

# Impact of inflation on Unemployment and GDP during Pandemic In India : A Short Term Analysis

## SUMMARY OF DISSERTATION

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## **Introduction**

In the world economy, inflation and unemployment are major issues in the global. Every developed and developing nation faces these issues and implements different economic reform programs to address them and maintain a low unemployment rate and stable price level. But this problem is less likely to be achieved simultaneously. In 1960, A W Phillips, the pioneer of the Phillips curve in the UK, first introduced the theory of the Phillips curve UK. This curve suggests a negative relationship between the rate of inflation and unemployment. The Phillips curve can be explained in two ways. The first is a short-term relationship between two variables; the second is a long-term relationship. In the short run, inflation and unemployment rate are trade-offs, according to the first model. Second, there is no significant trade-off between inflation and employment rate in the long run. So, economists should identify their relationship with inflation and unemployment rate; there is a short-run trade-off between inflation and unemployment rate in different countries and over different time periods. Inflation rate is a function of monetary policy, and unemployment rate is a function of fiscal policy.

Monetary policy aims to control the level of inflation in the economy or to maintain stable inflation by sacrificing employment. Fiscal policy, on the other hand, aims to achieve low unemployment in the economy regardless of inflation. In order to maintain an optimal level of trade-off between inflation and unemployment, it is necessary to coordinate all policies in order to maintain the non-accelerating inflation rate of unemployment, as Milton Friedman called it. A stable rate of wage inflation indicates no trade-off between unemployment and inflation. The concept is defined as the rate of unemployment when the rate of wage inflation is stable.

In general, inflation is the rate at which prices rise over a given period of time. Inflation is basically a broad measure and it has impacted overall increase in prices or the increase in the cost of living in a country. But it can also be more narrowly calculated—for certain goods, such as food, or for services, such as a haircut, for example. Whatever the context, inflation represents how much more expensive the relevant set of goods and/or services has become over a certain period, most commonly a year.

The unemployment rate is the most commonly used indicator for understanding conditions in the labour market. The labour market is the term used by economists when talking about the supply of labour and demand for labour.

The Phillips Curve theory found an relationship between the rate of inflation and the rate of unemployment in the economy. This theory guides the policymakers about the stability of prices in the economy. According to the Phillips Curve, the inflation and unemployment rate expand or contract based on the liquidity of the economy. Several economists, academicians, and researchers still argue about the connection between inflation and unemployment. The Phillips Curve is one of the best known, most debatable, and most often used to examine Macroeconomic relationships. The present study is on the “monthly movement of inflation and unemployment rate during the pandemic in India”. The -19 pandemic has affected the economy, the most tangible outcome, the one that affects each and every person, is the impact on inflation and unemployment. Even before the pandemic struck, consumer inflation had crossed the upper tolerance level of six percent in December 2019. India was in a tight situation with inflation higher than the mandate, but economic growth fell fast to levels of three percent, a rare low. On other hand, India's unemployment rate rose to its highest level since 1991 during 2020 as the coronavirus pandemic caused the economy to come to a screeching halt, according to a study. The nation saw one of the toughest lockdowns in the world starting March 2020 as the pandemic claimed numerous lives, with stringent restrictions on mobility and economic activities across the board.

### **Review of literature –**

Angus C. Chu, Guido Cozzi, Haichao Fan (2020) – Explore the relationship between inflation and unemployment in a monetary Schumpeterian growth model. Under the cash-in-advance (CIA) constraint on research and development (R&D), higher inflation reduces innovation and increases unemployment. Under the CIA constraint on consumption, higher inflation also reduces innovation but decreases unemployment instead.

Abdulsalam S. Ademola<sup>1</sup> and Abdullahi Badiru (2016)-The result of the Diagnostic test indicates that data for the analysis are stationary at the level and there are 2 cointegrating equations implying that there exists a long-run relationship between RGDP, Unemployment and inflation. The results indicated that unemployment and inflation rates are positively related to economic growth.

Rubee Singh (2018) – Concludes that inflation rate is insignificantly influenced GDP and unemployment and the correlation is negative. The correlation between unemployment and inflation is positive and is insignificant at a 10% level of significance. The correlation between GDP and unemployment rate has also been found insignificant. So we concluded that inflation

has a role which influential but for GDP and unemployment , inflation is an insignificant levels in the macroeconomics factors of Indian economy.

Sunusi Yahaya Enejoh (2016) - He is to analyse the impact of inflation and unemployment rate on economic growth in Nigeria from 1970 to 2016. They have analysed the impact of inflation and unemployment rate on economic growth in Nigeria from 1970 to 2016. The variables used in this research include the log of real GDP, log of the inflation rate, log of the unemployment rate and log of foreign exchange.

Vikas Barbate, Rajesh N. Gade, Shirish S. Raibagkar (2021)- They are to assess the impact of COVID-19 on the Indian economy in the short term and the long term. They found that there is a negative impact of COVID-19 on Indian economy.

S. Mahendra Dev and Rajeswari Sengupta (2021) - we describe the state of the Indian economy in the pre-Covid-19 period and explore the potential impact of the shock on various segments of the economy. They analyse the policies that have been announced so far by the central government and the Reserve Bank of India to ameliorate the economic shock and put forward a set of policy recommendations for specific sectors.

David G. Blanchflower, David N.F. Bell, Alberto Montagnoli and Mirko Moro (2014) - They discover that unemployment depresses well-being more than inflation. They have estimated that with European data imply that a 1 percentage point increase in the unemployment rate lowers well-being by more than five times as much as a 1 percentage point increase in the inflation rate.

Marta Fana, Sergio Torrejon Perez, Enrique Fernandez-Macias (2021) – They analysed that vaccine was the reason to reduce the COVID-19 case in all over the world.

Zîna Cioran (2014) - identifying the existing connections between the inflation rate and some important macroeconomic indicators and also on the dynamics of inflation at a national and European level. The study is to reveal the causal relation between the inflation rate and the interest rate of the monetary policy and also between the inflation rate and the unemployment rate, using regression method.

NMP Verma and Dolly Singh (2016)- proved that the negative effect of unemployment rate on inflation rate and the positive effect on real GDP. Unemployment is a continuously problem in all economies of developing countries where it is affecting highly the level of employment; price level, the living standard of people, and real GDP. The findings proved the influential relationship between unemployment and inflation rate conditions, Unemployment and Real GDP conditions, but in our economic condition, it is proved non-significant.

Dholakia (2011), in this study, the author estimates the short run aggregate supply curve for the Indian economy from 1950-51 to 2008-09. The study employs the technique of estimating adaptive expectations, constrained estimation consistent with long run equilibrium, and also introduces the extended Phillips curve.

Murphy and Robert (2013), attempted to ascertain whether the Phillips curve could explain the behaviour of inflation in the United States. They modified the traditional Phillips curve to explain time variation in its slope and showed that the modified model was more conversant a tool to analyse the recent behaviour of inflation without relying on set expectations.

Rafery et al. (2010), this study doubts the validity of the Phillips curve with the aid of dynamic model averaging. The authors' study aims to highlight that the existence of a systematic relation between real activity and inflation is blurred due to the failure to capture inflationary pressures, by means of a single measure of economic activity and second is the existence of a nonlinear response of inflation to the driving variable based on data for the USA and other G7 countries.

NMP Verma and Ravi Kant (2021) – They have defined the Macroeconomic Pandemic Panorama of Developing Economies and taken India in our research to analysis the effect of COVID-19 pandemic on Indian economy. It has been observed that the populated developing economies have been severely impacted due to spread of pandemic. The rising health expenditure, increasing debt, labour migration, increase in unemployment, prices, and the loss of output are the major factors to drag these economies into vulnerability.

Szomolanyi, et al. (2012), states that the Phillips curve is a basic tool to understand relations between the growth rate of money wage and unemployment rates.

NMP Verma and Partinidhi (2020) – they evident that in the pre-recession period, the volatility in price of wheat and rice has increased with high rate but the volatility on prices of wheat is higher as compared to prices of rice. This is largely due to the influence by (own shock) or due

to the past information about prices of agriculture commodities. Further, in the post-recession period, volatility on food prices of wheat and rice is largely influenced by the global financial crisis and past information about the prices of agriculture commodities.

### **Research problem –**

- Inflation increase the value to products which decrease the income of household and society output growth is reduced by increase value of product and Inflation reduces the real value of both monetary assets and liabilities and increase the real value of real assets. Unanticipated inflation imposes costs by generating a sense of uncertainty. People are unable to make plans for the future and as a consequence, economic decision making becomes inefficient.
- We have face problem from lower GDP and high food inflation and unemployment in India.
- Paaritosh Nath (2020) has analysed that employment growth has been weak in many demographic groups (men, women, urban, rural) and has lagged behind population growth. In every group, the results show a decline in labour force participation and an increase in unemployment.
- We had seen demonetization and GST policy implication in 2016 to 2021 period of time.
- In year 2016 to 2021, we have seen high unemployment and negative GDP growth in Indian economy.
- Unemployed individuals not only lose income but also face challenges to their physical and mental health and its effect their productivity in labour force.

### **Objective –**

The primary objective of this study are:

- To analysis monthly trend analysis of Inflation, Unemployment and Gross Domestic Product in India. (2016-2021)
- To analysis the impact of pre and post COVID-19 pandemic on inflation rate, unemployment rate and Gross Domestic Product in Indian economy. (2016-2021)
- To analysis the inflation rate impact on unemployment rate and Gross domestic Product during pandemic in India.

### **Data and methodology –**

The present Study is wholly based on the secondary data. The study uses time series database, taken from authentic data source such as the published official reports and data. Following are the reference points for collecting data:

- I. Report on Inflation published by the Reserve Bank of India.
- II. Annual Report published by the Ministry of Labour and Employment Labor Bureau, the Government of India.
- III. Ministry of Statistics and Program Implementation (MOSPI), the Government of India.
- IV. Handbook of Statistics on Indian Economy via the Reserve Bank of India. 5. National Sample Survey Organization (NSSO) India.
- V. Economic Political Weekly Research Foundation (EPWRF)
- VI. CMIE (Centre for Monitoring Indian Economy)

We have used quantitative and time series data such as monthly, quarterly and annual data on Consumer Price Index, Gross Domestic Product and unemployment rate. The present study has taken data pertinent to the monthly time period from 2016 to 2021. This study has been divided into two sub periods.

**Table 1 – Total time period divided into two period -**

Pre-Pandemic Period (2018-2019)	Pandemic period (2020-2021)
We considered this period is pre-pandemic period. It shows the trends of inflation and unemployment, impact of recession on macro variables, to examine the Phillips	We considered this period as the pandemic period. We have divided this period into two part first wave and second wave. It shows the trends of inflation and unemployment, impact of recession on macro variables.

curve relationship and output gap in this period.	
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The secondary data are used for this study period from 2016-2021. Therefore, data has sourced from CMIE which includes; data on Unemployment rate and consumer price index proxy for inflation (INF) and real gross domestic product which is taken from RBI data sources. The ordinary least square method and Bi-variate regression model of econometric approach was used in estimation. We have taken dummy model to estimate the pandemic effect on these three variables.

To study empirically on the relationship between variables we have taken different functional form in every chapter as according to our objective so our functional form are -

In the chapter 3 we have taken three functional form and find the relationship between variable and time –

$$\text{UNEMP} = f(\text{TIME})$$

$$\text{INF} = f(\text{TIME})$$

$$\text{GDP} = f(\text{TIME})$$

In the chapter 4 we have taken three functional form and find the effect between variable and pre and post COVID-19 pandemic period and our functional form are as –

$$\text{UNEMP} = f(\text{PANDEMIC PERIOD})$$

$$\text{INF} = f(\text{PANDEMIC PERIOD})$$

$$\text{GDP} = f(\text{PANMEIC PERIOD})$$

In the chapter 5, we have taken three functional form and find the effect between variables during pandemic time and our functional form are –

$$\text{UNEMP} = f(\text{PANDEMIC PERIOD}, \text{INF})$$

$$\text{GDP} = f(\text{PANDEMIC PERIOD}, \text{INF})$$

$$\text{INF} = f(\text{UNEMP}, \text{PANDEMIC PERIOD})$$

$$\text{INF} = f(\text{GDP}, \text{PANMDEIC PERIOD})$$

Where, UNEMP = unemployment Rate, INF = Inflation Rate, Real GDP = Real Gross Domestic Product and f = functional relationship.

The study will capture under this functional form and try evaluate the major finding as according to our objective.

### **Hypothesis –**

- Null hypothesis (H0) – There is a insignificant effect of inflation rate, unemployment rate and GDP with time in the monthly period of 2016 to 2021.
- Null hypothesis (H0) – There is insignificant effect of COVID-19 pandemic on inflation rate, unemployment rate and GDP.
- Null hypothesis (H0) – There is a insignificant effect of inflation rate on unemployment rate and GDP during pandemic time.

### **Significance of the study –**

The significance of this present study is in determining how the policymakers can formulate effective strategies to ensure employment while containing inflation during pandemic. Undoubtedly, inflation and unemployment have played a central role in monetary policy. The Central banks have tried to use this relationship by influencing unemployment through their inflation policy. Theory of Phillips curve is not only strong theoretically, but is also important for political foundations. The central banks' objective has always been to use their monetary policies to keep inflation and unemployment low, but they could only do so at the expense of high unemployment. On the other hand, an acute knowledge of the nature or relationship of inflation and unemployment in the short-run enables the policy makers to outline policies to minimize the harmful effects of inflation and unemployment for the society. Additional approach, the output gap is an important variable for monetary policy and it is a key source of

inflationary pressures in the economy. When the demand for goods and services is high, then economy has the capacity to produce while influencing high pressures on prices. When the rate of inflation actuates higher than expected, it is typically a sign that demand for goods and services are pushing against the limits of capacity. When the rate of inflation always ends lower than expected, it is generally a sign of weak demand and of spare or unused capacity. In the pandemic period both inflation and unemployment increase at higher rate so we try to examine the monthly movement of inflation and unemployment in India to analysis the any relation happened between these variables and how much inflation and unemployment increase during pandemic and before pandemic.

### **Scope of the study –**

The research work intends to know the unemployment and inflation situation within the Indian economy. The study will cover time period (2016-2019) and (2020-2021). This is to ensure updated information and to follow the trend. The range was chosen based on data availability

### **Finding to the study –**

The study is divided into following chapters.

#### Chapter 1 – Introduction

This chapter deals with the introduction parts enlisted in review of literature of the study, research objectives, hypothesis, data and methodology and significance.

#### Chapter 2 - conceptual framework

This chapter discusses about the conceptual and theoretical framework of inflation and unemployment with relevance to Phillips curve analysis.

#### Chapter 3 – Trends of inflation, unemployment and GDP during pandemic

This chapter presents the trendline analysis of inflation, Unemployment and Gross Domestic Product and find a theoretical relation between Okun's law and Phillips Curve. In this chapter. we see that there is relation between inflation with time and unemployment with time in developing countries like India, and with the help of regression analysis, we see that there is a significant positive relation of inflation with time and positive relation of unemployment with time. On the other hand, we

see that according to time, country GDP growth rate is significantly declining. So, this is clear the evidence that we are suffering the problem of stagflation.

#### Chapter 4 – Pandemic of COVID-19 impact on Inflation, Unemployment and GDP in India

This chapter presents the impact of pandemic of COVID-19 impact on Inflation, Unemployment and GDP in India by the help of dummy variable. We use ANOVA model to analysis the impact of COVID-19 on inflation. Unemployment and GDP. We have found that in this chapter, COVID-19 has significantly affect the inflation, unemployment and GDP in the period (2020-21).

#### Chapter 5 – Impact of Inflation on Unemployment and Gross Domestic Product during Pandemic in India

This chapter presents the impact of inflation on unemployment and Gross Domestic Product during the pandemic in India and the impact of unemployment and Gross Domestic product on inflation. The results show that there is an insignificant relation between inflation and unemployment during the pandemic when inflation is an explanatory variable and unemployment is an explained variable, but we find a significant relation between unemployment and inflation during the pandemic when we take inflation as an explained variable and unemployment as an explanatory variable. These results clear the picture that unemployment affects inflation during a pandemic, but inflation is not affected unemployment during a pandemic. On the other hand, other models where we were finding a relation between GDP and inflation. This relationship of models shows that both variables affect each other during a pandemic in this period of time.

#### Chapter 6 - Finding of the study, conclusion and recommendation

During the pandemic, we saw the highest unemployment and inflation rates, GDP growth rate was negative and all the global economy saw lower GDP growth rate problems. Our analysis shows that the COVID-19 pandemic highly impacted on the Indian economy. In this COVID-19 period, we have seen the highest labour migration in the Indian economy. Raising inflation because of the supply chain block due to lockdown. Negative GDP growth rate because in the pandemic, all sectors' growth rates were negative and only the agriculture sector had a positive growth rate and we all know that in GDP growth , agriculture sector participation in GDP growth rate is only 17.8% (2019-20 economy survey) and the rest sectors contribute more than

80% participation in the GDP growth rate. So, in the pandemic, these 80% contribution sectors were in negative or lower growth, so it had a direct impact on the country's GDP growth rate and at that period of time, we were at negative growth rate.