The asymmetric pass-through of input prices to firms' expectations and decisions*

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March 14, 2025

Abstract

This paper studies the pass-through of input price shocks to firms' expectations and pricing decisions. We rely on firm-level data from the Bank of Italy's Survey on Inflation and Growth Expectations (SIGE) and identify exogenous shocks through forecast errors in firms' input price expectations. We document a strong and asymmetric pass-through: positive shocks significantly raise firms' price expectations, realised prices, and short-term inflation expectations, while negative shocks have little effect. The extent of this pass-through varies with macroeconomic conditions and firm characteristics, with firms relying more on aggregate inflation signals in high-inflation environments. Finally, we show that central bank communication, particularly providing firms with information on current inflation, dampens the pass-through to inflation expectations, underscoring the role of transparency in anchoring expectations and stabilizing inflation dynamics.

Keywords: Pass-through, cost shocks, heterogeneous firm expectations, survey data, inflation.

JEL classification: D22, D84, E31, E50

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* We would like to thank Andrea Foschi, Fabio Parlapiano, Sara Solari, Alex Tagliabracci and participants to the Bank of Italy's Monetary Economics reading group

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1 Introduction

The pass-through of input prices to firms' expectations, and hence to their spending and pricing plans, is of critical importance for central banks. This is particularly so at times of growing inflationary pressures and supply chain disruptions, such as those experienced globally in recent years. More specifically, understanding how firms translate the input cost changes they face into expectations about their own prices and the broader economy is essential for designing effective monetary policy and communication strategies. In this respect, key issues include the magnitude of the pass-through, whether firms respond symmetrically to positive and negative input price shocks, and whether the transmission remains stable over time or rather varies with macroeconomic conditions. Additionally, firms' characteristics may influence the extent to which they adjust their expectations in response to input cost changes, raising the question of whether central banks can influence this pass-through through communication or targeted policy interventions. Despite its importance, empirical evidence on these issues remains limited, largely due to data constraints.

In this paper, we investigate the transmission of input price shocks to firms' expectations and pricing decisions. Leveraging detailed firm-level data from the Bank of Italy's Survey on Inflation and Growth Expectations (SIGE), we exploit forecast errors in firms' own input price expectations—measured as the difference between realised and expected input price growth—to identify exogenous input cost shocks. This approach enables us to isolate the causal effect of input price changes on firms' expectations and behavior, aligning with methodologies widely adopted in recent literature (Parlapiano, 2024, Bunn et al., 2025, Alati et al., 2024, Barrero, 2022, Bachmann et al., 2021).

Our findings point to a strong pass-through from input prices to firms' own price expectations and realisations. We document that a surprise in input price growth that increases expected input price growth by 1 percentage point leads to a 0.3 percentage point rise in firms' own expected price growth and a 0.2 percentage point increase in realised price growth one year later. Beyond firm-specific expectations, we document significant effects on aggregate

inflation expectations: firms revise upwards their 6- and 12-month-ahead inflation expectations in response to input price shocks, even though longer-term expectations (24 months and beyond) remain well-anchored. Importantly, we also find that the pass-through is highly asymmetric, with positive input price shocks driving expectation revisions, while negative shocks having little to no impact. This result aligns with existing evidence on asymmetric price adjustments (Peltzman, 2000, Buckle and Carlson, 2000, Benzarti et al., 2020).

We then explore heterogeneity in the pass-through, assessing the role of macroeconomic conditions and firm characteristics. At times of high inflation, firms appear to rely less on their individual business conditions and more on aggregate inflation signals when forming expectations, consistent with models of rational inattention. Furthermore, the strength of the pass-through varies systematically with firm characteristics such as size, sector, uncertainty, past price volatility, as well as financial constraints.

Finally, we provide policy-relevant evidence on the role of central bank communication. We find that providing firms with information about the current level of inflation significantly dampens the pass-through of input price shocks to inflation expectations. This suggests that effective monetary policy communication helps keeping inflation expectations anchored, particularly in high-inflation environments, and underscores the role of central banks in stabilising economic sentiment.

The strong and asymmetric pass-through of input price shocks to firms' expectations suggests that inflationary pressures can become self-reinforcing, as firms respond more aggressively to cost increases than to cost declines. This asymmetry implies that supply-side shocks can have prolonged effects on inflation dynamics, complicating monetary policy responses. Moreover, the heterogeneity in pass-through across macroeconomic conditions and firm characteristics highlights the need for sharp communication strategies. Notably, our evidence that central bank communication—such as providing firms with information on current inflation—can help anchor expectations suggests that transparency and effective messaging play a crucial role in mitigating inflationary pressures. These results underscore

the importance of complementing traditional monetary policy tools with clear and proactive communication strategies, especially in high-inflation environments.

Related literature. This paper contributes to two key strands of research.

First, our findings complement the empirical literature on the pass-through of input prices. Existing studies, both at the micro and macro levels, document incomplete pass-through from input to output prices.[1] Recently, Gödl-Hanisch and Menkhoff (2024) use survey data from Germany to show that pass-through dynamics are gradual, largely due to infrequent price adjustments and the high costs of deviating from competitors' pricing strategies. Their findings distinguish between permanent aggregate shocks and idiosyncratic firm-level shocks. Using the same survey data as this paper, Riggi and Tagliabracci (2022) and Parlapiano (2024) document incomplete pass-through, showing that firms absorb a significant portion of cost increases. We extend this literature by not only examining the pass-through to firms' own price growth but also evaluating its impact on expected inflation across different time horizons. Additionally, we assess whether the pass-through is symmetric for positive and negative input price shocks and how macroeconomic conditions and firm characteristics influence this transmission.

Second, we contribute to the literature on how firms form expectations. We provide evidence that firms extrapolate from their own business conditions when forming aggregate inflation expectations, consistent with findings in Boneva et al. (2020) and Andrade et al. (2022). We show that firms revise their expected inflation in response to input price shocks. Moreover, in line with the predictions of rational inattention models (e.g., Sims, 2003, Reis, 2006, Bartosz and Wiederholt, 2009, Afrouzi, 2016), which suggest that attention to macroeconomic information is endogenous to the economic environment, we find that this extrapolation weakens in periods of high inflation when firms focus more on aggregate shocks rather than firm-specific conditions.

[1] See, among others, Taylor (2000), Smets and Wouters (2003), Gopinath and Itskhoki (2010), Auer and Schoenle (2016), Garetto (2016), Amiti et al. (2019), Ganapati et al. (2020), Dedola et al. (2021), and Riggi and Tagliabracci (2022).

Furthermore, our evidence of asymmetric pass-through between positive and negative input price shocks challenges the predictions of standard New Keynesian models, such as the Calvo price-setting model and menu cost models, which assume symmetric price adjustments. Instead, our findings align with empirical research highlighting non-linear price responses to shocks. Peltzman (2000) examines item-level price changes in Dominick's supermarkets and finds that prices rise faster in response to positive demand shocks than they fall following negative demand shocks. Similarly, Buckle and Carlson (2000) use survey data from New Zealand firms to show greater responsiveness to positive than negative demand shocks. Benzarti et al. (2020) document that Finnish firms exhibit twice the price response to increases in value-added tax (VAT) compared to VAT reductions. Bunn et al. (2025), using large panel surveys of UK and US firms, show that price responses to demand shocks are convex at the firm level.

Finally, our findings on heterogeneous pass-through across firm characteristics underscore the role of financial constraints and precautionary pricing (Gilchrist et al., 2017), market power (Hensel et al., 2024), uncertainty, and price volatility (Gödl-Hanisch and Menkhoff, 2024). We further contribute to this literature by showing that providing firms with information about the current inflation rate strengthens the anchoring of their inflation expectations in the face of input price volatility, particularly during periods of high inflation.

The rest of the paper is organized as follows. Section 2 introduces the survey which we rely upon, as well as the dataset including firm-level characteristics. Section 3 presents our empirical results. In Section 4 we perform a battery of robustness checks. Section 5 concludes.

2 Data

2.1 Survey on Inflation and Growth Expectations

Data on firms' expectations are drawn from the Survey on Inflation and Growth Expectations (SIGE), which is ran at quarterly frequency by the Bank of Italy since 1999. The survey is designed to be nationally representative, stratifying the sample based on three key characteristics: sector of activity, size class (determined by the number of employees)[2], and geographical area (based on the firm's administrative headquarters). Each quarter, approximately 1,500 Italian firms are surveyed on both aggregate and business-specific variables.

The SIGE has been widely used in the academic literature[3]. The dataset's rich time-series and panel structure make it particularly well-suited for analyzing the pass-through of input prices to firms' expectations and decision-making processes.

In this paper, we primarily focus on the following questions, which pertain to firms' expectations regarding the expected and realised growth of their own input prices, the price growth of their output, and future inflation:

- *In the last 12 months, what has been the average change in your firm's prices of goods and services bought in Italy and abroad?*
- *In the next 12 months, what do you expect will be the average change in your firm's prices of goods and services bought in Italy and abroad?*
- *In the last 12 months, what has been the average change in your firm's prices?*
- *For the next 12 months, what do you expect will be the average change in your firm's prices?*
- *What do you think the consumer price inflation will be in Italy: In six months? In one year? In two years? On average between three and five years?*

[2]The survey is conducted only on firms with at least 50 employees.

[3]See, among others, Coibion et al. (2020), Bottone et al. (2021), Ropele et al. (2022), Bottone et al. (2022), Ropele et al. (2024a), Ropele and Tagliabracci (2024), and Ropele and Tagliabracci (2024).

Firms respond to the SIGE questions by reporting the approximate percentage variation.[4]

To single out unexpected changes in input prices experienced by firms, we use their input price forecast errors.[5] Forecast errors are defined as the difference between the realised price growth between $t-12$ and t, and what firms had expected in $t-12$ for the same period. The questions on input price growth were introduced at the end of 2016, hence relying on input price forecast errors effectively restricts the sample from 2017Q3 to 2024Q4. Throughout this period, the SIGE includes around 25,000 firm-level observations, with each firm participating in the survey for an average of 18 quarters.

Table 7 presents descriptive statistics for the main variables of interest. There is significant heterogeneity among firms in their aggregate and own price growth expectations and decisions during the period under consideration. For example, the average expected inflation across different forecast horizons remains close to the European Central Bank's 2% target but exhibits significant dispersion. The distribution's tails are particularly wide, with 12-month-ahead expected inflation ranging from 0.4% at the 10th percentile to 6% at the 90th percentile.

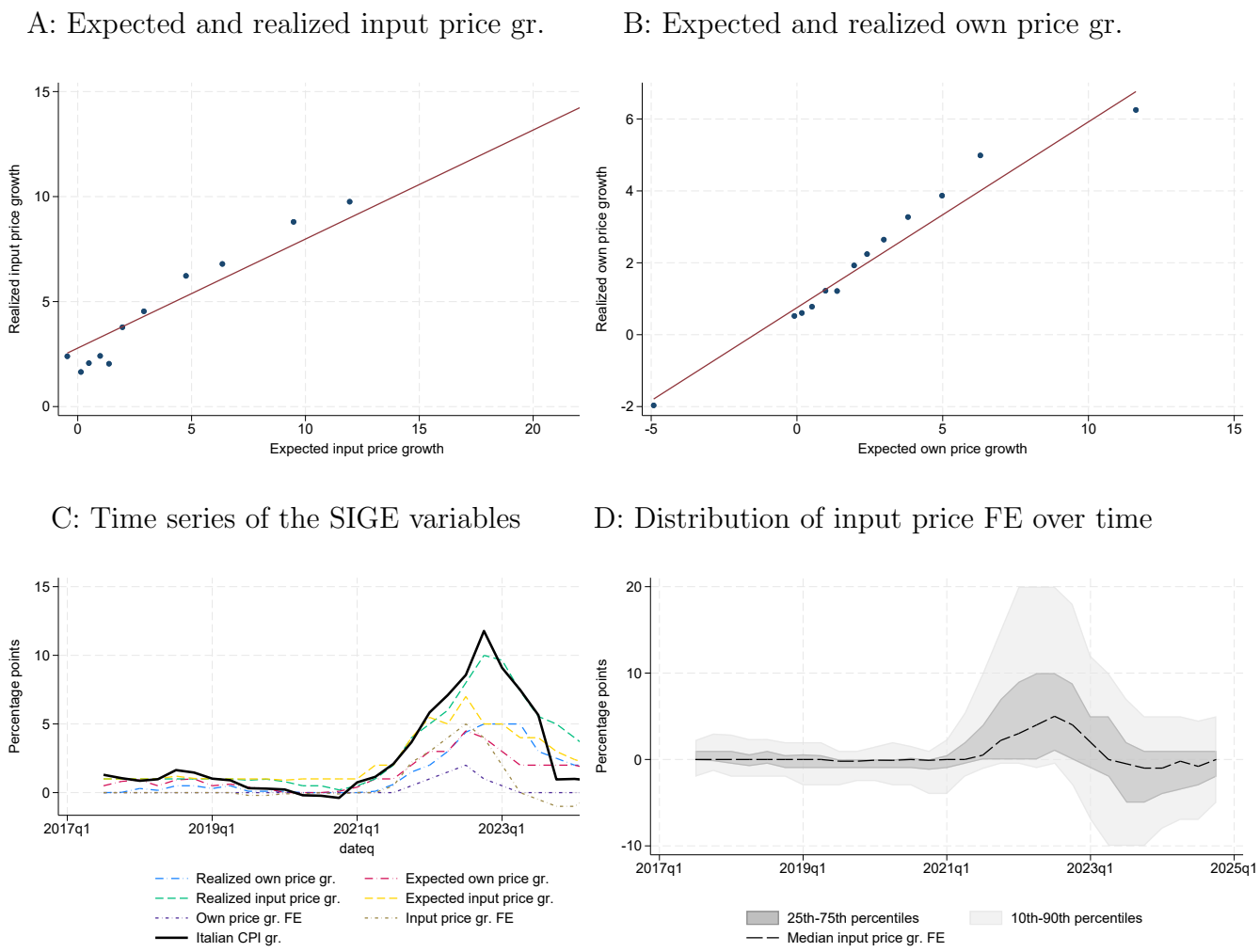
Panel A of Figure 1 compares the expected input price growth for the next 12 months (x-axis) with the realised input price growth that occurred over the same period (y-axis); panel B does the same for own price growth. Both variables display a strong positive correlation between the expected and realised values, confirming that, on average, firms are highly accurate at predicting the evolution of their own input and sales prices. This strengthens the validity of the survey data used in this analysis.

Panel C of Figure 1 shows the time series of the median values of the main variables used in the analysis, namely expected and realised input and output price growth. The figure also shows the forecast errors. The expected and realised price growth series closely follow each other, indicating that firms tend to report their true expectations. The expected and

[4]To limit the role played by outliers, the variables are trimmed at the 1st and 99th percentiles for each quarter. However, using raw data yields nearly identical results.

[5]A similar approach has been recently adopted by Bachmann et al. (2021), Barrero (2022), Alati et al. (2024), Parlapiano (2024), and Bunn et al. (2025).

Figure 1: The SIGE survey



Notes: Panels A and B of the figure plot the relationship between expected and realised input and output price growth. Panel C shows the time series of the main variables used in the analysis. Panel D presents the distribution over time of the input price forecast errors, defined as the difference between realised and expected input price growth. The data are sourced from the SIGE for the period 2017Q3–2024Q4.

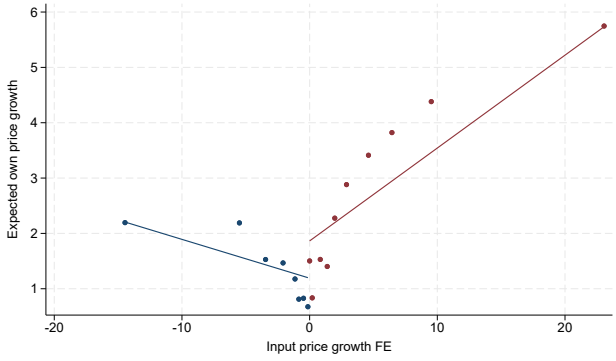
realised own price variables strongly correlate with the aggregate Italian Consumer Price Index, rising during the inflationary episode of 2022 and 2023, which further confirms the survey's high representativeness for the broader economy. Moreover, both input and output forecast errors increased during this period, suggesting that firms struggled to anticipate the future evolution of their own input and sales prices.

The time series of median input price forecast errors masks significant heterogeneity

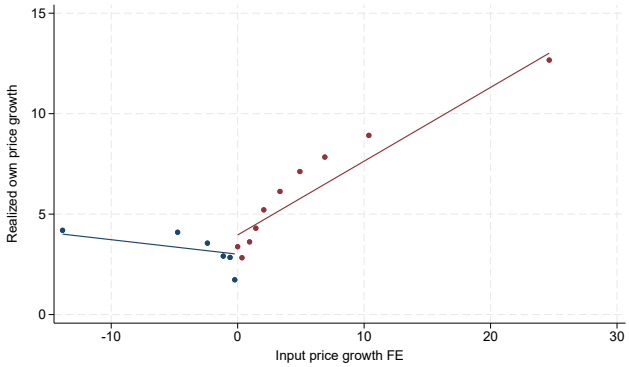
across firms. In Panel D of Figure 1, we plot different percentiles of the input price forecast errors distribution. In the low inflation phase, before 2022, the median forecast error was close to zero, but there were important variations in the tails, ranging from -3% to +3% at the 10th and 90th percentiles. During the inflationary episode, this interval expanded, reaching approximately -1% to +20%. As forecast errors are defined as the difference between realised and expected input price growth, positive values indicate that firms underestimated the increase in their own input prices relative to the actual prices they ultimately paid. As inflation returned to target, the median input price forecast errors converged back to zero, but the distribution remained quite wide in 2023 and 2024.

Figure 2: Input price FE vs expected and realized own price growth

A: Input price FE and expected price gr.



B: Input price FE and realized price gr.



Notes: Panels A and B of the figure plot the relationship between input price forecast errors and the expected and realised price growth. The input price forecast errors are defined as the difference between realised and expected input price growth. The data are sourced from the SIGE for the period 2017Q3–2024Q4.

Figure 2 visually anticipates the empirical results that will be presented in the next section. Panel A shows the relationship in the raw data between input price forecast errors and expected own price growth. Panel B depicts the relationship with realised price growth. Input price growth forecast errors lead to an increase in both expected and realised price growth. The effect is highly asymmetric, with mainly positive forecast errors leading to revisions in expectations and subsequent adjustments in the prices adopted.

2.2 The Company Accounts Data Service

The Company Accounts Data Service (CADS) is a proprietary database owned by Cerved Group S.p.A., a leading information provider in Italy and one of the major credit rating agencies in Europe. CADS includes detailed information on the balance sheets and income statements of nearly all Italian limited liability companies since 1993. The data is drawn from official records at the Italian Registry of Companies and from financial statements filed with the Italian Chambers of Commerce. Companies are required to submit this information on a compulsory basis, and each company's financial statement is updated annually. From this dataset, we collect yearly balance sheet data on various assets and liability items, as well as income statement information, which we use to compute measures of markup, liquidity ratio, and SGAX ratio.

3 Empirical results

In this section, we present the main results of our empirical analysis. First, we examine the pass-through from input prices to firms' own expected and realized price growth, as well as inflation expectations across different horizons. Second, we document that the magnitude of the pass-through is highly asymmetric between positive and negative input price shocks, with the former primarily driving the results. Third, we assess whether the importance of input price shocks in shaping business-specific and aggregate expectations differs during periods of high and low inflation. Finally, we evaluate the heterogeneous effects across firms' characteristics.

To study the pass-through of input prices to firms' expectations and decisions, we estimate the following empirical specification:

$$E_t^i y_{t+j}^i = \alpha + \omega^i + \delta_t + \beta InputPriceFE_t + \theta X_t^i + \varepsilon_t^i, \tag{1}$$

Table 1: Input price FE and firms' price expectations and decisions

	(1) Expected input price gr.	(2) Expected own price gr.	(3) Realized own price gr.
Input price FE	1.000***	0.299***	0.187***
	(0.0423)	(0.0274)	(0.0401)
Constant	2.993***	1.682***	2.858***
	(0.280)	(0.200)	(0.333)
Observations	25255	25206	16066
R^2	0.559	0.439	0.444
Controls	YES	YES	YES

Standard errors in parentheses

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

Notes: The table reports regression results for expected input price growth, own price growth, and realised price growth, all regressed on input price forecast errors. The input price forecast errors are defined as the difference between realised and expected input price growth. Additional controls are included, as discussed in the main text (but not shown here). The analysis is based on data from the SIGE for the period 2017Q3–2024Q4. Standard errors are clustered at the firm level.

where y represents the expectations or decisions of firm i relative to the horizon $t+j$, such as inflation or own price growth. $InputPriceFE_t$ denotes the input price forecast errors, defined as the difference between realised input prices from $t-12$ to t and the firm's expectations at $t-12$ for the same period. ω^i represents firm fixed effects, and δ_t captures time fixed effects. X_t^i is the matrix of controls, which includes size, sector, and area controls. Standard errors are clustered at the firm level.

3.1 Pass-through to firms' expectations and decisions

We begin by evaluating the overall pass-through of input prices to firms' own expected and realised price growth. The results are reported in Columns 1-3 of Table 1. To facilitate the interpretation of the magnitudes, the input price forecast errors are standardised to induce a revision of 1 percent in the 12-month-ahead expected input price growth, as shown in Column 1.

We document a strong pass-through of input price prices to firms' own prices. In response to a shock that increases expected input price growth by 1 percentage point, own expected price growth increases by 0.3 percentage points, as reported in Column 2. Moreover, 12 months later, the actual prices charged have increased by almost 0.2 percentage points.

Table 2: Input price FE and firms' inflation expectations

	(1) Expected infl. (6m)	(2) Expected infl. (12m)	(3) Expected infl. (24m)	(4) Expected infl. (36-60m)
Input price FE	0.0358***	0.0241**	0.0135	0.00914
	(0.0104)	(0.0104)	(0.0102)	(0.00987)
Constant	2.694***	2.410***	2.164***	2.057***
	(0.0955)	(0.0937)	(0.0965)	(0.107)
Observations	21614	21606	21607	21614
R^2	0.797	0.731	0.635	0.564
Controls	YES	YES	YES	YES

Standard errors in parentheses

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

Notes: The table reports regression results for inflation expectations across different horizons regressed on input price forecast errors. The input price forecast errors are defined as the difference between realised and expected input price growth. Additional controls are included, as discussed in the main text (but not shown here). The analysis is based on data from the SIGE for the period 2017Q3–2024Q4. Standard errors are clustered at the firm level.

The magnitude of this imperfect pass-through is consistent with empirical estimates in the literature.[6] This suggests that the propagation of cost pressures is incomplete, but the pass-through is quantitatively important for determining changes in output prices. It also implies that firms typically absorb a large part of the cost increases by lowering their profit margins.

The effects are not limited to firms' own variables. As shown by Andrade et al. (2022), firms rely on their business conditions to form expectations about the aggregate economy. In Table 2, we show that firms also tend to revise their expectations about aggregate inflation in response to an input price increase. Following an increase in expected input price growth of 1 percentage point, firms anticipate a rise of 0.035 percentage points in 6-month-ahead inflation (Column 1) and 0.024 percentage points in 12-month-ahead inflation (Column 2). No significant effects are found for longer-term expectations (Columns 3 and 4), suggesting that longer-term expectations remain well-anchored.

These results suggest that firms' inflation expectations are influenced by their own cost conditions, leading them to extrapolate from firm-specific developments to the broader economy, particularly in the short to medium term. This implies that during periods of rising

[6]There is a substantial body of work studying and documenting incomplete pass-through using both granular and aggregate data. See, among others, Taylor (2000), Smets and Wouters (2003), Gopinath and Itskhoki (2010), Auer and Schoenle (2016), Nakamura and Zerom (2010), Garetto (2016), Riggi and Tagliabracci (2022), Amiti et al. (2019), and Dedola et al. (2021)

Table 3: The asymmetric pass-through of input price FE

	(1) Expected own price gr.	(2) Realized own price gr.
Input price FE (+)	0.362***	0.228***
	(0.0441)	(0.0645)
Input price FE (-)	0.185***	0.102**
	(0.0345)	(0.0513)
Constant	1.594***	2.796***
	(0.202)	(0.337)
Observations	25206	16066
R^2	0.440	0.444
Controls	YES	YES

Standard errors in parentheses

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

Notes: The table reports regression results for expected own price growth and realised price growth, all regressed on input price forecast errors. The input price forecast errors are defined as the difference between realised and expected input price growth. Additional controls are included, as discussed in the main text (but not shown here). The analysis is based on data from the SIGE for the period 2017Q3–2024Q4. Standard errors are clustered at the firm level.

input costs, firms may collectively contribute to inflationary pressures through upward adjustments in their expectations, potentially reinforcing inflation persistence. However, the fact that long-term expectations remain anchored indicates that firms do not view these cost shocks as fundamentally altering the long-run inflation outlook, which is a positive sign for central banks' credibility. From a policy perspective, these findings highlight the importance of clear and proactive central bank communication to prevent short-term inflationary pressures from influencing long-term expectations.

As suggested by Figure 2, the pass-through of input price shocks appears to be asymmetric between positive and negative shocks. To formally assess this, we re-estimate our baseline specification by differentiating cost shocks according to their sign. Table 3 presents the results for firms' own variables, allowing us to examine whether upward and downward input price shocks elicit different responses in firms' pricing behavior and expectations.

As observed, firms primarily revise their own expected and realised price growth in response to positive input price shocks. The magnitude of these effects is more than twice as large for positive shocks compared to negative ones. This finding aligns with a broader body of empirical evidence documenting nonlinear price responses to shocks, typically show-

ing stronger reactions to cost increases than to cost declines (Peltzman, 2000; Buckle and Carlson, 2000; Benzarti et al., 2020; Bunn et al., 2025).

The asymmetric pass-through of input price shocks to output prices challenges the predictions of standard New Keynesian models, such as the Calvo price-setting model and menu cost models, which assume symmetric price adjustment. Instead, our findings align with several theoretical frameworks in macroeconomics and industrial organisation that allow for asymmetries in firms' pricing behavior. State-dependent pricing models (e.g., Dotsey et al., 1999; Golosov and Lucas, 2007) suggest that firms adjust prices only when the benefits outweigh the associated menu costs. Because rising input costs pose a direct threat to profit margins, firms are more likely to pass them through, whereas they may absorb cost reductions to avoid frequent price adjustments. Similarly, customer market models (e.g., Phelps and Winter, 1970) predict that firms engaged in long-term customer relationships may hesitate to reduce prices when costs fall, fearing that consumers might perceive frequent price changes as opportunistic or destabilising. However, when input costs rise, firms have a stronger incentive to raise prices to protect margins.

Additional asymmetries arise in models of pricing frictions and strategic interactions. S-s rule and kinked demand models (e.g., Ball and Mankiw, 1994; Hall, 2005) highlight that firms facing menu costs, strategic complementarities, or concerns about signaling product quality are more responsive to cost increases than to cost decreases. Downward price rigidity may also stem from wage stickiness and coordination frictions among competitors. Finally, financial constraints and precautionary pricing mechanisms (e.g., Gilchrist et al., 2017) suggest that liquidity-constrained firms may be particularly reluctant to lower prices, preferring to use cost declines to rebuild financial buffers rather than passing savings to consumers. However, when costs rise, these firms may raise prices more aggressively to preserve cash flow. To empirically test the role of liquidity constraints in shaping asymmetric pass-through, we conduct a dedicated analysis in Section 3.3.

The same asymmetric effect is observed in firms' inflation expectations across differ-

Table 4: The asymmetric pass-through of input price FE to inflation expectations

	(1) Expected infl. (6m)	(2) Expected infl. (12m)	(3) Expected infl. (24m)	(4) Expected infl. (36-60m)
Input price FE (+)	0.0560***	0.0411***	0.0262*	0.0204
	(0.0151)	(0.0152)	(0.0149)	(0.0142)
Input price FE (-)	-0.00305	-0.00892	-0.0110	-0.0124
	(0.0161)	(0.0167)	(0.0161)	(0.0166)
Constant	2.664***	2.385***	2.146***	2.040***
	(0.0959)	(0.0943)	(0.0978)	(0.108)
Observations	21614	21606	21607	21614
R^2	0.797	0.731	0.635	0.564
Controls	YES	YES	YES	YES

Standard errors in parentheses

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

Notes: The table reports regression results for inflation expectations across different horizons regressed on input price forecast errors. The input price forecast errors are defined as the difference between realised and expected input price growth. Additional controls are included, as discussed in the main text (but not shown here). The analysis is based on data from the SIGE for the period 2017Q3–2024Q4. Standard errors are clustered at the firm level.

ent horizons. As shown in Table 4, firms revise their inflation expectations exclusively in response to positive input price shocks. Both short-term expectations (6- and 12-month ahead) and medium-term expectations (24-month ahead) are revised upwards, while negative shocks have no statistically significant impact on firms' aggregate inflation expectations. Meanwhile, longer-term expectations (measured as the average between 36- and 60-month ahead forecasts) remain unaffected by both positive and negative shocks, reinforcing the view that firms' long-run inflation expectations remain well-anchored notwithstanding short-term fluctuations.

Since firms revise upwards their inflation expectations in response to cost increases but do not adjust them downwards when costs decline, inflationary pressures may persist for longer periods, leading to greater inflation inertia. Such asymmetry suggests that temporary cost shocks, such as energy price spikes, could have prolonged effects on inflation expectations, making it more challenging for monetary authorities to deliver on their price stability mandate. Policymakers should hence consider communication strategies that emphasise the transitory nature of certain cost shocks and reinforce the credibility of inflation targets to mitigate the risk of inflation expectations becoming unanchored. Additionally, understand-

ing the role of firms' pricing behavior in amplifying inflationary pressures can help design more effective monetary policies that address asymmetric price adjustments, ensuring that inflation expectations remain well-anchored in both directions.

Finally, in Table 8 of the Appendix, we show results on firms' economic expectations as dependent variables. The SIGE survey asks firms about their expectations for their total number of employees, business-specific conditions, and aggregate economic conditions over the next three months. These qualitative responses are coded as 1 if firms anticipate an increase, 0 if they expect no change, and -1 if they foresee a decline.

Columns 1–3 show that while expected input price increases do not significantly affect firms' employment expectations, they lead to a notable deterioration in both business-specific and aggregate economic expectations. As shown in Columns 4–6, this effect is highly asymmetric, with firms revising their economic outlook downward only in response to positive input price shocks. These findings reinforce the idea that input price forecast errors are perceived as supply-side shocks—raising costs while simultaneously worsening economic conditions. Moreover, the results highlight that firms do not view their own cost pressures in isolation; rather, they extrapolate from their business-specific conditions to form expectations about the broader economy.

3.2 Micro vs macro shocks

Models of rational inattention suggest that the level of attention agents allocate to macroeconomic information is endogenous to the economic environment (e.g., Sims, 2003, Reis, 2006, Bartosz and Wiederholt, 2009, Afrouzi, 2016). In these models, agents face limited cognitive resources and optimally decide how to allocate attention, focusing only on the most relevant information and ignoring less critical aspects. As such, in periods of high inflation, agents are expected to allocate more attention to aggregate variables rather than to firm-specific factors.

We test the predictions of rational inattention models by examining the pass-through of

Table 5: The pass-through in periods of low and high inflation

	(1) Expected input price gr. Low inflation	(2) Expected input price gr. High inflation	(3) Expected own price gr. Low inflation	(4) Expected own price gr. High inflation	(5) Realized own price gr. Low inflation-	(6) Realized own price gr. High inflation
Input price FE	1.176***	1.109***	0.426***	0.313***	0.287	0.208*
	(0.200)	(0.0916)	(0.0600)	(0.0584)	(0.244)	(0.0967)
Yoy CPI news surprise	-0.196	0.662***	-0.139	0.427***	-0.322	0.744**
	(0.184)	(0.147)	(0.112)	(0.102)	(0.462)	(0.242)
Constant	1.875***	4.752***	1.023***	2.477***	1.099*	2.309***
	(0.289)	(0.387)	(0.279)	(0.365)	(0.595)	(0.665)
Observations	11764	9629	11720	9628	8435	7439
R^2	0.500	0.587	0.435	0.465	0.362	0.457
Controls	YES	YES	YES	YES	YES	YES

Standard errors in parentheses

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

Notes: The table reports regression results for expected input price growth, own price growth, and realised price growth, all regressed on input price forecast errors. The input price forecast errors are defined as the difference between realised and expected input price growth. As a measure of aggregate shocks, we use the year-on-year (YoY) CPI news surprises, defined as the difference between the actual CPI and the experts' forecast prior to the release, as provided by Consensus Economics. Additional controls are included, as discussed in the main text (but not shown here). The analysis is based on data from the SIGE for the period 2017Q3–2024Q4. Standard errors are clustered at the firm level.

input prices in periods of low versus high inflation, while controlling for aggregate shocks. We divide the sample into two distinct periods: low inflation (2017Q3–2021Q4 and 2023Q4–2024Q4) and high inflation (2022Q1–2023Q3).

To measure aggregate shocks, we use year-on-year CPI news surprises, which represent the difference between the actual CPI and the forecast value prior to its release, obtained from Consensus Economics. Similar to firm-level input price forecast errors, CPI surprises capture the unexpected and exogenous changes in the broader economic environment. Studies by Hamilton et al., Boehm and Kroner (2023), Bauer et al. (2024), and Di Pace et al. (2024) have explored the effects of macroeconomic data releases on financial and aggregate variables. Since these forecasts are typically accurate and timely, the forecast errors can be viewed as exogenous shocks, providing an insightful measure of unexpected shifts in economic conditions. The surprise series is standardised to induce a 1 percentage point increase in the Harmonised Italian CPI on impact.[7]

The results for firms' own price variables are reported in Table 5. In the first two columns, we present the effects of the input price growth expectations for the two subsamples,

[7]The response of the Italian HCPI to an inflation surprise is reported in Figure 7.

Table 6: The pass-through to inflation expectations in periods of low and high inflation

	(1) Expected infl. (6m) Low inflation	(2) Expected infl. (6m) High inflation	(3) Expected infl. (12m) Low inflation	(4) Expected infl. (12m) High inflation	(5) Expected infl. (24m) Low inflation	(6) Expected infl. (24m) High inflation
Input price FE	0.0417	0.0400	0.0409**	0.0295	0.0335*	0.0202
	(0.0272)	(0.0462)	(0.0182)	(0.0345)	(0.0165)	(0.0259)
Yoy CPI news surprise	-0.134	0.855**	-0.0993	0.643**	-0.0644	0.512**
	(0.111)	(0.314)	(0.0957)	(0.231)	(0.0813)	(0.184)
Constant	1.172***	4.795***	1.238***	3.992***	1.394***	3.445***
	(0.113)	(0.506)	(0.105)	(0.403)	(0.104)	(0.359)
Observations	10158	8205	10150	8203	10151	8214
R^2	0.320	0.424	0.394	0.460	0.444	0.485
Controls	YES	YES	YES	YES	YES	YES

Standard errors in parentheses

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

Notes: The table reports regression results for inflation expectations across different horizons regressed on input price forecast errors. The input price forecast errors are defined as the difference between realised and expected input price growth. As a measure of aggregate shocks, we use the year-on-year (YoY) CPI news surprises, defined as the difference between the actual CPI and the experts' forecast prior to the release, as provided by Consensus Economics. Additional controls are included, as discussed in the main text (but not shown here). The analysis is based on data from the SIGE for the period 2017Q3–2024Q4. Standard errors are clustered at the firm level.

while controlling for aggregate surprises. The magnitude of the pass-through is similar across both the high and low inflation periods. However, consistent with predictions from rational inattention models, macroeconomic shocks—measured using the year-on-year CPI news surprises—emerge as important drivers of firms' expectations only during periods of high inflation. This pattern holds for both expected own price growth (Columns 3 and 4) and realised own price growth (Columns 5 and 6). These findings align with those of Born et al. (2025), who, using data from Italian and German firms, document that expectations overreact to micro news but underreact to macro news..

The determinants of firms' aggregate expectations also differ between low and high inflation periods. As shown in Table 6, in periods of low inflation, firms primarily rely on their own business conditions to form inflation expectations, with their expectations being influenced by their own input price forecast errors rather than aggregate inflation surprises (Columns 3 and 5). In contrast, during periods of high inflation, macroeconomic shocks dominate, and only aggregate shocks affect firms' inflation expectations (Columns 2, 4, and 6).

As an alternative measure of aggregate shocks, similar to Born et al. (2025), we use firms'

forecast errors for 12-month-ahead expected inflation. This variable is defined analogously to input price forecast errors, i.e., as the difference between realized and expected inflation growth. Table 9 in the Appendix presents the results for inflation expectations across different horizons. Consistently, during periods of low inflation, aggregate shocks have no impact on firms' inflation expectations, which instead respond primarily to firm-specific shocks. However, in periods of high inflation, aggregate shocks become the dominant driver.

The evidence suggests that when inflation is high, firms are more responsive to macroeconomic signals, particularly aggregate shocks such as CPI news surprises, when adjusting their expectations for input prices and their own prices. This highlights the importance for policymakers to effectively communicate their expectations about macroeconomic conditions, especially during inflationary episodes, as firms are likely to adjust their behavior based on the information they receive about the broader economy. In contrast, during periods of low inflation, firms rely more on business-specific information when forming expectations, implying that aggregate policy signals may have less immediate effect on their price-setting behavior. This suggests that when inflation is low and stable, more targeted interventions—such as sector-specific policies—could be more effective in shaping firms' expectations and decisions.

Overall, these results underscore the need for differentiated policy strategies depending on the inflationary environment. Policymakers should focus on providing clear and timely information about macroeconomic conditions during high inflation periods, while also considering more targeted, sector-specific measures during low inflation periods to guide firms' expectations. Furthermore, these findings suggest that fostering transparency in the communication of economic data can help firms make more informed decisions, which could contribute to more stable price-setting behavior and smoother economic adjustments in response to policy changes.

3.3 Heterogeneity

The effects documented so far may conceal significant heterogeneity across firms with different characteristics. In this section, we examine how firm-specific factors influence the pass-through of input prices to firms' expectations and decisions.

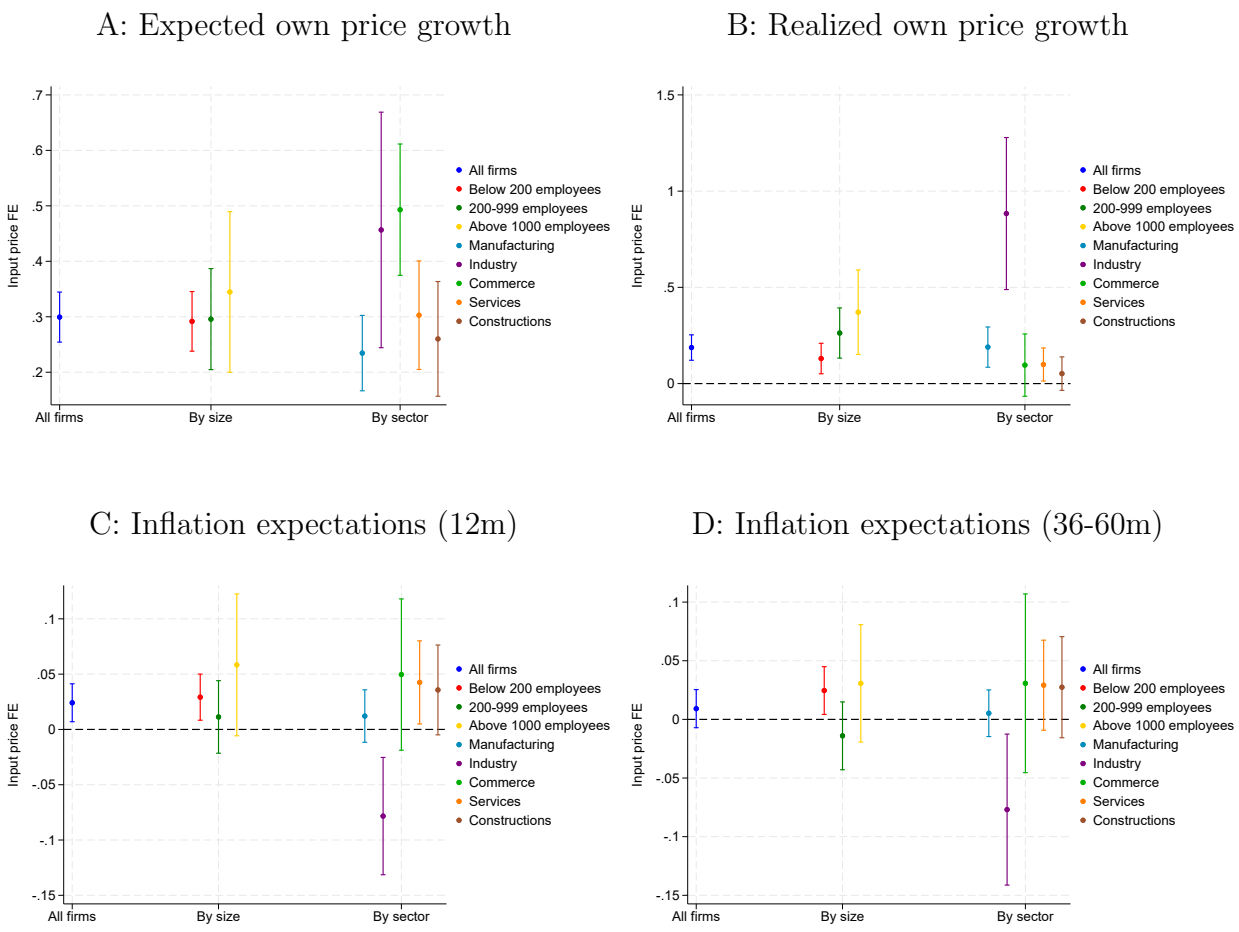
We begin by assessing whether the magnitude of the pass-through varies by firm size and sector. We categorize firms into three groups: those with fewer than 250 employees, those with 250 to 999 employees, and those with 1,000 or more employees. Additionally, we analyze sectoral differences by distinguishing firms operating in manufacturing, industry, commerce, services, and construction.

Figure 3 illustrates the impact of input price forecast errors on expected and realised own price growth (Panels A and B), as well as 12-month-ahead inflation expectations (Panel C) and the average expected inflation for the 36-60 month horizon (Panel D). For comparison, the blue dot and confidence bands represent the effects previously documented for the full sample.

Our analysis reveals that the pass-through to expected and realised own price growth is largely homogeneous across firm size groups. However, the pass-through to both short- and medium-to-long-term inflation expectations is significant only for smaller firms. This suggests that inflation expectations for smaller firms are more heavily influenced by firm-specific conditions and are more prone to de-anchoring in response to increases in input prices.

Turning to sectoral heterogeneity, we find that the strongest pass-through to realised prices occurs in the industrial and manufacturing sectors. This aligns with the findings of Gödl-Hanisch and Menkhoff (2024), who, using data from the Ifo Institute's business survey, report the lowest pass-through for services firms and the highest for manufacturing firms. As manufacturing and industrial firms are typically more dependent on raw materials and intermediate goods, their final prices are more sensitive to fluctuations in input prices. However, this heightened sensitivity does not extend to inflation expectations, where sectoral

Figure 3: The pass-through of input price FE across firms' characteristics



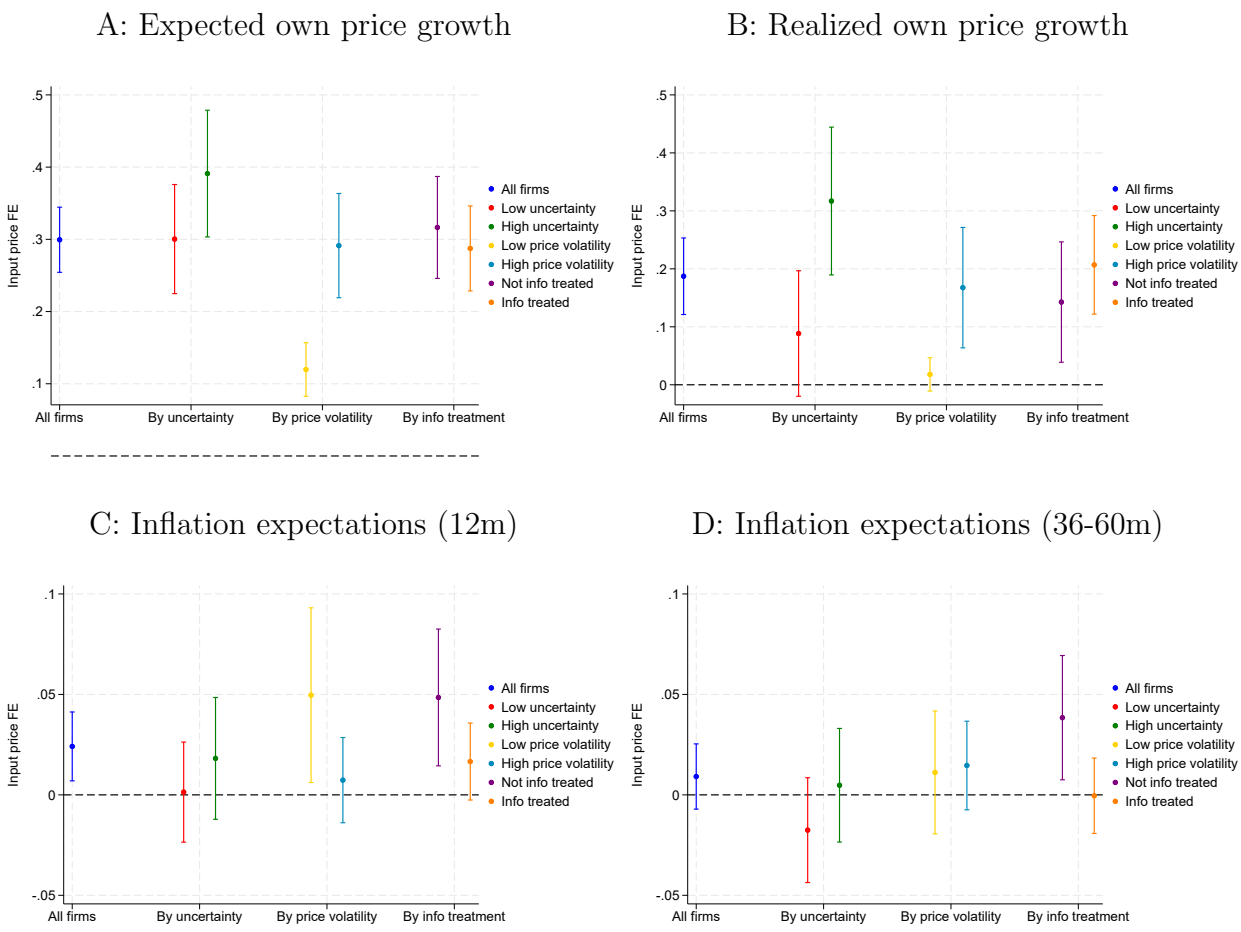
Notes: The figure presents regression results for expected and realised own price growth, as well as inflation expectations across different horizons, in relation to input price forecast errors across firms' characteristics. Input price forecast errors are defined as the difference between realised and expected input price growth. The shaded bands represent 90% confidence intervals. Additional controls are included (discussed in the main text but not shown). The analysis is based on SIGE data covering the period from 2017Q3 to 2024Q4.

differences in pass-through are less pronounced.

We next explore the role of other firms' characteristics like the degree of uncertainty regarding future business conditions, the volatility of price growth, and whether firms receive the information treatment from the Bank of Italy. The results are presented in Figure 4.

Uncertainty can have ambiguous effects on firms' pricing decisions. On one hand, greater uncertainty may lead to larger shocks, which in turn could result in more flexible pricing in

Figure 4: The pass-through of input price FE across firms' characteristics



Notes: The figure presents regression results for expected and realised own price growth, as well as inflation expectations across different horizons, in relation to input price forecast errors by firm characteristics. Input price forecast errors are defined as the difference between realised and expected input price growth. Shaded bands represent 90% confidence intervals. Additional controls are included (discussed in the main text but not shown). The analysis is based on SIGE data from 2017Q3 to 2024Q4.

the presence of menu costs Barro (1972). On the other hand, heightened uncertainty might induce a "wait-and-see" strategy, with firms opting to delay further price adjustments Vavra (2014). Supporting evidence for the first channel is provided by Bachmann et al. (2019), Arndt and Enders (2023), and Gödl-Hanisch and Menkhoff (2024), who show that higher volatility over time is associated with increased price pass-through.

To measure uncertainty at the firm level, we rely on survey responses from the SIGE

dataset. Firms provide the probability that their business conditions in the next three months will be better, the same, or worse. We quantify uncertainty as $1 - \sum_{i=1}^{3}(Prob_i - \frac{1}{3})^2$, where $Prob_i$ represents the probability assigned to each of the three possible outcomes. The lowest uncertainty occurs when all probability mass is assigned to a single scenario (e.g., 100% probability of better conditions), while higher uncertainty is associated with more evenly distributed probabilities (i.e., 33% for each scenario). We categorize firms into high and low price uncertainty, based on whether their reported uncertainty falls within the top or bottom third of the distribution for each quarter.

Consistent with the findings of Bachmann et al. (2019), Arndt and Enders (2023), and Gödl-Hanisch and Menkhoff (2024), we find that firms with higher levels of idiosyncratic uncertainty exhibit a significantly greater pass-through of input prices to actual price growth. The magnitude of this effect is substantial: firms with high uncertainty experience a pass-through three times larger than firms with low uncertainty. However, we find no significant differences in the way these firms extrapolate uncertainty to expected inflation.

We next examine the relationship between the magnitude of pass-through and the frequency of price changes. To measure price volatility at the firm level, we calculate the standard deviation of price growth changes implemented by the firms. We then categorise firms into high and low price volatility groups based on whether their reported value falls within the top or bottom third of the distribution for each quarter.

Consistent with Gödl-Hanisch and Menkhoff (2024), we find that a higher frequency of past price changes is associated with a higher pass-through. Firms that adjust their prices more frequently are more likely to coordinate their pricing strategies to maintain competitiveness. This implicit coordination enhances the pass-through of input price increases, as firms not only adjust their prices to reflect their own cost pressures but also to prevent losing market share to their competitors. The concept of price coordination is particularly salient in markets where firms frequently adjust their prices and are highly responsive to competitors' pricing decisions.

We also assess the causal impact of providing firms with inflation information on their responsiveness to an exogenous increase in carbon prices. Firms in the SIGE are randomly assigned to one of two groups at irregular intervals. The first group is asked to report their inflation expectations for the next 12 months without receiving additional information. The second group receives the same question but only after being informed about the most recent inflation rates for Italy and the euro area. Firms remain in their assigned groups until the next reshuffling, ensuring that some firms consistently receive updated information while others do not. Prior to 2012Q3, all firms received identical information about recent inflation rates. Starting in 2012Q3, approximately one-third of firms were randomly assigned to the group that did not receive any information. Firms were reshuffled again in 2012Q4, and they remained in their new assignments until 2017Q2, when another reshuffling occurred, followed by a final reassignment in 2019Q4.

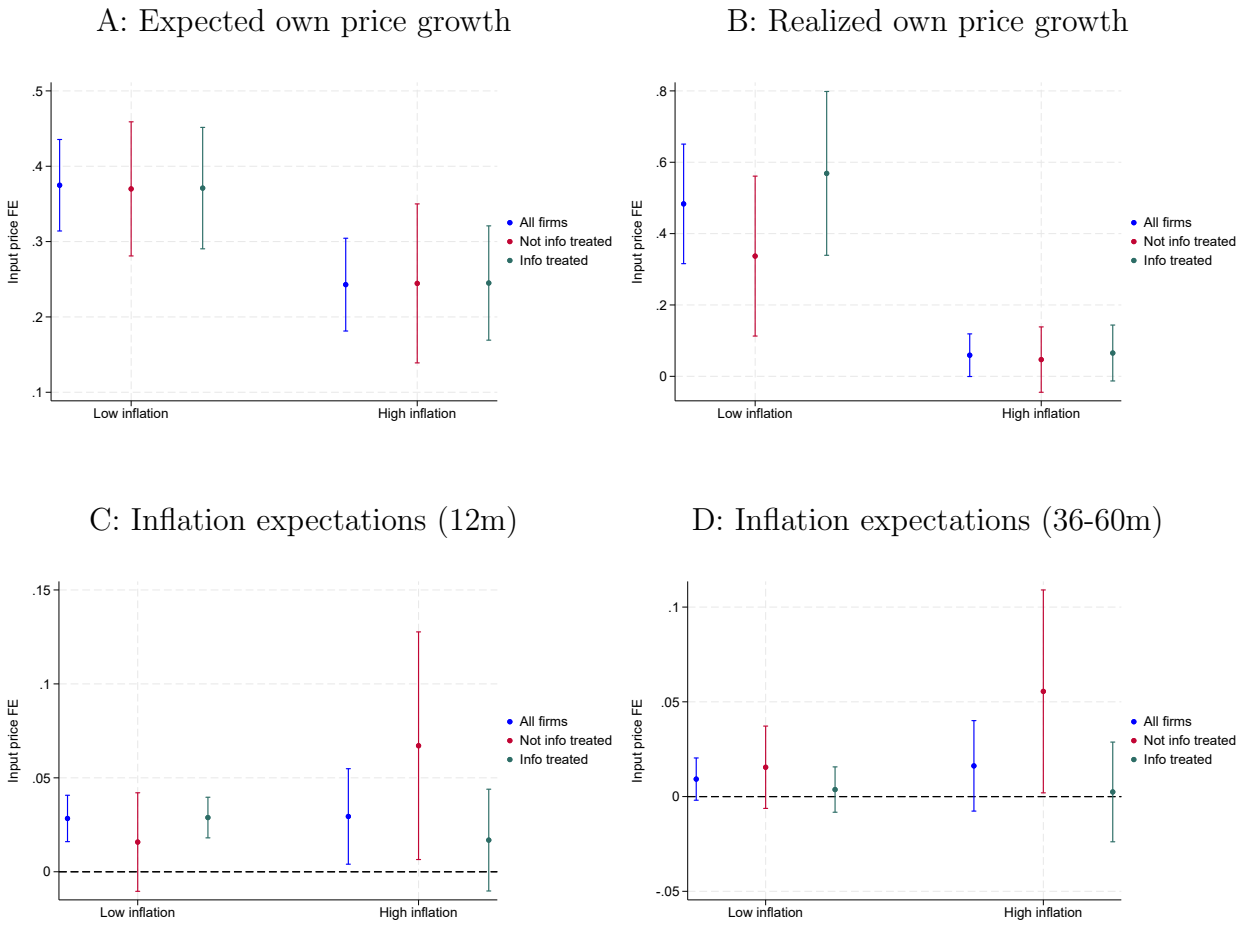
The unique extended duration of this treatment makes the SIGE an ideal setting to examine how providing firms with information on actual inflation influences their expectations and decision-making.[8] Previous studies have found that this treatment significantly improves the alignment of treated firms' inflation expectations with actual inflation.

As noted by Rosolia (2024), providing firms with information on the current inflation level does not affect their expected and realised own price growth, and the pass-through to these variables remains comparable across groups. However, we document that firms receiving inflation information exhibit a significantly lower pass-through to both their short- and long-term inflation expectations. This finding holds particular importance for central banks, as it suggests that clear and transparent communication about the state of the economy can effectively reduce the extrapolation of business-specific conditions to broader aggregate expectations, thus limiting potential second-round effects.

Given the importance of this finding, we further investigate whether the effects of providing firms with inflation information differ in periods of low and high inflation. Figure 5

[8]See Coibion et al. (2020), Bottone et al. (2021), Ropele et al. (2022), and Ropele et al. (2024b).

Figure 5: The pass-through to information treated firms



Notes: The figure presents regression results for expected and realised own price growth, as well as inflation expectations across different horizons, based on input price forecast errors for firms that received the information treatment and those that did not. Input price forecast errors are defined as the difference between realised and expected input price growth. Shaded bands represent 90% confidence intervals. Additional controls are included (discussed in the main text but not shown). The analysis is based on SIGE data from 2017Q3 to 2024Q4.

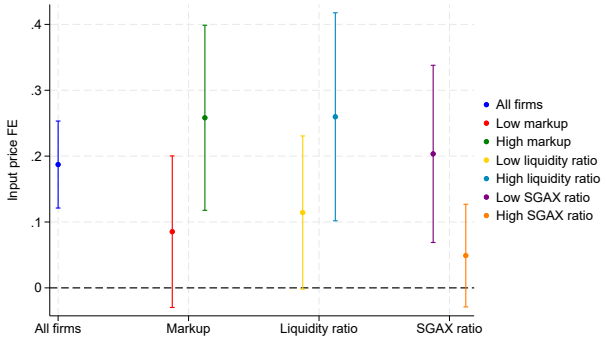
presents the coefficients for treated and non-treated firms across two subperiods. While the treatment does not significantly affect firms' expected or realised own price growth in either period, the pass-through to firms' inflation expectations is more subdued for treated firms, particularly in high inflation periods, as shown in Panels C and D.

These findings underscore the potential of information-based policy tools to stabilise inflation expectations and manage inflation dynamics, ultimately enhancing the effectiveness

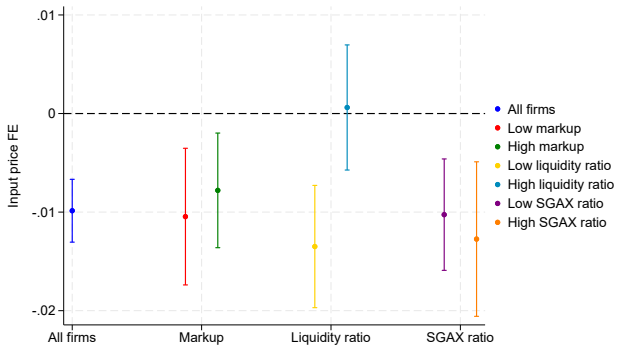
of monetary policy and mitigating the risk of inflation spirals. Well-informed firms are better equipped to anchor their expectations, filtering out short-term price fluctuations and focusing on broader economic trends. In high inflation periods, firms are more likely to rely on aggregate economic information rather than reacting impulsively to idiosyncratic cost increases. This anchoring effect can contribute to a more stable inflation environment, as firms are less prone to mechanically passing on input price increases, thereby reducing the risk of inflationary spirals. By providing clear and reliable information on inflation trends, central banks can steer firms' expectations, diminish the mechanical pass-through of input price increases to final prices, and reduce the likelihood of transitioning to a high-inflation regime.

Figure 6: The pass-through of input price FE across firms' characteristics

A: Realised own price growth



B: Firms' expected business condition



Notes: The figure presents regression results for own price growth and expected business conditions in relation to input price forecast errors by firm characteristics. Input price forecast errors are defined as the difference between realised and expected input price growth. Shaded bands represent 90% confidence intervals. Additional controls are included (discussed in the main text but not shown). The analysis is based on SIGE data from 2017Q3 to 2024Q4.

We conclude by evaluating the role of three additional characteristics derived from firms' balance sheet data. Consistent with the literature, we find that markup, liquidity ratio, and the SGAX ratio play significant roles in the transmission of input to output prices. Markup is defined as the difference between value-added and labor costs, relative to value-

added. The liquidity ratio is calculated as the sum of cash, cash equivalents, and short-term financial assets over total short-term liabilities, while the SGAX ratio (Selling, General, and Administrative Expenses as a percentage of revenue) is the sum of costs for services, third-party goods, and labor costs relative to net revenues. To mitigate endogeneity concerns, we use lagged values of these financial variables. We then classify firms as high or low value based on whether their reported values belong to the top or bottom third of the distribution for each quarter.

The results are presented in Figure 6. The left panel shows the pass-through to actual price growth, and the right panel shows the pass-through to firms' expected business conditions. The markup represents the proportion of value-added that is not attributed to labor costs, reflecting a firm's pricing power relative to its costs. Markup is commonly used as a proxy for firms' market power and the level of competitiveness in their operating environment (Coibion et al., 2018).[9] As shown in Panel A of Figure 6, higher markups are associated with stronger pass-through. The magnitude of the pass-through is nearly three times as large for firms with high markups compared to those with low markups. This result is in line with Hensel et al. (2024), who, using French survey data, finds a smaller pass-through of increased energy costs to both own price expectations and actual price growth for firms operating in more competitive environments. This confirms the crucial role of market power in the transmission of input costs to final prices.

We then examine the role of firms' liquidity conditions in the transmission of input price shocks. The liquidity ratio measures a firm's ability to meet short-term obligations using its liquid assets, while the SGAX ratio (Selling, General, and Administrative Expenses as a percentage of revenue) captures operating leverage—how much of a firm's revenue is allocated to overhead costs rather than direct production expenses.

Gilchrist et al. (2017) show that during the 2008 financial crisis, liquidity-constrained firms raised prices, whereas their unconstrained counterparts reduced them. At the same

[9]Similar results are obtained using profit margins as a measure of market power.

time, firms with greater financial flexibility experienced significantly higher real sales, reflecting their ability to compete through price reductions. Similarly, firms with high operating leverage (high SGAX ratios) also raised prices during the worst phase of the crisis, while those with lower SGAX ratios cut prices relative to industry trends. Facing both a liquidity squeeze and declining cash flows, high-SGAX firms likely increased prices to meet immediate debt obligations and sustain operations. However, this divergence in pricing behavior between low- and high-SGAX firms was temporary, with industry-adjusted prices and real sales converging over time.

These results challenge the standard price-adjustment mechanisms emphasised in New Keynesian models. Gilchrist et al. (2017) argue that such behavior reflects firms' attempts to preserve internal liquidity and avoid relying on external finance. This mechanism contributes to countercyclical markups and weakens the response of inflation to output fluctuations. While firms with lower SGAX ratios followed competitive market pricing dynamics, the relative price increases of high-SGAX firms suggest that SGAX expenditures may signal the presence of customer markets. Firms operating in such environments, when financially constrained, may raise prices during liquidity crunches at the expense of future market share.

To test the importance of liquidity constraints in our data, we assess whether the pass-through of input price shocks to output prices differs across liquidity and SGAX ratios. Panel A of Figure 6 shows that low-liquidity firms exhibit lower pass-through of input price shocks to output prices, while Panel B indicates that liquidity-constrained firms significantly worsen their expectations about their future business conditions. These findings align with Gilchrist et al. (2017), suggesting that for firms with already tight liquidity, a loss in sales could further amplify financial distress. As a result, these firms absorb a portion of cost increases to maintain cash flow and market presence, even at the expense of short-term profitability.

Similarly, firms with high SGAX ratios are more vulnerable to liquidity constraints when input prices rise. Their higher fixed cost base increases financial pressure, making it harder

to absorb shocks without adjusting prices. As liquidity concerns mount, these firms prioritise short-term cash flow over long-term profit margins, passing cost increases onto output prices despite the risk of reduced demand. This suggests that financially constrained firms view price adjustments as a liquidity management tool, reinforcing the link between financial conditions and inflation dynamics.

The findings highlight that firms' financial conditions and market structure significantly influence inflation dynamics, with higher markups leading to stronger pass-through, while liquidity constraints and high operating leverage (SGAX ratio) shape firms' pricing responses. Monetary policy should account for sectoral differences in pricing power, as inflationary pressures may be driven disproportionately by high-markup firms, while liquidity-constrained firms may delay pass-through, causing inflationary effects to emerge with a lag. Financial policies that improve firms' access to liquidity can help stabilise inflation dynamics by reducing the need for firms to suppress or accelerate pass-through based on cash flow concerns. Additionally, competition policies that limit excessive market power could help moderate inflation by reducing firms' ability to pass through cost shocks.

4 Robustness

In this section, we conduct several robustness checks to further validate our main findings. First, we assess the persistence of the documented effects over time. Second, we address potential endogeneity in input price forecast errors by regressing them on firm-level controls and using the residuals as exogenous variations in input prices. Third, we estimate a range of alternative model specifications, incorporating different fixed effects, standard error adjustments, time periods, and trimming procedures.

To evaluate the persistence of the effects, Tables 10 and 11 present the estimated coefficients for the expected input price growth and the six-month-ahead expected inflation. The dependent variable is shifted forward by up to three quarters to capture dynamic effects. As

observed, the impact of input price surprises dissipates after two to three quarters.

Next, we examine whether further refining input price forecast errors to mitigate potential endogeneity affects our results. We do so by regressing forecast errors on firm size, geographic area, and sector while also including date and firm fixed effects. The residuals from this regression are then used in the baseline specification instead of the raw forecast errors. The results, reported in Table 12, show that the estimated coefficients remain consistent in both sign and magnitude, confirming that our findings are robust to this adjustment.

Finally, we re-estimate the baseline analysis under a range of alternative specifications. Table 13 reports the results using expected price growth as the dependent variable. Column 1 includes firm and time-by-sector fixed effects, Column 2 clusters standard errors at the firm and time-by-sector level, Column 3 adds lagged input price forecast errors as additional controls, Column 4 restricts the sample to the pre-COVID period, and Columns 5 and 6 apply more aggressive trimming procedures to limit the influence of outliers. None of these alternative specifications alters our main conclusion: input price forecast errors systematically translate into firms' own price expectations.

5 Conclusion

The transmission of input price shocks to firms' expectations and pricing decisions plays a crucial role in shaping inflation dynamics, particularly during periods of heightened inflationary pressures and supply chain disruptions. Understanding the magnitude and asymmetry of this pass-through is essential for designing effective monetary policy responses. Moreover, the extent to which firms adjust their expectations based on input cost changes—and whether this response varies with macroeconomic conditions or firm characteristics—raises important questions for policymakers. Given the limited empirical evidence on these issues, our study aims to shed light on the causal relationship between input price shocks and firms' inflation expectations, addressing key gaps in the literature.

Our results provide robust evidence of a strong pass-through from input prices to firms' expectations and pricing decisions. We show that unexpected increases in input price growth lead to significant upward revisions in firms' own price expectations and realized price changes. Furthermore, these shocks also influence aggregate inflation expectations over shorter horizons, though long-term expectations remain anchored. Importantly, we uncover a striking asymmetry: firms respond strongly to positive cost shocks but exhibit little to no reaction to negative shocks, reinforcing concerns about persistent inflationary pressures. Additionally, our analysis reveals that firms' responsiveness to input price shocks depends on macroeconomic conditions and firm-specific factors, with higher inflation environments amplifying the role of aggregate signals in expectation formation.

The asymmetric nature of the pass-through suggests that inflationary pressures may persist even after supply-side shocks subside, posing challenges for monetary policymakers. The variation in firms' responses based on their characteristics underscores the need for targeted communication strategies that account for sectoral and firm-level differences. Crucially, we find that central bank communication—particularly providing firms with clear information on current inflation—can meaningfully reduce the pass-through of input price shocks to expectations. This highlights the importance of complementing conventional monetary policy tools with proactive and transparent communication strategies, especially in high-inflation environments, to help anchor inflation expectations and maintain economic stability.

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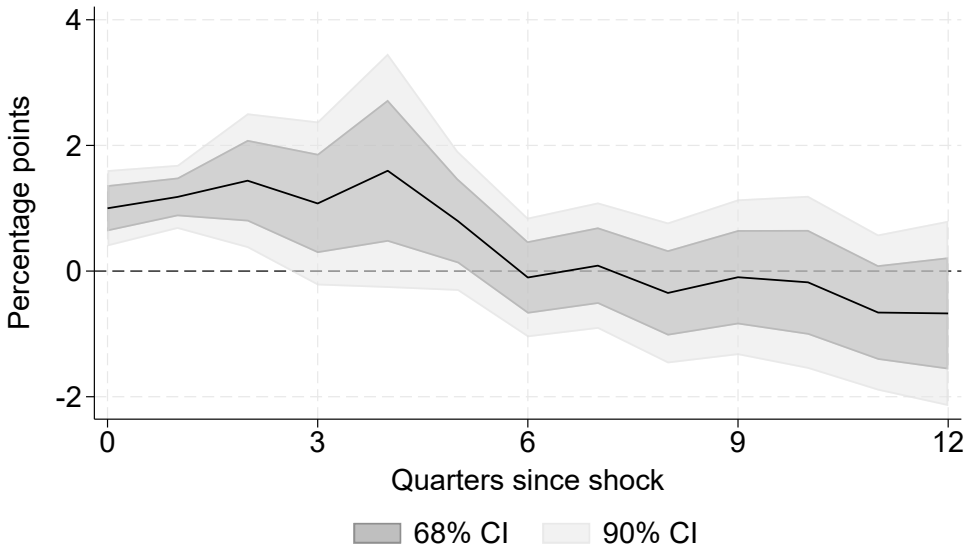
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Table 7: Summary statistics

	Obs.	Mean	p10	p50	p90	St. Dev.
Expected input price gr.	25710	3.54	0.00	2.00	10.00	5.35
Expected own price gr.	25670	2.13	0.00	1.00	5.00	3.88
Realized own price gr.	16361	2.68	0.00	1.00	8.20	5.39
Expected infl. (6m)	21983	2.70	0.30	1.50	7.00	2.83
Expected infl. (12m)	21975	2.51	0.40	1.50	6.00	2.49
Expected infl. (24m)	21978	2.31	0.50	1.80	5.00	2.15
Expected infl. (36-60m)	21986	2.22	0.50	1.90	5.00	1.96
Input price FE	25935	1.07	-5.00	0.00	7.80	7.60

Notes: The table reports several summary statistics for the expected input price growth, own price growth, realised price growth, expected inflation rate across different horizons and the input price forecast errors. The analysis is based on data from the SIGE for the period 2017Q3–2024Q4.

Figure 7: Italian HCPI response to inflation surprises



Notes: This figure shows the response of the Italian Harmonized Consumer Price Index to an inflation surprise. The inflation surprises is taken from Consensus Economics and defined as the difference between the analysts' forecasted values and the actual release.

Table 8: Input price FE and firms' economic expectations

	(1) Expected N employees (3m)	(2) Firm econ. cond. (3m)	(3) Aggregate econ. cond. (3m)	(4) Expected N employees (3m)	(5) Aggregate econ. cond. (3m)	(6) Firm econ. cond. (3m)
Input price FE	0.00152	-0.00986***	-0.00921***			
	(0.00184)	(0.00194)	(0.00216)			
Input price FE (+)				0.000672	-0.00327***	-0.00349***
				(0.000695)	(0.000789)	(0.000699)
Input price FE (-)				-0.000114	-0.000805	-0.000887
				(0.000932)	(0.00102)	(0.00102)
Constant	2.150***	1.958***	1.823***	2.148***	1.828***	1.963***
	(0.0261)	(0.0314)	(0.0295)	(0.0264)	(0.0296)	(0.0313)
Observations	25397	25371	25101	25397	25101	25371
R^2	0.357	0.342	0.425	0.357	0.425	0.342
Controls	YES	YES	YES	YES	YES	YES

Standard errors in parentheses

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

Notes: The table reports regression results for expected number of employees, firms' and aggregate economic conditions, all regressed on input price forecast errors. The input price forecast errors are defined as the difference between realised and expected input price growth. Additional controls are included, as discussed in the main text (but not shown here). The analysis is based on data from the SIGE for the period 2017Q3–2024Q4. Standard errors are clustered at the firm level.

Table 9: The pass-through to inflation expectations in periods of low and high inflation

	(1) Expected infl. (6m) Low inflation	(2) Expected infl. (6m) High inflation	(3) Expected infl. (12m) Low inflation	(4) Expected infl. (12m) High inflation	(5) Expected infl. (24m) Low inflation	(6) Expected infl. (24m) High inflation
Input price FE	0.0303**	-0.0413	0.0246**	-0.0314	0.0152	-0.0272
	(0.0142)	(0.0297)	(0.0102)	(0.0199)	(0.00911)	(0.0156)
Inflation FE	-0.0418	0.297***	-0.0211	0.226***	-0.0139	0.179***
	(0.0291)	(0.0509)	(0.0253)	(0.0351)	(0.0222)	(0.0271)
Constant	1.266***	4.386***	1.332***	3.651***	1.429***	3.189***
	(0.0930)	(0.387)	(0.0917)	(0.311)	(0.0947)	(0.282)
Observations	12557	8102	12557	8100	12555	8109
R^2	0.373	0.535	0.425	0.541	0.459	0.539
Controls	YES	YES	YES	YES	YES	YES

Standard errors in parentheses

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

Notes: The table reports regression results for inflation expectations across different horizons regressed on forecast errors on input price and the 12-month ahead expected inflation. The forecast errors are defined as the difference between realised and expected growth. Additional controls are included, as discussed in the main text (but not shown here). The analysis is based on data from the SIGE for the period 2017Q3–2024Q4. Standard errors are clustered at the firm level.

Table 10: Input price FE and firms' expected price expectations, persistency

	(1) Expected own price gr.	(2) F.Expected own price gr.	(3) F2.Expected own price gr.	(4) F3.Expected own price gr.
Input price FE	0.299***	0.165***	0.113***	0.0214
	(0.0274)	(0.0251)	(0.0290)	(0.0278)
Constant	1.682***	1.733***	1.461***	1.754***
	(0.200)	(0.232)	(0.215)	(0.233)
Observations	25206	20036	18675	17150
R^2	0.439	0.440	0.438	0.436
Controls	YES	YES	YES	YES

Standard errors in parentheses

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

Notes: The table reports regression results for expected own price growth on input price forecast errors. The dependent variable is shifted forward by up to three quarters. The input price forecast errors are defined as the difference between realised and expected input price growth. Additional controls are included, as discussed in the main text (but not shown here). The analysis is based on data from the SIGE for the period 2017Q3–2024Q4. Standard errors are clustered at the firm level.

Table 11: Input price FE and firms' expected inflation, persistency

	(1) Expected infl. (6m)	(2) F.Expected infl. (6m)	(3) F2.Expected infl. (6m)	(4) F3.Expected infl. (6m)
Input price FE	0.0358***	0.0293**	0.0166	0.00598
	(0.0104)	(0.0121)	(0.0125)	(0.0119)
Constant	2.694***	2.665***	2.674***	2.842***
	(0.0955)	(0.116)	(0.121)	(0.125)
Observations	21614	17290	16170	14913
R^2	0.797	0.798	0.795	0.793
Controls	YES	YES	YES	YES

Standard errors in parentheses

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

Notes: The table reports regression results for the 6-month ahead expected inflation on input price forecast errors. The dependent variable is shifted forward by up to three quarters. The input price forecast errors are defined as the difference between realised and expected input price growth. Additional controls are included, as discussed in the main text (but not shown here). The analysis is based on data from the SIGE for the period 2017Q3–2024Q4. Standard errors are clustered at the firm level.

Table 12: Input price FE and firms' expectations and realised and own price growth

	(1) Expected own price gr.	(2) Realized own price gr.	(3) Expected infl. (6m)	(4) Expected infl. (12m)	(5) Expected infl. (24m)	(6) Expected infl. (36-60m)
Input price FE, resid	0.284***	0.161***	0.0335***	0.0227**	0.0149	0.0118
	(0.0278)	(0.0392)	(0.0104)	(0.0104)	(0.0103)	(0.0100)
Constant	2.136***	2.707***	2.645***	2.445***	2.218***	2.120***
	(0.115)	(0.163)	(0.0604)	(0.0529)	(0.0493)	(0.0532)
Observations	25206	16066	21614	21606	21607	21614
R^2	0.451	0.474	0.798	0.732	0.637	0.568
Controls	YES	YES	YES	YES	YES	YES

Standard errors in parentheses

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

Notes: The table reports regression results for expected own price growth, and realised price growth, all regressed on the residuals of input price forecast errors on firm-level characteristics. Additional controls are included, as discussed in the main text (but not shown here). The analysis is based on data from the SIGE for the period 2017Q3–2024Q4. Standard errors are clustered at the firm level.

Table 13: Input price FE and firms' expected own price growth, robustness

	(1) Cluster: ID Time*Sector	(2) Fixed effects: ID Time*Sector	(3) Lag shock	(4) Before 2021	(5) Trimming 2-98	(6) Trimming 5-95
Input price FE	0.299***	0.282***	0.277***	0.384***		
	(0.0340)	(0.0276)	(0.0315)	(0.0555)		
Lag input price FE			0.0904***			
			(0.0243)			
Input price FE, 2-98					0.326***	
					(0.0236)	
Input price FE, 5-95						0.349***
						(0.0234)
Constant	1.682***	2.051***	1.714***	0.785**	1.649***	1.682***
	(0.198)	(0.114)	(0.268)	(0.337)	(0.184)	(0.149)
Observations	25206	25206	17711	9554	24300	21687
R^2	0.439	0.451	0.468	0.503	0.447	0.508
Controls	YES	YES	YES	YES	YES	YES

Standard errors in parentheses

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

Notes: The table reports regression results for the expected own price growth on input price forecast errors. A battery of different specifications is estimated. The input price forecast errors are defined as the difference between realised and expected input price growth. Additional controls are included, as discussed in the main text (but not shown here). The analysis is based on data from the SIGE for the period 2017Q3–2024Q4.