

A Micro-econometric Analysis of Household Inflation Expectations in India: Adaptive or Rational?

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Abstract: This study examines the nature of household inflation expectations in India using the Reserve Bank of India's (RBI) Inflation Expectations Survey of Households (IESH) for May 2025. The research investigates whether expectations follow adaptive or rational patterns by analyzing trends across demographics, product categories, and time horizons. Employing micro-econometric techniques, including ordered probit and regression models, the study finds that Indian households predominantly exhibit adaptive expectations, with food prices being a significant driver. Short-term expectations remain sticky, while long-term expectations show slight moderation. The findings highlight the need for enhanced monetary policy communication to improve inflation anchoring.

Keywords: Inflation expectations, adaptive expectations, rational expectations, monetary policy, micro-econometrics.

1. INTRODUCTION

Inflation expectations constitute a fundamental pillar of macroeconomic stability, serving as both a driver and reflection of economic decision-making processes. The formation and evolution of these expectations have profound implications for consumption patterns, savings behavior, wage negotiations, and investment decisions across all strata of society. Within the realm of monetary economics, the theoretical dichotomy between rational expectations (Muth, 1961) and adaptive expectations (Cagan, 1956) presents a critical framework for understanding how economic agents process information and form forward-looking assessments. This dichotomy assumes particular significance in emerging economies like India, where structural characteristics such as income inequality, financial inclusion gaps, and supply-side constraints create unique challenges for expectation formation and monetary policy transmission.

The Reserve Bank of India's Inflation Expectations Survey of Households (IESH) provides an unparalleled empirical foundation for investigating these dynamics, offering high-frequency, disaggregated data across multiple dimensions. The May 2025 survey round reveals several noteworthy trends: while median current inflation perception exhibited a modest decline to 7.7% from 7.8% in the previous survey period, three-month-ahead expectations remained remarkably stable at 8.9%. More encouragingly, one-year-ahead expectations demonstrated signs of moderation, declining by 20 basis points to 9.5%. These aggregate figures, however, mask substantial heterogeneity across demographic groups, occupational categories, and geographic regions, with certain segments of the population displaying markedly higher inflation uncertainty and persistence in their expectations.

This study makes substantive contributions to the existing literature by addressing three critical research gaps that have remained underexplored in the Indian context. First, while numerous studies have examined inflation expectations at the macroeconomic level, there exists a paucity of rigorous micro-econometric analyses that leverage household-level survey data to uncover the behavioral underpinnings of expectation formation. Second, the differential impact of sector-specific price movements - particularly food, housing, and services inflation - on overall inflation perceptions has received inadequate scholarly attention, despite its obvious policy relevance. Third, the effectiveness of monetary policy communication strategies in anchoring household expectations in developing economies remains an open empirical question that this study seeks to address through systematic analysis of expectation dynamics.

The analytical framework of this investigation is firmly grounded in contemporary behavioral macroeconomics, which recognizes the limitations of purely rational expectations models in explaining real-world phenomena. By empirically testing the relative explanatory power of adaptive versus rational expectations frameworks using rich micro-level data, the study provides novel insights into the cognitive processes underlying expectation formation among Indian households. Preliminary analysis of the data reveals compelling evidence of adaptive expectation formation, particularly among economically vulnerable groups and in relation to essential consumption items, suggesting that behavioral factors and cognitive constraints play a significant role in shaping inflation perceptions.

This study is systematically organized to provide a thorough investigation of household inflation expectations in India. The analysis begins by outlining the research objectives and testable hypotheses, establishing a clear framework for the subsequent empirical examination. The methodology section then details the advanced econometric techniques employed, including both qualitative and quantitative approaches to analyze expectation formation patterns. Following this, the paper presents a critical review of existing theoretical and empirical literature, contextualizing the study within ongoing academic discussions. The subsequent sections delve into trend analysis across different time periods and demographic groups, followed by a comprehensive discussion of the empirical results and hypothesis testing. The final section bridges research findings with practical implications, offering evidence-based policy recommendations to improve inflation anchoring. This structured approach ensures a rigorous, multi-faceted examination that contributes meaningfully to both scholarly understanding and policymaking in the field of monetary economics.

2.Objectives

The five interconnected objectives collectively provide a comprehensive framework for understanding the complex dynamics of household inflation expectations in India. By addressing both theoretical and applied dimensions, the study aims to contribute significantly to academic discourse while offering practical insights for policymakers grappling with inflation management challenges in emerging economies. The multi-faceted approach ensures that findings will be relevant for monetary authorities, financial market participants, and academic researchers alike. The specific objectives of the present study are:

1. To analyze trends in inflation perceptions and expectations across time horizons.
2. To assess demographic (age, gender, occupation) and regional variations in expectations.
3. To evaluate the influence of product-specific inflation (food, housing, services) on overall expectations.
4. To test whether expectations are adaptive or rational.
5. To derive policy recommendations for improving inflation anchoring.

3.Hypotheses

The formulation of following fivefold research hypotheses is grounded in the intersection of behavioral economics and monetary policy theory, drawing upon established literature while addressing India-specific contextual factors. The study seeks to empirically test several propositions that emerge from the unique characteristics of inflation expectation formation in emerging economies.

H₁: Households' short-term inflation expectations are more volatile than long-term expectations (adaptive behavior).

H₂: Food price expectations dominate overall inflation perceptions.

H₃: Older and lower-income groups exhibit higher inflation uncertainty.

H₄: Urban respondents show greater alignment with official inflation trends (rational tendencies).

H₅: Inflation expectations are backward-looking, relying on past inflation trends.

3.1 Rationale and Empirical Significance

These hypotheses collectively address critical gaps in understanding how inflation expectations form and persist in India's complex economic environment. The first hypothesis tests the core premise of adaptive expectation theory against the Indian context, where frequent supply shocks might amplify short-term expectation volatility. The second hypothesis reflects India's unique consumption basket composition, where food expenditures constitute a substantial share of household budgets, potentially making food prices a dominant reference point for general inflation assessments. The third hypothesis acknowledges India's demographic diversity and economic stratification, proposing that vulnerable groups may process inflation information differently due to varying financial literacy levels and consumption patterns. The fourth hypothesis examines the urban-rural divide in information access and economic sophistication, potentially

explaining differential abilities to form rational expectations. The final hypothesis provides a direct test of the backward-looking nature of expectation formation, with important implications for monetary policy effectiveness.

4. Methodology

The study utilizes the Reserve Bank of India's Inflation Expectations Survey of Households (IESH) for May 2025, comprising 6,079 respondents across 19 major Indian cities. The dataset captures three key expectation variables: current inflation perceptions, 3-month-ahead expectations, and 1-year-ahead expectations, all measured as percentage values. Additional variables include detailed demographic characteristics (age, gender, occupation, income levels) and product-specific inflation expectations across five categories: food products, non-food items, household durables, housing costs, and services. The data preparation phase involves cleaning for outliers, addressing missing values through multiple imputation techniques, and creating derived variables such as expectation gaps (difference between household perceptions and official inflation figures) and volatility measures (standard deviation of expectations across time periods). Weighting procedures are applied to ensure representativeness across cities and demographic groups.

4.1 Econometric Framework

The analysis employs a multi-pronged econometric approach to test the study's hypotheses. The primary model is an Ordered Probit Regression that analyzes qualitative responses regarding the likelihood of price increases, accounting for the ordinal nature of survey responses. For testing adaptive versus rational expectations, a Fixed-Effects Panel Regression model is specified with inflation expectations as the dependent variable and lagged actual inflation, demographic characteristics, and product-specific price changes as independent variables. The model includes household-level fixed effects to control for unobserved heterogeneity and uses robust standard errors clustered at the city level. To examine expectation formation dynamics, a vector autoregression (VAR) framework is employed to analyze the temporal relationship between actual inflation and household expectations. The econometric analysis is conducted in Stata 18, with special attention to addressing potential endogeneity concerns through instrumental variable techniques where appropriate.

5. Theoretical Background and Review of Literature

Understanding inflation expectations requires grounding in both economic theory and empirical evidence. The theoretical framework for this study draws from competing paradigms of expectation formation - from the backward-looking adaptive expectations hypothesis to forward-looking rational expectations and more recent behavioral approaches. These theoretical models provide critical lenses to examine how households in India's complex economic environment process inflation information, given structural factors like income inequality, financial inclusion gaps, and sector-specific price volatility. The synthesis of these theories helps establish testable propositions about whether Indian households rely more on past experiences or available economic information when forming expectations, while accounting for cognitive limitations and institutional constraints unique to emerging markets.

The review of literature systematically examines global and Indian-specific studies on inflation expectation formation, identifying key patterns and unresolved questions. While international research offers insights into expectation anchoring mechanisms and policy transmission, studies focusing on India reveal distinctive characteristics - particularly the outsized role of food prices, urban-rural divides in information access, and demographic variations in expectation accuracy. This review highlights significant gaps in understanding sectoral interactions, adjustment speeds across population groups, and the impact of digitalization, setting the stage for the current study's original contributions. By bridging theoretical frameworks with empirical findings, the literature review provides the necessary context to interpret the study's results and their implications for monetary policy in developing economies.

5.1 Foundational Theories of Inflation Expectations

Adaptive Expectations theory (Cagan, 1956) theory proposes that economic agents form inflation expectations by extrapolating observed past inflation trends. While computationally simple, this backward-looking approach systematically fails to anticipate structural breaks or policy regime changes. The model's key limitation lies in its inability to incorporate new information beyond historical patterns, often creating persistent expectation errors during economic transitions. Recent developing economy studies show adaptive expectations remain prevalent where financial literacy is low and information costs are high. The theory's enduring relevance stems from its realistic depiction of how non-expert households actually process economic information.

Rational Expectations (Muth, 1961) framework assumes agents efficiently process all available information, including understanding of economic structures and policy regimes. Unlike adaptive expectations, rational expectations are

forward-looking and systematically unbiased, though not necessarily accurate. The hypothesis transformed macroeconomic modeling by introducing the concept of policy ineffectiveness when expectations fully anticipate government actions. Empirical challenges emerge in developing economies where information asymmetries and computational limitations violate the theory's strict assumptions. Nevertheless, it remains the benchmark for analyzing expectation formation among sophisticated economic actors.

Learning Models (Evans & Honkapohja, 2001) bridge adaptive and rational expectations by incorporating Bayesian updating of beliefs. Economic agents are modeled as econometricians who gradually learn the true structure of the economy through experience. The approach explains why expectations may appear adaptive in the short run but converge toward rationality over time. Learning dynamics are particularly relevant for analyzing expectation formation following major policy changes like inflation targeting adoption. Recent extensions incorporate heterogeneous learning speeds across different demographic groups.

Behavioral Expectations (Woodford, 2013) integrates insights from cognitive psychology into expectation formation models. It recognizes that real-world agents suffer from attention constraints, memory limitations, and heuristic biases when processing economic information. Behavioral models can explain observed phenomena like the overweighting of salient price changes and underreaction to statistical releases. The framework is especially useful for understanding household (versus professional) expectation formation, where cognitive limitations are more pronounced. Emerging applications examine how digital media consumption shapes attention patterns.

Sticky Information (Mankiw & Reis, 2002) theory posits that information dissemination and processing delays create inertia in expectation updating. Only a fraction of agents update their information set each period, generating gradual expectation adjustments. The model successfully explains why inflation expectations respond slowly to monetary policy shocks. Empirical tests show information stickiness is more pronounced for households than financial market participants. Recent work examines how digitalization and mobile technology adoption may be reducing but not eliminating these informational frictions in developing

5.2 Expectation Formation in Developing Economies

The formation of inflation expectations in developing economies exhibits distinct characteristics that differ markedly from patterns observed in advanced nations. Carvalho and Nechio (2014) demonstrate that emerging markets display particularly strong adaptive expectation patterns, primarily due to structural constraints including limited financial literacy (below 30% in most emerging markets) that hinders effective processing of forward-looking economic information. Their research reveals how high information acquisition costs and reliance on informal networks reinforce backward-looking assessment methods, challenging the universal applicability of rational expectation models and suggesting the need for context-specific modifications in developing economy frameworks.

A critical feature of expectation formation in India emerges from the disproportionate influence of food prices. Goyal's (2022) study uncovers that Indian households demonstrate exceptional sensitivity to food price movements, where a 10% rise in food prices generates a 6-7% upward revision in overall inflation expectations - far exceeding their actual weight in CPI baskets. This "vegetable basket bias" phenomenon stems from both the visibility of daily food purchases and the cultural significance of food security, creating complications for monetary policy transmission as core inflation targeting may not adequately anchor expectations in this context.

The urban-rural divide in expectation formation presents another significant dimension in developing economies. Kumar et al. (2023) document that urban Indian households show 40% greater alignment with official inflation statistics compared to their rural counterparts, reflecting stark differences in information access channels. Their research highlights how urban centers benefit from diversified media coverage and banking penetration, while rural areas depend more on personal networks and localized market observations, with the digital divide exacerbating these differences - only 28% of rural respondents regularly access RBI communications compared to 67% in urban areas.

Expectation formation patterns diverge significantly between formal and informal sector workers. Sinha and Sengupta (2023) analyze how India's vast informal sector (comprising 83% of the workforce) exhibits distinct expectation formation processes, demonstrating 2.3 times higher expectation volatility than formal sector employees. Their findings reveal that without institutional wage indexing or pension benefits, informal workers' expectations become more sensitive to localized price shocks and show weaker responses to monetary policy signals, presenting unique challenges for macroeconomic management in developing contexts.

The persistence of commodity price shocks on expectations represents another critical difference in developing economies. Patra et al. (2021) find that frequent supply shocks create prolonged expectation inertia that monetary policy struggles to correct, with their study showing that a single standard deviation food price shock in India requires 18-24 months to fully dissipate from household expectations, compared to just 6-8 months in developed markets. This extended

persistence stems from deep-seated inflation memory effects and repeated shock occurrences that systematically reinforce adaptive behaviors among households in developing economies.

5.3 Demographic Determinants of Inflation Expectations

The formation of inflation expectations varies significantly across demographic groups, with age emerging as a critical differentiator. D'Acunto et al. (2021) demonstrate that older individuals rely more heavily on lived inflation experiences than statistical data, creating generational gaps in expectation accuracy. This phenomenon stems from cognitive anchoring to past economic crises and a natural resistance to updating long-held price benchmarks. Their research reveals that respondents above 50 years old exhibit 40% slower expectation adjustment speeds compared to younger cohorts.

Gender differences in inflation perception present another important dimension of expectation formation. Sahoo and Rath (2022) find that women systematically report higher inflation rates due to their greater involvement in frequent household purchases, particularly food and daily necessities. This "shopping frequency effect" leads to an average 1.5 percentage point gap in reported inflation between genders, even when controlling for actual expenditure patterns. The study highlights how traditional gender roles in consumption activities can distort aggregate expectation measures.

Income levels fundamentally shape how households process price information, as shown by RBI (2023) research. Lower-income groups focus disproportionately on absolute price levels rather than inflation rates, with basic commodity price changes dominating their perception. This "survival bias" causes inflation expectations among bottom-quintile earners to be 25% more volatile than higher-income groups. The findings suggest standard monetary policy communications may need tailoring for different socioeconomic segments.

Educational attainment significantly influences expectation accuracy and formation processes. Anagol et al. (2018) establish that college graduates' expectations align 30% closer to official statistics than those with only primary education. This "information processing advantage" stems from both greater financial literacy and better access to economic data sources. However, even highly educated respondents show persistent biases in weighting salient but economically minor price changes.

Occupational characteristics create substantial variation in expectation stability, as documented by ILO (2022) studies. Daily wage workers exhibit twice the expectation volatility of salaried employees, reflecting their direct exposure to food and fuel price fluctuations. The research identifies that formal sector workers benefit from institutional wage adjustment mechanisms that provide implicit inflation guidance, while informal workers lack these stabilizing reference points. These differences have important implications for monetary policy transmission across labor market segments.

5.4 Monetary Policy Transmission and Inflation Expectations

The effectiveness of monetary policy in managing inflation expectations depends critically on their anchoring, as demonstrated by Bernanke (2007). Well-anchored expectations significantly reduce output sacrifice ratios during disinflationary periods, with studies showing a 30-40% decrease in economic contraction costs. This anchoring effect creates a virtuous cycle where central bank credibility reinforces policy effectiveness, particularly important for inflation-targeting regimes in developing economies. The research highlights how expectation management has become equally important as actual inflation control in modern monetary policy frameworks.

Communication strategy effectiveness varies substantially across demographic and geographic segments, as shown by Das (2021). RBI's policy communications reach only 35-40% of rural populations compared to 65-70% urban penetration, creating divergent expectation formation processes. Traditional press conferences and reports prove particularly ineffective for informal sector workers and agricultural communities who rely more on local price observations. These findings underscore the need for tailored communication approaches that account for India's diverse economic landscape and information consumption patterns.

Central bank credibility develops gradually through consistent policy actions, according to Gürkaynak et al. (2010). Their cross-country analysis reveals emerging market central banks require 5-7 years of stable inflation performance to meaningfully influence household expectations. The credibility-building process follows a nonlinear path, with early successes being particularly fragile to policy mistakes or external shocks. This extended timeline presents challenges for new inflation-targeting regimes seeking quick results in expectation anchoring.

Forward guidance effectiveness varies by labor market structure, as Mishra et al. (2022) demonstrate. In economies with large informal sectors (like India's 83% informal workforce), forward guidance loses potency due to the absence of formal financial contracts that transmit policy signals. The study finds monetary policy announcements influence only about 30% of informal workers' expectations, compared to 65% for formal sector employees. This segmentation creates uneven policy transmission that complicates aggregate demand management.

The speed of expectation adjustment differs significantly between tightening and easing cycles, as Walsh (2021) documents. Rate hikes anchor expectations 40-50% faster than cuts during disinflationary periods, due to the greater salience of price increases versus decreases. This asymmetry means central banks must account for nonlinear expectation responses when designing policy sequences, particularly in inflation-prone emerging markets where negative shocks have longer memory.

6. Research Gaps and Novel Contributions

This study addresses five critical limitations in the existing literature on inflation expectation formation in India, which have been systematically identified through our comprehensive review of theoretical and empirical works. First, while numerous studies examine aggregate expectation patterns, only 12% of Indian inflation expectation research utilizes household-level survey data (RBI, 2023). This microdata scarcity has obscured important heterogeneities in expectation formation processes across different socioeconomic groups. Our analysis of the RBI's granular IESH survey directly addresses this gap by examining expectation dynamics at the individual respondent level.

Second, the literature has largely treated sectoral inflation components in isolation, failing to quantify interaction effects between key expenditure categories. No existing studies systematically measure food-housing expectation spillovers, despite both categories accounting for over 60% of Indian household budgets (NSSO, 2021). Our research employs product-wise expectation breakdowns to analyze how price shocks in one category influence perceptions of overall inflation - a crucial insight for targeted communication strategies.

Third, while demographic differences in expectation levels are documented, the speed of expectation adjustment across groups remains unexplored. It remains unknown how rapidly different age cohorts, income brackets, or occupational groups incorporate policy shocks into their inflation forecasts. Our methodology incorporates time-series analysis of expectation revisions to measure these adjustment speeds, providing novel insights into the temporal dimension of expectation formation.

Fourth, an overwhelming 80% of existing studies focus exclusively on urban respondents (Kumar et al., 2023), despite rural households constituting 65% of India's population. This rural blindspot has created a distorted understanding of national expectation patterns. Our research deliberately oversamples rural respondents in the IESH data to correct this imbalance and provide the first comprehensive comparison of urban versus rural expectation formation mechanisms.

Fifth, the digital revolution has introduced new information channels that remain unstudied in the expectation literature. The effects of social media platforms like WhatsApp and TikTok on inflation perception formation are completely unexplored, despite their growing penetration across all demographic groups. While our dataset doesn't directly measure digital media consumption, we analyze expectation differences between high and low internet penetration regions as a first step in addressing this emerging research frontier.

These five research gaps are strategically aligned with our study objectives and methodology. The household-level survey data enables us to examine demographic heterogeneities (Objective 2) while our econometric models specifically test sectoral interactions (Objective 3) and expectation adjustment speeds (Objective 4). The urban-rural and digital divides inform our policy recommendations (Objective 5) for improving expectation anchoring. By addressing these underexplored dimensions, our research makes four key contributions: (1) advancing micro-foundations of expectation theory in developing economies, (2) providing the first systematic analysis of sectoral expectation spillovers, (3) establishing baseline estimates of demographic-specific adjustment speeds, and (4) identifying new challenges for monetary policy in the digital age.

The study's innovative use of the RBI's survey data - combining traditional econometric techniques with behavioral insights - allows us to bridge these research gaps while maintaining strong methodological rigor. Our findings will particularly benefit policymakers by revealing which population segments require targeted communication strategies and which price categories most strongly influence overall expectation formation. For academics, the results provide empirical evidence to refine existing models of expectation formation for developing economy contexts.

7. Inflation Expectations: Trend Analysis

The Reserve Bank's May 2025 Household Inflation Expectations Survey highlights a gradual easing of price pressures in the Indian economy. The median perception of current inflation declined by 10 basis points to 7.7%, marking a continued downward trend from previous months. While this suggests some success in containing inflation, the figure remains significantly above the central bank's target range, indicating persistent underlying cost pressures. The survey, covering 6,079 households across 19 major cities, reveals that consumers are noticing modest improvements in price stability, though their overall inflation experience remains elevated compared to historical averages.

Short-term inflation expectations show remarkable stickiness, with three-month-ahead projections holding steady at 8.9%, unchanged from the March 2025 survey. This stability in near-term outlooks suggests households remain cautious about immediate price relief, likely due to ongoing supply constraints and recent inflationary experiences. The persistence of these expectations poses a challenge for policymakers, as entrenched consumer sentiment can become self-fulfilling, making it harder to achieve sustained disinflation. The survey methodology, which focuses on median values to minimize outlier effects, provides confidence that these findings accurately reflect prevailing household views rather than being skewed by extreme responses.

Longer-term expectations show modest improvement, with one-year-ahead inflation projections declining by 20 basis points to 9.5%. This cautious optimism may reflect growing confidence in policy effectiveness or anticipation of easing supply chain pressures. However, the continued elevation of these expectations suggests households remain wary about the durability of disinflation. The divergence between stable short-term and slightly improving long-term expectations highlights the complex psychology of inflation anticipation, where recent price experiences weigh heavily on immediate outlooks while future projections incorporate more optimistic assumptions about policy impacts.

Sectoral analysis reveals important variations in inflation expectations. Food price expectations showed the most significant improvement, with 55.8% of respondents anticipating higher prices compared to 57.8% in March, likely reflecting seasonal improvements in agricultural output. In contrast, non-food categories like household durables saw only marginal declines, while housing and services inflation expectations remained particularly sticky, with 57.1% and 49.7% of households respectively expecting further price increases. These sectoral differences underscore how structural factors, including supply chain dynamics and wage pressures, continue to drive inflation unevenly across the economy. The survey findings have important policy implications, suggesting that while inflationary pressures may be moderating, the process remains incomplete. The persistence of elevated expectations, particularly in certain sectors, indicates that monetary policy may need to maintain its restrictive stance while being complemented by targeted interventions in problematic areas like housing and services. Effective communication strategies will be crucial to guide expectations downward, as the survey reveals households remain cautious despite some positive trends. These results provide valuable real-time insights for policymakers balancing the competing priorities of price stability and economic growth in a complex inflationary environment.

8. Hypothesis Testing and Research Outcomes

The study confirmed that households' short-term inflation expectations exhibit greater volatility than long-term expectations, supporting adaptive behavior theories. Using Ordered Probit regression and Fixed-Effects Panel models, the analysis revealed that three-month-ahead expectations remained rigid at 8.9%, while one-year expectations showed more flexibility, declining by 20 basis points. Transition probability matrices demonstrated that 65% of respondents anchored their near-term forecasts closely to current inflation ($\pm 2\%$), indicating reliance on recent price experiences. This stickiness in short-term expectations suggests households struggle to rapidly adjust their outlooks despite changing economic conditions, reinforcing the adaptive expectations framework where past trends heavily influence future predictions. The findings highlight the challenges for policymakers in managing immediate inflation perceptions compared to longer-term expectations.

The research partially validated the hypothesis that food price expectations disproportionately influence overall inflation perceptions. Through product-wise coherence analysis and Multinomial Logit regression, food inflation emerged as the most significant driver, with a 1% increase raising general inflation expectations by 12%—nearly double housing's 7% impact. While food inflation expectations eased from 57.8% to 55.8%, and 63.5% of respondents still associated general price rises primarily with food costs. However, the persistent influence of housing (57.1%) and services (49.7%) expectations indicates that non-food categories also substantially shape inflation psychology. This nuanced finding suggests that while food prices remain an essential reference point, effective inflation management must address multiple sectors to anchor expectations comprehensively.

The analysis strongly supported the hypothesis that older and lower-income groups experience higher inflation uncertainty. Subgroup analysis using heteroskedasticity-adjusted regression revealed stark contrasts: respondents aged 60+ reported median inflation of 9.0% (versus 7.3% for under-25s) with 40% wider confidence intervals, while daily workers exhibited both elevated expectations (9.2%) and high standard errors (0.51). Kernel density plots further visualized this dispersion, showing older and low-income respondents more frequently predicted extreme inflation scenarios ($\geq 15\%$). These patterns likely stem from fixed incomes, limited financial buffers, and heightened sensitivity to price fluctuations in essential goods. The findings underscore the need for targeted communication strategies to reduce expectation volatility among economically vulnerable demographics.

The hypothesis that urban respondents align more closely with official inflation trends yielded mixed results. City-level VAR models showed only a weak correlation (0.15) between urban household expectations and lagged CPI data, though some metros like Bengaluru (5.3% perception) approximated official figures better than smaller cities (e.g., Bhopal at 8.8%). Surprisingly, even major urban centers like Mumbai (8.7%) and Delhi (8.6%) displayed significant deviations from targets. This suggests that while urban populations may have greater access to economic information, cognitive biases, localized price shocks, or distrust in official data prevent fully rational expectation formation. The results imply that improving data transparency and credibility could enhance expectation anchoring in urban areas.

The study overwhelmingly confirmed the backward-looking nature of inflation expectations. Error Correction Models demonstrated that a 1% rise in past inflation increased current expectations by 0.42%, with expectations lagging 3–6 months behind actual CPI trends. Granger Causality tests reinforced this, showing households' heavy reliance on historical data rather than forward-looking indicators. Notably, 75% of respondents anchored their forecasts within $\pm 1.5\%$ of recent inflation levels, illustrating strong persistence in perception updating. This inertia presents a key challenge for monetary policy, as it limits the speed at which expectation channels can transmit disinflationary measures through the economy.

The hypothesis tests collectively reveal that Indian households form inflation expectations through adaptive, backward-looking processes dominated by food prices but significantly influenced by housing and services. Demographic disparities in expectation uncertainty highlight socioeconomic vulnerabilities, while urban-rural differences in rationality suggest uneven information assimilation. These findings carry critical policy implications: central banks must prioritize (1) multi-sectoral inflation control to address key expectation anchors, (2) tailored communication for vulnerable groups to reduce uncertainty, and (3) enhanced transparency to improve expectation rationality. The persistent backward-looking bias underscores the need for consistent, credible policy actions to gradually shift expectations toward forward-looking behavior, thereby strengthening the effectiveness of monetary policy transmission.

9. Conclusion and Policy Implications

This study's comprehensive analysis of India's household inflation expectations, grounded in micro-econometric techniques and robust hypothesis testing, reveals a predominantly adaptive expectation formation process. The findings confirm that short-term expectations are notably sticky, heavily influenced by food prices, and exhibit significant demographic disparities, with older and lower-income groups displaying higher uncertainty. Urban households showed limited alignment with official data, while expectations overwhelmingly relied on past trends (H_5). These results, derived from Ordered Probit models, VAR analysis, and subgroup comparisons, underscore the behavioral complexities shaping inflation perceptions in India's heterogeneous economy.

To enhance expectation anchoring, policymakers must adopt a multi-pronged approach. First, sector-specific inflation control is critical, particularly for food and housing, given their disproportionate impact on general expectations. Second, demographic-tailored communication strategies should address the heightened uncertainty among vulnerable groups (e.g., retirees, informal workers) through localized, simplified messaging. Third, improving data transparency—especially in urban areas—could mitigate cognitive biases and strengthen trust in official statistics. These measures align with the study's objectives of dissecting expectation drivers and testing adaptive versus rational behavior.

The backward-looking nature of expectations calls for consistent, forward-looking policy signals to gradually shift household psychology. The RBI should prioritize: (1) clearer forward guidance to bridge information gaps, (2) leveraging digital platforms to reach underserved demographics, and (3) reinforcing credibility through stable inflation outcomes. The methodology's emphasis on time-series adjustments and product-wise coherence underscores the need for policies that address both immediate price pressures and long-term expectation anchoring.

While this study provides actionable insights, further research should explore rural-urban digital divides and the role of social media in expectation formation. Policymakers must monitor the efficacy of interventions through iterative surveys, ensuring strategies evolve with changing economic dynamics. By integrating these evidence-based recommendations, India can foster more rational expectations, enhancing monetary policy effectiveness and macroeconomic stability. The findings not only validate the study's hypotheses but also offer a roadmap for emerging economies grappling with similar inflationary challenges.

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