shocks) on domestic economic activity. This information is pivotal for the monetary authority in order to evaluate what would happen to the domestic economy if it does not react to the external shocks. In order to estimate the effectiveness of monetary policy in mitigating the negative impact from external variables, the study uses 'Shutdown Methodology'. The findings suggest that monetary policy plays an important role in stabilizing the domestic output and inflation from the adverse global supply shocks (an increase in world oil price growth), while its role in shielding domestic output from adverse effects of increase in federal rate is only marginal. This is an important finding as it shows that despite the partial pass-through of global oil price changes to domestic economy, some impact which is felt on domestic GDP and inflation can me ameliorated by the Central Bank's prudent policy measures.

KEYWORDS: *Monetary policy, Structural VAR, External factors*

Section-1: INTRODUCTION

Monetary policy analysis has become an increasingly important issue in the context of the growing integration of the Indian economy with the global economy. India's integration into the world economy over the last decade has been remarkably rapid. Going by the common measure of globalization, India's two-way trade (merchandize exports plus imports), as a proportion of GDP, grew from 21.8 per cent in 2000-01, to 44.1 per cent in 2013-14. Increasing integration has also meant that the external variables have increasingly started affecting the domestic variables. Therefore, the Central Bank has to consider the various resulting external environments in its preparation of the monetary policy. This is important to minimize any negative effect of external shocks to the domestic economy.

It has been observed that external shocks such as changes in world oil price and US federal fund rate changes have a significant influence on the macroeconomic fluctuations in any economy. For example, Kilian and Vigfusson (2014) empirically estimated the role of oil shocks in causing recession in the US and found that oil price shocks explained a 3 per cent cumulative reduction in U.S. real GDP in the late 1970s and early 1980s and a 5 per cent cumulative reduction during the financial crisis. An oil price hike acts like a tax on consumption and, for a net oil importer like the India, the benefits of the tax go to major oil producers rather than the Indian government. India is a major oil consumer and at present, India imports 79 per cent of its oil needs, and spent US$138.3 billion on the same in 2014-15.

Apart from world oil prices, foreign monetary policy, specifically changes in US federal fund rate are an important source of fluctuations in monetary policy implementation and macroeconomic fluctuations in a small open economy. For example, Mackowiak (2007) found that a sizable fraction of fluctuations in emerging markets is attributable to external shocks. In fact, U.S. monetary policy shocks affect quickly and strongly, the interest rates and the exchange rate in a typical emerging market. Another important global shock which has an important impact on the macroeconomic parameters of emerging economies is global growth rate shock. It works mainly through dampening of the trade impulses. Didier et al. (2012) in a cross-country panel found that emerging market economies suffered growth collapses comparable, or even larger, to those experienced by advanced economies during the global financial crisis of 2008-09.

Thus, given the importance of external variables in influencing the domestic macroeconomic variables in emerging economies, it is important to study the impact of the external shocks, specifically of - world oil prices, foreign income and foreign monetary policy shocks on the implementation of monetary policy. More importantly, also examine if monetary policy has been effective in mitigating the negative impact of external shocks on domestic macroeconomic variables. In the Indian context, such studies are only a handful. Thus, this paper makes an important contribution by improving the existing studies in three areas. First, this paper takes into account the role of external factors in modeling an open-economy structural vector autoregression (SVAR). Second, the paper provides a unique contribution of monetary policy analysis in a small open economy like India by identifying the structural shocks according to the economic theory as opposed to sometimes doubtful assumptions which underlie a traditional recursive VAR. Third, this study uses shutdown methodology in examining the question if RBI has been effective in guarding the domestic macroeconomic variables against the negative impact of external factors.

The rest of the study is organized as follows. Section 2 describes theoretical and empirical review of literature pertaining to the topic of study. Section 3 elucidates the objectives of the study. Section 4 discusses the methodology and the data used in the analysis. Section 5 discusses the empirical results. Section 6 provides conclusion and policy implications.

Section- 2: REVIEW OF LITERATURE

Most of the studies pertaining to SVAR have focused on a closed economy, specifically on US, in examining the effects of monetary policy shocks on economic activity. This seems understandable too as being a large economy US is not much affected by the happenings in the international arena. For example, Bernanke and Blinder (1992) in their study for US have used VAR involving four endogenous variables namely- Federal Funds Rate, unemployment rate, log of CPI, and the log levels of each of the three bank balance-sheet variables (deposit, securities and loans). In their study, monetary policy is assumed to be predetermined variable, which does not depend on contemporaneous shocks. Their findings show that federal fund rate is a better indicator in predicting economic activity than other measure of interest rates or other monetary aggregates.

There are few studies in which SVAR has been employed in a large open-economy. Kim and Roubini's (2000) work is one such study, wherein they employ SVAR in a sample of non US G-7 countries. They used seven variables, out of which two were foreign variables (the world price of oil and Federal Fund Rate), and five were domestic variables namely short-term interest rates, monetary aggregate, consumer price index, industrial production and exchange rate. In an interesting finding, they note that domestic monetary policy is not the major contributor to output fluctuations in the G-7 countries and in most countries, foreign shocks (oil price shocks and the US monetary policy) have contributed more to output fluctuations.

There is however limited amount of literature which has examined the effect of external shocks on domestic macroeconomic variables in a small open economy within a SVAR approach. Some of the recent SVAR studies done for a small open economy in this context were conducted by Cushman and Zha (1997), Brischetto and Voss (1999), Dungey and Pagan (2000), and Buckle et al. (2007). Most of these studies have assumed block exogeneity restrictions in modeling the external shocks.

There are many India centric studies examining the impact of monetary policy variables on growth & output and examining the efficacy of monetary transmission process. But most of these studies have been attempted considering India as a small and closed economy. There are only a limited number of studies which have modeled Indian economy in an open economy SVAR framework. For example, the recent SVAR studies of a small open economy were conducted by Khundrapakam and Jain (2012) and Paramanik and Kamaiah (2014). Most of these studies have used block exogeneity in modeling the international economic linkages to the small open economy. Khundrakpam and Jain (2012) in a RBI study

modeled India in an open SVAR model framework in order to examine the relative importance of various transmission channels of monetary policy to GDP growth and inflation in India. They took three exogenous variables in their study- world GDP, world commodity prices, and gross portfolio inflows. Amongst their important findings was the fact that external exogenous factors prolong the impact of monetary policy transmission on GDP growth and inflation in India, while removing the problem of 'price puzzle'.

Section-3: OBJECTIVES OF THE STUDY

The objective of the study is to analyze the effects of external shocks on macroeconomic variables in a small open economy. Further, the study examines how effective is domestic monetary policy in mitigating the negative effects of external shocks on domestic macroeconomic variables. The broad objectives of the study are as follows:

Objective 1: To examine how external shocks such as global crude oil price, external GDP and external monetary policy shocks are transmitted to the domestic economy.

Objective 2: How effective is the domestic monetary policy in mitigating the negative effects of external shocks to the domestic economy?

Section-4: DATA AND METHODOLOGY

All data are at a quarterly frequency spanning from first quarter of 1996 until the fourth quarter of 2014. In this study, there are two blocks of endogenous variables[1] namely external and domestic. The external block includes the variables - world oil price, global growth rate and federal fund rate. The domestic block consists of the target variables (GDP and inflation), monetary policy variables (money supply and call rate) and financial variables (exchange rate and stock prices). Data for the domestic variables has been collected from varied sources such as Reserve Bank of India (RBI), Central Statistical Organisation (CSO), and National Stock Exchange (NSE). Data for international variables has been sourced from IMF's International Financial Statistic (IFS), US Energy Information Administration (EIA), and US Federal Reserve. All variables are transformed into logs except for US fed rate, global growth rate, and call rate, which are stated in

percentage points. In addition, except policy interest rate variable, all other variables have been seasonally adjusted using X-12 ARIMA of the US Census Bureau. In addition to the endogenous variables, the model also includes three dummy variables. One dummy variable was to account for the global financial crisis of 2008, second was for the starting of quantitative easing in the US which pushed interest rates in US to near-zero and the third one was to control for extreme outliers in the values of call rates in 2007.

SHUTDOWN METHODOLOGY

In order to examine if the domestic monetary policy has been effective in mitigating the negative impact of external shocks on domestic macroeconomic variables, the study uses Shutdown Methodology. This methodology has not been used in any Indian study before; hence this paper is unique in that respect. In this methodology, the baseline impulse response functions are compared with the constrained model. In the constrained model, both the monetary policy variables (interest rates and money supply) are shut down by setting the monetary policy coefficient equal to zero in the domestic output and inflation equations. Therefore, the deviation or difference of the constrained impulse response from the baseline impulse response would represent the relative importance of monetary policy in stabilising the macroeconomic variables in response to foreign shocks.

Time Series Properties:-

Much of the SVAR literature which has examined monetary policy has overlooked the possible non-stationarity of the variables in the VAR model[2]. However, overlooking non-stationarity in the VAR system is not correct because only stationary variables return to their long-run mean after a shock. In this study, Augmented Dickey-Fuller (ADF) test has been employed to investigate the presence of unit roots in the data. The unit roots results are presented in Table below. The study uses lag two based on the fact that the optimum lag in the VAR system is determined once the existence of serial correlation is rejected in the VAR individual residuals. Appendix II gives detailed information about the Portmanteau serial correlation test among the individual residuals for different lag lengths.

(Footnotes)

[1] *For detailed description of these variables, see Appendix I*
[2] *Ramaswamy and Sloek (1997) have discussed extensively whether the VAR model should be estimated in level, difference or in vector error correction model (VECM).*

Table: Unit Root Results of Augmented Dickey Fuller (ADF) Test

Variables	LEVEL FORM		FIRST DIFFERENCE	
	Constant	Constant & Trend	Constant	Constant & Trend
LOIL	-1.657(1)	-2.582(1)	-5.096(0)***	-5.310(1)***
GLOBAL GROWTH	-4.701(2)***	-4.682(2)***	-	-
FED RATE	-1.934(1)	-3.019(1)	-3.764(0)**	-3.738(0)***
LNON-AGRI GDP	-0.519(0)	-0.929(0)	-8.957(0)***	-8.916(0)***
LCOREWPI	-0.0165(2)	-3.186(1)	-4.862(1)***	-4.775(1)***
LRealM3	-0.904(1)	-2.506(1)	-5.028(0)***	-5.056(0)***
CALL RATE	6.729(0)***	-6.675(0)***	-	-
LNEER6	-0.165(0)	-2.040(0)	-9.883(0)***	-9.866(0)***
LNSE500	-0.666(1)	-2.915(1)	-5.813(0)***	-5.780(0)***

Note: *** Denotes significant at the 1% level, ** significant at 5% level and * significant at 10 % level which rejects the null hypothesis of non-stationarity.

Indian Structural VAR Modeling:-

In identifying the structural VAR model, this has study employed the SVAR-A model proposed by Amisano and Giannini (1996). In matrix form, the identifying restrictions can be expressed as follows

$$
\begin{pmatrix}
1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
a_{21} & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
a_{31} & a_{32} & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & a_{54} & 1 & 0 & 0 & 0 & 0 \\
a_{61} & a_{62} & a_{63} & a_{64} & a_{65} & 1 & 0 & 0 & 0 \\
0 & a_{72} & a_{73} & a_{74} & a_{75} & a_{76} & 1 & 0 & 0 \\
a_{81} & a_{82} & a_{83} & a_{84} & a_{85} & a_{86} & a_{87} & 1 & 0 \\
a_{91} & a_{92} & a_{93} & a_{94} & a_{95} & a_{96} & a_{97} & a_{98} & 1
\end{pmatrix}
\begin{pmatrix}
\mu^{\Delta LOIL} \\
\mu^{\Delta GLOBAL} \\
\mu^{\Delta FED} \\
\mu^{\Delta LGDP} \\
\mu^{\Delta LWPI} \\
\mu^{\Delta LM3} \\
\mu^{\Delta CALL} \\
\mu^{\Delta LNEER6} \\
\mu^{\Delta LNSE500}
\end{pmatrix}
=
\begin{pmatrix}
\varepsilon_t^{\Delta LOIL} \\
\varepsilon_t^{\Delta GLOBAL} \\
\varepsilon_t^{\Delta FED} \\
\varepsilon_t^{\Delta LGDP} \\
\varepsilon_t^{\Delta LWPI} \\
\varepsilon_t^{\Delta LM3} \\
\varepsilon_t^{\Delta CALL} \\
\varepsilon_t^{\Delta LNEER6} \\
\varepsilon_t^{\Delta LNSE500}
\end{pmatrix}
$$

Identification Scheme:-

In the foreign block, the study has taken three variables, namely, oil prices, global growth rate and federal fund rate. This block has been assumed to be completely exogenous to the domestic blocks. In studies, it is common to identify that the foreign variables do not respond contemporaneously or with lags to the movements in the domestic variables in a small open economy.

Domestic GDP has been assumed not to respond contemporaneously to any of the other variables, be it the ones in the foreign or domestic block. With quarterly data, it seems reasonable to assume that output does not respond contemporaneously to other domestic shocks due to 3 months lag in the publication of output data in India. GDP has been assumed to respond to lags in world oil prices despite oil being an important input for domestic production as in India; despite the de-administering of oil prices way back in 2004, the pass-through to domestic prices is still partial. Domestic inflation has been assumed to respond contemporaneously to the innovations in only domestic output. As was in the case of domestic GDP, oil prices do not have a contemporaneous impact on domestic inflation due to delayed and incomplete pass-through of high international crude oil prices to domestic prices.

The use of the interest rates as a major instrument of monetary policy does not imply that it can ignore the role of money supply. The desired impact on the interest rates by the monetary authority can only be felt when it is accompanied by an appropriate change in money supply as well. Thus, the study considers two types of monetary policy shocks, namely, money supply and interest rates. Further, the study has assumed that money supply responds contemporaneously to all foreign block variables, domestic GDP and inflation. This seems to be a reasonable assumption as money supply can be changed by the Central Bank on a quarterly basis in order to reflect the changes in oil prices, global growth rate, fed rate, domestic GDP and inflation.

Further, it is assumed that the monetary authority responds on a contemporaneous basis to global growth rate, federal fund rate, domestic GDP, inflation and money supply, but in lags to oil prices, exchange rate and stock prices. It is customary to include output, inflation and money supply in the monetary policy reaction function given the fact that the Central Bank can observe this data on a quarterly frequency. Moreover, the inclusion of foreign monetary policy in the domestic monetary policy reaction function is reasonable too given that the India economy is getting increasingly integrated with the global economy. This justification of the monetary policy reaction function is also consistent with previous studies, for example, Kim and Roubini (2000), and Sims and Zha (2005).

The exchange rate is assumed to be respond contemporaneously with all foreign and all domestic variables (except stock prices). In contrast, the stock price is assumed to respond contemporaneously to all foreign and all domestic variables. This assumption is reasonable given that exchange rate and stock market are the fast-moving variables in the system.

Section-5: EMPIRICAL RESULTS
Structural Impulse Response Function (SIRF):-

Figures 1 and 2 illustrate the structural impulse response functions (SIRFs) of the foreign shocks on domestic macroeconomic variables (output and inflation), by comparing the baseline and constrained SIRFs (obtained by shutting off monetary policy response). The solid line in the SIRF indicates the estimated responses, while the two dashed lines represent the confident bands or error bands. The error bands of the SIRF are derived from Hall's bootstrapping methodology, which has a 95 per cent confidence interval with 100 being the number of bootstrap replications.

5.1 Impact of Foreign Shocks on Domestic Output:-

Oil Prices: As seen in the baseline SIRF (Figure 1 in the Appendix), a positive innovation in oil price shock leads to an increase in domestic GDP till the first quarter. However, after the second quarter, an increase in world oil prices is associated with fall in domestic real GDP growth, with the peak decline in growth occurring in the third quarter. It is interesting to note that this decline in domestic output is statistically insignificant; reflecting the fact that the pass-through of global oil prices change is still partial in India. The decline in domestic output from the second quarter onwards is due to the fact that an increase in world oil price will lead to an increase in firm's input costs, and subsequently the firms will respond by reducing their investment spending.

The constrained SIRF shows that the impact of a positive innovation in world oil price shock on domestic output is larger by shutting off an endogenous response of monetary policy as compared to the baseline impulse response. For example, in the third quarter when the peak impact happens in the constrained model, domestic output growth declines by 0.5 per cent in response to one standard deviation increase in oil prices, whereas in the baseline model, the accumulated output had declined by

only 0.3 per cent during the same period. Therefore, the study shows that monetary policy plays an important role in stabilizing the domestic output from the adverse supply shocks (an increase in world oil price growth).

Global Growth Rate: The Indian economy is also influenced by the global growth rate shocks. Domestic output growth responds positively to the foreign demand shock and the impact is statistically significant throughout. For example, the peak impact happens after nine quarters. After nine quarters, the accumulated response of domestic output growth is an increase to the tune of 0.38 per cent in response to one standard deviation increase in foreign income growth. This result is in line with the increasing integration of Indian economy with the global economy over time.

US Fed Rate: The accumulated response of domestic output to a positive innovation in federal fund rate is negative throughout but turns significant only between the second and fourth quarter. For example, between second and fourth quarter, the accumulated response of domestic output has decreased by 0.25 per cent in response to one percentage point increase in fed rate. Increase in foreign interest rate contracts foreign output, which decreases external demand, and subsequently contracts the domestic economy output.

The constrained IRF shows that by shutting down the domestic monetary policy variable, the accumulated decline in domestic output to one per cent positive innovation in fed rate peaks at 0.27 per cent in the second quarter. In the baseline model, domestic output had decreased by 0.25 per cent in the same time frame. Thus, monetary policy plays a marginal role in minimising the negative effects of foreign monetary policy shocks on domestic output growth

Figure 1: Structural Impulse Response Function: The Effect of Foreign Shocks on Domestic Output

BASELINE SIRF   CONSTRAINED SIRF
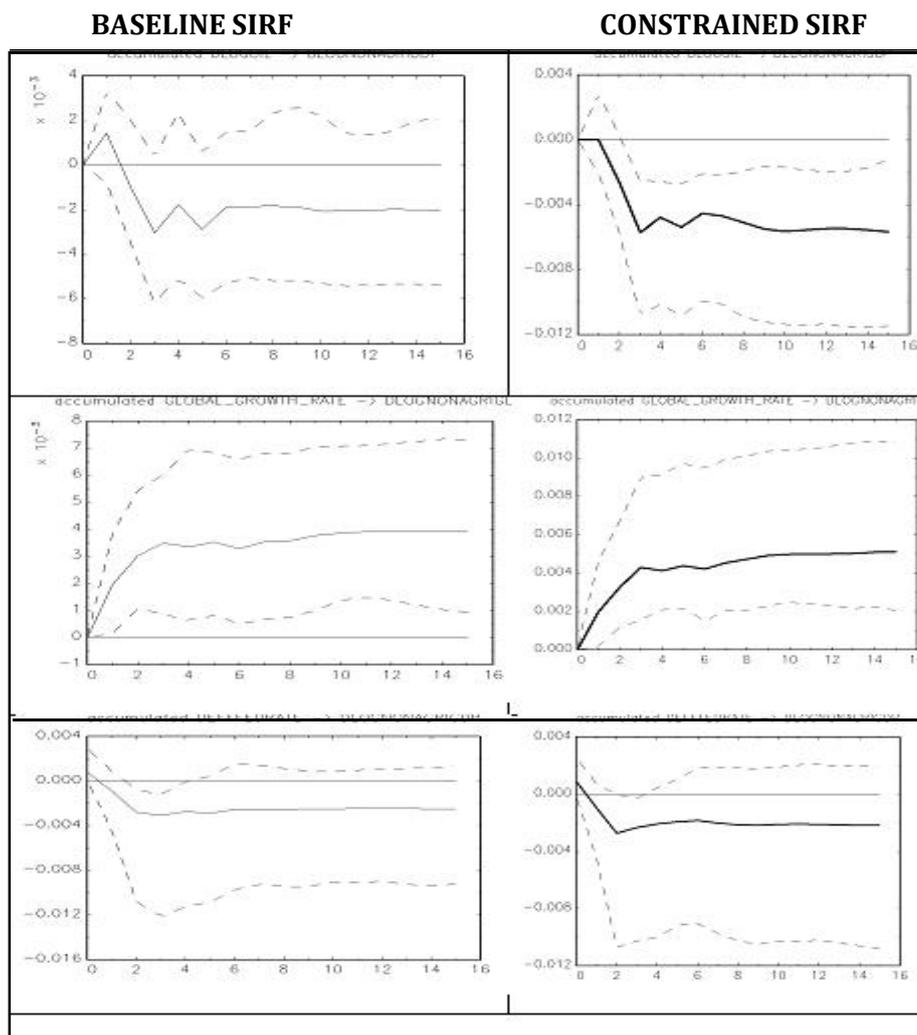
5.2 Impact of Foreign shocks on Domestic Inflation:-

Oil Prices: As seen in the baseline SIRF (Figure 2 of the Appendix), the impact of domestic inflation to one standard deviation change in global crude oil prices is positive throughout, with the impact being statistically significant only intermittently between the second & third quarter and eighth quarter. For instance, the peak effect is recorded in the second quarter, at which point every 1 per cent increase in world oil prices growth leads to an increase in inflation rate by 0.3 per cent. However, after two quarters, the response of inflation to oil price gradually declines. It is, however, interesting to note that the impact of global crude oil prices on domestic inflation is insignificant for most of the time period as it reflects the delayed and incomplete pass-through of high international oil prices to domestic prices.

The constrained SIRF shows that the impact of the world oil price growth on domestic inflation is higher without an endogenous response of monetary policy, with the peak increase in inflation recorded at 0.45 per cent in the second quarter. In comparison, in the baseline model, the peak increase in inflation was 0.30 per cent in the same quarter. Thus, it can be said that monetary policy is an effective tool in guarding against the negative effect of world oil prices on domestic inflation.

Global Growth Rate: The baseline SIRF shows that one standard deviation positive shock to global growth rate leads to an increase in core WPI, with the impact being significant throughout the period. This implies that global growth rate has an important influence on domestic inflation. The peak impact is felt in the third quarter. For example, in a three quarter period, a positive shock in global growth leads to an increase in domestic inflation by 0.24 per cent, after which the impact tapers off.

The constrained SIRF shows that a positive innovation in foreign demand shocks will generate an expansion of domestic output growth through an increase in exports, and could accelerate inflation rate. Therefore, monetary policy can be used as a stabilization policy in minimizing the effect of a foreign shock on the domestic inflation rate. By shutting off monetary policy, a positive innovation in global growth rate has increased domestic inflation rate by approximately 0.23 per cent by the third quarter (its peak level) as compared to 0.24 per cent in the baseline SIRF. Thus, the effect of monetary policy in stabilizing against the negative impact of rising global growth rate on domestic inflation is only marginal.

US Fed Rate: The baseline SIRF shows that the impact of a positive shock to federal fund rate (monetary contraction) to inflation is negative till the third quarter and then it turns positive. However, the response is statistically significant only between the first two quarters. The significant decline in inflation till the second quarter is in line with the response of the domestic output which declines in response to a positive innovation in federal fed rate shock.

In the constrained SIRF, the impact of a positive innovation in US fed rate on inflation shows that the increase in inflation after the third quarter is lower than in the baseline SIRF. Specifically, the increase in inflation after the third quarter stabilises around 0.1 per cent, in contrast with almost 0.2 per cent increase in the baseline model. This implies that monetary policy is not an effective tool in mitigating the negative impact of an increase in fed rate on domestic inflation.

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Figure 2: Structural Impulse Response Function: The Effect of Foreign Shocks on Domestic Inflation

BASELINE SIRF　　　　　　　**CONSTRAINED SIRF**
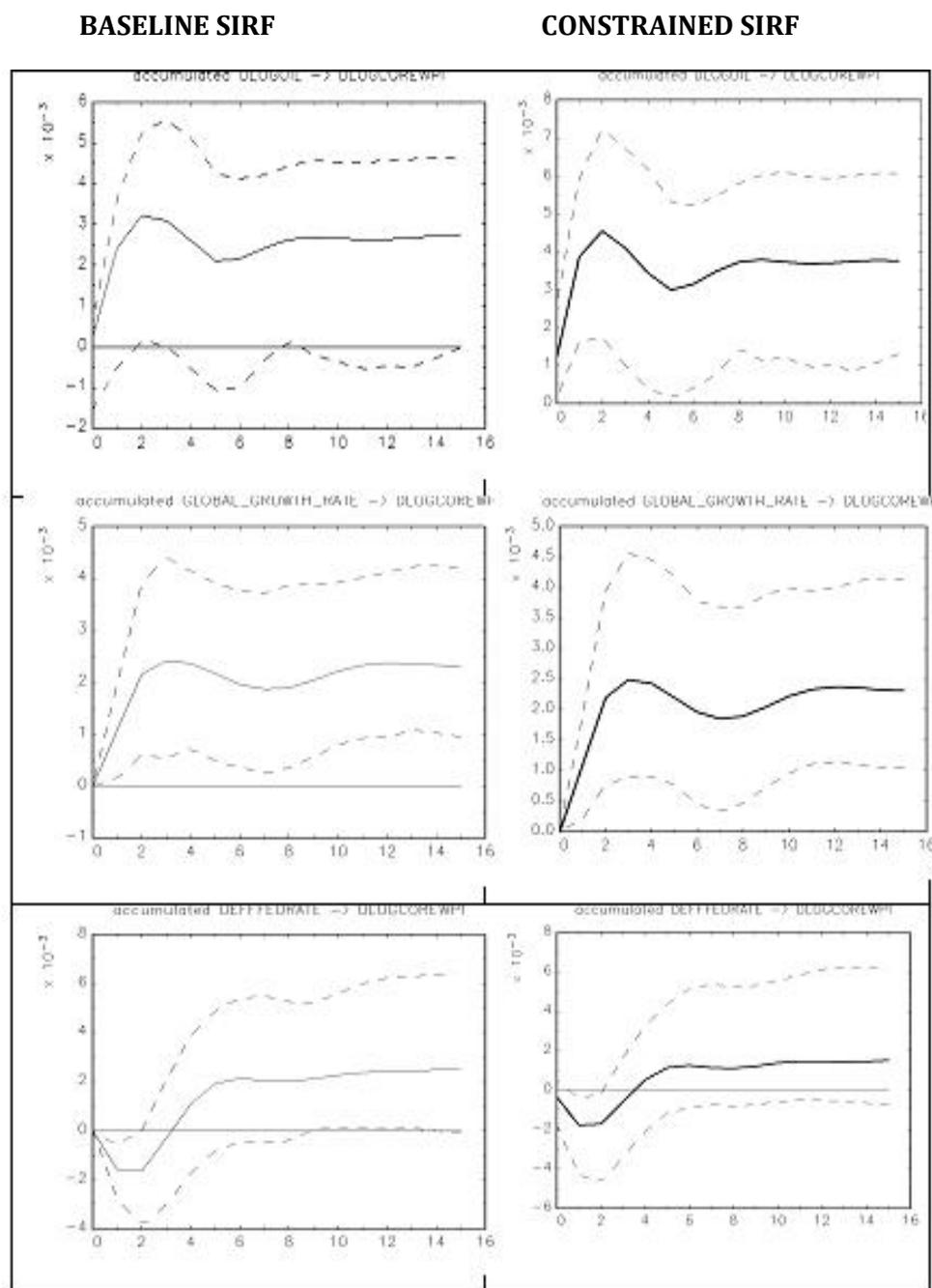
Section-6: CONCLUSION & POLICY IMPLICATIONS

As an open economy, the Indian economy is vulnerable to the exogenous shocks from external events. Therefore, the RBI has to consider the various effects of the external shocks on the domestic economy in formulating their monetary policy. This is vital to minimize any negative effect of external shocks to the domestic economy. Numerous major policy conclusions can be drawn from the empirical findings. First, monetary policy plays an important role in stabilizing the domestic output and inflation from the adverse global supply shocks (an increase in world oil price growth). This is an important finding as it shows that despite the partial pass-through

of global oil price changes to domestic economy, some impact which is felt on domestic GDP and inflation can be ameliorated by RBI's prudent policy measures. Second, global growth rate has a very significant and strong impact on both domestic GDP and inflation. Hence, it's important that RBI should keep a close watch on the global growth scenario before taking any monetary policy interest rate decision.

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Appendix I
Detailed description of variables used in the study:-

Oil Price (LOIL): It refers to the log of simple average of three different spot prices, namely, Dated Brent, West Texas International (WTI) and Dubai Fateh measured in US$ per barrel.

Global Growth Rate (GLOBAL): This study uses the global growth rate sourced from IMF's International Financial Statistics (IFS) as a proxy for foreign income.

US Federal Rate (FFR): The US federal fund rate is used as a proxy for foreign monetary policy as being a large economy, US has a significant impact on other global economies.

Domestic income (Non-Agricultural GDP): Domestic output has been proxied by non-agricultural GDP instead of real GDP as agricultural sector is not affected by the movements in monetary policy being a priority sector and is more dependent on the vagaries of the monsoon.

Inflation (Core WPI): Core wholesale price inflation (also popularly called as non-food manufacturing inflation) has been used as the indicator of inflation, as it reflects the demand-side pressures in the economy which are more influenced by monetary policy changes.

Monetary Aggregate (Real money supply, M_3): The broad monetary aggregate M3 is also considered as a monetary policy variable because M_3 is more liquid, and thus demanded for transactions purposes.

Interest Rate (Weighted Average Call Rate): The weighted average call rate has been used as a proxy for the policy rate, as the studies have shown that it has tended to hug the policy rate – repo rate or reverse repo rate effectively.

Exchange Rate (Nominal Effective Exchange Rate, NEER: NEER is used as a measure of domestic exchange rate as it captures imported inflationary pressures and changes in competitiveness more comprehensively than a bilateral exchange rate.

Stock Price (National Stock Exchange (NSE) 500): NSE-500 is important for analyzing the effect of the monetary policy on the asset prices. It examines how the economic activity responds to the stock market development.

Appendix II
Portmanteau Serial Correlation Test

Residual Series	Lag length 1		Lag length 2		Lag length 3	
	Port	P-value	Port	P-value	Port	P-value
μ_{LOIL}	29.375	0.549	26.683	0.639	40.789	0.090
μ_{GLOBAL}	40.077	0.127	42.285	0.067	31.980	0.368
μ_{FED}	33.003	0.369	25.956	0.677	35.610	0.221
μ_{LGDP}	26.960	0.674	23.208	0.806	28.785	0.528
$\mu_{LCOREWPI}$	27.500	0.646	16.539	0.977	29.593	0.486
μ_{LM3}	61.295	0.001	32.597	0.340	27.895	0.576
μ_{CALL}	26.293	0.707	31.038	0.413	41.065	0.085
μ_{LNEER6}	35.899	0.249	34.437	0.263	27.777	0.582
$\mu_{LNSE500}$	14.317	0.995	12.947	0.997	35.652	0.219

Note: Port is the Portmanteau statistic