RURAL AND URBAN INFLATION IN MAHARASHTRA: A COMPARATIVE STUDY (2014–15 TO 2024–25)

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Abstract:

Rural and urban areas are affected by inflation differently due to differences in consumption patterns, expenditure priorities, and exposure to commodity price fluctuations, which affect household purchasing power and living standards. Recognizing those differences is fundamental for the formulation of efficient policies on how to manage inflation and encourage economic stability. This study compares and analyzes rural and urban Consumer Price Index (CPI) inflations for Maharashtra state that includes ten annual observations with financial-year labels from 2014–15 to 2023–24, with the simultaneous application of the official averaging conventions applicable to some of the observations during the Covid period and the use of provisional data for April-December 2024, based on the National Statistical Office (NSO) official statistics and the Economic Survey of Maharashtra. To analyze the inflation trends, volatility, co-movement and rural–urban disparities, descriptive statistics, graphical trend analysis, paired-samples t-test and Pearson correlation were used. Results showed that mean rural inflation rate was 5.31% and urban inflation rate was 4.93% with a mean difference of 0.38 percentage point. No statistically significant difference was found, t(9) = 0.66, p = .528, and the effect size of this difference was small (Cohen's dz = .21) as indicated by the paired comparison. There were significant inter-annual fluctuations with higher rural inflation in 2015–16 and higher urban inflation in 2018–19. The rural inflation for April-December 2024 was 3.9% while for urban was 4.5% in provisional data. These patterns are partly due to differences in the composition of the CPI baskets, specifically in rural areas, the composition of food and in urban areas, the composition of housing and services. The study attempts to highlight the need for rural and urban inflation to be monitored separately in order to formulate specific economic policies.

Keywords*: consumer price index, rural inflation, urban inflation, Maharashtra, food prices, price stability*

1. Introduction

The impact of inflation on households is most indirect through its effects on the real disposable income, however the impact is not even across regions, locations or social groups. Rural–urban dichotomy is all the more relevant in Maharashtra as it has a large agricultural economy and one of the most urbanized and industrialized regional economy in India as well. Generally speaking, households in the major cities like Mumbai, Pune, Nagpur, Nashik, Thane tend to spend a higher proportion of their expenditure on housing, transport, education, health and market-provided services while the rural households spend a larger proportion of their consumption expenditure on food and other essentials. Hence, the welfare effects and inflation rates measured in rural and urban areas can be different as a result of the same commodity-price shock. For this reason, the National Statistical Office (NSO) publishes three separate series of CPI (rural, urban and combined) for each state with a base of 2012 = 100 (Ministry of Statistics and Programme Implementation [MoSPI], 2025). The study is conducted over the past 10 financial years from 2014-15 to 2023-24, which also includes some unique regimes of inflation with an additional provisional assessment from April 2024 to December 2024. The first few years had relatively moderate aggregate inflation and some easing of food-price pressures, while 2019–20 to 2020–21 saw a return of food inflation and at the time, the shock of COVID-19; and the years from 2021–22 through 2022–23 experienced global commodity, fuel, edible-oil, and supply-chain pressures. Headline inflation slowed in more recent years, but with food-price volatility still playing a key role. Indian studies find that food prices, agricultural market integration, international commodity prices, rainfall, monetary policy, and exchange rate fluctuations affect the level of consumer inflation (Anand et al., 2014; Furceri et al., 2015; Mitra & Chattopadhyay, 2017; Samal & Goyari, 2022). This is particularly pertinent for Maharashtra, where key agricultural markets, such as the onion markets around Nashik, can spread supply shocks across the state and to the rest of India (Ahmed & Singla, 2023; Paul et al., 2016). This paper thus focuses on urban-rural inflation in Maharashtra during 2014-15 to 2024-25 to understand the differential between urban and rural inflation and the potential structural factors which may account for this difference. The aim is to be descriptive and interpretive and not causal, so that using official secondary data, published CPI weights and simple exploratory statistics the sector-specific inflation trend is assessed.

2. Literature Review and Conceptual Background

Food prices play an important role in the inflation dynamics of India as food is a significant portion of the household consumption basket and is vulnerable to weather shocks, storage costs, transportation costs, market intermediation and policy shocks. Anand et al. 2014 contends that fluctuations in the food price can have long lasting impact in the headline inflation and inflation expectations which makes monetary policy decision a difficult affair. Sasmal (2015) associates the food inflation in India to the structural constrain in agricultural production and Kozicka et al. (2017) demonstrate how procurement and food-grain policies can impact stocks and fiscal cost. Recent studies also identify domestic food inflation to be sensitive to international commodity prices, relative-price variability (Anwar & Guha, 2023; Dash & Lugauer, 2024; Samal & Goyari, 2023; Sanyal, 2025), and to supply shocks. It is noteworthy that CPI in the rural areas of Maharashtra has a higher share of food and beverages with 54.28% in the rural basket and 34.38% in the urban basket, as per Government of Maharashtra (2025). Another key market channel is spatial market integration. With agricultural markets integrated, such as when production or transport shocks affect the local market, the price shock can spill over to the far away consumer market reducing the overall price dispersion over the long run and propagating the volatility over the short run. The transmission of onions and potatoes prices across wholesale markets in India is found to be significant with key wholesale markets in Maharashtra (Ahmed & Singla, 2017, 2023; Kumar et al., 2022; Paul et al., 2016; Saha et al., 2021). Onion prices are particularly important to Maharashtra due to Nashik and other neighbouring districts being the most important centres of production and trade. Other studies on forecasting also report high volatility and nonlinear adjustment of the agricultural prices (Ghosh et al., 2020). The results are useful in understanding how temporary rural–urban inflation differences could arise in the presence of a common broad macroeconomic environment in both sectors in the event of a food shock. Housing and market services on the other hand have greater impact on urban inflation. The weight of housing is 24.74% in the urban CPI basket and it is not separately weighted in the rural CPI basket. The weight of the miscellaneous group, which consists of transport, communication, health, education, personal care and other services, is also a bit more in the urban basket. Thus, urban inflation might be different with respect to exchange-rate pass-through and fuel price and monetary-policy transmission due to the different composition of goods and services in the urban area (Bhat et al., 2024; Kumar & Dash, 2020; Mendali & Das, 2017; Ranadive & Burange, 2015). Moreover, household inflation expectations have revealed that the oil price, policy uncertainty, and observed price changes can impact perceived inflation and wage–price interactions (Ghosh et al., 2021; Goyal & Parab, 2021; Pattanaik et al., 2020). Recent evidence also suggests that there is a spatial heterogeneity in the inflation rates in different states in India, and convergence in food-inflation is incomplete (Peer et al., 2024, 2025). For this reason, it cannot be concluded that the national or combined state-level CPI measure are comprehensive indicators of household price pressures. The rural-urban comparison is thus pertinent in the design of welfare programmes, minimum wage remunerations, public distribution, transport policy and local food-market interventions, for Maharashtra.

3. Objectives and Hypotheses

The study has four objectives:

a)to compare rural and urban CPI inflation in Maharashtra across complete financial years from 2014–15 to 2023–24, supplemented by provisional data for 2024–25

b)to estimate the magnitude and direction of the rural–urban inflation gap

c)to interpret observed rural–urban differences with reference to CPI basket weights and the literature on food, fuel, housing, services, and market integration

d)to test, on an exploratory basis, whether the mean annual rural–urban inflation difference is statistically distinguishable from zero

The hypotheses for the paired-samples comparison are:

H0: The mean annual rural–urban inflation difference in Maharashtra is zero ($\mu d = 0$); that is, the mean annual rural and urban inflation rates do not differ statistically over the observed period.

H1: The mean annual rural–urban inflation difference in Maharashtra is not zero ($\mu d \neq 0$); that is, the mean annual rural and urban inflation rates differ statistically over the observed period.

4. Data and Methodology

The study uses secondary data from the NSO state-level CPI series (base 2012 = 100), as reported in successive editions of the Economic Survey of Maharashtra. The periodicity of the analytical series is 10 years of complete financial year (2014-15 to 2023-24) with provisional data provided in the Economic Survey of Maharashtra 2024-25 for April-December, 2024. Based on available provisional figures the rural and urban inflation rates are estimated to be 3.9% and 4.5% respectively. The following are provisional observations and not used in the inferential statistical testing to assure consistency in the annual comparison. COVID-era source tables retain official price-collection and averaging conventions, which are acknowledged rather than artificially harmonized. The empirical strategy is primarily descriptive and exploratory. First, annual rural and urban inflation rates are plotted to identify turning points and broad co-movement. Second, the rural–urban gap is defined as the difference between rural inflation and urban inflation; when this gap is positive, it means rural inflation is higher than urban inflation and when the gap is negative it means urban inflation is higher than rural inflation. The mean, standard deviation, minimum and maximum values are reported as third. A paired-samples t-test is used to examine the mean difference over the 10 observations ranging from 2014–15 to 2023–24 and linear co-movement between the two annual time series is summarized by Pearson's correlation. The provisional observation (2024-25) is not considered in either of the statistical tests. Due to the small sample size (n = 10) and ordered nature of the observations as an annual time series, these kinds of inferential statistics have weak power, and are not used to model serial dependence or drivers of the structure. Hence, p-values are interpreted with caution and effect sizes and descriptive patterns are provided in conjunction with p-values and no causal or strong population-level inference is made.

Table 1. Annual Rural and Urban CPI Inflation in Maharashtra

Financial year	Rural (%)	Urban (%)	Rural–urban gap (pp)
2014–15	6.1	5.2	0.9
2015–16	6.6	3.3	3.3
2016–17	5.8	3.6	2.2
2017–18	5.3	3.4	1.9
2018–19	1.6	4.0	−2.4
2019–20	3.3	5.1	−1.8
2020–21†	5.5	6.6	−1.1
2021–22‡	6.6	5.5	1.1
2022–23	7.3	7.4	−0.1
2023–24	5.0	5.2	−0.2
2024–25 (April–December 2024)	3.9	4.5	−0.6

Note. † and ‡ denote official COVID-era/partial-period averaging conventions retained in the source tables. The figures for 2024–25 relate to April–December 2024 and are provisional, rather than full-year observations. pp = percentage points. Sources: Government of Maharashtra (2021, 2024, 2025); Ministry of Statistics and Programme Implementation (2025).

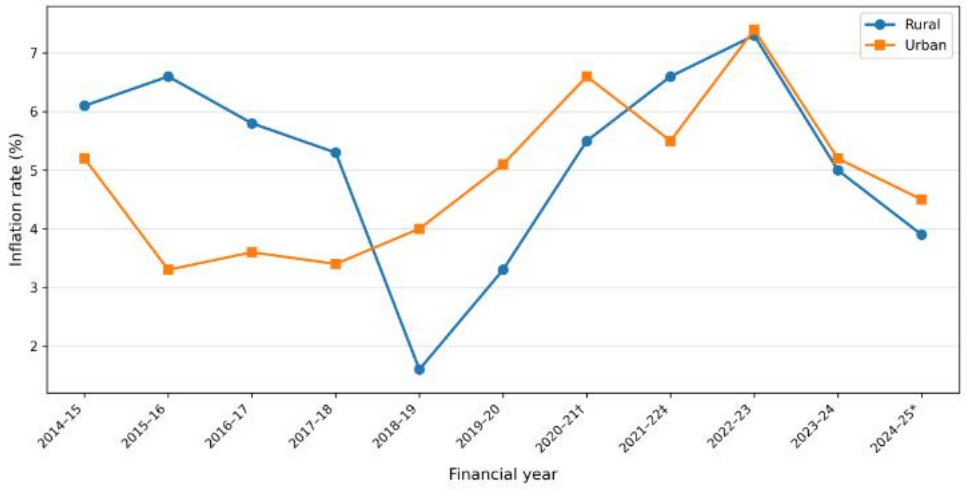


Figure 1. Rural and Urban CPI Inflation in Maharashtra, 2014-15 to 2024-25

Note. The 2024–25 observation represents provisional data for April–December 2024 and is excluded from inferential statistical analysis.

5. Results

There is significant annual variation in both sectors. On 10 observations mean rural inflation of Maharashtra was found to be 5.31% whereas the urban Maharashtra was 4.93%. Rural inflation was slightly more volatile, with a standard deviation of 1.70 percentage points to the urban inflation's standard deviation of 1.38. Rural inflation ranged from 1.6% in 2018–19 to 7.3% in 2022–23, while urban inflation ranged from 3.3% in 2015–16 to 7.4% in 2022–23. The average rural–urban gap over the period was 0.38 percentage points, however, with large annual swings. In 2015–16, rural inflation rate was 3.3 percentage points higher than urban inflation rate, whereas in 2016–17, the urban inflation rate was 2.2 percentage points higher than rural inflation rate. This trend was turned around during 2018–19 when rural inflation was 1.6% compared to 4.0% for urban inflation, resulting in an urban inflation rate 2.4 percentage points higher. In 2019–20, urban inflation was also 1.8 points higher and in 2020–21, it was 1.1 points higher. The rural rate of inflation was higher than the urban rate by 1.1 points in 2021-22, very similar in 2022-23 and 2023-24. The urban and rural inflation rates in 2024–25 were 4.5% (provisional) and 3.9% (provisional) respectively, resulting in an urban premium of 0.6 percentage point.

Table 2. Descriptive and Comparative Statistics

Statistic	Rural	Urban
Mean inflation (%)	5.31	4.93
Standard deviation	1.70	1.38
Minimum (%)	1.6	3.3
Maximum (%)	7.3	7.4
Observations	10	10

Exploratory paired-samples comparison: mean gap = 0.38 pp, $t(9) = 0.66$, $p = .528$, Cohen's $dz = 0.21$. A Pearson correlation was carried out to see if there was a correlation between annual rural and urban inflation; it was found to be $r = 0.31$, $p = .388$, which was exploratory. These statistics are derived from the 10 full financial years, and do not include provisional statistics from 2024–25. The paired-samples t-test shows that the t value (0.66) is not significant at conventional levels of $\alpha < .05$, $t(9) = 0.66$, $p = .528$, leading to failure to reject the null hypothesis. This outcome is not a finding that the rural and urban inflation are the same, but is a lack of evidence of a statistically significant difference in mean. The effect size is small (Cohen's $dz = 0.21$) for the paired data. However, there is only weak linear synchronization in this short annual series as shown by a modest but positive, and statistically non-significant, Pearson's correlation of $r = 0.31$ with $p = .388$. The number of observations for both tests is very small (10), and time dependence of the observations may be present in the annual observations that is not captured by these simple tests. The inferential results are therefore an additional to the descriptive proof which indicates obvious variations in both the direction and size of the rural–urban gap over the years.

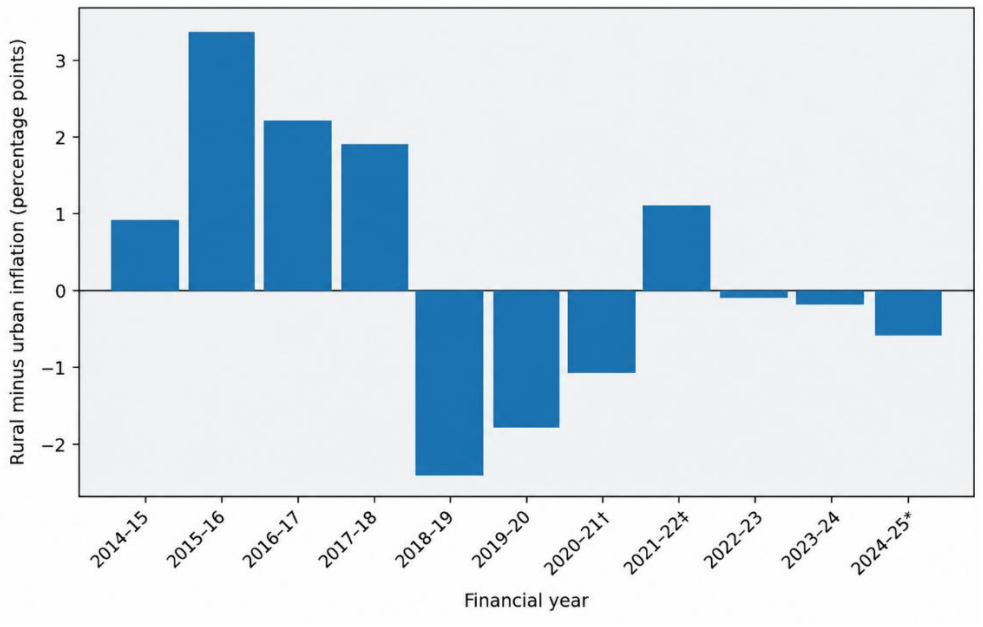


Figure 2. Annual Rural–Urban Inflation Gap, 2014-15 to 2024-25

Note. Positive values indicate higher rural inflation, whereas negative values indicate higher urban inflation. The 2024–25 figures represent provisional data for April–December 2024 and do not constitute a full-year observation. †/‡ indicate official COVID-era averaging conventions.

6. Why Do Rural and Urban Inflation Differ?

The clearest structural explanation for rural–urban inflation differences is the composition of the CPI baskets. In Maharashtra's rural CPI, food and beverages carry a weight of 54.28%, compared with 34.38% in the urban CPI. Consequently, price changes in vegetables, cereals, pulses, milk, edible oils, eggs, meat, fish, and spices have a mechanically larger effect on headline rural inflation. By contrast, housing carries a weight of 24.74% in the urban basket and is not separately weighted in the rural basket. The miscellaneous group accounts for 29.56% of the urban basket and 27.58% of the rural basket, while fuel and light has a somewhat higher rural weight (7.86%) than urban weight (5.21%). These compositional differences mean that rural–urban inflation gaps can emerge even when both sectors face the same underlying set of price changes, because those changes are aggregated using different expenditure weights.

Table 3. Selected CPI Group Weights for Maharashtra

CPI group	Rural weight (%)	Urban weight (%)	Difference (R–U)
Food & beverages	54.28	34.38	19.90
Pan/tobacco/intoxicants	2.72	0.97	1.75
Clothing & footwear	7.56	5.14	2.42
Housing	0.00	24.74	-24.74
Fuel & light	7.86	5.21	2.65
Miscellaneous	27.58	29.56	-1.98

Source. Government of Maharashtra (2025), Annexure 4.3, based on NSO CPI weights (base 2012=100).

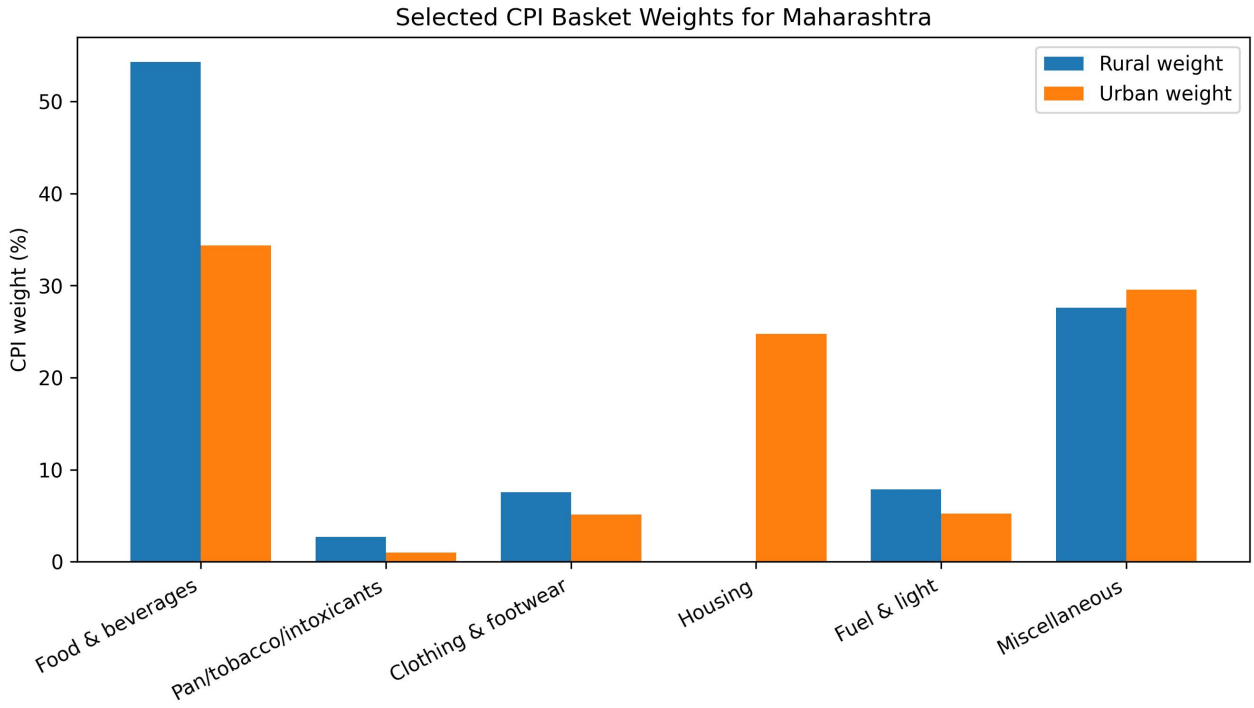


Figure 3. Comparison of Rural and Urban CPI Basket Weights

The early-period rural premium is consistent with the heavier exposure of rural CPI to food prices. Monsoon variability, crop damage, storage constraints, transport bottlenecks, and wholesale-market disruptions can all generate agricultural-price shocks. Research on Indian food markets shows that price shocks can be transmitted across markets, but the adjustment is neither instantaneous nor uniform (Andrle & Blagrave, 2020; Mittal et al., 2018). This mechanism is particularly relevant to Maharashtra's onion markets. Production shock in Nashik may initially impact farm-gate and wholesale price, and subsequently retail chains where margin, storage and substitution may impact the consumer price response. Urban premiums in 2018–19, 2019–20 and 2020–21 align with the increased weightage of housing, transport, education, health and other services in the urban index what is referred to as a broad cost-of-living channel. In addition, the exceptional supply constraints and mobility restrictions as well as service-market disruptions and potential limitations in official price collection are also difficulties in year-to-year comparisons during COVID-19. The high inflation episode of 2021–22 to 2022–23 reflected pressures that were national and global in scope, including higher food-commodity, freight, edible-oil, and fuel prices as well as domestic weather shocks. Evidence on exchange-rate pass-through and world food prices indicates that external shocks can affect Indian consumer prices with different magnitudes across sectors (Bhat et al., 2024; Furceri et al., 2015). The near equality of rural and urban inflation in 2022–23 are 7.3% and 7.4%, respectively is consistent with a broad-based shock rather than a purely rural- or urban-specific disturbance.

7. Policy Implications

The first policy implication is that merely the combined CPI should not be used for the management of inflation in Maharashtra. The overall indicator can mask economically relevant short-term rural–urban divergence, however, but could be useful for macroeconomic monitoring. State monitoring might thus be able to provide additional separate rural, urban, food, fuel and selected-commodity indicators that could supplement the combined CPI. This type of monitoring is particularly helpful for the consumption of vegetables, pulses, edible oils, milk and cereals, which tend to be a large proportion of household budgets and can be very sensitive. Secondly, there is an important equity dimension to food-price stabilization, in a rural context. Improved storage and cold chains, market information, farm-to-market logistics, increased competition among the intermediaries and better wholesale-market integration can help minimize excessive price dispersion and post-harvest losses. Market integration shouldn't necessarily be understood as government policies to push down farm-gate prices; instead, the goal of the policy should be to lower the avoidable transaction costs, and increase the responsiveness, of supplying the market. In the case of large shocks, the provision of targeted food or cash support may still be significant for low income families who spend a large proportion of their spending on basic necessities. Thirdly, the urban inflation policy must take into account food, and also housing and service prices. Cost pressures in cities can be softened by increasing the rental housing supply, further enhancing the public transport system, lowering logistics costs due to congestion and increasing competition in local services. Fourth, coordination matters. Monetary policy is national while state-level policy influences the agricultural marketing, transportation, fees, taxes, storing, public distribution, local infrastructures, etc. A state-level monitoring framework can be useful to identify whether the inflation is due to a commodity shock or due to more persistent service inflation and can be used in conjunction with the Reserve Bank of India's inflation-targeting framework (Alex, 2025; Kumar & Dash, 2020).

Table 4. Interpretive Summary of Inflation Phases

Phase	Observed pattern	Likely dominant channels	Policy relevance
2014–15 to 2017–18	Rural inflation consistently above urban	Food-heavy rural basket; agricultural and market shocks	Food supply, market integration, rural protection
2018–19 to 2019–20	Urban inflation above rural	Housing/services and relative food-price moderation	Urban cost monitoring; service-sector pressures
2020–21	Urban premium during the pandemic	Mobility restrictions, supply-chain disruption, measurement constraints	Emergency logistics and targeted support
2021–22 to 2022–23	High inflation in both sectors	Fuel, food, global commodity and domestic supply shocks	Broad stabilization and coordinated policy
2023–24 to 2024–25	Moderation in inflation; urban inflation remained above rural inflation during April–December 2024	Easing headline pressures but persistent food/service risks	Granular monitoring rather than one-size-fits-all response

8. Limitations

There are a number of limitations to interpretation of the findings. Firstly, only ten observations (full financial years) were used for the inferential analysis and this is too little to be able to present strong inferential evidence for the paired t-test and Pearson correlation which can be used as exploratory aids. These provisional observations for 2024–25 will be analysed separately as these are not for a full financial year. Second, within year variability is lost when using annual averages, and time-series variation (serial correlation, etc.) cannot be modeled. Third, official averaging conventions and conditions for the collection of prices differ in the period of COVID-19 and annual values reported in subsequent editions of the Economic Survey may be revised. Fourth, the paired t-test does not consider national shocks, commodity-specific drivers, rainfall, wages, exchange rates and policy variables. To avoid biases, future studies should be conducted with monthly state CPI data, and with a sufficient sample, time-series analyses should be explored using an ARDL, VAR, or error-correction specification for food, fuel, housing, and core components. Availability of retail-price information at the district level may further give insights on spatial differences in the rural and urban Maharashtra.

9. Conclusion

This study aims to shed light on the unique trends and disparities between rural and urban areas in Maharashtra regarding Consumer Price Index (CPI) inflation in the period 2014–15 to 2023–24, with provisional observations made from April to December 2024. The results indicate that the average inflation was slightly higher in rural areas (5.31%) when compared with urban areas (4.93%) with a mean difference of 0.38 percentage point. The paired-samples t-test however revealed that the difference was not statistically significant ($t(9) = 0.66$, $p = .528$), which means there was no sufficient evidence of systematic difference in average inflation across the years in the sample. Nevertheless, there has been a significant annual variation indicating the variation in inflationary pressures of rural and urban households. Preliminary data for the month of April to December 2024 also showed that urban inflation rate (4.5%) was higher than the rural inflation rate (3.9%). All of these variations are in line with the differences in the consumption expenditure pattern, where the weight of food and agricultural commodities is more significant in rural CPI baskets and more significant weight of housing and services in urban CPI baskets. The results highlight the need for region-wise inflation monitoring, more efficient agricultural supply chains, food price stabilization policies and policies to tackle the cost of living in cities. When considering specific, more equitable interventions, policymakers may wish to consider disaggregated indicators of inflation, in addition to the CPI. But the number of observations done in a year and the research design used (descriptive) limit the statistical and causal interpretations in general. Future studies with month-wise inflation data, commodity level indicators and employing more advanced econometric methods would enhance the understanding of rural-urban inflation relationship and provide inputs for evidence-based economic policymaking.

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