A Study of Consumer Price Index in India from October 2020 to August 2023

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Abstract:
In this paper we study the trend of monthly consumer price index (CPI) from October 2020 to August 2023. We find an overall increasing trend of CPI, with decline in a few periods only. We fit an ARIMA (1,1) model to the CPI data for the sample period.

Keywords: CPI, ARIMA

I.Introduction

In this paper we study the trend of consumer price index in India from October, 2020 to August 2023. The importance of the sample period is that it covers both the Corona period and the post Corona period.

II. Description of Consumer Price Index

The consumer price index measures the overall change in consumer prices based on a representative goods and services purchased by households over time. Annual percentage change in Consumer Price Index is used as a measure of Inflation. It is used to estimate average variation between two given periods in prices of products consumed by the households.
CPI includes necessities such as food, clothing, housing and services like medical care , transportation and education.
There are different types of consumer price index. For example- Consumer price index for rural workers, consumer price index for urban workers, Consumer price Index for Industrial workers.
The National Statistical Office (NSO), Ministry Of Statistics and Programme Implementation
(MoSPI) release All India Consumer Price Index (CPI) and corresponding Consumer Food Price Index (CFPI) for rural, urban and combined.

III. Data

We use monthly data of consumer price index from October 2020 to August 2023, obtained from The Reserve Bank Of India Website (www.rbi.org.in). We find an overall increasing trend in CPI, with decline in a few periods only.

IV. Empirical Modelling

In an autoregressive moving average (ARMA)model a variable is explained by its own lag and the past white noise terms. If a variable is not stationary at levels, but stationary at its first difference, we use autoregressive integrated moving average (ARIMA) model where the first difference of the variable is the dependent variable.
We used unit root test to check for stationarity in the consumer price index (CPI). The null hypothesis of unit root test is presence of unit root or non-stationarity. The results of the unit root test show the stationarity of CPI at its first difference.

V. Results

Table 1: Unit root test of CPI

		5% Critical value	10%critical value
ADF test statistic (level)	**-3.102123**	**-3.520787**	**-3.191277**
ADF test statistic (first difference)	**-8.115134**	**-3.520787**	**-3.191277**

Table 2: Results of ARIMA Model
Dependent variable: first difference of CPI
Method: Least Squares

Variables	Coefficients	Prob
C	**0.411256**	**0.0010**
AR (1)	**0.671689**	**0.0029**
MA(1)	**-0.941012**	**0.0025**

R squared 0.491215

VI. Conclusion

We find an overall increasing trend in consumer price index, with a decline in a few periods only , from October 2020 to August 2023. We fit an ARIMA (1, 1) model to CPI data for the sample period.

References

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