

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



Fiorella De Fiore | Bank for International Settlements (BIS)  
 Marco Jacopo Lombardi | Bank for International Settlements (BIS)  
 Giacomo Mangiante | Bank of Italy

*Keywords:* Pass-through, heterogeneous firm expectations, survey data, inflation

*JEL codes:* D22, D84, E31, E50

## Abstract

Firms' pricing decisions play a crucial role in shaping inflation. Understanding how firms translate input price changes into their own pricing and broader views on inflation is essential for central banks to manage inflation effectively. In this column, we examine the pass-through from input prices to firms' expectations and pricing decisions using data from the Bank of Italy's Survey on Inflation and Growth Expectations (SIGE). We find that the pass-through is strong and asymmetric: when firms face higher-than-expected input costs, they revise prices upward and expect higher near-term inflation. By contrast, unexpectedly lower input prices have little effect. The magnitude of the pass-through varies systematically across firms: it is stronger for upstream firms and for those facing greater uncertainty, adjusting prices more frequently, or operating with thinner margins. The pass-through also depends on the inflation environment: firms respond more strongly to firm-specific signals when inflation is low, whereas aggregate conditions dominate when inflation is high. Finally, we show that providing firms with information on current inflation attenuates the pass-through to their expectations, highlighting the role of central bank communication.

Disclaimer: This policy brief is based on [BIS Working Papers No 1305](#). The views expressed here are those of the authors and do not necessarily reflect those of the Bank of Italy, the Bank for International Settlements or any of their policy committees.

## Introduction

Firms' pricing decisions are especially important at times of elevated inflation and supply chain disruptions. When input costs rise, firms must decide how much of these changes to absorb and how much to transfer to their selling prices. Their decisions influence not only current inflation but also expectations that guide their future decisions. Despite its policy relevance, empirical evidence on how firms react to input price movements remains limited, largely because of limited availability of micro-level data.

In a recent paper (De Fiore et al., 2025), we study how Italian firms update both their expectations and their pricing behaviour when confronted with unexpected changes in input costs. We also explore how these responses differ across inflation regimes and across firms with different characteristics.

## Survey data

Our analysis draws on firm-level data from the SIGE, a quarterly, nationally representative survey covering a wide set of Italian firms. The survey asks firms about business-specific variables — such as expected input price growth, expected own-price growth over a 12-month horizon, and realised price changes over the previous 12 months — as well as inflation expectations at various horizons (6, 12, 24 and 36–60 months ahead). Our sample spans the years from 2017 to 2024.

Figure 1a shows the relationship between expected and realised input and output price growth. The strong positive correlation confirms that firms track the evolution of their own input and selling prices remarkably well, supporting the reliability of the survey and the elicited expectations.

To capture unexpected changes in input costs, we construct forecast errors as the difference between realised input price growth and the growth firms had predicted one year earlier. These forecast errors provide an exogenous measure of unanticipated cost shocks. Figure 1b shows a pronounced asymmetry: positive forecast errors, i.e., input prices turning out higher than expected, are associated with substantial upward revisions in expected own-price growth. By contrast, negative forecast errors are not associated with comparable downward adjustments.<sup>1</sup>

**Figure 1. Firms' expected and realised own price growth and input price forecast errors (FE)**

Figure 1a. Expected and realised price growth

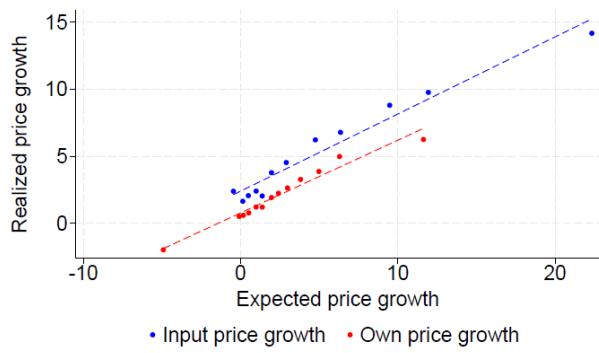
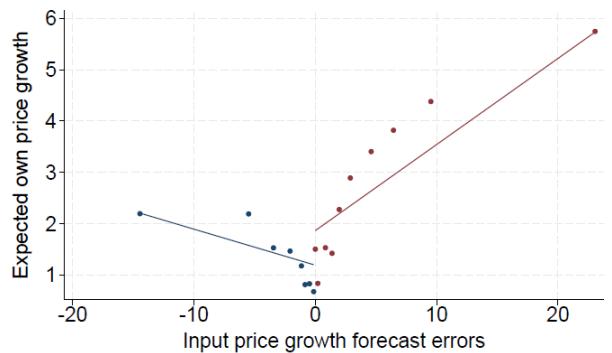


Figure 1b. Input price FE and expected price gr.



Source: SIGE and authors' calculations.

Notes: The LHS figure shows the binned scatterplots that illustrate the relationship between the expected input and own price growth for the next 12 months (x-axis) and the realized input and own price growth that occurred over the same period (y-axis). The RHS figure presents a binned scatterplot of input price forecast errors against expected own-price growth.

<sup>1</sup> The same pattern is observed with realised price growth. Moreover, this asymmetry is not driven by the recent high-inflation episode but is also evident during the preceding low-inflation period up to the end of 2021.

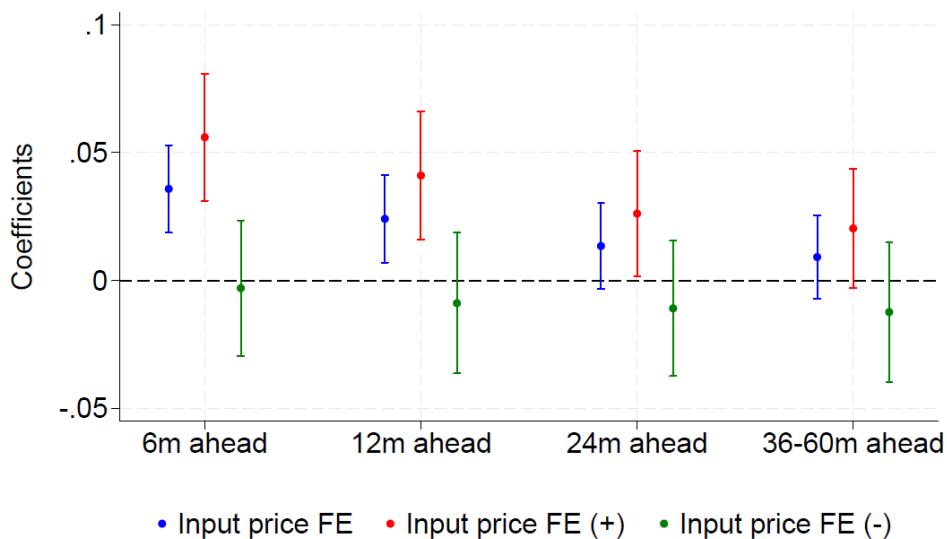
## Estimating input price pass-through to firms' expectations and decisions

We quantify the impact of unexpected input cost changes by estimating regressions of firms' expectations and pricing decisions on their input price forecast errors, and a set of controls like the sector in the firm operates and its size.

We find a strong pass-through from unexpected input cost increases to both expected and realised selling prices. This indicates that firms tend to shift part of the cost increase onto their customers.<sup>2</sup> However, the effect is marked asymmetric: firms adjust prices upward in response to positive forecast errors, whereas negative forecast errors have only negligible effects on pricing decisions.

Figure 2 illustrates how these shocks affect inflation expectations across different horizons. Higher-than-expected input prices increase short-term inflation expectations, while longer-term expectations remain relatively stable, suggesting that firms view cost shocks as transitory. Separating positive from negative forecast errors reveals that the aggregate effect is almost entirely driven by the positive surprises.

**Figure 2. Input price forecast errors and firms' inflation expectations**



Sources: SIGE and authors' calculations.

Notes: The figure reports regression results for inflation expectations across different horizons regressed on input price forecast errors. The dots are the point estimates, and the bands are the 90 percent confidence bands.

## The role of firms' characteristics

The magnitude of the pass-through depends heavily on firms' characteristics and on the inflation regime.

We estimate heterogeneous pass-through coefficients by conditioning on several firm-level attributes. Figure 3a shows that the pass-through to 12-month-ahead expected inflation is substantially stronger for firms in upstream sectors — those furthest from the final consumer — and for firms whose cost structures are more energy- or capital-intensive.<sup>3</sup> These firms are particularly exposed to global input price swings.

Across other characteristics, we find higher pass-through for firms operating under greater uncertainty, in markets with volatile prices, with stronger market power, or with more liquidity available.<sup>4</sup> The inflation regime also matters: firms place more weight on firm-specific signals when inflation is low, but react more to aggregate signals when it is

<sup>2</sup> The strong but incomplete pass-through is in line with the literature. See, among others, Conflitti and Zizza (2021) and Riggi and Tagliabracchi (2022).

<sup>3</sup> Consistent with evidence from Gödl-Hanisch and Menkhoff (2025).

<sup>4</sup> In line with Gilchrist et al., (2017).

high, suggesting that high-inflation environments make firms more attentive to aggregate developments, as opposed to firm-specific ones.

Finally, we assess whether providing firms with information on current inflation affects the passthrough. Since 2012, two-thirds of SIGE respondents have been randomly exposed to the most recent inflation data before reporting their expectations. Prior research shows that this type of information provision significantly influences expectations (Coibion et al., 2020). Figure 3b shows that the pass-through to long-term expectations is virtually absent for firms receiving additional information, whereas it is sizable for firms not exposed to it. This finding underscores the potential of communication strategies in anchoring expectations and dampening the transmission of cost shocks.

**Figure 3. Input price pass-through to expectations across firms' characteristics**

Figure 3a. Short-term inflation expectations (12m)

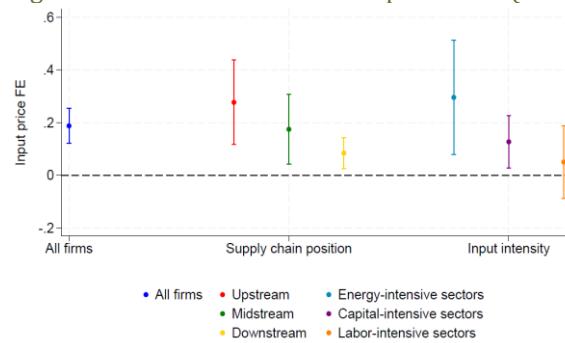
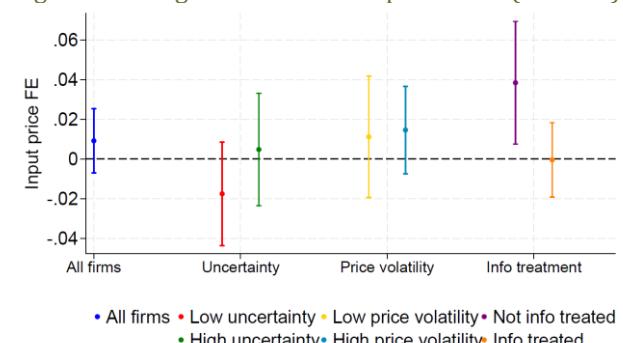


Figure 3b. Long-term inflation expectations (36-60m)



Sources: SIGE and authors' calculations.

Notes: The LHS figure represents the estimated input price pass-through to short-term inflation expectations across firms' supply chain position and input composition. The RHS figure shows the pass-through to long-term expectations across firms' characteristics. The dots are point estimates, and the bands are the 90% confidence intervals.

## Conclusion

We document a strong yet asymmetric pass-through of unexpected input price movements to firms' expectations and pricing decisions. Firms react forcefully to rising costs but barely respond to falling ones. This asymmetry helps explaining why inflation tends to rise rapidly but decline only gradually. The extent of the pass-through varies across firms depending on their sector, cost structure, market environment, and financial conditions, and differs across inflation regimes. Our findings highlight the importance of understanding firm heterogeneity and the broader macroeconomic context when interpreting inflation dynamics.

Our results have relevant policy implications. Since firms respond more strongly to cost increases than decreases, disinflation may proceed more slowly even as cost pressures ease. Structural characteristics, such as economic uncertainty and market power, along with firms' financial conditions, including liquidity and leverage positions, influence the transmission of shocks and should be taken into account when formulating policy responses. Finally, clear and timely central bank communication can significantly dampen the effects of cost shocks by anchoring expectations, underscoring its role as a key complement to conventional monetary policy.

## References

Coibion, O., Gorodnichenko, Y., Ropele, T., 2020. Inflation expectations and firm decisions: New causal evidence. *Quarterly Journal of Economics* 135, 165–219.

Conflitti, C., Zizza, R., 2021. What's behind firms' inflation forecasts? *Empirical Economics*. 61, 2449–2475.

De Fiore, F., Lombardi, M., and Mangiante, G. (2025). The asymmetric and heterogeneous pass-through of input prices to firms' expectations and decisions. Working Paper Series No 1305, Bank of International Settlements.

Gilchrist, S., Schoenle, R., Sim, J., Zakrajšek, E., 2017. Inflation dynamics during the financial crisis. *American Economic Review* 107, 785–823.

Gödl-Hanisch, I., Menkhoff, M., 2024. Firms' pass-through dynamics: A survey approach. LMU Munich, CEPR, CESifo, and ifo Institute, Working Paper.

Riggi, M., Tagliabracci, A., 2022. Price rigidities, input costs, and inflation expectations: Understanding firms' pricing decisions from micro data. Bank of Italy Working Paper No. 733.

## About the author(s)

**Fiorella De Fiore** is Research Adviser at the BIS and Research Fellow of the Centre for Economic Policy Research. She previously held the position of Head of Monetary Policy in the Monetary and Economic Department of the BIS, and of Adviser in the Monetary Policy Research Division and in the Financial Research Division of the ECB. She holds a PhD in economics from the European University Institute and a MSc in economics from the London School of Economics. Her main research is in the field of macro and monetary economics.

**Marco Jacopo Lombardi** is a Principal Economist in the Financial Markets unit of the Bank for International Settlements. He joined the BIS in June 2012 from the ECB, where he worked in the Directorate General Economics. While with the ECB, Marco also spent five months as a visitor to the International Department of the Bank of Canada. Prior to joining the ECB, he was assistant professor at the University of Pisa and taught Bayesian econometrics, statistics and time series analysis. Marco holds a PhD in applied statistics from the University of Florence and has been Max Weber Fellow of the European University Institute. Before joining the BIS Financial Markets team in 2023, he worked in the Macroeconomic Analysis and Monetary Policy units, as well as in the Representative Office for Asia and the Pacific.

**Giacomo Mangiante** is a Senior Economist at the Bank of Italy. He received a PhD in Economics from the University of Lausanne, and a Master in Economics from Bocconi University. His research interests lie in the field of macroeconomics, with a focus on inflation expectations and monetary economics. Prior and during his PhD, he gained research and policy experience at the European Central Bank, the Bank of England, the European Commission and the European Investment Bank.

---

SUERF Policy Notes and Briefs disseminate SUERF Members' economic research, policy-oriented analyses, and views. They analyze relevant developments, address challenges and propose solutions to current monetary, financial and macroeconomic themes. The style is analytical yet non-technical, facilitating interaction and the exchange of ideas between researchers, policy makers and financial practitioners.

SUERF Policy Notes and Briefs are accessible to the public free of charge at <https://www.suerf.org/publications/suerf-policy-notes-and-briefs/>.

The views expressed are those of the authors and not necessarily those of the institutions the authors are affiliated with.

© SUERF – The European Money and Finance Forum. Reproduction or translation for educational and non-commercial purposes is permitted provided that the source is acknowledged.

Editorial Board: Ernest Gnan, David T. Llewellyn, Donato Masciandaro

Designed by the Information Management and Services Division of the Oesterreichische Nationalbank (OeNB)

SUERF Secretariat

c/o OeNB, Otto-Wagner-Platz 3A-1090 Vienna, Austria

Phone: +43 1 40 420 7206

E-Mail: [suerf@oenb.at](mailto:suerf@oenb.at)

Website: <https://www.suerf.org/>