

THE INFLATION DYNAMICS IN INDIA SINCE 2005

ANISHA SAWHNEY¹, KAVITA INDAPURKAR²

¹Student, Amity School of Economics, Amity University, Uttar Pradesh, 201303, India

²Professor, Amity School of Economics, Amity University, 201303, India

ABSTRACT

Inflation, that is termed as sustained rise in prices of goods and services over a period of time is the most talked about area of economics that influences the common life of the people most so much so that they have influenced the politics of the country as well. It is the monetary policy that aims at dealing with inflation that affects the economy as a whole, however, the fiscal policy of the country also has a considerable role to play when it comes to incidence of inflation. Inflation is a typical macroeconomic variable, the fine tuning of which is important to ensure adequate expansion of the economy that contributes to economic growth and employment. Economic growth raises employment thus increasing the demand for goods and services, fuelling inflation (demand pull) on one hand but at the same time a higher economic activity in the economy leads to increase in the supply thus sufficing the risen demand. But since this comes with a lag, there is inflation in the economy. However, whatever explains the phenomenon, incidence of inflation, particularly, food inflation, further out affordability of the grasp of the poor in the country, thus pinching the poor the most. The present paper makes an attempt to understand the applicability of Phillips curve in Indian economy. It also aims to study the various inflation that exist in the economy, particularly food and fuel inflation and the factors that contribute towards the same. Further it analyses the impact of inflation on economic growth.

Keywords: inflation, food inflation, fuel inflation, fiscal policy, monetary policy, purchasing power, economic growth, Philips curve

INTRODUCTION

Inflation in general term can be linked with a sustained rise in prices of the goods and services that prevail in the economy over a period of time. It has a negative effect on the purchasing power of the people. As a result, the people are left with a lesser amount, in terms of money's buying power to meet their needs. The rise in prices in the economy leaves people who are poor

badly hurt. While the rich and the middle class first reduce their discretionary spending, maintaining their standard of living, it is the poor who generally have a hard time as all their income is spent on fulfilling their basic needs of food, clothes and housing only.

In order to control the level of inflation in the economy most of the major economies in the world adopted the mechanism of inflation targeting. In India too, RBI introduced this concept in the year 2014 where inflation is targeted at 4 percent, having a band of plus-minus 2 percent. Monetary policy is the best mechanism to control the inflation rate in India and maintain price stability (Dr. Padmasani and K. Kasthuri, 2018). One of the ways to do so is reducing money supply and another is by adjusting the interest rates in the economy. As the rate of interest decreases, there is an increase in the money in circulation which causes demand of goods to increase which in turn leads to rise in prices. To control this inflation a reverse mechanism is then deployed by the policy makers by increasing the repo rate.

The monetary policy also aims at providing a nominal anchor that will help in the growth of the economy and also maintain a low and stable inflationary expectation (Manju S. Nair, 2014) The policy anchor adopted to determine the level of inflation in the economy is the consumer price index (CPI). The index includes services like transportation, medical care, education as well as other miscellaneous products which cover most of the consumer preferences, thereby making the monetary policy more influential.

On the other hand, there exists a negative relationship between the inflation and unemployment rate in the economy, implying that as the inflation rate increases, the employment opportunity in the economy grows. The employment level is increased in the economy by generating more investment or money supply. Increase in investment results in increase in the money supply, thereby causing inflation. Hence, the Phillips curve empirically indicates a trade-off between two of the most important macro-economic functions, inflation and unemployment, stating a negative relation between the two.

This paper makes an attempt to study the various types of inflation that exists in the economy, specifically the food and fuel inflation and the factors that contribute towards the same. Also the research aims to study the applicability of Phillips curve and analyzing the impact of inflation on economic growth in India.

LITERATURE REVIEW

MRPA - The Inflation Dynamics: An Analysis

Attempts at modeling the inflation that is prevalent in the country. India as per the paper has

exhibited high variability in inflation over the last eight years due to some internal as well as external factors. The global financial meltdown, recurrent increase in oil prices, wage employment programs, etc have resulted in the fluctuation in the level of inflation. The paper uses empirical analysis in the determination process along with time series trends. Other tests such as the Augmented Dickey-Fuller test, Engel Granger test, Johansen test were also used in this paper.

IFPRI Discussion paper – Food inflation and food price volatility in India, trends and determinants

The study analyzes food inflation trends in the country, over several years after the drought in 2009. It summarizes that the food inflation and its underlying factors have some macro-economic implications and also impacts the welfare of the population, most importantly the poor. The main objective of this paper is to assess the pattern in volatility of the food prices and identify its drivers and also to suggest some policy implications in the short as well as the long run. In order to measure the volatility of the food prices, ARCH and GARCH models have been used.

RBI working paper series – Analytics of food inflation in India

As per the paper, the high food inflation is due to a variety of factors such as increasing demand mainly arising from higher rural wages, higher agricultural cost of production, change in the consumption pattern, increase in the minimum support price and the climatic conditions. The main objective of this paper is to examine the relevance of these factors and how an increase in the real rural wage can play a key role in the determination of the overall food inflation in the country. The research methodology used in this paper is the standard co-integration and error correction modelling based on the Johansen's test.

International Journal of Management Studies – The impact of monetary policy on Indian economy

The paper discusses that India's monetary policy has been focusing on adequate finance for the growth of the economy and hence ensures some level of price stability. RBI helps in the expansion process by expanding the amount of credit in the economy. Inflation occurs due to sustained rise in the prices of the products. In this case, when the prices rise, fewer goods are consumed in the economy thereby reflecting in a reduction in the purchasing power per unit of money. The stability test, Augmented Dickey Fuller test have been used in the paper in order to find out the impact of the monetary policy revealing that it has the power to regulate the inflation as well as the economic growth.

American Economic Association – The role of monetary policy

The paper talks about how the monetary policy can contribute or how should it be conducted to contribute more towards the economy and its growth. Opinion of some economist's rest on the view that inflation is like a string. One can pull on it to stop inflation, but cannot push on it in order to halt recession. As per Keynes, the monetary measures cannot lower the interest rate. If the interest rates have a little affect on the investment level and the consumption level, it would only do little good and the monetary policy would be twice damned.

National Institute of Public Finance and Policy - Food inflation in India: cause and consequences

The paper attempts to empirically evaluate some of the drivers of inflation. Analysis of the contribution of the input price inflation and the global food inflation to domestic food inflation in a SVAR framework is carried out taking into account the monthly macro-economic indicators. In order to gauge the role of some of the government policies, as drivers of food inflation, the effect of rise in procurement price on the wholesale price of the food commodities have been evaluated. It can be concluded by the analysis that both the demand as well as the supply factors contribute to the recent surge in the food inflation in the country.

RESEARCH METHODOLOGY

The present paper has been undertaken with the following Objectives

- i. To study the applicability of Phillips curve in India.
- ii. To Study the various types of inflation that exist in the economy, specifically:
 - Food inflation
 - Fuel inflation
- iii. To study the factors that contribute to these types of inflation.
- iv. To Analyze the impact of inflation on economic growth.

Secondary data has been used for the purpose and the various data collection sources used are RBI website, World Bank and IMF. Trend lines have been used for the purpose of analysis and the time period taken for the analysis is from 2005 to 2018. Regression analysis has also been carried out which shows that inflation influences the GDP growth and unemployment rate in India.

Food Inflation

It refers to a condition where there exists an increase in the wholesale price index of some essential food item, relative to the general inflation or the consumer price index.

Reasons for food inflation in the economy can be broadly categorized as supply side and demand side factors (Thangzason Sonna, 2014) –

SUPPLY SIDE FACTORS	DEMAND SIDE FACTORS
Food prices increased due to the climatic conditions, i.e droughts and floods.	The rising income especially the rural farm wage and the real consumption are the key factors.
The carry over effect of low growth of food production.	Prices of food items including the fruit and vegetables have increased at a high level.
In the long term, the structural supply side factor which result in the raising of food prices is the shift in the land use from food crops to export-oriented commercial crops.	In addition to the high growth of the economy, the expansion in the Indian middle class has also been one of the major reasons.
Environmental degradation and the resultant fall in the agricultural productivity also contribute towards the increase prices.	Structural change in the food consumption has increased demand for the protein based food items like pulses, eggs, milk, etc.

It has been seen that the cost of food in India reduced by 2.17 percent in 2019. The food inflation for India averaged to about 5.95 percent from the year 2012 until 2019. Because of food inflation in the economy, a larger section of the people is losing out on its purchasing power. As a result, the common man is forced to take loans from banks and other financial institutions to meet their requirements.

Low food prices in the recent years can be attributed to a string of factors which include low overall demand, oversupply through bumper crops as well as low global food prices. A major impact on food inflation is the level of monsoon rains in the country which vary from year to year. Low and stable food prices are on one hand good for everyone but can affect the farmers adversely unless accompanied by productivity increase.

Fuel Inflation

Fuel prices play a major role in influencing the food prices, through a variety of channels. Fuel is generally used to transport the product from the producer to the consumer. Hence, a rise in the prices of the fuel will widen the gap between the farm price and the retail price. It also acts as a

source of power of various machines used in the production process. Therefore, an increase in the price of crude oil leads to an increase in the cost of producing goods. This price rise is ultimately passed on to consumers leading to inflation.

The retail inflation mainly covers the food and the oil prices. The government of India eased down the food prices which further cooled down the inflation level by 2.05%.

Global price of oil and inflation are usually tied in a cause-effect relationship. As oil prices move down or up, inflation follows in tandem, affecting the Indian economy. One study estimates that the current account deficit increases by 0.4% of GDP and inflation by 10 bps for every \$10 per barrel rise in the oil price. This affects the economy as rise in inflation due to higher prices will lower the real disposable income and therefore discretionary spending.

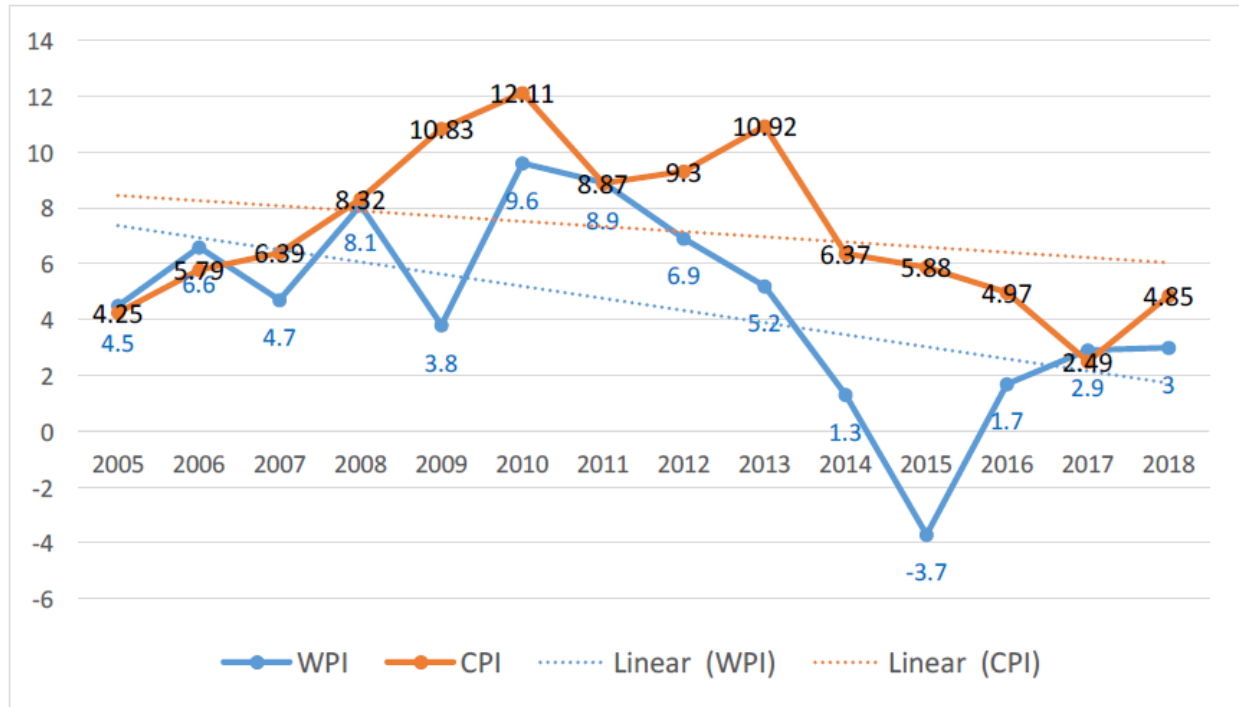
DATA ANALYSIS AND FINDINGS

There has been a shift in the policy anchor from WPI to CPI. WPI used to skip the prices of services when calculating inflation. CPI, on the other hand is more realistic and measures the price changes in a basket of goods and services, such a transportation, food and medical care. It also includes food, beverages, housing, fuel, light, clothing, footwear, alcohol and other miscellaneous products. Hence, it is also known as Cost of Living Index.

Shifting the policy anchor to CPI was a bold step as it would expose the economy to the world and at the same time and will attract the world towards Indian markets. However, using CPI as policy anchor would also help in strengthening the monetary policy framework of the country and its implementation. Some of the important Reasons for adopting CPI as the policy anchor are:

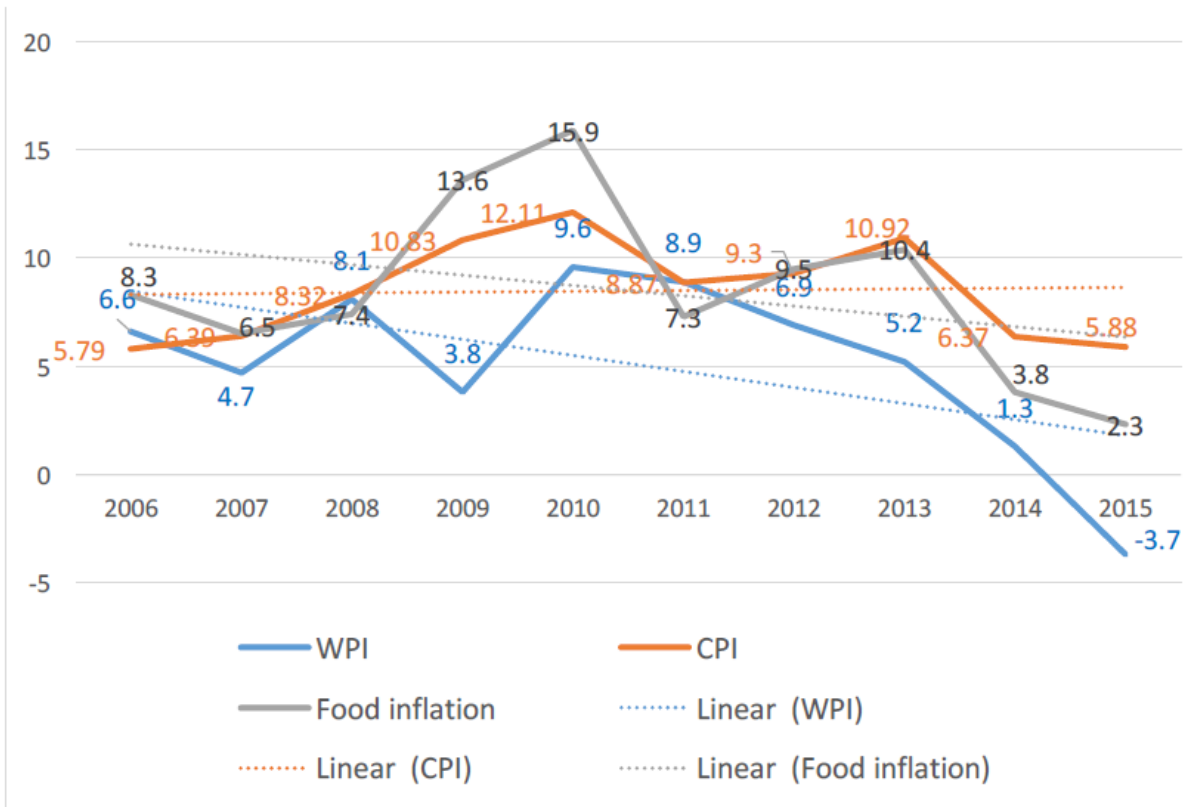
- This would be more realistic as it includes services and services account for 60% of GDP. This also gives a clearer idea of how inflation is likely to affect the people in general.
- CPI is used to calculate rural and urban part of the country simultaneously.
- It gives an idea of general retail inflation and the prices driven by the consumer demand and supply.
- Also, inflation should be measured by the price of a basket of goods that directly affect the common man.
- WPI also contained a lot of traded manufactured goods and commodities whose prices are determined in the international market.
- The industrialists and the government used to pay a low interest rate and the entire inflationary pressure was on the common man.

I. WPI and CPI



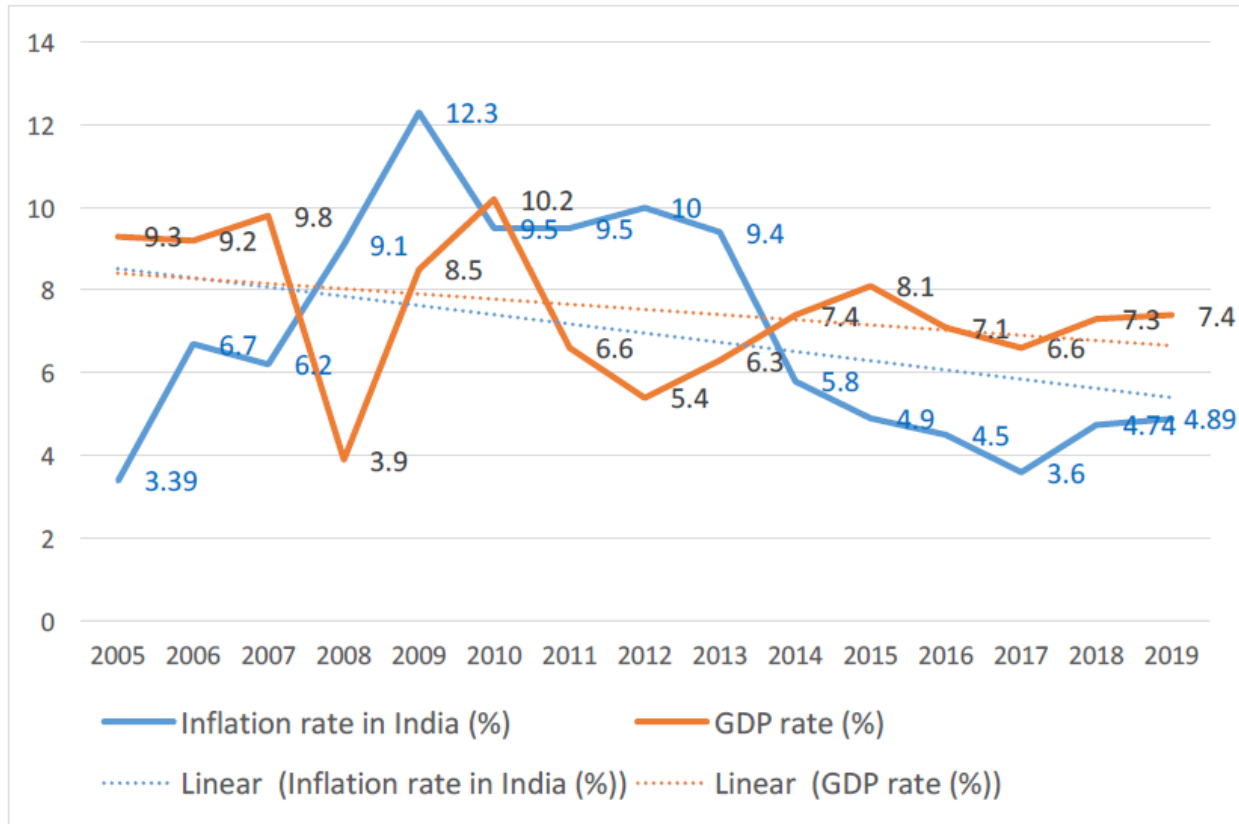
It can be seen that over 2005 to 2018, the trends have been linearly falling depicting a slow but a steady fall in the inflation level. WPI and CPI are dependent on many other variables and cannot be studied with the same factors. Different factors are responsible for the determination of each of the two. After 2014, there has been a shift in the government policies and the understanding about CPI. It is only then, the concept of inflation targeting came into being, which has helped develop better sentiments about inflation amongst the people. An inflation target of 4% was adopted under the monetary policy framework, with an upper ceiling of 6% and a lower limit of 2%. CPI witnessed a steady fall irrespective of the fact that WPI dipped at some points in time. Prior to 2014, WPI was dipping and still the value of CPI was seen rising. The inflation rate is solely determined by the RBI and not the government. The RBI declared that inflation rate cannot be more than 6% which is why the level of inflationary expectation also remains low. In 2015, a sudden dip in WPI was witnessed as the global food prices dropped but the CPI declined gradually only.

II. WPI, CPI and food inflation



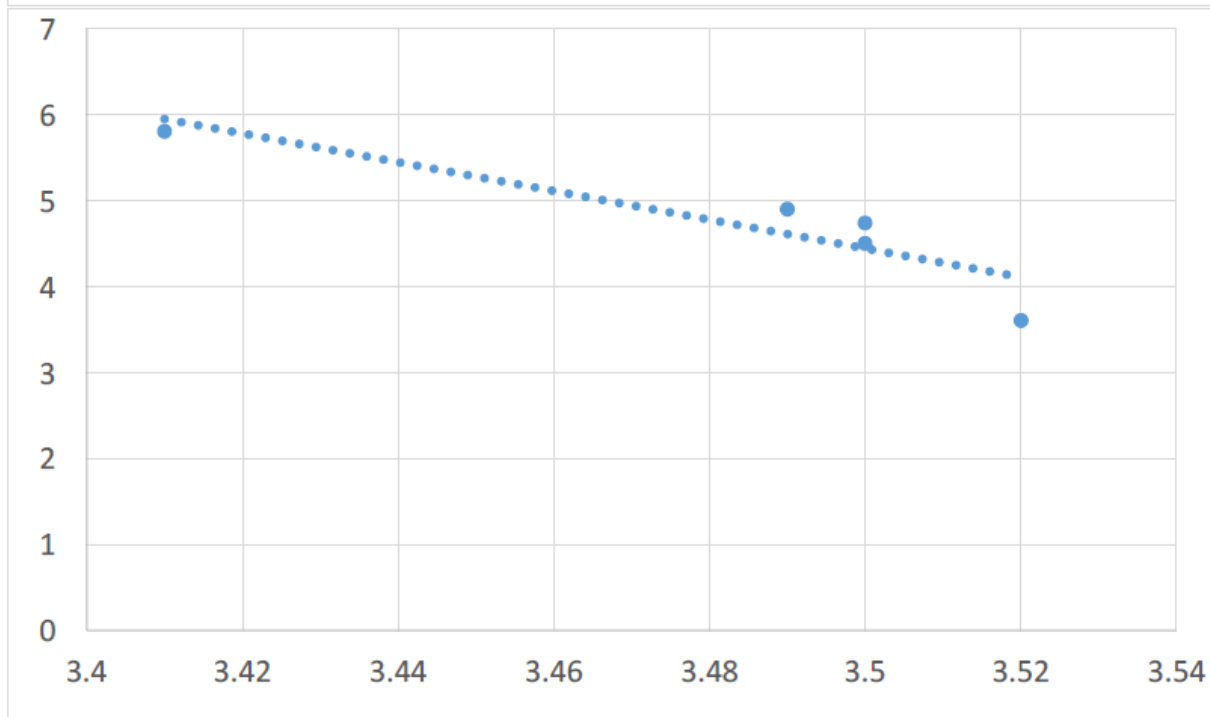
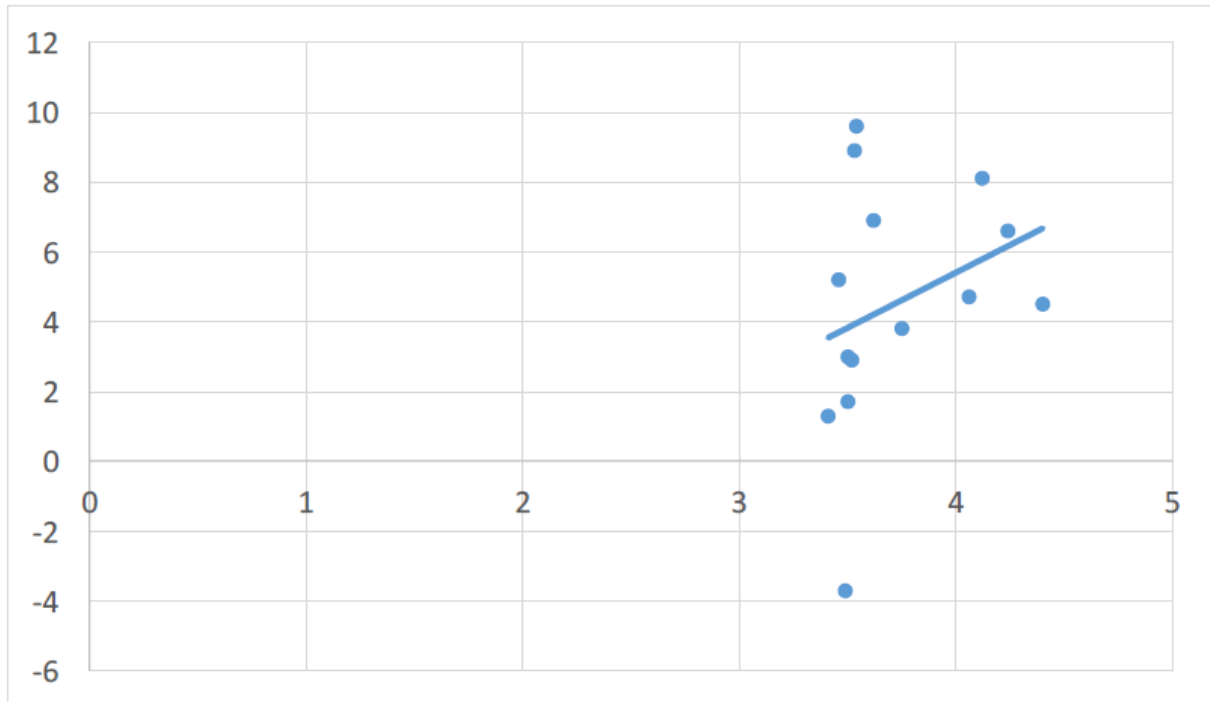
Shifting the policy anchor to CPI from WPI in 2013, was considered as a good decision for the economy. The components it involves are more consumer friendly, which in turn makes the monetary policy more influential. It can be seen that the food inflation affects the lower income group more as these spend most of their income of food and related goods. Most of the income of the lower income group goes for sustaining themselves with a high percentage spend on food. They also face restriction in export and import and have limited scope of trade. The traders in the country take advantage of the same and create unnatural supply crises to raise the prices. The trend line above shows the better management of food inflation over the past few years as compared to time period between 2005 to 2010, so much so that since 2012, the food inflation is lower than the CPI. This has been possible because in the last few years the government has proactively managed food supplies and prices.

III. Inflation and GDP



One of the most fundamental objectives of macroeconomic policies in India is to sustain high economic growth together with low inflation. From the graph above, a special relation can be seen between the inflation rate and the GDP growth rate. Between 2014-2019, the level of real income increases because of low inflation in the economy. A conducive environment for investment is created when the level of inflation is low which in turn is also an indicator of macroeconomic stability. This can also be viewed at a reversal trend of the monetary factors in the economy. The relation between growth and inflation is non-linear, and there is a threshold below which there is a trade-off between growth and inflation. But above the threshold there is no trade-off. In other words, a little inflation is good for growth; but when inflation exceeds a critical level inflation can actually come in the way of growth. This trend is apparent from 2014 onwards. Hence, common man can witness a positive impact due to the stable trend between the inflation and GDP.

IV. Phillips curve



The graphs above demonstrate an inverse relation between inflation and unemployment. The essential finding is that high rates of inflation are generally associated with low unemployment rates and vice-versa. In short run, a downward sloping Phillips curve is marked as a valid one. If an economy experiences inflation, the monetary policy can be used to curb down the inflation. This can be done either by increasing the interest rates or by contracting the money supply in the economy. This facilitates a fall in the aggregate demand which in turn reduces the inflation rates.

<i>Regression Statistics</i>	
Multiple R	0.301078
R Square	0.090648
Adjusted R Square	0.060910
Standard Error	1.756108
Observations	15

<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	3.689011278	1.844505639	0.598105072	0.565447305
Residual	12	37.00698872	3.083915727		
Total	14	40.696			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	3.769723939	5.439626806	0.693011501	0.501495116	8.082204735	15.62165261	8.082204735	15.62165261
X Variable 1	0.108636203	0.170108015	0.638630713	0.535062305	0.47926973	0.261997323	0.47926973	0.261997323
X Variable 2	1.2227007	1.416538266	0.86316108	0.4049705	1.863671049	4.309072448	1.863671049	4.309072448

The regression analysis (in the above table) explains how inflation influences the GDP growth and unemployment rate in India. The results show that inflation and unemployment rate are the two variables that affect the GDP growth rate to the extent of 9.06%, indicating that there are many more factors that influence the economic growth.

However, looking at the p-value, it can be seen that it affects the growth significantly. (Ernest Miguelez, 2015) Inflation level helps in determining the buying capacity of the people which in turn has its own effects on the production of the economy.

CONCLUSION

It can be concluded from the research that RBI shifted the policy anchor to CPI, which is considered good for the economic growth of the country. This is because, it considers services for determining of inflation level that accounts for 60% of the GDP. This therefore marks the applicability of the Phillips curve in India as well as other developing nations, which states that the rise in the level of inflation is supported by expansion in the employment opportunities. There also exists a positive correlation between the inflation level and the economic growth rate. The main components of inflation are food and fuel. Fuel inflation directly affects the food inflation in the economy. Food inflation can be kept low by increase in productivity of farmers, better supply management and low increase in the procurement prices.

DISCUSSION

The main goals of economic policy are high growth, stable prices, and high employment. The key challenge is to make them mutually compatible over a sustained period. Although RBI would like to achieve all these simultaneously, there is a broad consensus that primary objective must be to stabilize price levels. Financial literacy and inclusive are some of the economic variables in the new scenario, which are important for the growth of the economy as a whole. Taking care of this, the concept of inflation targeting was introduced, that has been considered as a welcome move by all. (Kavita Indapurkar, 2015) Inflation targeting is a monetary policy regime which requires the central bank to choose an explicit target inflation rate for the medium term and announces it to the public. It uses the short term interest rate, generally the repo rate to achieve the target.

Inflationary expectation is another area which plays a major role in the growth of the economy. The central bank needs to gear up evidences which suggest that the former influences the latter. Policy makers conclude that high inflation is being driven mainly by inflationary expectations, hence wage and prices controls may be an attractive way to change the expectations and break the inflationary spiral. The inflationary expectation survey can be done digitally and more frequently

which will give a better understanding and more accurate results. India had to take up tight monetary policy, to slow down the over heated economic growth, to curb inflation increasing too fast and also to boost the interest rates that increase the cost of borrowing and effectively reduces its attractiveness. Going forward, it is expected that inflation targeting levels will be maintained despite a projected rise in food inflation. The World Bank also expects the global food prices to rise in 2019. The core inflation however is expected to remain sticky and fuel inflation will also be soft as global crude oil prices are not anticipated to rise sharply.

REFERENCES

- 1) Kavita Indapurkar (2015) "Inflation targeting in India – issues and challenges", International Journal of Business Quantitative Economics and Applied Management Research.
- 2) Trisha Jolly and Kavita Indapurkar (2017) "Demonetization and Sustained Growth in Indian Economy", International Journal of Economic Research.
- 3) Rudrani Bhattacharya and Abhijit Sen Gupta (2017) "Drivers and impact of food inflation in India", MRPA.
- 4) C.S.C Sekhar, Devesh Roy and Yogesh Bhatt (2017) "Food inflation and food price volatility - trends and determinants", IFPRI Discussion paper.
- 5) Thangzason Sonna, Dr. Himanshu Joshi, Alice Sebastian and Upasana Sharma (2014) "Analytics of food inflation in India, RBI working paper series.
- 6) Milton Friedman, "The role of monetary policy", American Economic Association.
- 7) Dr. Padmasani and K. Kasthuri (2018) "The impact of monetary policy on Indian economy", International Journal of Management Studies.
- 8) Manju S Nair (2014) "Inflation dynamics in India – an analysis", MRPA.
- 9) Donald J Harris (2007) "The classical theory of economic growth", The New Palgrave Dictionary of Economics.
- 10) Rudrani Bhattacharya and Abhijit Sen Gupta (2015) "Food inflation in India – caouses and consequences", National Institute of Public Finance and Policy.
- 11) A Orphanides and J Williams (2004) "The theory of rationally heterogeneous

expectations”.

- 12) JM Roberts (1998) “Inflation expectations and the transmission of monetary policy”.
- 13) Nagabushana Rao, P. Chenchu Reddy, A.M Mahaboob Basha, P. Srinivasulu and K. Sai Pranav (2013) “A Study on Inflation in India”, International Research Journal of Social Sciences.
- 14) Tim Callen and Dongkoo Chang (1999) “Modelling and Forecasting Inflation in India”, IMF.
- 15) Enrique Martinez-Garcia “Inflation as a Global Phenomenon –some implications for inflation modelling and forecasting”.
- 16) Daisuke Ikeda (2013) “Monetary Policy and Inflation dynamics in asset price bubbles”.
- 17) C Zhang “Globalization and Changing Inflation dynamics”
- 18) L Ball (2016) “Understanding Inflation in India”
- 19) Jagdish P Sahu (2013) “Inflation dynamics in India: hybrid New Keynesian Phillips curve approach”
- 20) RBI working paper (2009) “Regional Inflation dynamics in India”
- 21) RBI working paper (2019) “Inflation expectations of Households in analysis of Inflation dynamics in India”