



A LITERARY REVIEW OF DRIVERS OF INFLATION IN INDIA AND ITS POLICY IMPACT

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ABSTRACT

This paper reviews various studies which analyse various drivers of inflation and policy impact in Indian economy. Some of the studies have examined various causes of inflation. Instead of analysing the impact of oil price in other goods, it will be better to analyse the impact of the volatility of price of some administered goods on other commodities in general. Regarding the role of monetary and fiscal policy in controlling inflation an examination of restrictive fiscal policy in controlling inflation is needed. Some studies examined only the volatility and various indices of monetary policy. Due to market fluctuation, the volatility of policy variables is obvious. But, their effectiveness is a matter of concern. This can be analysed by regressing inflation on one of the major policy variables i.e. repo rate over some years. This will give a historical performance of repo rate in controlling inflation. In general, money supply and fiscal deficit are correlated. Therefore, a joint examination of both the policies is needed. After this detailed examination, inflation forecasting for future years can give a complete shape to the study.

KEY WORDS: Inflation, administered prices, volatility, fiscal deficit, forecasting.

INTRODUCTION

Hatakar, Sharma and Kulkarni (2011) have examined the overheating and input costs as the driving factors of Indian Inflation. The salient feature of this study has been the frequency domain approach to uncover the causality relation between international commodity prices and domestic prices and output by using monthly data for the period 1994:4 (fourth quarter of 1994) to 2010:12 (twelfth quarter of 2010). They aimed to assess the pass through of international

commodities prices to manufacturing product prices and its effect on manufacturing sector output. They also analysed the IMF's overheating viewpoint in the Indian Context. They have considered Industrial Index of Production for the manufacturing sector at the base year 1993-94 as a measure of output. WPI of manufacturing prices has been considered as a proxy for prices with the base year 1993-94 and 2004-05. Industrial Material Index (IMI) and Energy Index (EI) have been used

as the measures of international commodity prices. In order to test the stationarity, they have used Beaulieu and Miron methodology in those series and then tested their causality by using Granger Causality test. The study found that the IMI Granger causes WPI in the short run, at business cycle frequencies and also in the long run. The causality running from IMI to WPI is relatively stronger compared to that of from EI. In contrast to the general proposition that higher crude oil prices add cost pressure on Indian industries, forcing them to cut output, they did not find any causality between EI and IIP manufacturing. One reasoning for this could be the cushioning of industrial output through fiscal stimulus such as higher subsidy. Moreover, they have used HP filter to obtain output gap and examined the Granger Causality running from output gap to WPI manufacturing sector. They found that output gap drives domestic inflation only in short run and not in the long run. They have concluded that restrictive monetary policy has an adverse impact on growth due to the possible downturn in year-to-year (deseasonalised) growth rate of manufacturing IIP. They also suggested that public policy aimed at minimising the impact of input cost shocks might work better in the long run as inflation in India is a cost-push inflation according to their findings.

Similarly, Chand (2010) also found that supply shocks and inefficient food management strategy are the vital reasons for the surge of food prices in Indian Economy. In his study, he had examined both the short run as well as long run factors which affect food inflation during the period of 1994-95 to 2006-09. He found that the short run factors like domestic production, trade and international prices of various commodities and food management are the drivers of food inflation in India.

According to Kapur (2012), both demand and supply factors act as drivers of inflation. Demand conditions are found to have a stronger impact on non-food manufactured products inflation (NFMP) vis-a-vis headline (WPI) inflation; moreover, NFMP inflation is found to be more persistent than headline inflation. Inflation in non-

fuel commodities is seen as a more important driver of domestic inflation rather than fuel inflation. The exchange rate pass-through coefficient is found to be modest, but nonetheless sharp depreciation in a short period of time can add to inflationary pressures. The estimation period is from 1996-2011 (April-June 1996 to January- March 2011). HP filter has been used to measure output gap. The study also found that the inflation process is persistent, with the sum of lagged coefficients being around 0.5 and highly significant. The pass through of high international crude oil prices to domestic prices is delayed and incomplete. Oil prices are found to have a significant impact on inflation. The coefficient on the exchange rate (NEER) indicates that the exchange rate pass through is 0.06 in short run and 0.12 in long run. Moreover, the rainfall shortage during the month of July is found to have an adverse impact on inflation. He concluded that the monetary policy should respond to expected inflation and output dynamics because a positive output gap of one percent increases headline inflation by 36 basis points (bps) in the short run and by 72 bps in the long run, whereas a negative output gap of one percent reduces headline inflation by only 8 bps and 16 bps in the short run and long run.

INFLATION

After analysing various factors which drives inflation, it is necessary to examine their nature and extent of their impact. In general, price of oil is considered to be a prime driver of Indian inflation.

Bhattacharya and Bhattacharya (2001) examined the nature and the extent of feedback in the transmission mechanism of an increase in petroleum prices on the prices of other commodities and output in India. Using a four equation VAR model on oil and non oil inflation, and the growth in broad money and output, it attempted to identify the lag structure in which a rise in the prices of the mineral oils begin to affect the prices of other commodities and output. The impulse response function from the VAR model revealed that a 20% point shock in oil prices lead to a 1.3% increase in inflation in other commodities at its peak, which typically occurred after five to

seven months after the shock. The impact on prices persists for about two years, though during the later period it lessens considerably in magnitude. In response to a shock of similar magnitude, growth in output decelerates by about 21% point and recovery starts to take place approximately after a year. They obtained the evidence of bidirectional causality between oil and non oil inflation in India. The data set consists of 81 monthly observations covering the entire span of the latest WPI and IIP series, involving four variables named as WPIOIL, WPIOTH, M3 AND IIP. By using Granger causality, they found that inflation in other commodities and inflation in oil Granger cause each other. The results established that given the alternatives, policy makers tend to increase oil prices when inflation in other commodities is low as inflation is an emotive issue and generally evokes consternation from the public. The results also indicated evidences of IIP Granger causing money growth. IIP, on the other hand, has been found to be somewhat exogeneous as no other variable in the model Granger causes its movements.

The effects of agricultural sector and financial sector on Indian inflation have been ignored in the study which was done by Hatakar, Sharma and Kulkarni (2011). The study also had a limited objective of studying the causality flowing from international industrial commodity markets to Indian industrial prices. Chand (2010) had done a theoretical study of the drivers of inflation in India without the use of any specific model. It lacks applications of mathematical mechanisms. The rate at which these factors affect inflation has not been examined statistically or by simulation. Kapur (2012) ignored the effect of structural food inflation emanating from fruits and vegetables which have emerged as key drivers of inflation. Some of the articles used HP filter which doesn't yield reliable output gap estimates as it overestimates the potential output. So, the result may be misleading.

INFLATION AND POLICY IMPACT

Persistence of higher level of inflation over the years requires continuous effort of policy makers in order to minimise its adverse effect on

Indian economy. Therefore, some of the studies tried to analyse such policy effectiveness.

Kumar and Mitra (2012) found that large contemporary Govt. Deficits un-accompanied by concrete prospects for future Govt surpluses promote realistic doubts about whether monetary restraint must be abandoned sooner or later to help in financing the deficit. As a result, there will be a rise in inflationary expectations in spite of current money supply restraint. They have taken the sample from 1983:4 to 2011:1 and have split it into different segments with each segment corresponding to a statistically distinct mean of overall inflation compared with the adjoining segment. This is based on the Bai and Perron (2003) test of multiple structural breaks at unknown dates where the optimal breakpoints are estimated from the data itself. Moreover, they found that if the announced inflation target lacks credibility, then inflation expectations will not be significantly affected. Facing imperfect credibility, the policymaker perceives a quick disinflation to be extremely costly and consequently finds it optimal to gradually reduce inflation. In a policy regime that lacks credibility, learning time by private agents can generate a significant amount of inflation persistence. In contrast, in a stable and transparent policy regime, agents learn quickly resulting in a drop in inflation persistence. ARMA, State Space Model, Kalman filter have been used as econometric tools for the estimation. They explained that agents will also look at fiscal policy in their attempt to determine whether the 'reform' can be sustained. If fiscal policy is incompatible with the 'reform' in monetary policy, agents will attach positive probability to the event that the reform will be abandoned in the future. The result will be an increase in inflationary expectations. If so, agents will try to get rid of money today- driving up the prices of goods, services, and eventually wages across the entire economy. Our economy will be primed as long as our fiscal trajectory is unsustainable. They concluded that it is insufficient to announce and maintain restrictive monetary policies unless accompanied by a coordinated reduction in the budget deficits. Prudent anti-inflation policy includes containment of the deficit.

Regarding the relationship between fiscal policy and monetary policy, Das (2004) tried to investigate whether there is any reason to believe that a higher fiscal deficit-GDP ratio necessarily increases the real rate of interest and hence cause a crowding out of private investment. He examined the deregulated regime of interest rates to find out whether interest rates in India are in anyway dependent on the fiscal deficit-GDP ratio or not during the period 1990-91 to 2000-01. The data on fiscal deficit-GDP ratio and interest rates deflated by WPI have been considered for the sake of analysis. McKinnon p-value, DF test statistic have been used as econometric tools. From the estimation, he found that neither correlation nor the regression coefficients, at the first difference level with respect to fiscal deficit-GDP ratio is significant. He tried to check whether any definite positive linear relationship exists between real rates of interest and the fiscal deficit GDP ratio. From the results, he argued that Govt bond yields are not necessarily affected the fiscal deficit-GDP ratio. He also found that the change in real deposit rates in India doesn't necessarily depend upon the change in the fiscal deficit-GDP ratio. He ended with the conclusion that interest rates don't necessarily depend on the fiscal deficit.

Bhattacharya (2009) argued that it will be better to control speculative capital directly instead of recommending deflationary fiscal policies in the midst of a recession. He explained the positive relationship between Govt borrowing and interest rate as a case of prejudice in favour of "Small Govt".

Role of Fiscal policy:-

Some of the studies tried to study the effectiveness of fiscal policy in controlling inflation. According to Karnik (2002), it is necessary for the centre to be seen to be fiscally prudent which will be a signal to the states of the centre's seriousness in regard to fiscal management. However, he has analysed some of the contributions of the currency and finance report in the chapter on 'The Role of fiscal policy in reinvigorating growth'. The results stress the need for restructuring of the composition of Govt expenditure in favour of investment in infrastructure while ensuring that the fiscal deficit

is unchanged or even reduced and such investment is contingent upon enforced financial discipline emphasising cost recovery and productivity gain.

Role of Monetary policy:-

Khundrakpam and Das (2011) have examined the relative response of food and manufactured prices to change in interest rate and money supply in India during the period 2001:Q1 to 2010:Q2. Food prices, manufactured prices, exchange rate, weighted average call rate, broad money and narrow money are the variables that have been taken into consideration. By cointegration analysis, they found that the neutrality of money doesn't exist in long run. Moreover, through Vector Error Correction Model, they found that expansionary monetary policy leads to increase in the prices of both food and manufactured products. But, the response of food prices to change in money supply is higher than the corresponding response of manufactured prices. They also tested the short run causality among the variables through VEC Granger Causality test-Wald test. According to the estimation, in short-run, interest rate channel of monetary policy is found to be more effective on manufactured prices while quantum channel is more effective on food prices. In long run, while increase in call rate leads to fall in the prices of only manufactured products, increase in money supply leads to rise in the prices of both food and manufactured products. However, the impact of money supply on food prices is more than that of manufactured prices. On food prices, call rate has no significant impact statistically. On the other hand, on manufactured prices, money supply has no significant positive impact. But, call rate has a negative impact. While increase in both food and manufactured prices induces call rate hike, money supply shows an asymmetric response by way of increasing with the rise in food price and decreasing with the rise in manufactured prices.

Bose (2012) has discussed various sources, challenges and policy options that were addressed at a one day seminar on inflation at the National Institute of Public Finance and Policy, New Delhi in November 2011. The underlying arguments, reflecting distinct views, were vastly different. Some

of them explained that the monetarists held the “Baby Steps” approach which was responsible for the persistence of inflation and urged that aggressive tightening early in the inflation episode would have brought inflation under control, with a slowdown in growth being part of the trade-off. However, some of the papers presented in that seminar found that higher international prices and their transmission to domestic prices as the main culprit, causing policy, including monetary policy to be of little use in the face of imported inflation. The majority of the evidence and arguments presented in the seminar regarded demand-supply imbalances and higher food prices as the source. Based on this ‘majority view’ some suggested that changing the agricultural supply side to bring forth more food through active public policy intervention would be an appropriate policy response.

According to Shetty (2013), the reduction in repo rate has come very late and small. He suggested that the central bank should accept to maintain the flow of credit to the productive sectors as one of its main roles. He also explained that RBI’s action have persistently depressed business sentiments and hence affected the private investment climate. Though there are a number of other causes for the industrial stagnation, credit policy impetus does inspire private investment plans, and this is so particularly amongst the large numbers of small and medium enterprises. Moreover, he suggested focusing on bank credit. According to his view, bank credit should expand at the right rate, neither more nor less. He mentioned that inflation can be controlled easily and is less harmful for the economy than growth as employment; saving and investment trade, capital inflows and the overall BOP scenario macroeconomic trends are associated with the growth.

Marjit (2008) had tried to examine the interrelationship between interest rate, inflation and growth in Indian context. He mentioned that the overall correlation between GDP growth and inflation is negative (-0.102). But in the post reform period, it is rather strongly negative (-0.347); whereas in the pre-reform period it is positive

(0.352). He also found a clear negative relationship between inflation and real lending rate by plotting the rate of inflation against the real lending rate i.e. the real prime lending rate between 1980 and 2008.

Hutchison, Sengupta and Singh (2010), estimated the exchange-rate-augmented Taylor rule for India over the period 1980Q1 to 2008Q4 and explored possible monetary policy shifts between the pre and post liberalisation periods. Nominal interest rate, year on year inflation rate, output gap and exchange rate changes are the variables in the estimated equation. Lagged interest rate has been introduced to capture inertia in optimal monetary policy. For short term policy rate, overnight call or money market rate has been used. They derived the output gap using HP filter and used IIP for the measurement of output. Year-on Year inflation is measured using the annual percentage change in the WPI. They estimated their model using OLS regression with Newey-West variance-covariance matrix, in order to correct for both autocorrelation and heteroscedasticity. Through estimation, they found that Indian monetary policy is responsive to the output gap. They further found that in line with the RBI’s own public stance, exchange rate movements don’t constitute a systematically important determinant of its monetary policy conduct over the entire sample period. The output gap seems to matter more than inflation. Exchange rate changes do not constitute an important policy factor and post 1998 conduct of monetary policy seems to have changed in the direction of less inertia.

Pandey and Kanagasabapathy (2013) have argued that the market will remain on tenterhooks, if the RBI’s current approach to the twin challenges of reining in inflation and stimulating growth continues. They have analysed the policy cycles from 2001 to 2013 on a quarterly basis. The phase 1 (2001-02 to 2004-05) and phase 3 (2008-09 to 2009-10) are monetary easing phase and phase 2 (2004-05 to 2008-09) and phase 4 (2009-10 to 2011-12) are tightening phase. The fifth and most recent easing phase (2012-13 to 2013-14) has given confusing signals of easing and tightening. The two policy

announcements of the Govt represent a combination of both easing and tightening because of peculiar circumstance created by easing of the MSF rate while increasing the repo rate. They also found that rather than the usual repo rate, the effective policy rate influencing short term market rates turned out to be the MSF rate. This has resulted in a volatile movement in the policy rate in the current cycle. They also argued that the possible explanation for the sudden hike in repo rate could be to make the rate positive in real terms to encourage savings. With the recent hikes in the repo rate, the real policy rate has turned positive in WPI terms and negative in CPI terms. This paper concerns with the period from 2001 to 2013.

According to Pattnaik and Samantaraya (2006), supply shocks, both due to a setback in agricultural production and international oil prices and monetary expansion due to automatic monetisation of the fiscal deficit were the major contributing factors to higher inflation in India. Regarding the policy effectiveness, they suggested that reform initiatives since the early 1990s towards developing a broad based financial market, particularly activation of the Govt securities and forex markets coupled with imported monetary-fiscal interface enabled better monetary management since the second half of 1990s. Moreover, judicious supply management through better stocks of food grains and import of sensitive commodities containing the adverse impact of supply shocks also played an important role. They found that the modal range of inflation during the period 1951-52 to 2004-05 consists of 3%-6%. They also noted that monetary management was effective in ensuring a reduction in inflation and lowering inflation expectations.

Some studies (Kundrakpam and Das 2011) have not taken some important policy variables into consideration such as repo rate, CRR e.t.c. Moreover, they have ignored the functioning of Govt. Sector and its fiscal policy which made it an one sided analysis. If it is established that fiscal deficit and lax money policy strongly correlated then it makes sense to consider only monetary factors. But in the absence of conclusive evidence in favour of this,

fiscal policy parameters have to be studied and controlled. Though, some studies (Pandey and Kanagasabapathy) explained about various policy variables' volatility, but have not explained about their effectiveness i.e. to what extent, the fluctuations of policy variables have resulted in achieving the target (inflation control or output stabilization). Due to market fluctuations, it is obvious to change the policy variables. Hence, their effects are a matter of concern. Some studies (Shetty 2013) concluded that inflation is less harmful and can be easily controlled as compared to unemployment. But his study lacks statistical evidence. An analysis of the determinants of policy has been done by Hutchison, Sengupta and Singh (2010). Hence, the analysis of their effectiveness is needed. They used HP filter in their study whose inadequacies have already been pointed out. Repo rate can be considered as the most important instrument of monetary policy rather than call money rate.

GROWTH, INFLATION AND FORECASTING

The recent debates of growth inflation controversy have been examined by various studies. Mohanty and Chakraborty (2011) have investigated the threshold limit of inflation in India. They have examined the issue of the existence of threshold effects in the relationship between inflation rate and real GDP growth in India. The empirical analysis used data for the period of Q1:1996-97 to Q3:2010-11. Apart from inflation and lagged values of domestic GDP growth, they also used a control variable world growth to examine the significance of external development on domestic growth-inflation nexus. In absence of quarterly world GDP data, OECD countries GDP growth is used as proxy. Sarel's method and Khan and Senhadhi methods have been used to estimate the parameters by using OLS and NLLS. Nature of relation varies at different levels of inflation. At some low levels, inflation may be positively correlated with growth, but at higher levels, inflation is likely to be harmful to growth. Based on the full sample, they found that there exists statistically significant structural break in the relation between growth and inflation at 4% and 5.5%. For WPI-inflation up to 5.5%, there is positive

impact on growth. The relationship reverses when WPI-inflation is beyond 5.5% and inflation effect on growth turns negative.

According to Pattanaik and Nadhanael (2011), the threshold level of inflation in India could be around 6%. This paper has tried to estimate threshold inflation for non-agricultural GDP by assuming that high inflation may not adversely impact agricultural GDP as much as non-agricultural GDP because income elasticity for agricultural product is low. Growth in real GDP has been taken as dependent variable and deviation of monsoon rainfall from normal as a proxy for supply shock, WPI inflation and dummy variable which takes value 1 if inflation is higher than threshold and 0 otherwise have been taken as independent variable. To avoid the possibility of endogeneity of credit relative to growth, credit/GDP ratio has been used. Quandt-Anderson and Cusum tests have been conducted for finding the statistically significant break point in the relationship between growth and inflation and their stability. The estimation is conducted for annual data over the period 1972-2010. By using VAR model, they found that the grease effect of inflation on growth as suggested by the conventional Phillips curve doesn't hold after a threshold level of inflation. This paper provided three layers of justification to explain why inflation impedes growth, drawing evidence from economic analysis, cross country evidence and economic theory.

Dholkia and Sapre (2012) have estimated the short run aggregate supply curve for the Indian economy over the period 1950-51 to 2008-09. Methodological improvements in this paper include the technique of estimating adaptive expectations, constrained estimation consistent with long run equilibrium and introduction of the extended Phillips curve. They attempted to investigate the question of speed of recovery and the choice of adjustment paths available to policymakers in face of adverse supply shocks. They found a regular trade off between inflation and output or unemployment with inflationary expectations based on the experience of past three to four years. They also found that subtle trade off between the rate of output

recovery and inflation is negative in India thereby implying that a strategy of fast recovery is not likely to result high inflationary pressure.

Bhattacharya, Pattnaik and Shah (2002) have applied standard seasonal adjustment procedures in order to obtain a point on point seasonally adjusted monthly time series of inflation in India. They conducted seasonal adjustment using the X-12-ARIMA system developed by the US bureau of census. It conducts dummy variable regression for fixed seasonal effects, trading day effects, moving holiday effects and outliers and fits a seasonal ARIMA model thus modelling the changing seasonal pattern. Their main finding is that Point on Point seasonally adjusted inflation helps in obtaining superior information about inflationary pressures in the economy. In terms of data resources, they used the monthly WPI series from CMIE's Business Beacon database. Each observation for a month is the average of all observations of WPI in the month. The data set runs from April 1999 to July 2008 and has 220 observations. They found that, the WPI in India is non-stationary, but WPI inflation is stationary. In this paper, the strategy that they have followed consists of application of seasonal adjustment directly to the aggregate data, which is termed as direct seasonal adjustment. Moreover, they found that Point on Point seasonally adjusted data yields an early warning of eight and six months respectively. In three interesting high inflation episodes- 1994-95, 2007 and 2008- they found this data yields a faster and better understanding of inflationary pressures.

According to Banerjee and Das (2011), the uncertainty in inflation forecast occurs because of the inter-play of the macro-economic variables affecting inflation. The uncertainty in the macro-economic variables is based on their historical standard deviation of the forecast errors. They have presented the technical details underlying the derivation of Fan Chart used in representing the uncertainty in inflation forecasts. The Fan Chart represents a probability distribution that captures the subjective assessment of inflationary pressures evolving through time based on a central view and the risk surrounding it. Therefore, for such

forecasting distributions, three variables are needed; a) a measure of central tendency b) a view on the degree of uncertainty c) a view on the balance of risk. In this paper, split normal or two pieces normal distribution is used. In order to forecast Indian inflation, the baseline forecast has been based on VAR using monthly data on WPI, IIP, REER and M1. The estimation period is based on the latest WPI data available till March 2011. They found that WPI inflation, as per the balance baseline projection, is predicted to be around 7.20% at the end of the year 2011. As they move from current period to the future on monthly basis, the standard error of forecast increases. Moreover, they have shown how the balance of risk of any macroeconomic indicator can be assessed by the skewness parameter of the distribution. Their main objective of using Fan Chart is to focus on the whole forecasting distribution rather than changes to the central projection.

Pethe and Samanta (2001) attempted to construct a composite leading indicator for tracking the future path of inflation rate in India. Empirical results showed that the percentage change in manufacturing output, money stock, exchange rate, bank credit to commercial sector, raw material prices are important leading indicators for inflation rate in India. In this paper, growth rate cycle is preferred mainly on account of the fact that it fits in well with the concept of inflation rate which commonly used to assess the inflation scenario and thus is at the centre of interest to the public as well as policy makers. The inflation rate series has been derived as the annual point to point percentage changes in monthly WPI data which represents the reference series. The data period covers from April 1982 to December 1998. Partial information about future inflation rate provided by a number of basic series has been analysed first. Based on the correlation analysis, a few of the basic series have been chosen for construction of composite indicator. Based on monthly data on the basic series, one composite indicator is constructed which contains information about behaviour of inflation rate six months in advance. The estimates are calculated by using monthly data WPI and other

variables covering the period from April 1982 to December 1998. A number of Granger's causality tests are carried out to check the causal influence of composite indicator on inflation rate. The constructed composite indicator can be used to generate forecasts of inflation rates 6 months in advance. It has been found that out of sample forecast error of the composite indicator is quite impressive; the magnitude of error in six months ahead forecast is only 1.2% point.

The sacrifice ratio i.e. the statistical relationship between growth and inflation should be estimated to find out the rate of change in growth due to a unit change in inflation at both stages (low level which is below the threshold level and higher level which is above the threshold level). Some of the papers (Dholkia and Shapre 2012) did not test the stationarity of the data. Any estimation without testing the stationary character of data may result in spurious regression. Therefore, the stationary test of the variables is needed first. There has to be a comparative analysis between the different indices of inflation to judge their relative efficiency.

Some of the above studies have examined various causes of inflation. Instead of analysing the impact of oil price in other goods, it will be better to analyse the impact of the volatility of price of some administered goods on other commodities in general. Regarding the role of monetary and fiscal policy in controlling inflation an examination of restrictive fiscal policy in controlling inflation is needed. Some studies examined only the volatility and various indices of monetary policy. Due to market fluctuation, the volatility of policy variables is obvious. But, their effectiveness is a matter of concern. This can be analysed by regressing inflation on one of the major policy variables i.e. repo rate over some years. This will give a historical performance of repo rate in controlling inflation. In general, money supply and fiscal deficit are correlated. Therefore, a joint examination of both the policies is needed. After this detailed examination, inflation forecasting for future years can give a complete shape to the study which can be done by using VAR model and Fan chart methodology. The results of these two methods can be compared in order to get an accurate figure.

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