

Firm Inflation Expectations, Uncertainty and Beliefs

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WORKING PAPER

FIRM INFLATION EXPECTATIONS, UNCERTAINTY AND BELIEFS

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Abstract

In this paper, we examine the dynamics between inflation uncertainty, beliefs and inflation expectations of firms. Inflation uncertainty and beliefs influence a firm's perception of the inflation levels, thereby impacting its expected inflation. Using novel survey data on firm inflation expectations, we examine the extent to which crises influence the relationship between inflation uncertainty and inflation expectations. We find that the effect of crisis-led inflation uncertainty on inflation expectation is asymmetric. The COVID-19 pandemic increased the impact of high inflation uncertainty on inflation expectations. On the other hand, the Russia-Ukraine war reduced inflation expectations. The war effect may be attributed to geopolitical factors that helped India procure crude oil from Russia on favourable terms. Additionally, we find that the disagreement in expected inflation across firms seems to have increased in the period post-pandemic. Further, this paper analyses whether firms' beliefs about their own performance influence inflation expectations. Performance can impact the perception of cost structure, thereby, inflation expectations. The findings suggest that firms' beliefs about their performance are negatively associated with inflation expectations.

JEL Classification: E30; E31; E58; E60.

Key Words: Inflation expectations, Inflation uncertainty, beliefs, firms

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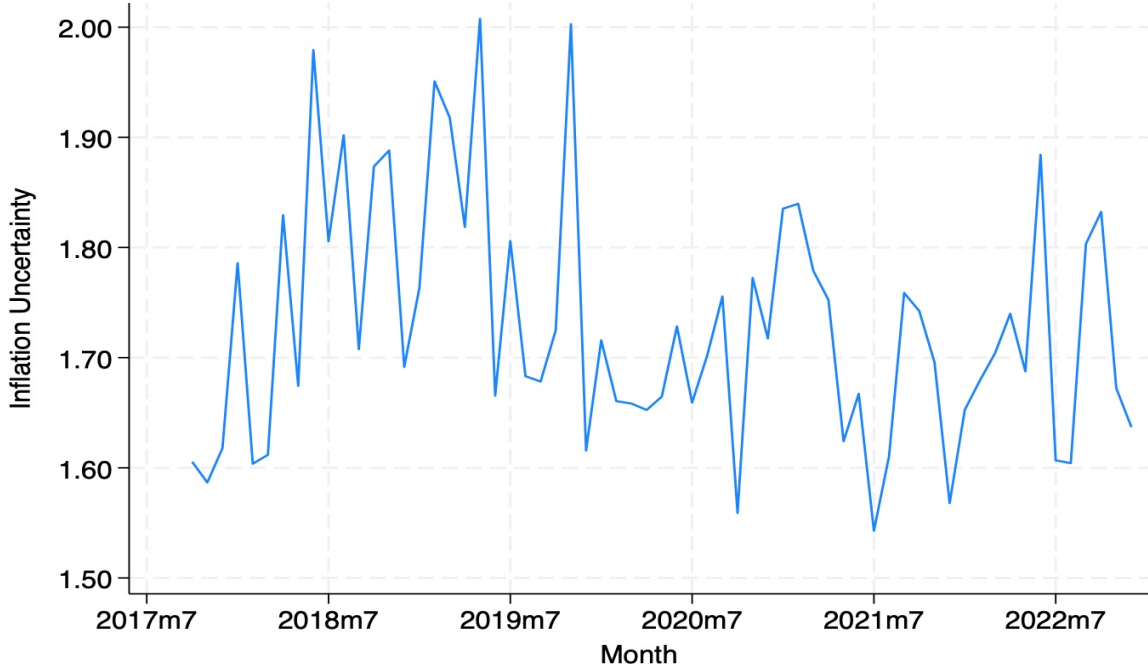
1. Introduction

Information channels available to economic agents play a crucial role in shaping their perceptions of current and future inflation levels (Gülşen and Kara, 2019; Conrad et al., 2022). During periods of heightened economic uncertainty, there is a lack of clarity about the inflation levels in the economy, leading to high uncertainty about future levels of inflation (Londono et al., 2023). The COVID-19 pandemic severely disrupted information channels. Supply was limited due to movement restrictions, leading to mounting inflationary pressures. In response to the pandemic-induced economic slowdown, fiscal policies globally focused on stimulating demand. India also witnessed cost-push pressures due to bottlenecks in the supply chain and logistics. Increases in energy prices, metal prices and costs of logistics added to the input cost pressures of firms. The inflationary situation was further exacerbated in 2022 by Russia's invasion of Ukraine, which increased oil and commodity prices. This study analyses whether the COVID-19 pandemic and the subsequent geopolitical crisis aggravated the impact of inflation uncertainty on inflation expectations.

Inflation uncertainty reflects the variability in predicting inflation rates. High uncertainty about inflation may impact inflation expectations. Firms base their production and price-setting decisions on expected inflation (Bryan et al., 2015; Coibion et al., 2020). Heightened inflation uncertainty can impact investment (Ha and So, 2024). Since inflation expectations have implications for the actual price levels, inflation expectations of firms have to be anchored well by the central bank. Figure 1 shows a decline in inflation uncertainty among firms post-pandemic. An RBI study finds that during the 2021-23 period, India was characterised by high inflation and low volatility. This suggests that while inflation was high, the associated uncertainty may have decreased.

The relationship between inflation uncertainty and inflation has been examined in the literature, primarily from the household side (Zhao, 2022). The inflation uncertainty of firms has not been analysed adequately due to a dearth of surveys on firm inflation expectations. Existing empirical research on firm inflation expectations focuses on firm-level

Figure 1: Inflation uncertainty



characteristics to understand the micro-level drivers of inflation expectations (Boneva et al., 2016; Coibion et al., 2018). Here, we attempt to understand if inflation uncertainty influences inflation expectations from the firms' side. By incorporating pre and post-crisis analyses, we are able to understand how large-scale economic uncertainties, such as the COVID-19 pandemic and the Russia-Ukraine war, influence the dynamics between inflation uncertainty and expectations. We categorize firms as high and low-inflation uncertainty firms based on the estimated subjective uncertainty.

Our study finds that firms with high inflation uncertainty tend to have higher inflation expectations compared to those with low inflation uncertainty. The COVID-19 pandemic exacerbated the effect of high uncertainty on these expectations. The Russia-Ukraine war period however has lower inflation expectations. This is an interesting result and is indicative of the easing input cost pressures in the post-war period due to the benefit of geo-political developments between India and Russia. Further, we observe disagreement between the inflation expectations across firms, highlighting variability across firms. This heterogeneity may be influenced by firm characteristics and their responses to news or information. In addition to examining the link between inflation uncertainty and inflation

expectations, this study analyses the influence of firms' beliefs about their performance on their inflation expectations. Understanding this relationship sheds light on how a firm's perception of its current performance perceptions shapes its inflation expectations.

The paper is structured as follows: Section 2 reviews relevant literature. Section 3 details the survey questions and methodology used to estimate inflation expectations. Section 4 outlines the model specifications for dynamics between inflation expectations and inflation uncertainty. The results of this analysis are discussed in section 5. The analysis of firm beliefs and expectations is presented and discussed in Section 6, followed by concluding remarks in the final section.

2. Related literature

Information frictions can impact the transmission of monetary policy. The noisy information model (Woodford, 2001) assumes that agents form expectations based on private signals that are noisy. Mankiw and Reis (2002) introduce the sticky information model which suggests that economic agents may pay limited attention to processing information. The prices may, hence, be sticky, and pricing decisions may face delays. Sims (2003) suggest that agents use select information to make their decisions due to their limited capacity to process it. They may not always be attentive to the happenings in the economy, which can cause information friction. This concept is relevant to the signalling channel of monetary policy. Anchoring inflation expectations by the central bank requires that agents pay attention to the communication related to policy actions and accordingly make decisions.

When future inflation is unpredictable, there is higher uncertainty regarding inflation levels in the economy. Inflation uncertainty is critical to the formation of inflation expectations since it influences the agent's perception of the inflationary situation. The literature has examined the relationship between inflation and inflation uncertainty. Holland (1995) finds a negative association between inflation and inflation uncertainty. However, Grier and Perry (2000) and Berument et al. (2009) find a positive relationship

between inflation uncertainty and inflation. Similarly, Gülşen and Kara (2020) also find that inflation uncertainty is positively and significantly associated with inflation. The changes in inflation uncertainty can reflect the credibility of monetary policy. Hou (2020) attempts to understand if the relationship between inflation and inflation uncertainty has changed over a period of time. They find that there is a substantial change in the relationship as time progresses. Our study moves beyond this literature as we examine the relationship between inflation uncertainty and inflation expectations before and after periods of crises. Inflation uncertainty influences the perception of inflation and affects inflation expectations. This, in turn, influences the decision-making of firms and impacts the general price level

The emerging literature on inflation expectations of firms focuses largely on firm-level determinants of inflation and inattention. For example, Richards and Verstraete (2016) find that inflation expectations of firms are significantly determined by forward-looking information gathered at the firm level. They model inflation expectations using firm-level data for Canadian firms. They find that firms that report shortages in labour or pressure on production capacity generally expect higher levels of inflation. Coibion et al. (2020) analyse the inflation expectations of Italian firms. The firms are treated with information about recent inflation. The treatment helps bring about exogenous variation in inflation expectations. The inflation expectations of firms influence their economic decisions. For instance, firms with higher inflation expectations reduce employment and capital more than firms that have relatively lower levels of inflation expectations. They also increase prices to a higher extent. The observable characteristics of firms also play an important role in influencing their inflation expectations. Results from Frache and Lluberas (2019) are in line with the rational inattention model wherein inflation expectations of smaller firms are not as accurate as those of larger firms. Further, firms that adjust wages are more accurate in their inflation expectations when compared to firms that don't adjust wages. The authors study firms in Uruguay and find information frictions in the process of formation of inflation expectations. Afrouzi (2023) developed a general equilibrium model where they account for rational inattention and oligopolistic competition. They find that

the number of competitors in an industry plays an important role in the formation of firms' expectations.

A firm's perception of its current performance impacts its inflation expectations. Our study, like Bryan et al. (2015), uses unit costs as a measure of inflation expectations. The performance of the firm impacts its cost structure and, thereby, decision-making. Frache and Lluberas (2019) study the expectations of companies in the Euro area. They note that companies rely on information that is most relevant to their business. They do not necessarily follow a rational or adaptive expectations model. Firms seem to rely on both backward and forward-looking elements to form expectations. Born et al. (2022) study German and Italian firms and find that actual expectations do not follow the Full Information Rational Expectations (FIRE) hypothesis. FIRE expectations adjust immediately to new information, but the authors find that the firms do not adhere to this. The authors find that firms overreact to news about firm-level developments. Zhang et al. (2022) studies inflation expectations of firms from surveys. The study tests expectations models such as adaptive expectations, rational expectations, VAR and heterogeneous static expectation formation models. Through the empirical analysis, they find that firms are not perfectly rational when they form their expectations.

The studies Bryan et al. (2015) and Drakos et al. (2020) focus on the impact of inflation uncertainty accuracy of inflation expectations. Bryan et al. (2015) use the survey data for inflation expectations of firms in the U.S. Their results suggest that the accuracy of firm inflation expectations is negatively associated with the uncertainty of firms about future inflation. Drakos et al. (2020) find that when the macroeconomic environment is more uncertain, the survey respondents forecast inflation more accurately. They attribute this to the high cost of inattention. Inflation expectations, according to them, are adaptive.

We contribute to two broad strands of literature - inflation uncertainty and firm inflation expectations. Firstly, we attempt to understand how inflation uncertainty affects inflation expectations. Our analysis is unique as we focus on the periods before and after the COVID-19 and Russia-Ukraine war crises. Next, we leverage the BIES firm-level data on firm expectations and analyse if a firm's beliefs about its own performance influence

its inflation expectations. This presents a unique angle to firm beliefs and perceptions.

3. Data

We use the firm level data from IIMA's Business Inflation Expectations survey. The survey covers a panel of firms from the period 2017-2022. The firms are predominantly from the manufacturing sector. The survey asks the respondents to assign probabilities to their forecasts of inflation. Further, it asks respondents about their perception of current sales and profit margins when compared to "normal" times. They are also asked to indicate their perception of current costs in comparison to the previous year's costs. The survey mentions that the respondents answer in terms of the main or most important product in terms of sales. "Normal" refers to the average level for the corresponding preceding three years after excluding the COVID-19 period. The question regarding sales is considered the "Sales expectations", and the question regarding profit margin is considered "Profit expectations".

3.1. Survey questions:

1. How do your current profit margins compare with "normal" times?
 - Much less than normal
 - Somewhat less than normal
 - About normal
 - Somewhat greater than normal
 - Much greater than normal

2. How do your current sales levels compare with sales levels during what you consider to be "normal" times?

- Much less than normal
- Somewhat less than normal
- About normal
- Somewhat greater than normal
- Much greater than normal

3. Looking back, how do your current costs per unit compare with this time last year?

- Down ($< -1\%$)
- About unchanged (-1% to 1%)
- Up somewhat (1.1% to 3%)
- Up moderately (3.1% to 6%)
- Up significantly (6.1% to 10%)
- Up very significantly ($> 10\%$)

4. Projecting ahead, to the best of your ability, please assign a percent likelihood (probability) to the following changes to costs per unit\$ over the next 12 months.

- Unit costs down ($< -1\%$)
- Unit costs about unchanged (-1% to 1%)
- Unit costs up somewhat (1.1% to 3%)
- Unit costs up moderately (3.1% to 6%)
- Unit costs up significantly (6.1% to 10%)
- Unit costs up very significantly ($> 10\%$)

3.2. *Inflation expectations*

The one-year ahead inflation expectation for a firm is computed as the weighted average of the percentage probabilities assigned to each of the responses (i-vi) by the respondent for the following question.

$$\pi_{i,t}^e = (-1.5 \times i) + (0 \times ii) + (2 \times iii) + (4.5 \times iv) + (8 \times v) + (10.5 \times vi)$$

In this equation, $\pi_{i,t}^e$ represents one year ahead of inflation expectations of the i^{th} firm. The variables i, ii, iii, iv, v and vi represent the percentages of probabilities assigned to each of the response options.

4. Dynamics between Inflation uncertainty and Inflation expectations

In this section, we focus on the relationship between inflation uncertainty and inflation expectations. There are two categories of firms - high and low inflation uncertainty. The objective of the analysis is to understand the relative difference between the impact of an increase in inflation uncertainty of high inflation uncertainty firms vis-a-vis low inflation uncertainty firms.

4.1. *Estimation of Inflation Uncertainty*

Inflation uncertainty is computed as the standard deviation derived from the probability distribution of the inflation expectations of the firms. The intervals are assumed to be closed for the computation of standard deviation. We follow Yotzov et al. (2023) and use the following measure for the computation of inflation uncertainty:

$$\pi_{i,t}^{SD} = \sqrt{\frac{\sum_{j=1}^6 p_{i,t,j} (\pi_{i,t,j}^e - \pi_{i,t}^e)^2}{100}}$$

where $\pi_{i,t,j}^e$ is the expected inflation for a firm i , in month t and for scenario j . The probability percentage associated is denoted as $p_{i,t,j}$.

4.2. High and Low inflation uncertainty firms

We use the standard deviation of probabilistic forecasts of firms to estimate the inflation uncertainty (Sill, 2012; Yotzov et al., 2023). A firm is categorized into a high inflation uncertainty bucket if its inflation uncertainty is greater than the mean inflation uncertainty. Similarly, it is considered a low inflation uncertainty firm if its inflation uncertainty is lower than the mean value. For robustness, we also categorise firms into high and low inflation uncertainty buckets based on the median (50th percentile) values.

4.3. Methodology

4.3.1. Matching Groups

The pandemic may have impacted locations and industries differently. Different industries in different states may experience varying cost structures and input price dynamics, affecting firms' inflation expectations. Policies implemented by states and for industries post covid may differ. The proportion of firms belonging to a location and industry in the pre and post covid period sample of firms can vary. To ensure there is no bias, we have done a matching for location and industry.

The treatment for this analysis is the beginning of the COVID-19 pandemic. COVID-19-related movement restrictions in India were imposed from the end of March 2020 onwards. Hence, firms belonging to the sample after March 2020 are considered part of the treatment group. We make use of the coarsened exact matching (CEM) method to reduce imbalances between the control and treatment groups (Iacus et al., 2012). The state and industry of firms are the covariates for the matching analysis. The observations are pruned based on the covariates. CEM coarsens observations using bins. The treatment and control groups may not be identical before treatment. Matching helps with a better balance between the treatment and control groups. The matched groups are comparable

with respect to the observed covariates. Through the exact matching method, we ensure that the number of observations is equal in the control and treatment groups. The balancing tables for the covariates are provided in the Appendix. To check for the robustness of matching, I have also used propensity score matching (PSM) to match observations in the treatment and control groups. I have used PSM with replacement and PSM without replacement (nearest neighbour). The regression results for observations based on PSM matching are presented in the Appendix.

4.3.2. Model Specifications

We use the matched sample for the panel regression estimating the impact of inflation uncertainty of firms on their inflation expectations. The following specification is used to estimate the relationship.

$$\pi_{it}^e = \alpha_0 + \beta_1 \pi_{it}^u \times COVID_i + \lambda_2 t + \gamma_1 X_{it} + \lambda_3 Industry_j \times year + \epsilon_{it} \quad (1)$$

Model 3.1 is a fixed effects model to account for the time invariant factors. X_{it} represents the firm level controls. The variable π^u represents inflation uncertainty, and the variable π^e is the inflation expectations of the firm i at time period t . The industry-year effect is considered to account for any industry-specific regulatory changes or economic conditions which may impact the performance of firms within a particular industry. $COVID_i$ represents a dummy which assumes the value 1 for observations after March 2020 and the value 0 for the period before.

$$\pi_{it}^e = \alpha_0 + \beta_1 \pi_{it}^u \times war_i + \lambda_2 t + \gamma_1 X_{it} + \lambda_3 Industry_j \times year + \epsilon_{it} \quad (2)$$

Model 3.2 is also a fixed effects regression. The estimation is done for the subsample period from April 2020 to December 2022. The focus is to understand the role of the Russia-Ukraine war on the relationship between inflation uncertainty and inflation expectations. war represents a dummy which assumes the value 1 for observations after

February 2022.

5. Results

Table I presents the results from the regression analysis. In column one, we only analyse the impact of inflation uncertainty on inflation expectations. We find that an increase in inflation uncertainty of firms categorised as high inflation uncertainty increases inflation expectations by 0.63 per cent more than firms categorised into the low inflation uncertainty bucket. In the second column, we present results with the additional element of COVID-19 and the interaction of high inflation uncertainty with COVID-19. We find that the impact of inflation uncertainty on the inflation expectations of firms in the post-COVID-19 period is 1.38 per cent higher than in the pre-COVID-19 period. Further, the marginal effect of the interaction between COVID-19 and high inflation uncertainty is 1.98 per cent. Clearly, COVID-19 has aggravated the impact of high inflation uncertainty. In Column (3), we check for the robustness of the results by incorporating time-fixed effects. In the next column, we also cluster the standard errors at the firm level. Column (5) represents results with the added element of Industry time effects. The results are robust to all specifications.

High inflation uncertainty firms have higher inflation expectations when compared to low inflation uncertainty firms. The difference is significant across specifications. Further, the interaction term of the COVID-19 dummy and high inflation uncertainty firms is significant across specifications, implying that COVID-19 has increased the marginal effect of high inflation uncertainty firms on inflation expectations. As a robustness check, we also categorise firms into high and low-inflation uncertainty firms based on their 50th percentile values i.e. the median. The results are robust to the alternate categorisation of firms as high and low inflation uncertainty. The results for this are presented in Table II. The results for the categorisation with the median value are also robust to all specifications.

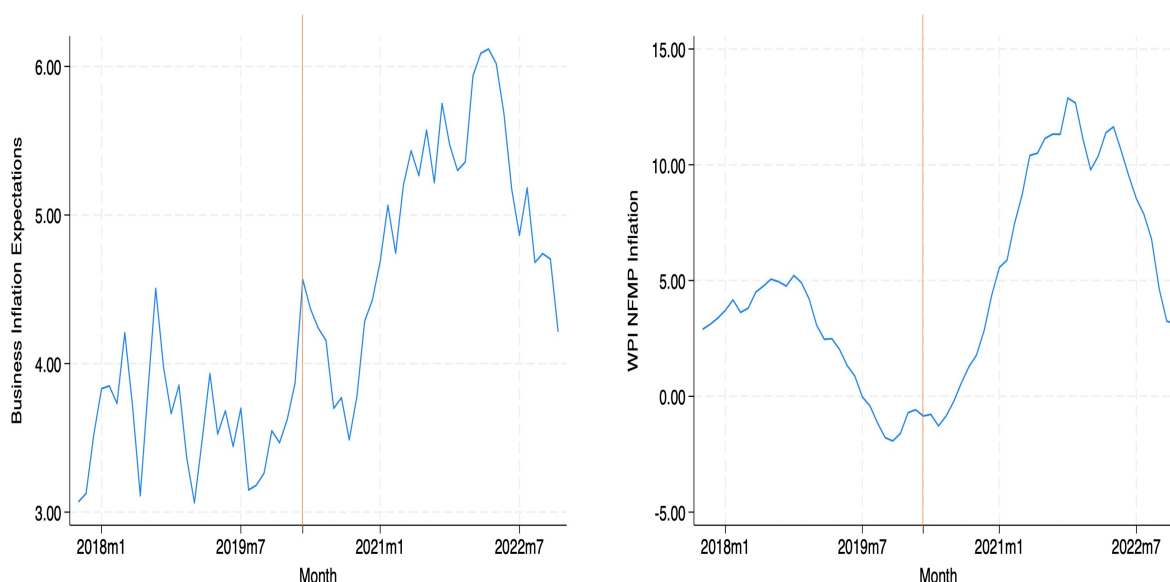
As the next step, we attempt to understand if the increased cost pressures during

COVID-19 have contributed to the increase in inflation expectations. We see from Figure 2 that, after a dip, inflation expectations of firms considerably increased post the covid. The right panel of the diagram depicts the Wholesale Price inflation Non-food Manufacturing Product (WPI NFMP). This component of inflation depicts the underlying input cost pressures. WPI NFMP inflation also witnessed an increase in the post-covid period.

(Insert Table I here)

(Insert Table II here)

Figure 2: COVID-19, Inflation and Inflation expectations

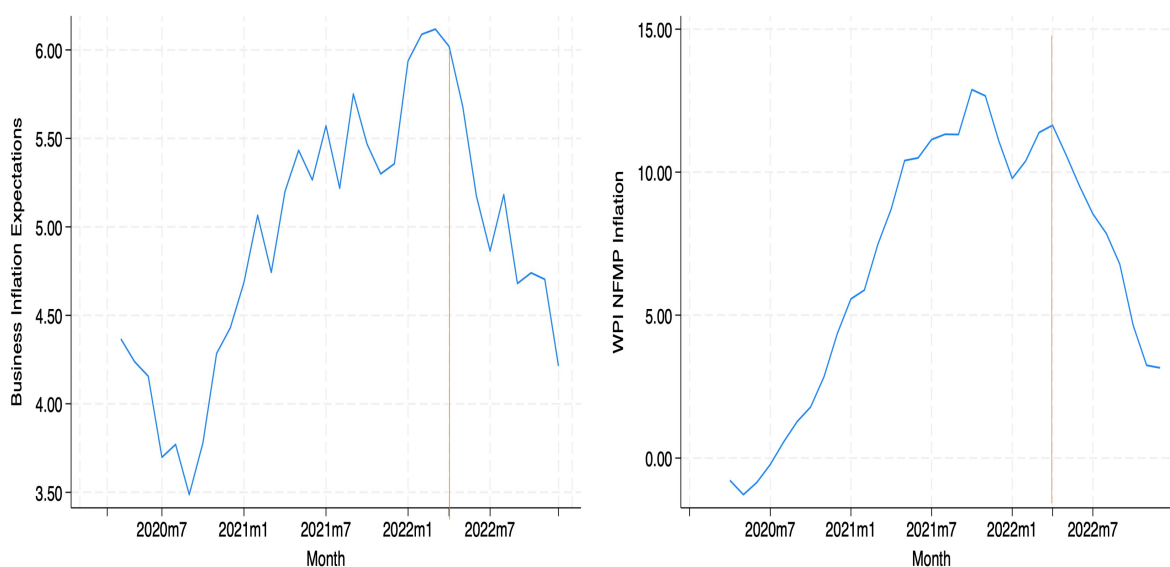


In addition to the pre and post-COVID analysis, we also do a sub-sample analysis for the period April 2020 to December 2022 to understand the impact of the Russia-Ukraine war on the dynamics between inflation uncertainty and inflation expectations. Table III presents the results of the sub-sample analysis before and after the Russia-Ukraine war. Measure 1 of inflation uncertainty categorises firms as high and low inflation uncertainty based on mean inflation uncertainty (Column 1 of Table III). The post-war period has witnessed lower inflation expectations. The period after the invasion of Russia has 1.02 per cent lower inflation expectations when compared to the pre-war period. In the pre-war period, inflation uncertainty had an amplifying impact on inflation expectations. The

effect of high uncertainty on inflation expectations continues to remain higher than low inflation uncertainty firms. From the coefficient for war, we see that the war period has contributed to lowering inflation expectations. Measure 2 of inflation uncertainty categorises firms as high and low inflation uncertainty based on median inflation uncertainty (Column 2 of Table III). The results are robust to this categorisation of high and low uncertainty firms.

(Insert Table III here)

Figure 3: War, Inflation and Inflation expectations



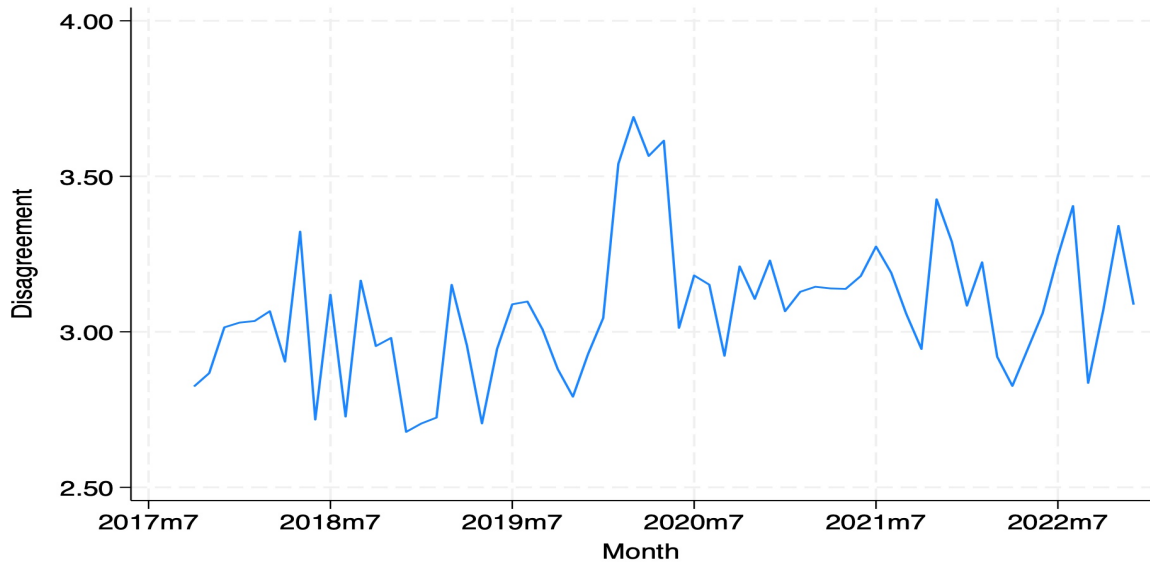
This is an interesting result since the war led to heightened macroeconomic uncertainty around the world. The war and subsequent geo-political sanctions on Russia led to an increase in global crude oil prices. As a consequence, most of the countries, particularly the developed ones, witnessed an inflation surge. India was, however, able to circumvent the effect of crude oil price increase on account of favourable trade terms with Russia. Also, post-COVID, China faced a significant slowdown in economic activity and went into deflation. Prices of basic metals and alloys, which India usually imports from China, collapsed. On both counts, India benefited. This is reflected in the reduced cost pressures with a decline in WPI NFMP inflation in Figure 3.

5.1. Disagreement in Inflation Expectations

In this section, we briefly discuss the disagreement in inflation expectations across firms. Firms may form beliefs about inflation based on the industry-specific conditions that they are exposed to. There could, hence, be divergence among firms regarding their beliefs (Andrade et al., 2022). When there is high disagreement amongst economic agents, the monetary policy transmission may not achieve the desired price stability. The signalling channel of monetary policy becomes less effective in anchoring inflation expectations (Barbera et al., 2023). Montes and Luna (2018) and Ciro and Zapata (2019) measure disagreement as the range i.e. the difference between the maximum and minimum values of expected inflation. The disagreement can be estimated as the standard deviation (Ehling et al., 2018; Falck et al., 2021) or interquartile range of inflation expectations (Mankiw et al., 2003; Capistrán and Timmermann, 2009; Siklos, 2013; Falck et al., 2021) across the cross-section of firms. We use standard deviation and interquartile range across firms to estimate disagreement in expected inflation

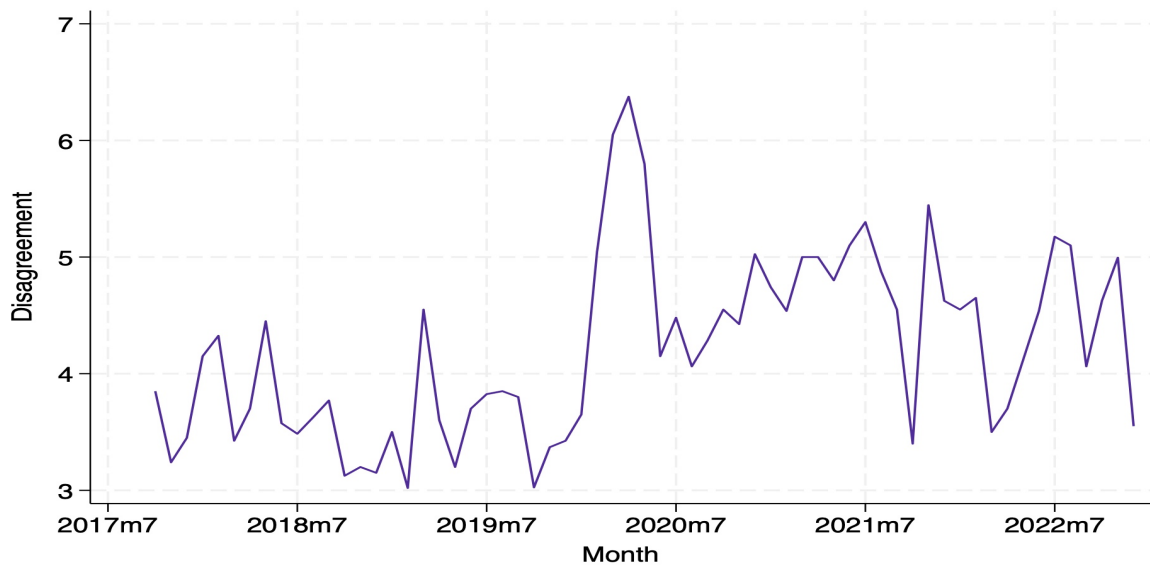
Figure 4 presents the disagreement, estimated using standard deviation, across firms. We see from the figure that the disagreement was highest during 2020 when there was an increase in uncertainty due to the COVID-19 pandemic. As in the case of individual firm level uncertainty, the disagreement also reduced over the period of time. This may be due to the anticipated consequences of global supply shocks on the inflationary trends in India. We observe a similar pattern for disagreement when we estimate it as the interquartile range of inflation expectations (Figure 5) across the sample of firms. The disagreement amongst firms can depend on various factors such as the credibility of the central bank, the industry-specific trends or the firm-specific characteristics. High disagreement can lead to sub-optimal investment and spending decisions. Transparency and credibility of central bank communication can help reduce disagreement amongst firms (Ciro and Zapata, 2019; Falck et al., 2021).

Figure 4: Disagreement in Inflation Expectations



Disagreement is estimated as the standard deviation of inflation expectations across the cross-section of firms

Figure 5: Disagreement in Inflation Expectations (Interquartile Range)



Disagreement is estimated as the interquartile range of inflation expectations across the cross-section of firms

6. Firm beliefs and inflation expectations

The price-setting behaviour of firms is dependent on various factors such as market power, competitor’s pricing and input costs (Afrouzi, 2023). The inflation expectations in context represent the unit cost expectations of firms. We attempt to understand if the firm’s cost expectations are impacted by their perception of future sales and profit margins. If the respondents expect sales and profit margins to be greater than in normal times, they are optimistic about their performance. A value of '0' indicates that the firms are not optimistic about their current profit margin or sales level. The value of '1' indicates that firms are optimistic about their profit margin or sales level (Table IV)

(Insert Table IV here)

We employ the following specification to estimate the empirical model. The focus of the baseline estimation is to understand how the sales and profit expectations of firms impact their inflation expectations.

$$\pi^e = \alpha_0 + \beta_1 SalesExp_{it} \times ProfitExp_{it} + \lambda_2 t + \lambda_3 Industry \times Year + \epsilon_{it} \quad (3)$$

where the variables $SalesExp_{it}$ and $ProfitExp_{it}$ assume the value of 1 if a firm’s response is categorised as optimistic for sales level and profit margins, respectively. We include the interaction between the sales and profit optimism terms. This interaction term will help assess the additional effect that the sales level has on the profit margins and vice-versa. We include industry-year fixed effects and time-fixed effects. From the results presented in Table V, we see that an increase in the sales expectations of firms increases their inflation expectations. Firms may thereby anticipate an increase the production costs due to a perceived increase in the sales volume. This relationship, however, can be dependent on many factors, such as the market power of the firm or the cost elasticity of the product.

(Insert Table V here)

7. Concluding Remarks

In this paper, we focus on the dynamics between firm inflation uncertainty, inflation expectations and beliefs about their performance. We analyze how firms' inflation uncertainty influences their inflation expectations in India. We focus on the periods before and after the COVID-19 pandemic and the Russia-Ukraine war. We find that an increase in inflation uncertainty increases the inflation expectations of firms. This increase is accentuated by the COVID-19 pandemic. The Russia-Ukraine war period, on the other hand, has witnessed lower inflation expectations.

In addition to uncertainty, we explore disagreement in inflation expectations across firms. We observe that the disagreement has increased in the post-COVID-19 period. This is likely due to the heightened uncertainty about inflation levels and overall growth prospects. Further, our analysis of firm beliefs reveals that firms that are optimistic about their profit margins tend to have lower inflation expectations compared to those with less optimistic views about profit margins. Firms that expect an increase in profit margins may anticipate lower costs.

These results underscore the importance of central bank communication during periods of economic crisis. Enhanced transparency and clarity in central bank communication can help mitigate inflation uncertainty and anchor inflation expectations. Firm performance across industries can provide valuable insights into expected inflation, providing policymakers with signals about future inflation trajectories.

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Table I: Pre and Post covid - Inflation uncertainty

	(1)	(2)	(3)	(4)	(5)					
	BIE	BIE	BIE	BIE	BIE					
High inflation uncertainty1	0.6343***	(0.000)	0.7459***	(0.000)	0.7660***	(0.000)	0.7660***	(0.000)	0.7715***	(0.000)
Covid			1.3819***	(0.000)	0.6325***	(0.001)	0.6325**	(0.014)	0.5033*	(0.083)
Covid \times High inflation uncertainty1			1.9852***	(0.000)	1.2473***	(0.000)	1.2473***	(0.000)	1.0273***	(0.001)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Time effects	No	No	No	No	No	No	No	No	Yes	Yes
Clustering	No	No	No	No	No	No	Yes	Yes	Yes	Yes
No. of observations	6198	6198	6198	6198	6198	6198	6198	6198	6198	6198
R^2	0.011	0.064	0.076	0.076	0.076	0.076	0.076	0.076	0.144	0.144

p-values in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The average uncertainty value for the time period is used as the cutoff to categorise firms as high or low inflation uncertainty firms. The frequency of analysis is at a monthly level.

Table II: Pre and Post covid - Inflation uncertainty

	(1)	(2)	(3)	(4)	(5)					
	BIE	BIE	BIE	BIE	BIE					
High inflation uncertainty ²	0.5650***	(0.000)	0.7593***	(0.000)	0.7792***	(0.000)	0.7792***	(0.000)	0.7989***	(0.000)
Covid			1.4302***	(0.000)	0.6787***	(0.001)	0.6787***	(0.008)	0.5390*	(0.062)
Covid × High inflation uncertainty ²			1.9823***	(0.000)	1.2450***	(0.000)	1.2450***	(0.000)	1.0470***	(0.001)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Time effects	No	No	No	No	No	No	No	No	Yes	Yes
Clustering	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	6198	6198	6198	6198	6198	6198	6198	6198	6198	6198
R^2	0.008	0.063	0.076	0.076	0.076	0.076	0.076	0.076	0.144	0.144

p-values in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The average uncertainty value for the time period is used as the cutoff to categorise firms as high or low inflation uncertainty firms. The frequency of analysis is at a monthly level.

Table III: Pre and Post war (Sub-sample analysis)

	(1)	(2)
	BIE	BIE
<i>Inflation Uncertainty (Measure 1)</i>		
War	-1.022***	(0.005)
High inflation uncertainty1	0.3952*	(0.066)
High inflation uncertainty1 \times War	-0.3028	(0.398)
<i>Inflation Uncertainty (Measure 2)</i>		
War		-1.106*** (0.002)
High inflation uncertainty2		0.3793* (0.085)
High inflation uncertainty2 \times War		-0.2204 (0.642)
Firm fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
Industry Time effects	Yes	Yes
Clustering	Yes	Yes
No. of observations	3099	3,099
R^2	0.097	0.099

p-values in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The average uncertainty value for the time period is used as the cutoff to categorise firms as high or low inflation uncertainty firms. The frequency of analysis is at a monthly level.

Table IV: Profit and Sales expectations: Number of firms

Variable	Number of Firms		
	0	1	Total
Profit expectations	6849	2610	9459
Sales expectations	6132	3327	9459

This table presents an overview of the number of firms from the sample that assume the values '0' or '1' for the dummy variables 'Profit expectations' and 'Sales expectations'. A value of '0' indicates that the firms are not optimistic about their current profit margin or sales level. The value of '1' indicates that firms are optimistic about their profit margin or sales level. There are a total of 9459 firms in the sample.

Table V: Firm Beliefs and Inflation Expectations

	(1)	(2)	(3)
	BIE	BIE	BIE
Profit Expectations	-0.5939*** (0.001)	-0.5939*** (0.006)	-0.6012*** (0.005)
Sales Expectations	0.1428 (0.266)	0.1428 (0.397)	-0.0019 (0.990)
Profit Expectations \times Sales Expectations	-0.3428*** (0.005)	-0.3428** (0.012)	-0.4249*** (0.002)
Firm Fixed Effects	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes
Industry-Year Effects	No	No	Yes
Clustering	No	Yes	Yes
No. of observations	9459	9459	9459
R^2	0.053	0.053	0.115

p-values in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$



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