

Analysis of Causal Relationship between Unemployment and Inflation in India

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ABSTRACT

Monetary policy of a country has a short term impact on inflation and the economy-wide demand for goods and services. Hence, the demand for the human resources who produce those goods and services also fluctuates. When monetary policy is used to reduce inflation, countries face problems to control unemployment. This scenario was well explained by economist A. W. Phillips in 1958, where he showed that when inflation is high, unemployment is low, and vice versa. This relationship is now well known as the Phillips curve. With the fall of aggregate demand, inflation would decline. However, if there is a decline in Real GDP, firms will employ fewer employees leading to a rise in unemployment. From the available data for Gross Domestic Product, unemployment rate and inflation rate of India for the period of 1991-2012, I have tried to statistically analyse the data. The data is available with base period as 2004.

1. Introduction

As India is considered as one of the fastest-growing economies in the world and hence it is recognized as one of the G-20 major economies as well as a member of the BRIC countries, an association that is made up of rapidly growing economies. Apart from India, three other countries, namely Brazil, Russia and China, are BRIC members. Economy of any country also depends on the employment rate of the country.

India progressed significantly over the years. However, in comparison to the other emerging countries in the BRIC group, India's progress was rather minimal. China experienced the most apparent growth.

India's Unemployment Rate increased to 3.60 % in Dec 2017, from the previously reported number of 3.50 % in Dec 2016. The data reached an all-time high of 4.40 % in Dec 2005 and a record low of 3.50 % in Dec 2016. The data is reported by World Bank. There is relation between Economy growth, unemployment rate and inflation of the country.

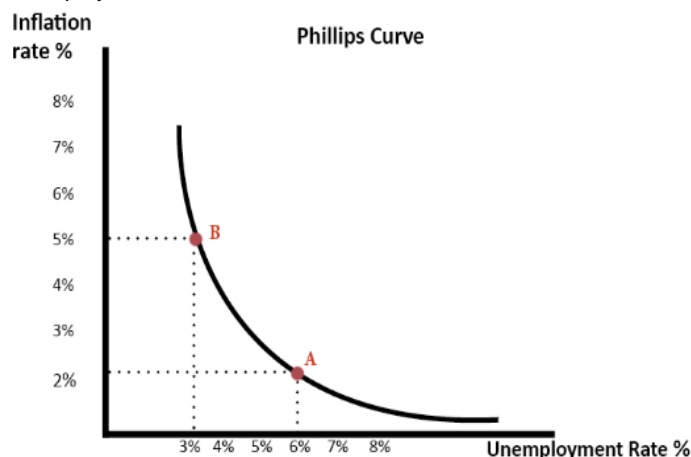
2. Objective

To find out statistical relation between gross domestic product of a country, unemployment and inflation in India during the period 2006-2016.

'Phillips Curve'

The Phillips curve is an economic concept developed by A. W. Phillips which states that inflation and unemployment have a stable and inverse relationship. The theory states that with economic growth comes inflation, which in turn should lead to more jobs and less unemployment. If rate of inflation increases suddenly, it temporarily reduces, the rate of increase in the wages. Consequently, unemployment rate decreases. If

the workers are able to cope with the increase in inflation, unemployment rate is also less.



The concept behind the Phillips curve states the change in unemployment within an economy has a predictable effect on price inflation. The inverse relationship between unemployment and inflation is depicted as a downward sloping, concave curve.

Both Edmund Friedman and Milton Phelps argued that such stable and inverse relationship between inflation and unemployment exists in short run but not in long run.

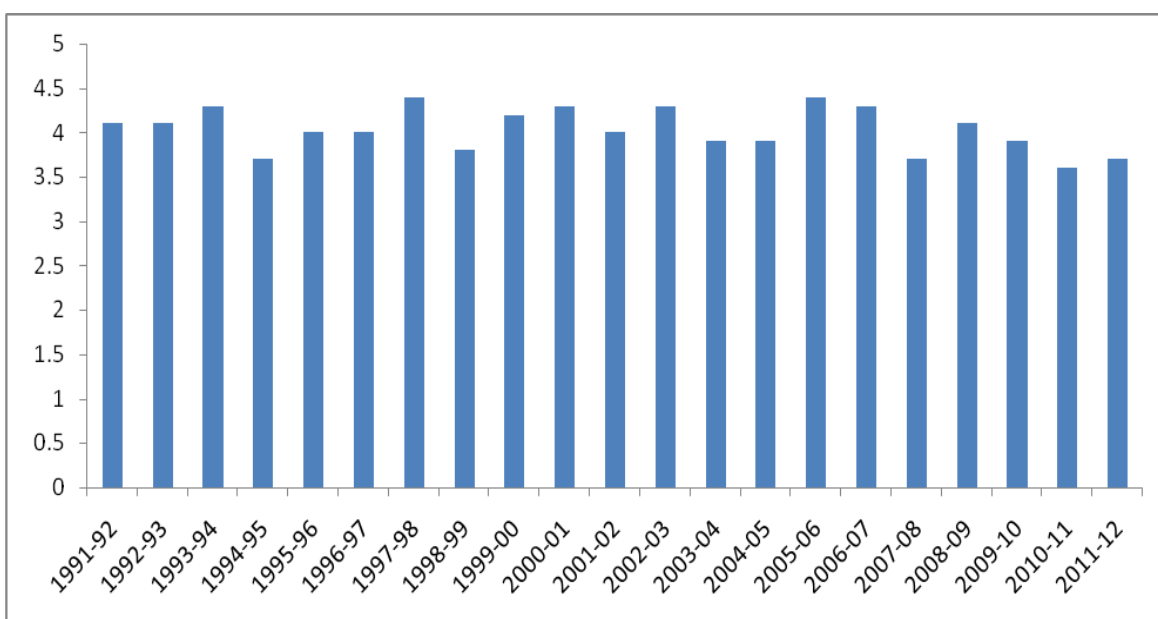
3. Analysis of data

To study the relationship in India we have taken the data of GDP at constant value, Unemployment rate and inflation rate from 1992 to 2012 of India. We try to fit a regression model between GDP on Unemployment rate and inflation rate.

Annual Data

Year	GDP constant	Unemployment rate	Inflation rate
1991-92	13671.71	4.1	13.07

1992-93	14405.03	4.1	8.00
1993-94	15223.43	4.3	8.64
1994-95	16196.94	3.7	9.47
1995-96	17377.40	4.0	9.69
1996-97	18763.19	4.0	10.41
1997-98	19570.31	4.4	6.29
1998-99	20878.27	3.8	15.32
1999-00	22549.42	4.2	0.47
2000-01	23484.81	4.3	3.48
2001-02	24749.62	4.0	5.16
2002-03	25709.35	4.3	3.20
2003-04	27757.49	3.9	3.72
2004-05	29714.64	3.9	3.78
2005-06	32530.73	4.4	5.57
2006-07	35643.64	4.3	6.53
2007-08	38966.36	3.7	5.51
2008-09	41586.76	4.1	9.70
2009-10	45160.71	3.9	14.97
2010-11	49185.33	3.6	9.47
2011-12	52475.30	3.7	6.49

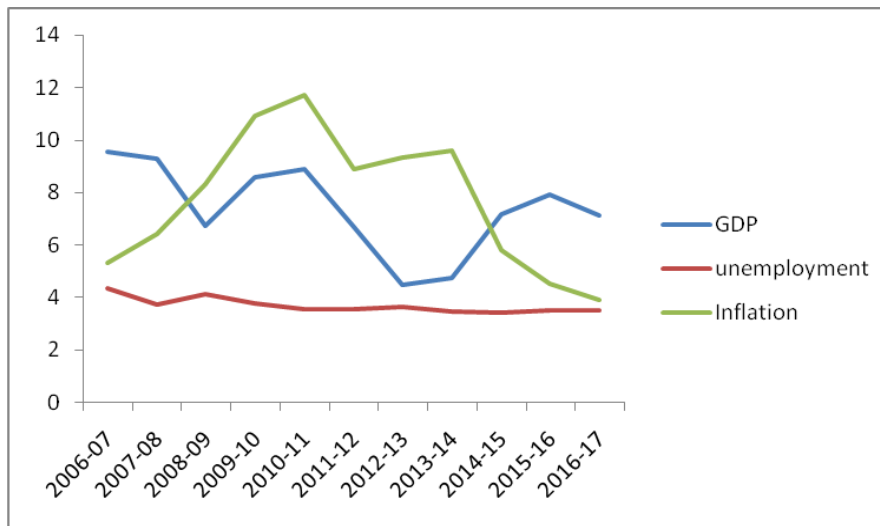


Graph1: Unemployment rate in India

To understand the relationship I have taken into account the rates of the three variables from recent years.

Table 2 : GDP rate, Unemployment rate and Inflation rate

Year	GDP Rate	Unemployment Rate	Inflation Rate
2006-07	9.57	4.33	5.3
2007-08	9.32	3.72	6.4
2008-09	6.72	4.12	8.3
2009-10	8.59	3.75	10.9
2010-11	8.91	3.54	11.7
2011-12	6.69	3.53	8.9
2012-13	4.47	3.62	9.3
2013-14	4.74	3.46	9.6
2014-15	7.18	3.41	5.8
2015-16	7.93	3.49	4.5
2016-17	7.11	3.51	3.9



Graph 2 Line Chart

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.43148165
R Square	0.18617641
Adjusted R Square	0.09575157
Standard Error	11266.3085
Observations	21

ANOVA					
	df	SS	MS	F	Significance F
Regression	2	522673116.1	261336558	2.058908	0.15659304
Residual	18	2284734713	126929706.3		
Total	20	2807407829			

	Coefficients	Standard Error	t Stat	P-value
Intercept	119836.187	45496.69013	2.633954	0.01685
Unemployment	-21850.608	10774.82665	-2.02793	0.057633
Inflation	-504.67451	684.3534507	-0.73745	0.470355

Correlation			
	GDP	Unemployment	Inflation
GDP	1		
Unemployment	-0.40198	1	
Inflation	-0.01549	-0.32972	1

4. Conclusion

Graph 1 depicts that unemployment rate over the years does not have more variation. Anova reveals that in India there is weak relationship between GDP and Unemployment rate which evidenced that there are chances of jobless growth in India. For relationship between GDP and inflation is almost zero which implies inflation is not affected by GDP. Also the Anova

suggest there is no linear relationship between the three i.e. the regression model is insignificant.

From graph 2 it is very clear that with the change in GDP there is hardly any change in unemployment rate and inflation rate. We can see that's table and inverse relationship between inflation and unemployment exists in short run but not in long run.

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