

The Interrelationship Between Inflation Rate and Economic Growth in India: An Empirical Evidence

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Abstract: In recent times, when India is moving towards growth but due to inflation, this growth may be reduced. Recently, World Bank cut off India's growth rate in the third quarter, due to the high inflation rate which reduced the money value in the international market. Many researchers predict that it has positive relation in the short-run only. But it is not fruitful for long-run economic growth. This study investigates whether a country's growth will be impacted favourably or unfavourably by its inflation rate. Annual data is taken from the government's official sites after that ADF (Augmented Dickey fuller test), PP Unit root test (Phillips Perron Test) is used for identify whether the data is stationary or non-stationary. Following analysis, the co-integration and Vector Error Correction (VEC) model is used to illustrate how inflation and economic growth are related over the long-run.

Keywords: GDP, Co-Integration, Economic Expansion, and Inflation.

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I. INTRODUCTION

The debate over how inflation and price stability are related is not a recent one; it has existed for a while. Due to its pros and cons, the thought regarding it is divided in two parts i.e. Structuralist and Monetarist. Structuralists are those who believe that inflation shows progressive economic growth as it is considered an important element. On the other side, Monetarists are those who believe that inflation work as a barrier to economic growth. It shows the decline in production and price stability (Ghosh, N.D). There is two ways through which growth can be observed on the basis of the short run or long run. Economic growth and inflation only have a positive link when they are observed based on the short run. But that won't work in the long run (THE RELATIONSHIP BETWEEN INFLATION AND GROWTH: A GENERAL EVALUATION, 1999).

Those countries are affected by the high inflation rate. The government and central bank policies and instruments are adopted to tighten inflation, usually in this condition the central bank increases the repo rate and absorbs the excess money from the economy (Munyeka, 2014).

In the context of India, the value of money is declining in the international market and on the other side government laid the target to achieve 5 trillion. On the respective of this one side the country facing inflation and another side its objective is to achieve the 5 trillion target, for the government lowered the inflation rate by increasing the repo rate up to 5.90% in the month of September. Which means the government absorbed money, but with absorbing money it affects the production, per capita income etc. The government can adopt an alternative way to achieve its target by lowering the unemployment rate and investing in different sectors such as in agriculture, manufacturing industries etc.

II. LITERATURE REVIEW

Study on the relationship between inflation and economic growth, various studies have been done. After analyzing those studies and divergent result shows and predict various aspects through which some researcher are in the favour of positive relation between inflation and economic growth and some are in the favour of negative relationship between economic growths. On this regard some reviews on the following topic are as follows:

(Pet Kov et al., 2011)The growth of any country is based on various factors such as saving and investment but these things are affected by capital formation as well as affected by inflation and deflation of money value. The growth of any country is based on the high return on the various sectors. (Saha, N. D.) The following study shows the three types of relation between inflation and economic growth i.e. positive, negative and no relation. The researcher shows a positive relationship between inflation and economic growth but the condition is that the rate of unemployment should be reduced. (Salian, N.D.), High inflation affects growth in the long period because high inflation affects private investment. The rise in price value may be controlled by adopting various measures of fiscal and monetary policies. Government should maintain a 'tolerable' inflation rate and grab the maximum growth rate through different sectors. (Sattarov, 2011) every nation's primary goal is to reduce inflation and promote economic expansion. Inflation has a negative effect on the distribution of resources it makes capital more captivating and on the opposite side low inflation make wages and price more flexible and the most important trend to higher economic growth. (Andrés & Hernando, 1997), the main objective for the monetary policy maker is to control inflation, which directly increases the per capita income. But the negative correlation put pressure on the saving of individuals, return on investment etc. Mallik & Chowdhury (2001), According to the research area the researcher says that the growth rate is larger than the growth changes in inflation rates, and he analyzed that there is a positive relationship between inflation and economic growth. Ekinci et al., N.D. - Mainly central banks of countries control inflation by adopting different instruments. Rather than it, the central bank mostly adopted an inflation targeting strategy which is generally 2% or 3%. On the basis of this central bank also ensure that

the inflation level does not affect economic activity negatively.

➤ Objectives of the Study:

In the light of above discussion, this study aimed at achieving the following these objectives:

- To examine the relationship between inflation and economic growth (GDP) in India over the period 2000-01 to 2025-26.
- To analyze the trend of time series between inflation and economic growth (GDP) in India over the period 2000-01 to 2025-26.

III. DATA AND RESEARCH METHODOLOGY

This study is a type of empirical research. Researchers use the annual data of given by RBI reports over the period of 2000-01 to 2025-26 years. Inflation is measured from the average Wholesale Price Index (WPI) and Growth rates of Gross Domestic Products (GDP) at different year prices. The data of year 2000-01 to 2007-08 is based on the base price year is 1999-2000, data from 2008-09 to 2013-14 is based on price year 2004-05 and data from 2014-15 to 2025-26 is based on base price year is 2011-12. In this study for achieving desired objectives, researcher used three methods for data analysis. To examine the trends of time series between the variables researcher shows by the descriptive statistics with graph. Secondly, to check the relationship between the variables researcher used Unit-Root Test, Co-integration and then Vector Error Corrections (VEC) Model with the help of E-views 12 Version of Student Lite Software.

➤ Data and Empirical Evidences

Table 1 Descriptive Statistics of GDP and Inflation

Variables	No. of Observations	Mean □	Std. Deviation	Maxi.	Mini.
GDP	21	6.29	3.4072	9.700	-6.600
INF	21	6.23	2.6646	11.990	3.330

Above table 1 revealed that the descriptive statistics of inflation and GDP rates from 2000-01 to 2025-26. The total number of years 21 denoted the mean value of GDP and inflation rate is 6.29 and 6.23. On the basis of mean value both are trends equally. As we observe the relation in the context of India from 2000-2026 and easily observe the

growth and inflation relation through the Phillips curve which is as below.

In this figure 1 shows also the trends of inflation and Gross Domestic Product from 2000-01 to 2025-26.

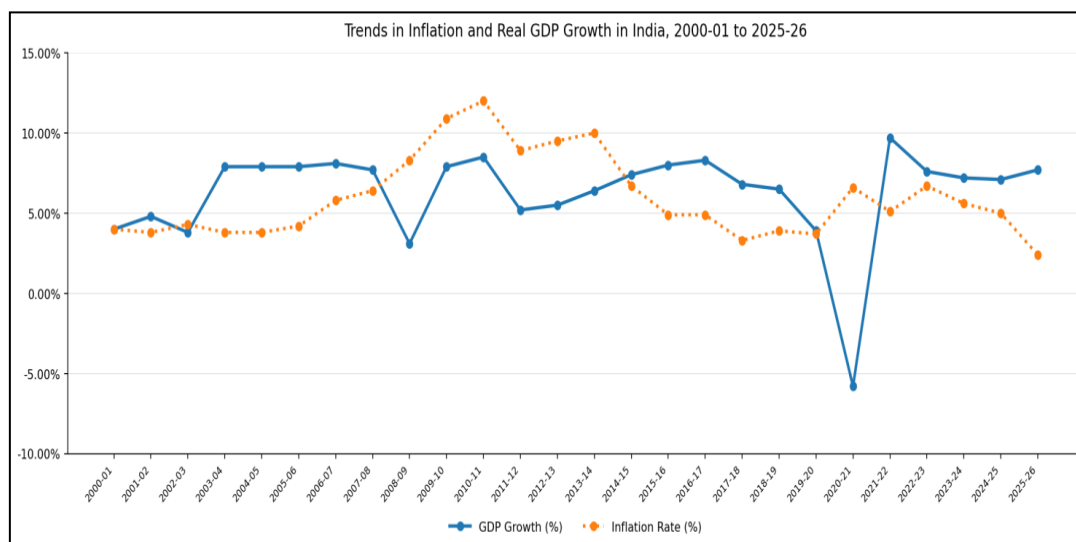


Fig 1 Trends in Inflation and Real GDP Growth in India, 2000-01 to 2025-26

➤ Unit-Root Test Method

Prior to verifying the co-integration between the variables, a Unit-Root Test is utilized to demonstrate the characteristics of stationary or non-stationary data. In this

unit test root method mention in two time series of variables i.e. Augmented Dicky-Fuller and Phillips-Perron.

• Test of Stationarity

Table 2 Unit Test Root with ADF and PP in Levels

Variable		Augmented Dicky-Fuller			Phillips-Perron		
		T-Statistics	Critical values 5%	Probability	T-Statistics	Critical values 5%	Probability
GDP	Observation (21)	0.054	-3.021	0.9533	0.054	-3.021	0.9533
INF		-0.404	-1.959	0.5252	-1.582	-3.021	0.4727

• Notes:

- ✓ Econometric Views Package (E-Views) software version 12 Student Lite was used to run the ADF and PP tests.
- ✓ The unit root test's null assumptions are the basis of the ADF and PP tests.
- ✓ Mackinnon (1991) critical values for null hypothesis rejection are used, and significance is determined at the 5% level.
- ✓ Figures in parentheses show how long the lag is.

It is made clear that GDP and inflation were non-stationary without a lag above Table 2 (unit test root). The alternative hypothesis is rejected when the probability-values of GDP (0.9533) and inflation (0.4727) of Phillips-Perron and Augmented Dicky-Fuller are more than 5% levels of significance apart (P-value 0.05), indicating that the series is non stationary.

➤ Co-integration Test

Finally the data is non stationary. Then check the co-integration relationship between both the variables.

Table 3 Co-integration Test (Johansen -Test)

Trends: Constant Sample:2000-01 - 2025-26			Number of Sample =21 Lags= 2	
Maximum Rank	Eigenvalue	Trace Statistics	Critical Value 5%	Probability Value
0	0.590845	17.06225	15.49471	0.0288
1	0.004342	0.0826	3.841465	0.7737

The results above the table 3 examine that maximum rank is 0 to 1 when the trace-statistics is more than the crucial value at 5%, the null hypothesis of having Zero rank, which is the first significant values, was discovered (Kaisidi, Faraji, 2013) or the value of probability is less than at 5% level of significance p-value 0.5. It indicates co-integrated relationship between the two variables. They demonstrate the co-integration of inflation and economic growth rates. According to both variables' co-integration, there is a long-

term relationship between economic growth and inflation rates.

• Vector Error Correction (VEC) Model Method

Due to both the variables are co-integrated, Then researchers use the model of VEC (Vector Error Correction) model.

Table 4 Vector Error Correction (VEC) Model Inflation with GDP

Dependent Variable: D(INFLATION)				
Method: Least Squares (Gauss-Newton / Marquardt steps)				
Date: 10/09/26 Time: 18:49				
Sample (adjusted): 2000-01 - 2025-26				
Included observations: 18 after adjustments				
	Coefficient	Std. Error	t-Statistic	Prob
C (1)	-0.353376	0.353376	-2.512883	0.0273
C (2)	0.167025	0.200486	0.833097	0.4211
C (3)	0.245424	0.197723	1.241253	0.2382
C (4)	-0.532391	0.313800	1-.696595	0.1155
C (5)	0.233216	0.258500	0.902187	0.3847
C (6)	-0.030918	0.285891	-0.108146	0.9157
R-squared	0.667722	Mean dependent var		0.073333
Adjusted R-squared	0.529273	S.D. dependent var		1.756557
S.E. of regression	1.205166	Akaike info criterion		3.472313
Sum squared resid	17.42910	Schwarz criterion		3.769104
Log likelihood	25.25082	Hannan-Quinn criter		3.513236
F-statistics	4.822874	Durbin-Watson stat		2.334855
Prob (F-statistics)	0.011951			

Above table 4 shows that the significant and negative long-run coefficient C (1) indicates that there are long-run relationship associated with both inflation and growth. A negative sign on the coefficient indicates the ability to return to equilibrium. The presence of the positive sign implies a shift from equilibrium. Short run coefficient C (2) predicts that a percentage rise in growth will reduce inflation by 0.16 percentage points. C (3) an increase in growth by a percentage will cause inflation to rise by 0.24 percentage points. C (4) an increase in growth will cause inflation to fall by 0.53 percentage points. C (5) an rise in growth will cause inflation to fall by 0.23 percentage points. The constant or intercept is C (6). Alternatively, the t-statistics value falls below 1.96. That is, the relationship between the two variables is no longer present.

IV. CONCLUSION

As India beat U.K. in 1st Quarter and become 5th largest economy. This thing motivates to study the connection between economic growth and inflation because India has the world's fastest-growing economy on the one hand while also struggling with inflation on the other. It concludes that the long-run and short-run relationships between inflation and economic growth in India from 2000-01 to 2025-26 are examined on the basis of co-integrated and estimated by the Vector Error Correction (VEC) model. Interesting findings from this study indicate a negative correlation between inflation and economic growth. It follows that any increase in inflation will have a negative impact on economic growth. In India, there is no substantial long-term association between inflation and economic growth, although there is a strong or negative relationship in

the short-term for both the variables. It is suggested that on the basis of above results, Government of India should be maintained tolerable inflation rate, government should make policies regarding medium of exchange in rupee at international market, open doors for foreign investment in India and reduce government expenditure which are not profitable in future of India.

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