

Inflation and inflation-uncertainty in India

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Abstract

The annual percentage increase or decrease in the Wholesale Price Index (WPI) is the measure of inflation. It's a decent indicator of how much prices for a certain set of products and services have fluctuated over the course of a year. India uses the World Producer Price Index (WPI) as its inflation benchmark. When these factors combine with shifts in the cost of production and distribution and/or an increase in product taxes, the result is inflation. The value of money declines when inflation occurs in an economy, as measured by a general increase in the cost of living. This signifies that the purchasing power of one currency unit has decreased. Buyers are the ones that suffer the most. Consumers are having a hard time affording even the most fundamental necessities due to the rising cost of goods. They have no choice but to demand pay raises because of this. Therefore, the government works to limit price increases.

Key words: Inflation, Uncertainty, India, Government etc.

Introduction

Inflationary Trend in India

Following the 2008-2009 financial crisis, India's inflation rate skyrocketed to double digits in 2010, the highest of any major emerging country. Inflation was initially sparked by rising food costs, but it has spread across the economy between 2010 and 2011. "It appears that manufacturers are passing along the rising prices of labour and service inputs to customers at every stage of the supply chain. Inflation is more structural than cyclical in an economy where supply restrictions and skilled labour shortages are prominent. As a result, the Reserve Bank of India has repeatedly increased its key lending rates. Rising costs for commodities like food and energy, as well as manufactured goods, have defied central bank and government forecasts of a slowing inflation rate. In reality, evidence suggests that inflation has caused formerly low-cost country to see a new normal increase in costs.

Inflation and its measurement have gained a lot of attention in recent years in India, reflecting some new circumstances. First, since the financial liberalisation process began in 1991, when most administered interest rates were eliminated, financial intermediaries have paid special attention to the correlation between inflation, interest rates, and forward exchange premia.

Second, market actors in a more globalised economy closely monitor inflation to foresee and evaluate monetary policy changes in an effort to retain domestic economic competitiveness.

Estimation Results

In order to produce a measure of inflation uncertainty that takes into account both lagging and seasonal effects, we use the following GARCH model to calculate the conditional variance of the error factor across time:

$$INF_t = \alpha + \sum \beta_j INF_{t-j} + \sum \lambda_s INF_{t-s} + \mu_t \quad (1)$$

Where INF_t is the domestic inflation rate at time t , α is a constant term, $\mu_t \sim N(0, \sigma^2_t)$ and $\sigma^2_t = \nu_0 + \sum \nu_i \mu_{t-i} + \sum \eta_i \sigma^2_{t-i}$, and $j = 1, 2, 3, 4$ and $s = 6, 9, 12$. The stochastic error term is denoted by μ_t while σ^2_t is the variance of the error. Several lags of the explanatory variable at lags 6, 9, and 12 are included in order to account for seasonality in the data.

The percentage monthly change in the Wholesale Price Index is used to calculate inflation in India (WPI). The Reserve Bank of India is the source of monthly WPI data collection for the period 1954/04–2010/04. The reason for using the WPI is that it is widely recognised as the most accurate indicator of overall inflation in India. It's worth noting that this metric has been employed in other research before (for instance, by Asghar et al. in 2011).

Inflation Uncertainty and Growth

Finally, to test for the effect of inflation uncertainty on output growth, we estimate the following equation for output growth Y :

$$Y_t = \phi_0 + \sum \phi_i Y_{t-i} + \sum \delta_j h_{t-j} + \varepsilon_t \quad (2)$$

Next, we conduct an experiment to determine whether or not all $\phi_j = 0$ is true. Friedman's claim that inflation uncertainty has detrimental actual consequences is supported by the data that refutes the null hypothesis and shows that $\phi_j \neq 0$. The output growth data utilised is GDP expansion in real terms. Panel C in contains the findings of Granger-causality tests concerning the impact of inflation uncertainty on economic growth. A statistically significant relationship exists. Furthermore, production growth is hindered by inflation uncertainty. Consequently, Friedman's case that inflation uncertainty has genuine repercussions is accepted in India. The implications for Indian policymakers are substantial.

Summary and Policy Implications

Every economy faces the risk of inflation and the associated uncertainty lowering actual economic production. These prices may be more for an emerging market like India than for an

established economy since inflation is still higher than is ideal. When added to other economic inefficiencies, rising prices and inflation can be especially difficult for those with lower incomes to prepare for. Policymakers in India require a thorough knowledge of the key channels via which inflation may influence the actual economy in order to mitigate the negative economic effects and welfare costs of inflation rate increases. Effects of increasing inflation on inflation uncertainty is one such pathway.

As part of that mission, this article examines how inflation and inflation uncertainty are connected in India. Initial calculations suggest that the rate of inflation is stable. The presence of a positive link between inflation level and its uncertainty is strongly supported by the maximum likelihood estimates from the GARCH model. Feedback between inflation and uncertainty is reported by the Granger causality results. Both the Friedman-Ball and Cukierman-Meltzer hypotheses are true at the same time in India due to the bidirectional nature of Granger causality. It lends weight to the argument that India's central bank is willing to seize advantageous opportunities.

Although food and other commodity prices have increased recently, inflation in India has been declining over the past many years. The fact that inflation rates are rising across the board and based on supply and demand in the foreseeable future is more evidence that the reasons of recent inflation are complex. Historically, periods of high inflation have been characterised by increases in the cost of both food and fuel (which indicate supply-side pressures) and manufactured goods (which reflect demand-side drivers). This casts doubt on the efficacy of monetary policy as a stand-alone solution to periods of inflation. Historically, times of high inflation have also corresponded with demand and/or supply-side shocks, with the most persistent shocks occurring in the food (mainly internal owing to monsoon failures, etc.) and petroleum supply (primarily external) markets (see Figure 2). When it comes to the supply side, however, traditional monetary and even fiscal policy solutions won't work.

Table : Summary Statistics for WPI (Period 1954:04-2010:04)

Panel A:	Descriptive Statistics
Mean	0.064
Standard deviation	0.068
Kurtosis	14.776
Skewness	5.062
Jarque-Bera	88.46 (0.000)
Q212	79.654 (0.000)

LM(12) 75.198 (0.000)

Panel B: Normality and Autocorrelation Tests

Kolmogorov-Smirnov 0.096 (0.085)

Test Statistic

Autocorrelation Tests

	1st Moment		2nd Moment		3rd Moment		4th Moment	
Lags	6	12	6	12	6	12	6	12
	0.16	0.23	0.22	0.26	0.50	0.48	0.46	0.67

Note: LM(12) is a chi-square test statistic for ARCH effects with 12 degrees of freedom; Q212 is the 12th order Ljung-Box test for serial correlation in the squared residuals of the inflation rate from its sample mean; and Jarque-Bera is the normalcy test statistic. Statistical significance levels are indicated by the numbers in parenthesis. Details can be found in Thornton (2007a). For Autocorrelation tests, p-values of the LM tests correspond to the null of no auto-correlation in the first four moments.

Table : Unit Root Test Statistics

Panel A. Unit Root with no Structural Break			
Lag	P-P	ADF	KPSS
0	-5.34	-4.98	0.32
6	-8.44	-6.15	0.43
Optimal	-9.12	-8.04	0.45

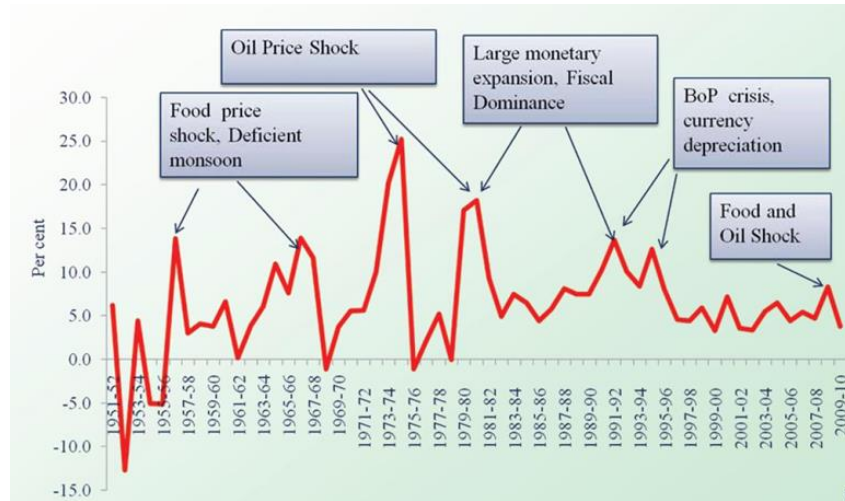
Panel B: Zivot-Andrews test with one Structural Break

Test Statistics	Break Date
-6.942	1991:06

Note: The Phillips-Perron test (P-P), the Augmented Dickey Fuller test (ADF), and the Kwiatkowski-Phillips-Schmidt-Shin test (KPSS) are all statistical procedures used to evaluate data. The P-P test, the ADF test, and the KPSS test all start with the assumption that there is a unit root in the series under investigation. The Zivot-Andrews test contrasts the possibility of a stationary process with a break with the null hypothesis of a unit root with no break. The P-P test and KPSS use the Newey-West criterion to determine the optimal lag time, whereas the

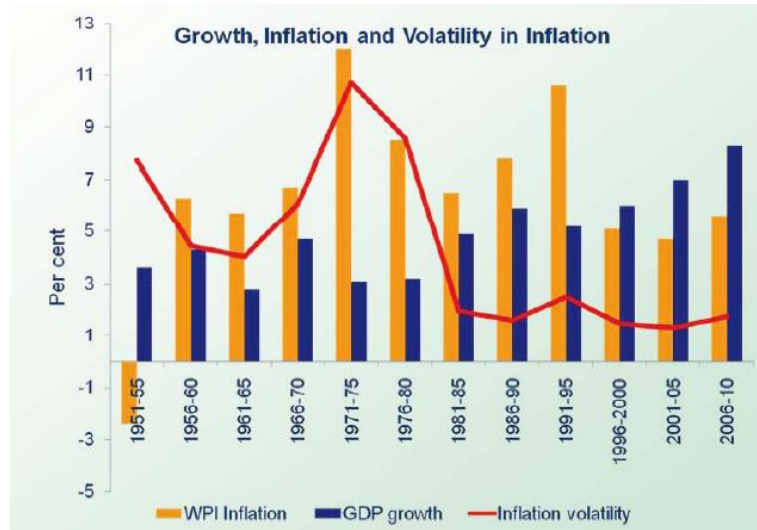
ADF test uses Akaike's Information Criterion. In the instance of the Zivot-Andrews test, the t-test is employed to determine the ideal lag time.

Figure : Major Sources of High Inflation



Source: Gokarn (2010)

Figure: Growth, Inflation and Volatility in Inflation



Source: Gokarn (2010)

Conclusion

As a result, inflation is becoming the new worldwide epidemic. The economic conflict between the West and Russia continues to hold energy and supply chains hostage, and inflation is acting as an increasingly strong brake on global economy. As winter approaches, uncertainty about oil and gas prices has a chilling effect on India's economy. Even though it may cause a recession, western central banks are taking bold measures to reverse their cheap money policy

in an effort to halt inflation from running amok. Leaders in the business world have had to go back to the drawing board in order to adjust their post-covid recovery and reconstruction strategies. Both policymakers and business leaders are troubled by the prospect of inflationary expectations becoming firmly established and causing a price-wage spiral. Inflation tends to eat away at growth if it becomes widely expected that expenses and prices will keep going up.

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