INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, ECONOMICS & MANAGEMENT

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CONTENTS

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iv

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    NEED/IMPORTANCE OF THE STUDY
    STATEMENT OF THE PROBLEM
    OBJECTIVES
    HYPOTHESES
    RESEARCH METHODOLOGY
    RESULTS & DISCUSSION
    FINDINGS
    RECOMMENDATIONS/SUGGESTIONS
    CONCLUSIONS
    LIMITATIONS
    SCOPE FOR FURTHER RESEARCH
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- Bowersox, Donald J., Closs, David J., (1996), "Logistical Management." Tata McGraw, Hill, New Delhi.

- Hunker, H.L. and A.J. Wright (1963), "Factors of Industrial Location in Ohio" Ohio State University, Nigeria.

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CONFERENCE PAPERS

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–23

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- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

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WEBSITES

- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

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THE IMPACT OF INFLATION RATE AND INTEREST RATE ON REAL ECONOMIC GROWTH RATE: EVIDENCE FROM INDIA

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ABSTRACT

This study attempts to investigate the impact of inflation rate and interest rate on the real economic growth rate in India for the period 1980-2013. Data was sourced from secondary sources and the study adopted Vector Autoregressive (VAR) model, Impulse Responses Functions and Variance Decompositions in order to find the interrelationship between the variables. The result obtained shows that, inflation rate and interest rate have a negative impact on economic growth rate of India. And also the overall result obtained from Variance Decompositions shows that, economic growth rate own shocks explain most of the Forecast Error Variance, and also it recorded a higher variations in the inflation rate and interest rate equations. Therefore the result implied that, Indian economic growth is strong to withstand with the negative effects of inflation rate and interest rate due to effective government policy and macroeconomic stability in the country. The study further uses Granger-Causality Test to find out the direction of causality between the three variables. During the periods, the study found that there exist a unidirectional relationship between economic growth rate and inflation rate, running from economic growth rate to inflation rate. The policy implications of this study is that, in order to achieve higher and sustained economic growth government should concentrate on macroeconomic stability, the necessary infrastructure, controlling inflation and raising public investment. Moreover, interest rate should be suitable to produce deposits which directly accomplish the requirements of investments and therefore people have the chance to save their money with the banks.

KEYWORDS
Economic Growth, Inflation, Interest rate.

JEL CLASSIFICATION
O40, E31, E43.

INTRODUCTION

Economic growth is the increase in the market value of the goods and services produced by an economy over time. It is conventionally measured as the percent rate of increase in real gross domestic product, or real GDP. Of more importance is the growth of the ratio of GDP to population (GDP per capita), which is also called *per capita income*. An increase in growth caused by more efficient use of inputs is referred to as *intensive growth*. GDP growth caused only by increases in inputs such as capital, population or territory is called *extensive growth*. Growth is a process, it is not a single event; rather, it is an unfolding series of events. We define growth in terms of the economy's ability to produce goods and services, as indicated by its level of potential output. Growth suggests that the economy's ability to produce goods and services is rising. A discussion of economic growth is thus a discussion of the series of events that increase the economy's ability to produce goods and services.

Interest rate is one of the macroeconomic growth factors; national economies, and the international economy, consist of the activity of labor, along with the use of resources such as land, buildings, minerals and capital in the form of money and credit. When an economy is growing, this typically means that it is generating more income from increased output of goods and services. When there is economic slowdown, which means either that the rate of growth of the economy, measured in terms of economic output, is decreasing or that economic output is actually shrinking.

The up and down volatility of interest rate is closely related with inflation rates. Its high or low rates also impact the economic boom (high GDP) and extending to influence economic growth rate. Inflation in an economy means that prices are of goods and services in the economy are generally rising.

REVIEW OF LITERATURE

The scholarly literature on these phenomena has proliferated, as have specific studies of the impacts of some macroeconomic variables on the others on cross-countries, regions and on particular countries. The present study reviewed some of those literatures mostly on the impact of macroeconomic variables on the economic growth rate.

A way back, Fischer (1993) used both cross-section and panel data that included both industrialized and developing economies to present a seminal contribution to the literature in exploring the possibility of a non-linear relationship between inflation and economic growth in the long-run. In his study, he found that the existence of significant negative association between inflation and economic growth. He also observed that inverse relationship dampens inflation rates after 40% in addition to establishing the existence of non-linearities in the inflation-growth nexus.

Understanding the relationship between inflation and real growth has all along been a key concern in macro-economic research. According to Rangarajan (1998), the question, in essence, presupposes a possible trade-off between price stability and growth either in the long or short run.

Bruno and Easterly (1998) conclude that there was no evidence of a growth-inflation tradeoff in a sample which excluded discrete high inflationary crisis. On the other hand, there was ample evidence to show that growth turned sharply negative when inflation crossed past a high threshold rate of 40 % per annum. They also argue that the failure of investigators in detecting a meaningful relationship between inflation and growth can be attributed to a stylized rapid recovery of output after inflation which, on an average, renders the overall statistical relationship insignificant.

In a study of 17 countries, Cordon (1990) finds that although there are outliers, evidence generally supports the view that high growth is associated with low inflation.

A more recent work by Paul, Kearney and Chowdhury (1997) involving 70 countries (of which 48 are developing economies) for the period 1960-1989 found no causal relationship between inflation and economic growth in 40 % of the countries; they reported bidirectional causality in about 20 % of countries and a unidirectional (either inflation to growth or vice versa) relationship in the rest. More interestingly, the relationship was found to be positive in some cases, but negative in others.

Umaru and Zubairu, (2012) in their attempt to find the effect of inflation on the growth and development of the Nigerian Economy, found that all the variables in the unit root model were stationary and the results of causality revealed that GDP caused inflation and not inflation causing GDP. The results also revealed that inflation possessed a positive impact on economic growth through encouraging productivity and output level and on evolution of total factor productivity.

Papers in a VAR model examine the interrelationship of output growth, inflation, and money growth in India. Rangarajan and Arif (1990) using annual data over the period from 1961 to 1985 conclude that the price level has no response to the changes in real output. Das (2003) working with money, price, and output of India over the period from April 1992 to March 2000 shows a negative relationship between price and output.

In India, Mallick and Agarwal (2007) found that none of the three measures of real interest rate (call rate, 91 T Bill rate, and 364 T Bill rate) seemed to exert any direct influence on growth of real output. This unusual result they ascribed to the possibility that investment, which is an important determinant of growth, is conditioned by several factors other than real interest rate alone.

Mohanty, Chakraborty and Gangadaran (2012), on the other hand, highlighted the presence of inverse relationship between growth and real lending rates in India, with empirical evidence on real lending rates Granger causing both overall GDP and non-agricultural GDP growth. Tokuoka (2012) found evidence of negative impact of increase in real interest rate on corporate investment in the macroeconomic data (with the impact ranging between 51 to 34 bps in different estimates for 100 bps change in real interest rate), while for the firm level data profitability, liquidity and leverage were highlighted as the key determinants of corporate investment in India.

IMPORTANCE OF THE STUDY

It was predicted by International Monetary Fund (IMF) that, Indian economic growth rate will surpass China's in 2016. Many previous studies examined the relationship between macroeconomic variables in India such as inflation, economic growth, exports, exchange rate, interest rate and stock prices etc. None of these previous studies focused on what this study attempt to investigate using the study's methodology. Therefore, this study contributes to the existing literature on real growth rate of India's economy; it will examine the impact of inflation rate and interest rates on the real economic growth rate of India's economy

STATEMENT OF RESEARCH PROBLEM

India is developing economy which its economic growth rate experiencing up and down due to some macroeconomic factors such as inflation, interest rates, exchange rates, oil prices, stock prices etc.

Measuring real economic growth of a country aims to assess whether growth can cope with the growing demands of the society including the population and prosperity growth rates; and how to maintain and confine the depletion rate of its national natural resources.

OBJECTIVES

The broad aim of this study is to evaluate the impact of macroeconomic variables on real economic growth rate of India, thus, Study is concerned to analyze: -
1.   The relationship between Interest rate and inflation rate,
2.   The relationship between inflation rate and economic growth rate.
3.   The relationship between interest rate and economic growth rate.
4.   The Effect of interest rate and inflation rate on real economic growth rate.
5.   The causal relationships between real economic growth rate, inflation rate and interest rate.

HYPOTHESES

For a meaningful study and constructive direction there is a need for a tentative explanation for which the evidence necessary for testing the study is least potentially available. Therefore in the light of this study, the hypotheses stipulated for testing the study are as follows;

Ho-1: There is no significant effect of interest rate on economic growth.
Ho-2: There is no significant effect of inflation on economic growth.

RESEARCH METHODOLOGY
SOURCES OF DATA

Data were collected from secondary sources. These include Reserve Bank of India (RBI), Central Statistics Office (CSO) and World Bank publications. The data comprised Real Economic Growth Rate, Inflation rates and Real Interest rates for the period 1980 - 2013. The information generated formed the basis of data presentation and analysis.

MODEL SPECIFICATION

The backbone of analysis in this research is based on vector autoregression (VAR).Vector autoregression (VAR) is an econometric model used to capture the evolution and the interdependencies between multiple time series, generalizing the univariate AR models. All the variables in a VAR are treated symmetrically by including for each variable an equation explaining its evolution based on its own lags and the lags of all the other variables in the model. Based on this feature, Christopher Sims advocates the use of VAR models as a theory-free method to estimate economic relationships, thus being an alternative to the "incredible identification restrictions" in structural models.

A VAR model describes the evolution of a set of k variables (called endogenous variables) over the same sample period (t = 1, ..., T) as a linear function of only their past evolution. The variables are collected in a k × 1 vector yt, which has as the ith element $y_{i,t}$ the time t observation of variable y_i. For example, if the ith variable is GDP, then y_i, t is the value of GDP at t.

A (reduced) p-th order VAR, denoted VAR (p), is

$y_t = c + \Phi_1 y_{t-1} + \cdots + \Phi_p y_{t-p} + \varepsilon_t$

where c is a k × 1 vector of constants (intercept), Φ_i is a k × k matrix (for every i = 1, ..., p) and et is a k × 1 vector of error terms

The i-periods back observation y_{t-i} is called the i-th lag of y. Thus, a pth-order VAR is also called a VAR with p lags.

{yt} is covariance-stationary if Eyt and E(yt-Eyt)(yt-j-Eyt-j)' are independent of t for any j.

TRANSFORMATION OF DATA

To get a better result of fitting and capture the variations in these three variables, the variables were transformed into their logarithmic form.

RESULTS AND DISCUSSION

For the effectiveness of this study, both descriptive and analytical techniques were employed. For the analysis of the time series data, certain statistical techniques were employed. This includes the unit root test of testing stationarity, VAR lag order selection, VAR stability conditional check, and VAR normality residual check.

THE UNIT ROOT TEST OF TESTING STATIONARITY

A time series is said to be stationary when it has constant mean and variance over time, and the covariance between two variables does not depend on the actual observed time, but rather on their lag length of time. Consider a simple auto-regression model of order one:

$y_t = \rho y_{t-1} + \varepsilon_t$

Where ρ is the parameter to be estimated and ε_t is an independent error with zero mean and constant variance.

The test for unit root is done by employing a Schwarz Information Criterion to determine the automatic lag. The results of Augmented Dickey Fuller (ADF) show that all variables LREGR, LINFR and LINTR are stationary in their levels. The unit root test results are presented below:

TABLE 1: UNIT ROOT TEST OF VARIABLES IN LEVELS

Variable	LREGR	LINFR	LINTR
t-adf (lag)	-4.6182 (0)	-3.2312 (0)	-4.6867 (0)
Critical Value (5%)	-2.9571	-2.9540	-2.9604

Source: Author's Computation using E-views

VAR LAG ORDER SELECTION

An important preliminary step in model building and impulse response analysis is the selection of the VAR lag order. In this project we use some commonly used lag-order selection criteria to choose the lag order, such as AIC, HQ, SC, LR and FPE. Lag length selection criteria shown in the above table; suggest inclusion of 5 lags in the VAR, following the Akaike Information criteria. While the Schwarz's Information Criteria, Final predictor error, Hannan-Quin information criteria and Sequential modified LR test statistic each suggest 1 lag respectively.

VAR LM TEST FOR SERIAL CORRELATION

The LM test shown in Table 2 shows that no presence of serial correlation at all orders. Specifying 12 lags removes all rejections of the null (no serial correlation) at the 5% level.

TABLE 2: VAR LM TEST FOR SERIAL CORRELATION

| Lags	LM-Stat	Prob	Lags	LM-Stat	Prob
1	7.464756	0.5888	7	5.903635	0.7495
2	6.673166	0.6711	8	5.804989	0.7593
3	6.784980	0.6595	9	13.69908	0.1334
4	5.846767	0.7552	10	9.005366	0.4368
5	2.787481	0.9721	11	7.350719	0.6007
6	2.017801	0.9912	12	9.745937	0.3714

Source: Author's Computation using E-views

VAR NORMALITY RESIDUAL TEST

Using Cholesky VAR residual normality test, the result obtained shows that the probability value of Jarque-Bera for all the three components are greater than 0.05 and the joint probability is 0.8892. This suggests the acceptance of null hypothesis which says residuals are multivariate normal.

VAR STABILITY CONDITIONAL CHECK

FIGURE 1: VAR STABILITY CONDITION CHECK
Inverse Roots of AR Characteristic Polynomial
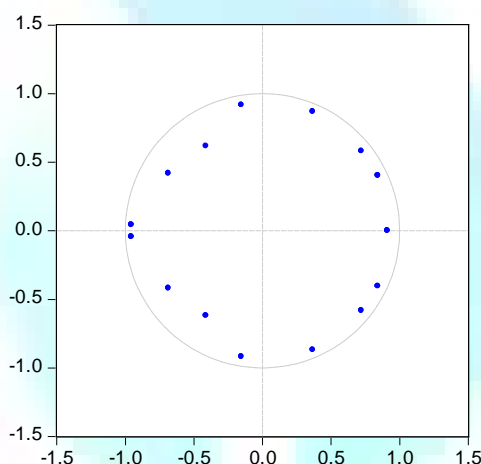
The stability condition for VAR estimation requires that the roots of the related characteristic equations lie within the unit circle (solutions can be real or imaginary). If satisfied, the variables will be jointly covariance stationary, or _non-explosive'. In the present 3-variate 5 lag model there are 15 roots to check, all of which lie within the unit circle as Figure 1 shows.

VAR

An unrestricted vector-autoregression is generated to explore the significant relationship between real economic growth rate, inflation rate, interest rate, and real gross domestic product. (Table 3) presents the matrix generated from VAR base on fifth lag. In VAR, ordering of the endogenous variables and the right length of lag is very essential. Using the Choleski factorization, the real economic growth rate is placed in the first followed by, inflation rate and interest rates. The lag order is five as suggested by Akaike Information Criterion.

The equation used in order to determine VAR for lregr, linfr and lintr, is as follows:

$$lregr_t = \beta_{1,1}lregr_{t-1} + \cdots + \beta_{1,4}lregr_{t-5} + \beta_{1,5}linfr_{t-1} + \cdots + \beta_{1,8}linfr_{t-5} + \beta_{1,9}lintr_{t-1} + \cdots + \beta_{1,12}lintr_{t-5} + \varepsilon_{1t}$$
$$linfr_t = \beta_{2,1}lregr_{t-1} + \cdots + \beta_{2,4}lregr_{t-5} + \beta_{2,5}linfr_{t-1} + \cdots + \beta_{2,8}linfr_{t-5} + \beta_{2,9}lintr_{t-1} + \cdots + \beta_{2,12}lintr_{t-5} + \varepsilon_{2t}$$
$$lintr = \beta_{3,1}lregr_{t-1} + \cdots + \beta_{3,4}lregr_{t-5} + \beta_{3,5}linfr_{t-1} + \cdots + \beta_{3,8}linfr_{t-5} + \beta_{3,9}lintr_{t-1} + \cdots + \beta_{3,12}lintr_{t-5} + \varepsilon_{3t}$$

TABLE 3: VAR

	Lregr	linfr	lintr
lregr	0.054524	-0.159725	-0.115557
	(0.14309)	(-0.45443)	(-0.46966)
linfr	-0.152205	-0.671583	0.506932
	(-0.38320)	(-1.83306)	(1.97661)
lintr	-1.045008	-0.168953	-0.069451
	(-2.23568)	(-0.39186)	(-0.23001)

Source: Author's Computation using E-views

The VAR result shows that, real economic growth rate has a negative relationship with inflation rate, though it is not statistically significant. There also exits a negative relationship between real economic growth rate and interest rate, and the relationship is statistically significant. However, it has a positive relationship to itself, though not statistically significant.

On the other hand, from the inflation rate equation, it is clearly indicates a negative relationship between inflation rate and real economic growth rate, though it is not statistically significant. Furthermore, there is a negative relationship between inflation rate and interest rate and also a negative relationship to itself. In all the cases the coefficients are not statistically significant.

Moreover, there is a negative correlation between interest rate and real economic growth rate, and also a negative relationship to itself. However, the relationship between interest rate and inflation rate is positive and statistically significant.

The entire results of VAR are somehow confusing and tedious to analyse. However, evidence from impulse response and variance decomposition would be utilized to analyse the impacts of the variables on the dependent variable under the period of the study.

IMPULSE RESPONSES FUNCTIONS

The impulse responses function results are presented in both tables and graphs. The graphical presentation of the results is shown below in (Figure 2).

FIGURE 2: IMPULSE RESPONSES FUNCTIONS
Response to Cholesky One S.D. Innovations±2 S.E.
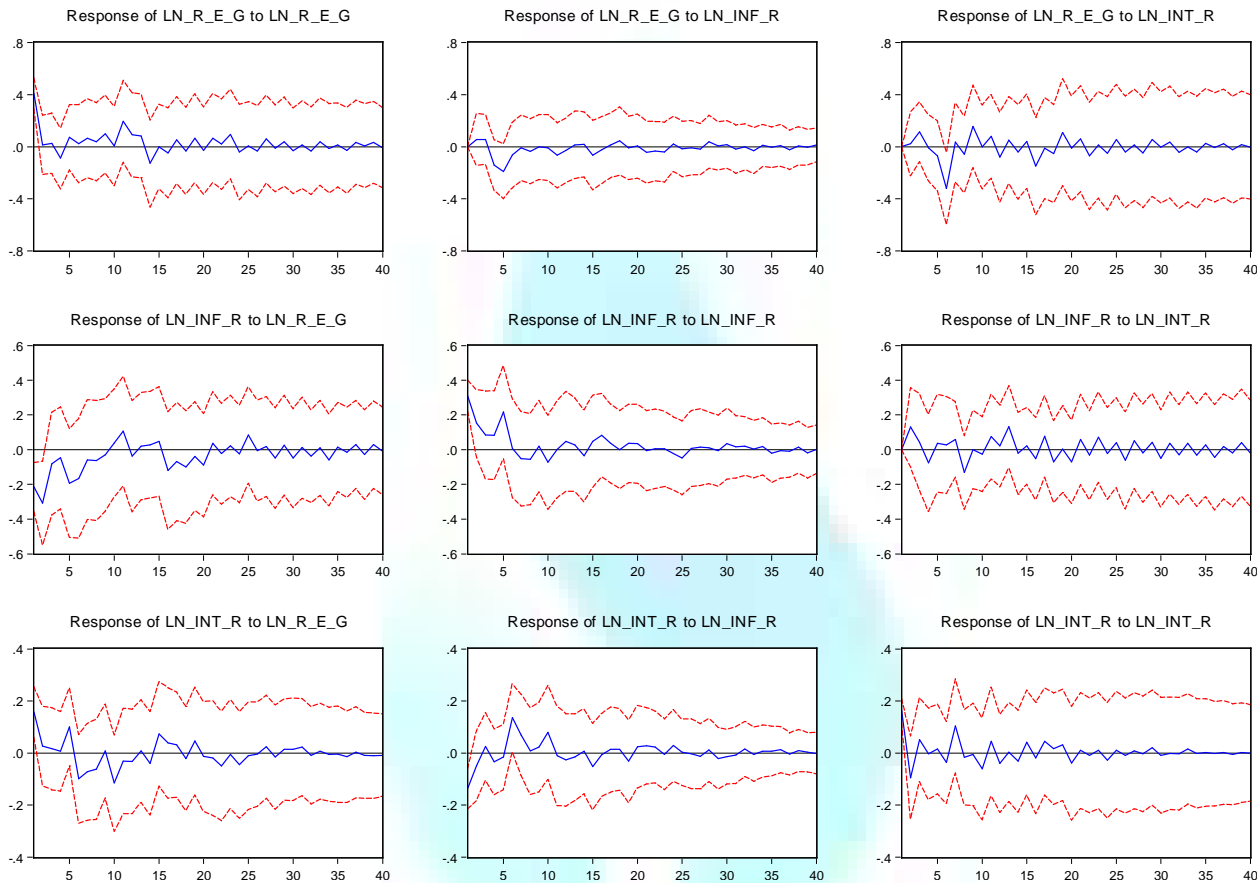
REAL ECONOMIC GROWTH RATE SHOCKS

When the impulse is real economic growth rate, the response of inflation rate has an obvious fluctuation; there is a highest positive effect on the 2nd period and a lowest negative effect on the 4th period. The response of interest rates has an obvious fluctuation; it has the highest positive effect on the 10th period and lowest negative effect on the 6th period.

The responses of inflation rate is mostly negative, this suggest that inflation has a negative effects on economic growth. This supports most of the literatures which argued that inflation has a negative impact on economic growth. The researchers that support this argument are Rangarajan (1998), Fischer (1993), and Cardon (1990) among others. All these researchers found the existence of negative relationship between inflation and economic growth. The result confirmed that inflation has impacts on economic growth, but most of these impacts are negative.

On the other hand, interest rate also shows almost a negative relationship with economic growth. This shows that it has a negative impact on economic growth. This support the research conducted by some researchers that interest rate has a negative relationship with economic growth. Among such researchers are Mohanty, Chakraborty and Gangadaran (2012), the researchers highlighted the presence of inverse relationship between growth and real lending rates in India, with empirical evidence on real lending rates Granger causing both overall GDP and non-agricultural GDP growth. Tokuoka (2012) found evidence of negative impact of increase in real interest rate on corporate investment in the macroeconomic data (with the impact ranging between 51 to 34 bps in different estimates for 100 bps change in real interest rate), while for the firm level data profitability, liquidity and leverage were highlighted as the key determinants of corporate investment in India.

This means interest rate has impacts on economic growth, and most of these impacts are negative.

INFLATION RATE SHOCKS

On the other hand, when the impulse is inflation rate, the response of real economic growth rate has an obvious fluctuation, the highest positive effect is on the 11th period and the lowest negative effect is on the 2nd period. The response of interest rate also has an obvious fluctuation; there is highest positive effect on the 2nd and 13th period respectively, while the lowest negative effect is on the 8th periods. In this equation, most of the negative effects are from real economic growth rate. This reaffirm that inflation rate and economic growth rate are negatively related, which means inflation is influencing economic growth negatively.

INTEREST RATES SHOCKS

Furthermore, when the impulse is interest rates, the response of real economic growth rate has an obvious fluctuation; there is a highest positive effect on the 1st period and lowest negative on the 10th period. The response of inflation rate has an obvious fluctuation, the highest positive effect is on the 6th period and the lowest negative effect is on the 1st period. In this equation inflation responses are mostly negative. This supports the research conducted by the World Bank (1993) which found that interest rates have a positive relationship with economic growth, but when inflation is included, the coefficient for the real interest rate is no longer statistically significant, while the negative coefficient on the rate of inflation is.

VARIANCE DECOMPOSITIONS

The variance decompositions results are presented in both tables and graphs. The tabulated presentation is shown below in (Table 4).

TABLE 4: VARIANCE DECOMPOSITION

	S.E. [a]	ε^{lregr}	ε^{linfr}	ε^{lintr}
lregr	0.7967	48.3930	14.4402	37.1668
		(24.3095)	(18.2362)	(23.5321)
linfr	0.8021	47.2066	33.6185	19.1749
		(24.0028)	(19.2831)	(22.8805)
lintr	0.4695	40.9142	28.4758	30.6101
		(24.2004)	(18.6020)	(24.0457)

[a] Monte Carlo's standard errors are shown in parentheses

Source: Author's Computation using E-views

VARIANCE DECOMPOSITIONS OF REAL ECONOMIC GROWTH RATE

The results explain that for the changes in real economic growth rate variable, the variance decompositions are mostly explained by itself. It accounts for 48%, while interest rate shows 37% which much higher compared to inflation rates with 14% respectively. This means that inflation rate has no strong impact on real economic growth rate of India. The result signifies that the shocks of interest rate to real economic growth rate are much higher than the shocks of inflation rate. This result implies that inflation can change or it may have weak impact on real economic growth rate due to change of government policy.

VARIANCE DECOMPOSITION OF INFLATION RATE

For inflation rate variable, own shocks for the variance decomposition accounts for 34%, this is less than the real economic growth variation with 47%. This reaffirm that under the period of the study, inflation rate has no strong impact on Indian economic growth. On the other hand, interest rates explain shocks for about 19%.

VARIANCE DECOMPOSITION OF INTEREST RATES

The variance decompositions for variable interest rate is not determine mainly by own shocks, its shocks account for 31%, while the shocks of inflation rate is 28% respectively. In this equation too, the movement of real economic growth rate has the highest percentage of variation, which accounts for 41%. This result shows that in most cases interest rate is unable to influence economic growth due to effective monetary policies in India. On the other hand, the result reaffirm that inflation rate has a strong influence on real interest rate.

GRANGER CAUSALITY TEST

Granger causality test is a technique for determining whether one time series is useful in forecasting another. Two causality tests are implemented. The first is a F-type Granger-causality test and the second is a Wald-type test that is characterized by testing for nonzero correlation between the error processes of the cause and effect variables. Granger causality test can be applied in a multivariate context. Suppose that the variables of a VAR are categorized into two groups, as represented by the (n1*1) vector y1, and the (n2*1) vector y2. The VAR may then be written y1t = c1 +A1 ' x1t + A2 ' x2t + ε1t, y2t = c2 + B1 'x1t + B2 'x2t + ε2t. The group of variables represented by y1 is said to be block-exogenous in the time series sense with respect to the variables in y2 if the element y2 in are of no help in improving a forecast of any variable contained in y1 that is based on lagged values of all the elements of y1 alone. In the VAR model above, y1 is block-exogenous when A2 = 0.

TESTING ANALYSIS

Granger causality test is a technique for determining whether one time series is useful in forecasting another. It can determine whether there is causality relationship between variables. We work the Granger causality test; the results are presented in the following table.

TABLE 5: GRANGER-CAUSALITY RESULTS

Direction of Causality	Null Hypothesis	F-statistic (Computed)	P-Value	Decision
LINFR→LREGR	No Causality	0.05368	0.9478	Do not Reject Null
LREGR→LINFR	No Causality	4.28949	0.0246	Reject Null
LINTR→LREGR	No Causality	0.58712	0.5640	Do not Reject Null
LREGR→LINTR	No Causality	1.30070	0.2916	Do not Reject Null
LINTR→LINFR	No Causality	1.89574	0.1720	Do not Reject Null
LINFR→LINTR	No Causality	2.63290	0.0925	Do not Reject Null

Source: Author's Computation using E-views

From the above results, there is a unidirectional (one-way) causality between real economic growth rate and inflation with the direction of causality running from real economic growth rate. Thus; it is real economic growth rate lead to inflation, this support the research conducted by Umaru and Zubairu (2012) in their attempt to find the effect of inflation on the growth and development of the Nigerian economy, they found causality revealed that GDP caused inflation and not inflation causing GDP. On the other hand, Paul, Kearney and Chowdhury (1997) in their attempt to find any meaningful relationship between inflation and economic growth involving 70 countries. They found that almost 40% of the countries reported a unidirectional causality either inflation to growth or vice versa.

Finally, there is no any directional causation either between real economic growth rate and interest rate or between interest rate and inflation rate.

FINDINGS

The VAR results using 5 lags showed that, the sign of the coefficients are found to be positive at a particular lag and negative at other lags in the same equation. And also it was found that in most cases the coefficients are not statistically significant.

The precise clarification of VAR is given by impulse responses functions and variance decompositions analysis. The result obtained from impulse response function shows that the variables have interrelationship, though the relationship is found to be mixed. But most of the relationships were found to be negative except the relationship between inflation rate and interest rate, in which most of the relationship is positive.

On the other hand, the variance decompositions analysis shows that real economic growth rate own shocks explain most of the forecast error variance. Furthermore, real economic growth rate also recorded higher shocks in inflation rate and interest rate equations compared to their own shocks. This result shows that even though it was found in impulse responses functions that, the impacts of inflation rate and interest rates on economic growth are mainly negative, which confirmed that the two variables have significant influence on economic growth of India. However, the variance decompositions result showed how strong Indian economic growth is to withstand with these negative impacts of the inflation rate and interest rate. This can be attributing to the effective government policy and macroeconomic stability of the country.

One important finding in these results is that, the movement of interest rate is stronger to influence the economic growth than that of inflation rate. This means interest rate has more impact on economic growth of India than inflation rate.

Moreover, from the granger causality test, the study discovered a unidirectional (one way) causality between real economic growth and inflation rate with the direction of causality running from real economic growth rate to inflation rate; this means growth lead to inflation.

RECOMMENDATIONS

In view of the above findings, this paper recommends:

1. In order to boost the economic growth, government should adopt a tight monetary policy to reduce inflation as the results indicate that inflation has significant negative impact on economic growth. Thus, policy makers should focus on maintaining inflation at a low rate (single digit).This implied that controlling inflation is a necessary condition for promoting economic growth.

2. The government should curtail unproductive expenditure, which is bad for both growth and inflation, in favour of investment. Providing stability and the necessary infrastructure can set the stage for the use of other more direct policy measures aimed at promoting growth.
3. The study also suggests that higher and sustained growth can be achieved by controlling inflation and raising public investment. To promote growth and keep inflation low, the government needs to control budget deficits.
4. Government should concentrate on macroeconomic stability and the necessary infrastructure which are among the preconditions for sustained growth.
5. Finally, Interest rate should be suitable to produce deposits which directly accomplish the requirements of investments and therefore people has the chance to save their money with the banks. Government should lower real interest rates which can stimulate growth and investment.

CONCLUSION

This paper examines the dynamic interactions among real economic growth rate (regr), inflation rate (infr) and interest rate (intr). More specially, the effect of inflation rate and interest rate shocks on real economic growth rate is analysed by using multivariate vector autoregressive model (VAR). For the effectiveness of the research several econometrics tools has been employed. The research findings show that inflation rate and interest rate has significant impact on economic growth of India.

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