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ANALYSIS OF THE SHORT RUN PHILLIPS CURVE IN INDIA

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Abstract

Inflation, Unemployment and GDP are some of the vital variables for any nation, as they play a key role in determining the economic growth and development. The relationship between inflation and unemployment has been discussed by A.W. Phillips in his concept Phillips curve, which was widely accepted, criticized and augmented by the successive schools of economic thought. This study analyzes the relationship between inflation and unemployment in India from 2004 to 2018 using ordinary least square method and it has been observed that there exists a negative relation among the variables as explained by A.W. Phillips.

Key words

Inflation, Unemployment, Phillips relation, Regression analysis, India

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1. Introduction

Inflation and unemployment are two major economic concepts and it has been observed that these determine development in any country. Whether major macroeconomic goals of low inflation and low unemployment can be achieved or not has remained as a question of debate among the economists. This has eventually resulted in the emergence of Phillips curve.

A.W.Phillips, a neo keynesian economist in his study published in 1958 drew attention to a statistical relation between unemployment and inflation for which he used the annual rate of change of money wages and the annual average percentage rate of unemployment of UK for the years 1861-1957. He observed that there is an inverse and non linear relationship between rate of change of money wages and the percentage rate of unemployment which was displayed using a curve. A stable relationship that persists over a long period of time was thought to exist as the observations for 1948-57 lie close to the curve fitted for the years 1861-1913.

By allowing for long run changes in the productivity of labour one can move from this relationship to one between the rate of change of price level and unemployment. Many empirical studies on the relationship between the rate of change of money wages, inflation and unemployment were undertaken. Studies from 1960-80 proved that the relationship holds only in the short run. This was followed by the Natural Rate of Unemployment hypothesis and a new framework of Friedman which considers real wages instead of money wages and the Expectations Augmented Phillips curve.

As far as India is concerned, the unemployment rate has been growing over years. . Does this imply low inflation as explained by the Phillips relation? Thus for or a developing country like India, that faces many economic problems like poverty, unemployment and inflation, it becomes necessary to analyze the relationship between inflation and unemployment.

2. Objectives

Main objective of this paper is to examine the relationship between inflation and unemployment in the economy.

3. Literary Review

Various studies have taken place concerning the topic. Unemployment rate, inflation rate and growth rate of output are the three broad measures by which macro economic performance is evaluated. Most of the governments strive to achieve the goals of price stability and full employment. We can say that unemployment refers to wastage of country's resources and is a serious hindrance to economic progress.

Dr. Rubee Singh (2018) in his study has examined the impact of inflation on GDP and unemployment rate in India from 2011-2018 . The study uses secondary data sources and concludes that inflation significantly influence GDP and unemployment. Maximova Alisa(2015), in her article, 'Relationhip between inflation and unemployment:- Theoretical discussion about Phillips curve', has observed the relation between the concepts and has constructed short term and long term Phillips curve based on the statistical data of The Russian Federation. Alfred a Haug and Ian P King (2011) examined the relationship between inflation and unemployment in the long run using US quarterly data from 1952 to 2010 using band pass approach and found that there exists a positive relationship where inflation leads unemployment by some 3 to 3.5 years in cycles that lasts from 8 to 25 or 50 years. Their study provides evidence to the predictions of Friedman and the recent New Monetarist models. Kayode Bamidele Adebowale (2015)examined the relationship between inflation and unemployment in Nigeria and observed a negative relationship. He also found that inflation and unemployment are destructive rather than helpful to economic development and growth.

4. Inflation

Inflation according to Rosalind Levacic and Alexander Rebmann 'occur when the general price level is continuously rising. The relative prices of all commodities change and prices on the average are rising'. Inflation is measured as a weighted average of prices of a large number of commodities.

Several theories on inflation have evolved through time like Monetary theory, Keynesian theory, Structural theory etc. Monetarists emphasizes the role of money and to them only money matters .According to them money supply determines the level of output and prices in the short run. But in the long run money does not affect the output level. Milton Friedman observed that monetary policy has a dominant role in determining inflation and this was widely accepted.

When we discuss the vital theories of inflation Market power theory should be considered. This theory discusses the market power of a single or a group of sellers who are capable of deciding prices. When activities of trade unions result in wage hike, oligopolistic firms with higher market power, can hike prices. The theory also emphasizes that fiscal and monetary policies are not applicable in such situations. When conventional demand pull theory exerts the excess of aggregate demand over aggregate supply as the cause of inflation, the structuralist theories like mark up theory considers the cumulative effect of demand pull and cost push factors and bottle neck theory explains boom in capital goods and wage – price spiral as the source of inflation.

Inflation according to Keynes is a phenomenon of full employment. Keynesian economics observes increase in aggregate demand as the main cause of inflation. Cost push inflation occurs when demand for product remains unchanged as the cost of production rises.

5. Concept of Unemployment

With unemployment being a key issue in the developing economies it become necessary to discuss on the topic. Unemployment may be defined as a state of worklessness for a person fit and willing to work. The rate of unemployment is calculated as the ratio between total unemployed and total labour force. Yelwa et al observes that " the International Labour Organisation defines unemployment as the number of economically active population who are without work but available for work and seeking work including those who have lost their jobs and those who left jobs voluntarily."

According to those belonging to the classical school of thought, real wage unemployment occurs as real wages are set above the market clearing level. As the government intervenes to improve the conditions of the working population, unemployment tends to increase. Even though this argument has been criticized for not considering certain external factors and restraining the association between wage rates and unemployment, it has gained importance in literature .

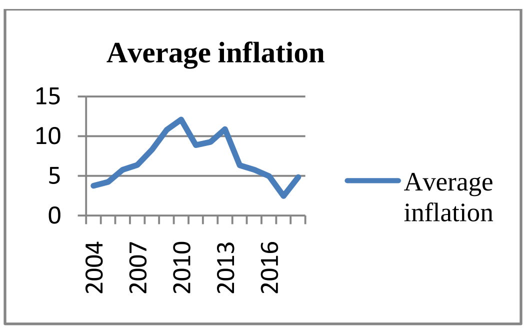
When the Keynesian school gained importance after 1936, deficit demand unemployment was discussed. This occurs when there is lack of aggregate demand and less job opportunities as a result. They consider shifts in business cycle as a reason for cyclical unemployment.

Unemployment definitely has economic and social implication in a country like India like loss of output, loss of revenue, developmental lag, poverty and even a situation of social unrest.Thus both inflation and unemployment definitely imposes a cost in the economy. Although various studies on inflation and unemployment has been conducted, not much attention has been given to analyzing the relationship between these variables based on data from India. Since inflation has been on the rise in India for the past few years and affects the growth of the economy and the poor sections of the society more, the study focuses on the topic.

6. Methodology

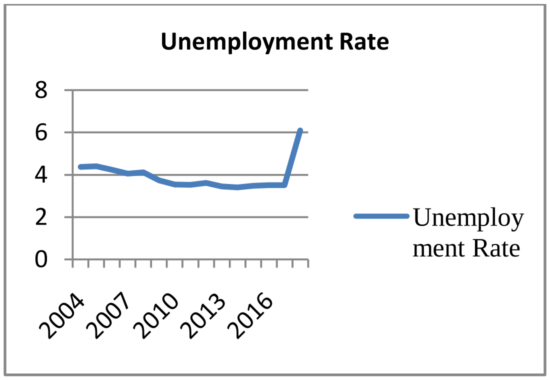
The study uses secondary data taken from various sources. The average inflation in percentage, according to the planning commission of India and unemployment statistic provided by World Bank have been taken for fifteen years from 2004 to 2018 and analyzed using method of ordinary least square and simple linear regression model.

Figure 1. Trend of average inflation(in percentage) in India from 2004 to 2018



The above figure how the inflation rate in India for the past fifteen years. It is evident from the above data that the highest inflation was experienced in the years 2009-2010. The reasons may be the changes in oil prices and the effect of global economic crisis. As per 2018 data inflation in the country has been 4.85 percent which was a tremendous increase compared to 2.49 percent in the previous year.

Figure 2. Trend of Unemployment in India(in percentages) from 2004-2018



According to the data(provided by World bank), unemployment has remained 3-4% over these years while a tremendous increase can be observed in 2018 of about 6.10%.

According to the Phillips relation both inflation and unemployment are inversely related. But this need not be always true as proved later by the other subsequent studies, especially in the long run in countries like India.

In order to examine the relationship, the regression equation formulated is :

$$Y = \alpha_1 + \alpha_2 X_1$$

Where Y = unemployment

X_1 = inflation

The result of the regression analysis is given below:

Regression Analysis					
	r^2 0.128	n 15			
	r -0.357	k 1			
	Std. Error 0.673	Dep. Var. **Y**			
ANOVA table					
Source	*SS*	*df*	*MS*	*F*	*p-value*
Regression	0.8611	1	0.8611	1.90	.1909
Residual	5.8795	13	0.4523		
Total	6.7406	14			

Regression output			confidence interval	
Variables	*coefficients*	*std. error*	*t (df=13)*	*p-value*
Intercept	4.5419	0.4686	9.693	2.58E-07
X1	-0.0857	0.0621	-1.380	.1909

Since the value of r^2 is 0.128, we can expect a slight relation between the variables. The p-value being 2.58E-07, it can be concluded that α_2 is highly significant and inflation and unemployment are related. With the value of α_2 being -0.0857 it is observed that both the variables are negatively related.

7.Conclusion

The study thus proves that in India the relationship between inflation and unemployment as featured by the popular concept of Phillip's curve, do exist in the short run. The time frame considered in this particular analysis, once extended, might provide a different result. Knowledge on this relationship might enable policy makers to formulate policies for minimizing both inflation and unemployment as required. This should primarily include programs and policies for employment generation like public investments in productive activities, rural upliftment, research and development and controlling price rise. Government should also raise the efficiency of labour market by reducing the cost of job search. Education should be a thrust area and training programs should be promoted to develop skills and ideas and enhance productivity. Above all successful implementation of the policies adopted should be ensured systematically.

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