

Micro-level Mechanisms of Inflation Formation: The Interaction Between Firm Pricing Behavior and Household Inflation Expectations

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Abstract. Traditional inflation research has mainly focused on the macro transmission of the inflation channel, but has paid insufficient attention to the micro interaction characteristics among economic agents. This study believes there exists a dynamic coupling relating among corporate pricing strategy and household inflation expectations. By using the empirical data of Bank of Canada's Household Survey and US Consumer Confidence Index, this study examines their relationship and operational mechanisms. Households differ significantly in their requested price increases based on education and income levels. This divergence results in large differences in consumption patterns, which similarly affects the setting of price levels, thus forming a closed-loop phenomenon of "expectations-pricing-revisited expectations", and the effects of policy intervention are increasingly difficult to predict. In this context, it is necessary to account for individual differences and improve public trust through two-way communication. This enhances resource allocation efficiency and strengthens macroeconomic stability on a broader scale. By exploring inflation formation based on micro-interactions, this study aims to establish a new theoretical and empirical foundation for inflation governance.

Keywords: inflation formation mechanism, firm pricing behavior, household inflation expectations, micro-interactions, heterogeneity

1. Introduction

Inflation is a macroeconomics topic. Its temporal changes in value are linked to the social system and the life of the public. Traditional macroeconomics mainly explains inflation from the perspective of money supply, aggregate demand-supply equilibrium, etc. The basic cause of inflation is inherently associated with microeconomic agents. As key participants involved in consumption expenditure and labor supply, households can impact the demand structure and savings tendency by changing the inflation expectation, thus changing the market demand pattern. When making pricing decisions, enterprises consider cost factor changes, supply-demand matching, and consumer psychological expectations, all based on forward-looking forecasts. The interaction between households and businesses for two terms is one of the causes for changes in prices. However, at the micro-level perspective of subject interaction has often been insufficient attention

and research from the macroeconomics view. Bridging this gap by interpreting inflation through micro-agent interactions can clarify its dynamic mechanisms, with a focus on the dual-channel impact of households and firm pricing on inflation. Prices stem from the choices of each household for what to buy, and from the decisions of each firm as to how much to make. This micro perspective will make the management of inflation better in line with the actual situation of the operation of the economy.

2. Literature review

2.1. Heterogeneity and influencing factors of household inflation expectations

Numerous empirical studies have shown that there is considerable demographic heterogeneity in household inflation expectations. A survey of 5,000 households in Canada indicated that younger people and women with less education have significant misunderstandings about the goal of the central bank's policy and have a weak ability to integrate information [1]. Analysis of the U. S. SCE database shows that low-income households have stronger and more volatile inflation expectations than high-income households, and are more sensitive to changes in policy [2]. Information asymmetry widens this gap: only approximately 20% of U.S. households are aware of the Federal Reserve's core inflation target, and the digital divide further weakens the anchoring effect of expectations [3].

2.2 Determinants of corporate pricing behavior

The price of enterprises is not decided only by marginal costs, but also takes into account household inflation expectations and market demand forecast. Empirical results indicate that firms base pricing decisions on the inflation forecast of households: If households expect higher future inflation rate, firms are prepared to raise the prices in the future for higher cost and adjust prices accordingly. On the contrary, if the public is considered to be mildly inflationary, enterprises will be reluctant to raise prices. Firms also differ in their sensitivity to inflation signals. Regularly, large corporations and high-productivity companies can grasp the signal of inflation and then make a price decision [3].

2.3 Microeconomic interactions and inflation transmission

Household inflation expectations shape the price environment in which firms make pricing decisions [1]. Monetary policy has some feasibility about fighting inflation depending on how individuals adjust spending based on inflation expectations. Even minor changes in household spending behavior can indirectly influence firm pricing decisions, thereby mitigating or amplifying inflationary pressures at the macro level [1].

3. Theoretical framework: the interactive logic between firm pricing and household inflation expectations

3.1. Formation and heterogeneous sources of household inflation expectations

The formation of household inflation expectations is an interactive effect which contains information acquisition-experience accumulation-environmental perception, in terms of information processing point of view, different households of various education backgrounds have different capability to receive and process inflation data. Higher-educated, higher-income households can

access high-quality information (e.g., central bank policy explanations, specialized economic forecasts), enabling them to form more accurate expectations aligned with official targets. In contrast, households of lower education or income tend to judge the prices of commonly used goods such as food and energy changes for their subjective perception [1]. Based on historical evidence, it is suggested that those households that experienced massive urbanization often strongly overestimate short-term overall price increases [4]. Heterogeneous inflation expectations lead to divergent household behaviors. Households that expect high inflation will generally choose to boost their short-term consumption and reduce the accumulation of savings, showing a higher desire to purchase durable goods. On the contrary, those who expect low inflation attach more importance to long-term investment and thrift. Different consumptions result in different demand patterns, companies will adopt differentiated pricing strategies to adapt.

3.2. Decision function of corporate pricing behavior

The pricing decision of the enterprise can be expressed as a function of cost factors, demand factors and expectation factors.

When household inflation expectations rise, firms face dual impetus: more room to raise prices as a result of anticipated demand growth, and the need to pre-empt an expected rise in costs. And both of them pushing the firms to raise prices. If household inflation expectations stabilize around the central bank's target. Conversely, firms make moderate price adjustments to avoid a drop in demand from a sharp rise in prices. In addition, companies have "sticky pricing features", but persistent changes in household inflation expectations break this stickiness and increase the frequency of pricing changes [3].

3.3. Interactive cycle and inflation formation

A five-stage interactive cycle exists between corporate pricing and household inflation expectations [5].

The first stage is the initial expectation formation stage, at which point households form initial inflation expectations Eh_0 based on information and experience. The second stage is consumption and demand, which is Eh_0 that affects households' consumption behavior and forms market demand D_0 . The third stage is firm pricing, which is firms setting prices based on market demand D_0 and their own expectations Ef_0 . The fourth stage is expectation adjustment, that is, with the rise of P_0 , people's perception of inflation is also aroused, thus they will revise their expectations to Eh_1 , and then firms will adjust the prices to P_1 . And the fifth stage is the generation of inflation, which is that after multiple rounds of interaction, the equilibrium state of pricing and expectation forms the overall level of inflation.

Within this cycle, unanchored household expectations (e.g., failing to align with the central bank's 2% target) cause corporate pricing to deviate from a reasonable range via the demand channel, destabilizing inflation. Conversely, stable household expectations for household expectations enhance the consistency of corporate pricing behavior and thus maintain inflation at the target level.

4. Empirical characteristics: evidence from micro-level survey data

4.1. Heterogeneity in household inflation expectations and their impact on demand

The average expected household inflation figure in Canada's spring 2020 Household Survey was approximately 7%-8%, much higher than the actual 1.9% and the 2% target of the central bank. This expectation shows a relatively larger gap: women's inflation expectation is 1.27 per point higher than men's; individuals with education were 1.98 periods higher than high-educated individuals; individuals with the low income has 2.0 periods higher than individuals with high income [1]. This heterogeneity was translated as a difference in consumption path of 0.32 percentage points and was 0.32 percentage points higher nominal consumption path for the households which have higher expectations of nominal consumption growth that shows intent to consume durable goods significantly higher [3].

Studies using U. S. SCE data also confirm demand divergence driven by heterogeneous household inflation expectations. Low-income households' inflation expectations are more responsive to changes in food and energy prices, with consumption demand concentrated on necessities, and the prices of such goods are more volatile. High-income households exhibit relatively stable consumption concepts, a diversified and rich demand structure, and have less impact on the prices of non-essential goods.

4.2. Feedback effects of corporate pricing on household expectations

Corporate price level influences household expectation adjustments through the "perceived actual inflation" mechanism. When firms raise prices in response to high household expectations, the increase in actual inflation reinforces the high expectations, forming an upward spiral of "expectations - pricing - inflation"; When firms maintain moderate pricing, stable actual inflation gradually corrects the overhigh expectations of households [1].

Transparency of companies' prices also affects the degree of the feedback. When firms communicate the reasons for the price changes (e.g. the cost changes), households understand better that the price is not permanently changed and then adjust expectations reasonably. On the contrary, opaque pricing practices may lead households to link short-term price rises to long-term inflation, thus reducing expectation anchoring.

4.3. Macro manifestation of interactive effects: micro roots of inflation fluctuations

Global inflation volatility since 2020 verifies the influence of micro-level interaction. In the early stages of the outbreak of the Covid-19 pandemic, the expectations of inflation of households have risen due to supply chain disruptions, and they have increased the demand for immediate consumption. Facing expected high demand and rising cost pressures, companies raised prices. This mutual reinforcement pushed up inflation. After 2022, central banks carried out contractionary monetary policy, curbing the consumption demand of households with high inflation expectations, reducing the corporate profit margin, so that the inflation gradually declines [2].

Regression results show a positive correlation between household inflation expectation heterogeneity and inflation volatility. For every 1 percentage point increase in the interquartile range of household expectations, the increase in inflation volatility is 0.399 percentage points[1]. The explanatory power of the expectation volatility of low-income households for the fluctuations of inflation is 23%, significantly higher than the 8% for high-income households [2].

5. Transmission mechanism: channels for micro-level interactions

5.1. Demand channel: household expectations shaping corporate pricing environments

Household inflation expectations influence corporate pricing by shaping consumption timing and structure. Consumption time: Households with high inflation expectations tend to engage in "front-loading consumption", especially of durable goods that have a high chance of being subject to price hikes (e.g., home appliances and automobiles). This boosts short-term demand for such goods, driving price increases. On the contrary, households that expect low inflation will "postpone consumption," and companies will have to reduce or maintain prices to maintain sales.

In terms of consumption structure, households have different sensitivity to price changes of different goods: The fluctuation of price of necessities such as food and energy is more likely to change the expectations of the households, but such goods have low demand elasticity, and companies can get higher profits by raising prices. Non-necessities, by contrast, have higher demand elasticity and therefore the firms have to be more cautious in adjusting prices and must take fully into account the demand changes caused by households' expectations [3].

5.2. Price channel: firm pricing adjustments modify household expectations

Corporations alter the households' expectations via actual inflation rate and price signals. Average corporate pricing is the basis for inflation. Households would form their expectation of future inflation based on their experience with inflation in the past, known as the adaptive expectations mechanism [4]. Additionally, the frequency and intensity of corporate price hikes indicate future inflation; Households expect sustained inflation when prices rise frequently, and when prices are stable, they expect moderate inflation and thus form reasonable expectations.

As for different firms' price behaviors on expectations. Large companies and leaders in the industry have a "demonstration effect", and their price changes are seen by households as changes in the industry as a whole, thus having a stronger impact on expectations. Small and medium-sized enterprises have weaker price impact, failing to correct overall expectations.

5.3. Monetary policy adjustment channels

Monetary policy modulates interactive effects through influencing microeconomic agents. For households, contractionary monetary policy raises interest rates and increase consumer credit costs. This suppress the immediate consumption demand of households with high inflation expectations, and reduce firms' pricing incentives. While expansionary monetary policy reduces credit costs and stimulates consumption demand and provides support for corporate pricing [2].

In terms of the enterprise itself, monetary policy regulates the price through the impact on financing cost and market confidence: contractionary policy, high financing cost, restricts the adjustment of price rise; The expansionary policy will lower the financing cost, so as to improve the flexibility of pricing. Also, central bank inflation communication is able to stabilize household expectations, reduce expectation heterogeneity, and induce less response of business pricing behavior to household expectations, breaking the vicious cycle of "high expectations-high pricing" [1].

6. Policy implications

Central Bank needs a differential communication strategy based on different groups: For low-education and low-income people, utilize plain language to interpret inflation developments and incorporate visual elements to narrow the information gap; For high-education, high-income people, release forecasting and analysis papers to enhance the anchoring effect of expectation. Simultaneously, clarify temporary inflation drivers (e.g., supply chain shocks) to prevent households from mistaking short-term price fluctuations for long-term trends.

Regulators can improve the price monitoring mechanism to ensure transparency in household fuel prices, thus preventing the market from taking advantage of households' increased expectations to increase prices excessively. For key sectors of daily necessities, set up a price fluctuation early warning system to prevent hoarding and price gouging. In addition, incentivize businesses to base pricing on long-term costs and demand through tax incentives to mitigate the impact of short-term expectation fluctuations on pricing decisions.

Monetary policy formulation should fully consider the heterogeneity of households and businesses: For low-education, low-income households with volatile expectations, implement consumption subsidies to ease living burdens and reduce excessive expectation deviations. Targeting the low price elasticity of demand of small and medium-sized enterprises, measures such as targeted reserve requirement cuts can lower their financing costs and increase pricing flexibility. Monetary and fiscal policies should be coordinated to generate synergy and stabilize microeconomic activities.

7. Conclusion

This study comprehensively analyzes the mechanism through which corporate pricing behavior and household inflation expectations interact to drive inflation. Inflation is not the result of a simple inflation of macroeconomic variables, but it is the result of the effect of both macroeconomic variables described above. Household inflation expectations differ, therefore the demand shift is also different and then the price environment for firms. Enterprises, in turn, modify household inflation expectations via the price channel, forming a closed loop. Monetary policy can guide these micro-behaviors to stabilize the cycle and maintain price stability.

Theoretical contribution lies in constructing a micro-interaction model of inflation generation, addressing the neglect of the micro-level of action in the macro-inflation research. Theoretical contribution and empirical contribution combined to use the existing micro-survey data to give evidence in different places and countries. Future studies may directly analyze the mutual influence of such firms and households based on matched data and further discuss how digital economy development and supply chain changes impact firm-household interaction mechanisms.

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