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# AN EMPIRICAL ANALYSIS OF ECONOMIC GROWTH AND INFLATION OF PRIMARY SECTOR OUTPUT OF JAMMU AND KASHMIR ECONOMY

**Article Particulars**

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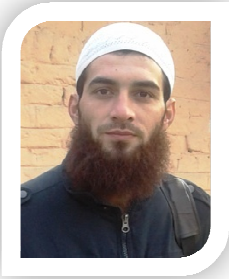

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**Abstract**

*In the present paper we have attempted to study the association between economic growth and inflation rate of primary sector of Jammu & Kashmir Economy for a reference period of 1980-2011. GDP deflator has been used to calculate the inflation rate in primary sector as well as for an economy as a whole. The OLS regression model has been used to analyse the association between economic growth and inflation rate of primary sector of state Economy. The results of the growth regression model proved that there is a weak association between the two variables which gave birth to an important policy option that inflation of the primary sector output should be checked and only a mild inflation should be allowed in the sector which will prove to be an incentive to the farmers of the state economy.*

***Keywords:*** *NSDP, Inflation, Primary, GDP Deflator, Growth, Sector.*

## Introduction

The Jammu and Kashmir State lies in the extreme north of the Himalaya and constitutes about 67.5 per cent of the North West Himalayan region. Total geographical area of the State is 2, 22, 236 $km^2$ out of which 78,114 $km^2$ (35.15%) area lies under the occupation of Pakistan, and 42,735 $km^2$ (19.23%) under the occupation of China (including the area handed over by Pakistan to China). Therefore, the State is

left with an area of 101,387 km$^2$ (45.62%). Ladakh is the largest hilly arid zone which occupies 58321 km$^2$ (42.00%). As per land utilization statistics for the year 2010-2011 the total reported area of the state is 2416 thousand hectares of which 74 per cent, 23 per cent and nearly 3 per cent in Jammu, Kashmir and Ladakh regions, respectively.

Agriculture constitutes an important sector of the state economy as more than half of the population of J&K derives greater part of their income directly or indirectly from this sector. As per census 2001, 18.38 lakh persons comprising 15.92 lakh as cultivators and 2.46 lakh as agricultural labours depend directly on agriculture for their livelihood forming 49 percent of the total working force (37.54 lakh) of the state. The average holding size as per Agriculture census 2000-01 was 0.67 hectares in J&K and 1.31 hectares for all India.

**Theoretical Background about the Relationship between Growth Rate and Inflation Rate**

The association between economic growth and inflation lingers a debatable one in both theory as well as empirical results because Classical Growth Theory, Keynesian Theory, Neo-classical Theory, Neo-Keynesian Theory, the Tobin Effect and Endogenous Growth Theory states that inflation is an important factor that facilitates economic growth. Originating in the Latin American context in the 1950s, the issue has generated a permanent debate between **Structuralists and Monetarists**. The structuralists believe that inflation is essential for economic growth, whereas the monetarists see inflation as detrimental to economic progress. There are two aspects to this debate: (a) the nature of the relationship if one exists and (b) the direction of causality. Friedman (1973: 41) succinctly summarized the inconclusive nature of the relationship between inflation and economic growth as follows: ―historically, all possible combinations have occurred: inflation with and without development, no inflation with and without development.

The impact of inflation on growth, output and productivity has been one of the main issues examined in macroeconomics. Theoretical models in the money and growth literature analyze the impact of inflation on growth focusing on the effects of inflation on the steady state equilibrium of capital per capita and output. There are three possible results regarding the impact of inflation on output and growth: i) none; ii) positive; and iii) negative. Sidrauski (1967) established the first result, showing that money is neutral and superneutral1 in an optimal control framework considering real money balances (M/P) in the utility function. Tobin (1965), who assumed money as substitute to capital, established the positive impact of inflation on growth, his result being known as the Tobin effect. The negative impact of inflation on growth, also known as the anti-Tobin effect, is associated mainly with cash in advance models (e.g., Stockman, 1981) which consider money as complementary to capital.

**Growth and inflation in the Jammu & Kashmir Economy**

A noteworthy feature of Jammu & Kashmir Economy growth process over the last one and a half decades has been its stability. This is evident from the substantially lower coefficient of variation of real GDP growth during the post-reform period as compared to that during the pre-reform period, that is, before the nineties. It is also important to note that Jammu & Kashmir Economy's growth is driven by domestic consumption, contributing on an average to almost two-thirds of the overall demand, while investment and export demand are also accelerating. As consumption is less volatile component of demand, this has also contributed to reducing the volatility of NSDP.

The growth rate of NSDP in Jammu & Kashmir Economy increased from 2.44 % in the 1980s to 3.54 % in the 1990s, and finally reached to 4.27 % in 2000's while as the inflation rate was 4.4 % in 1980's and it increased to 7.8% in 1990's and finally it reached to 14.2 % in 2000's.Therefore, it shows clearly that there is positive correlation between growth rate and inflation in Jammu and Kashmir state. Therefore, this supports the structuralists believe that inflation is essential for economic growth, whereas the monetarists see inflation as detrimental to economic progress.

**Objectives**

The following are the objectives of our study:

1. To analyze the relationship between economic growth and primary sector inflation rate in Jammu and Kashmir state economy.
2. To analyze whether this relation is viable for our economy or not

**Data and Methodology**

The study is primarily based on the secondary data that is obtained from the following sources:

- Economic census, Govt. of India, various issues.
- Digest of statistics; Directorate of Economics and Statistics; Govt. of J&K, various issues.
- Economic Survey; Directorate of Economics and Statistics; Govt. of J&K, various issues.
- Economic Review of J&K; Directorate of Economics and Statistics; Govt. of J&K, 2007-08.
- Reports, journals, magazines and news papers.
- The following appropriate statistical tools and formulas have been used to analyze the data:

**Statistical and Econometrical Tools**

The following statistical and econometrical tools have been used to explain the relationship between economic growth and inflation rate:

**The Regression Model for Growth Rate of State Economy Output and Primary Sector Inflation Rate**

**Simple Growth Regression Model**

We have used this model by converting the variables of a simple regression equation into growth form and the equational form of the model is given below.

$X = a + b_1X_1 + u_1$

Where dependent variable X = Primary **Sector Inflation Rate**

$X_1$ = Growth **Rate of State Economy Output** (NSDP)

$u_1$ = error term assumed to follow normal distribution with zero mean and constant variance 1

**GDP Deflator**

It refers to the ratio between GDP at current prices and GDP at constant prices. If GDP at current prices = GDP at constant prices, GDP deflator =1, implying no change in price level. If GDP Deflator is found to be 2, it implies rise in price level by a factor of 2 and if GDP Deflator is found to be 4, it implies a rise in price level by a factor of 4.

GDP Deflator is acclaimed as a better measure of price behavior because it covers all goods and services produced in the country.

Data on inflation rate for J&K state is available since 2010 on CPI index. Therefore, in our study we have employed GDP Deflator which we have calculated from the NSDP time series data from 1980-2011.

**Compound Growth Rate**

The compound growth rate (cgr) has been calculated with the help of exponential function which is as:

Exponential function $y = ab^x$

The compound growth rate = (b-1)* 100

**Analysis Segment Of Growth Rate Of State Economy Output And Inflation Rate In Primary Sector**

The Regression Model for Growth Rate of State Economy Output and Primary Sector Inflation Rate

**Simple Regression Growth Model**

We have used this model by converting the variables of a simple regression equation into growth form and the equational form of the model is given below.

$X = a + b_1X_1 + u_1$

Where dependent variable X = Primary **Sector Inflation Rate**

$X_1$ = Growth **Rate of State Economy Output** (NSDP)

$u_1$ = error term assumed to follow normal distribution with zero mean and constant variance.

The regression equation is

**$X = 1.04 + 0.10\ X_1$**

| Predictor | Coefficient | St.Dev | T | P |
|---|---|---|---|---|
| **Constant** | 1.04 | 0.27 | 3.87 | 0.001 |
| **$X_1$** | 0.10 | 0.05 | 2.12 | 0.04 |
| **R-Sq = 13.8%** | | **R-Sq(adj) = 10.8%** | | |
| **F= 4.50** | | **P=0.04** | | |

It is apparent from the results as shown by growth regression model that Growth Rate of State Economy Output is positively related to the Primary Sector Inflation Rate. This variable is highly significant as P-value is just 0.001 percent. It is well observed from the above equation that one percent increases in output growth rate leads to 0.10 percent increase in the inflation rate in the primary sector. The reason for positive coefficient with respect to the inflation rate in the primary sector can be explained in terms of Structuralists theory of relationship between inflation and economic.

From the analysis it becomes clear that inflation rate in the primary sector is weakly related to the growth rate of the state economy output as it has become clear from $R^2$ vlaue which is just about 14%..

**Conclusions**

The main objective was to examine whether a relationship exists between economic growth and inflation of primary sector output and, if so, its nature. The interesting results found in this study is that the, inflation and economic growth are positively related but the association is very weak.

The policymakers should note that any increase in inflation from the previous period at any level has positive effect on economic growth. However, the fact that the common people and the decision makers do not like inflation has enormous effects on the consumption pattern, which in turn affects the output demanded. Macroeconomic stability and the necessary infrastructure are among the preconditions for sustained growth. Among the ways inflation can affect growth, an important avenue is the effect of inflation on investment. Low or moderate inflation is an indicator of macroeconomic stability and creates an environment conducive for investment. The Jammu & Kashmir Economy experience appears to support the Structuralists Theory but in the pathetic form.

## Appendix

**Table 1 Primary sector, state economy output and inflation rate**

| Year | Primary Sector at Current Prices | Primary sector at Constant Prices | NSDP at current Prices | NSDP at constant prices |
|---|---|---|---|---|
| 1980-81 | 497.44 | 1798.04 | 1049.5 | 3793.52 |
| 1981-82 | 570.04 | 1849.84 | 1194.51 | 3883.62 |
| 1982-83 | 631.64 | 1817.35 | 1362.42 | 4007.11 |
| 1983-84 | 708.69 | 1883.75 | 1549.29 | 4137.99 |
| 1984-85 | 760.47 | 1932.66 | 1746.69 | 4345.65 |
| 1985-86 | 794.61 | 1993.38 | 1929.23 | 4445.38 |
| 1986-87 | 862.11 | 1876.85 | 2134.01 | 4471.15 |
| 1987-88 | 801.01 | 1468.32 | 2086.26 | 4010.87 |
| 1988-89 | 1087.18 | 1870.91 | 2547.67 | 4545.25 |
| 1989-90 | 1130.51 | 1773.65 | 2688.38 | 4646.03 |
| 1990-91 | 1258.89 | 1890.37 | 2908.26 | 4913.66 |
| 1991-92 | 1390.51 | 1892.53 | 3249.87 | 5026.03 |
| 1992-93 | 1525.07 | 1921.34 | 3564.56 | 5249.38 |
| 1993-94 | 2052.96 | 2063.78 | 5489.38 | 5500.2 |
| 1994-95 | 2492.38 | 2324.98 | 6001.44 | 5744.99 |
| 1995-96 | 2653.73 | 2387.08 | 6973.05 | 6031.48 |
| 1996-97 | 3131.72 | 2547.55 | 7850.89 | 6320.65 |
| 1997-98 | 3307.91 | 2443.83 | 8857.86 | 6652.24 |
| 1998-99 | 3831.73 | 2558.12 | 11128.21 | 7005.7 |
| 1999-00 | 4581.07 | 2473.78 | 13632.97 | 7307.81 |
| 2000-01 | 4729.5 | 2448.58 | 14328.4 | 7515.45 |
| 2001-02 | 5099.29 | 2593.52 | 15456.42 | 7659.86 |
| 2002-03 | 5797.13 | 2650.48 | 17399.87 | 8049.87 |
| 2003-04 | 10584.9 | 2843.54 | 23159.44 | 8463.52 |
| 2004-05 | 7000.63 | 2910.85 | 21020.27 | 8999.298 |
| 2005-06 | 7339.08 | 2906.75 | 25278.1 | 9468.883 |
| 2006-07 | 7643.3 | 2941.85 | 27652.09 | 10058.34 |
| 2007-08 | 8038.24 | 2972.12 | 30720.05 | 10759.6 |
| 2008-09 | 8410.38 | 3036.49 | 34290.32 | 11379.9 |
| 2009-10 | 8786.63 | 2898.26 | 38734.75 | 12017.57 |
| 2010-11 | 9225.98 | 2941.2 | 43716.39 | 13382.72 |

**Sources:** Compiled from

- Domestic Product of States of India, 1960-61 to 2006-07 (second updated edition), April 2009, EPW, Research Foundation, Mumbai.
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- Note: Constant prices at 1993-94 which has been calculated by Linking Factor Method

**Table 1 Inflation rate and economic growth rate**

| Year | Inflation Rate of Primary sector | Inflation Rate of NSDP at constant prices | Growth Rate of NSDP at constant Prices |
|---|---|---|---|
| 1980-81 | 0.28 | 0.28 | - |
| 1981-82 | 0.31 | 0.31 | 2.38 |
| 1982-83 | 0.35 | 0.34 | 3.18 |
| 1983-84 | 0.38 | 0.37 | 3.27 |
| 1984-85 | 0.39 | 0.40 | 5.02 |
| 1985-86 | 0.40 | 0.43 | 2.29 |
| 1986-87 | 0.46 | 0.48 | 0.58 |
| 1987-88 | 0.55 | 0.52 | -10.29 |
| 1988-89 | 0.58 | 0.56 | 13.32 |
| 1989-90 | 0.64 | 0.58 | 2.22 |
| 1990-91 | 0.67 | 0.59 | 5.76 |
| 1991-92 | 0.73 | 0.65 | 2.29 |
| 1992-93 | 0.79 | 0.68 | 4.44 |
| 1993-94 | 0.99 | 1.00 | 4.78 |
| 1994-95 | 1.07 | 1.04 | 4.45 |
| 1995-96 | 1.11 | 1.16 | 4.99 |
| 1996-97 | 1.23 | 1.24 | 4.79 |
| 1997-98 | 1.35 | 1.33 | 5.25 |
| 1998-99 | 1.50 | 1.59 | 5.31 |
| 1999-00 | 1.85 | 1.87 | 4.31 |
| 2000-01 | 1.93 | 1.91 | 2.84 |
| 2001-02 | 1.97 | 2.02 | 1.92 |
| 2002-03 | 2.19 | 2.16 | 5.09 |
| 2003-04 | 3.72 | 2.74 | 5.14 |
| 2004-05 | 2.41 | 2.34 | 6.33 |

| | | | |
|---|---|---|---|
| 2005-06 | 2.52 | 2.67 | 5.22 |
| 2006-07 | 2.60 | 2.75 | 6.23 |
| 2007-08 | 2.70 | 2.86 | 6.97 |
| 2008-09 | 2.77 | 3.01 | 5.77 |
| 2009-10 | 3.03 | 3.22 | 5.6 |
| 2010-11 | 3.14 | 3.27 | 11.36 |

**Source:** Based on Table-1

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