BANCA D'ITALIA
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# Temi di discussione

(Working Papers)

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June 2026

Number 1535

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Number 1535 - June 2026

ISSN 2281-3950 (online)

*Designed by the Printing and Publishing Division of Banca d'Italia*

# ASYMMETRIC MONETARY POLICY TRANSMISSION ACROSS EURO-AREA MANUFACTURING INDUSTRIES

by Marco Flaccadoro* and Tiziano Ropele*

**Abstract**

We study the asymmetric transmission of monetary policy shocks on euro-area manufacturing output and producer prices using monthly data from 2003 to 2024. Employing externally identified monetary policy shocks and nonlinear local projections, we show that contractionary policy actions generate large and persistent declines in output and prices, while expansionary shocks have weaker effects. These asymmetries are common across manufacturing industries and quantitatively important, with the contribution of monetary policy to forecast error variance driven primarily by contractionary shocks. We further show that the effects of monetary tightening are amplified in industries with greater financial fragility and stronger exposure to interest-sensitive demand.

**JEL Classification**: E23, E31, E32, E52.

**Keywords**: industrial production, inflation, business fluctuations, monetary policy.

**DOI**: 10.32057/0.TD.2026.1535

## 1. Introduction[1]

Understanding how monetary policy affects real activity and prices is central to macroeconomic stabilization. A growing body of evidence suggests that the transmission of monetary policy is neither linear nor symmetric: policy tightenings and easings can generate different economic responses in both magnitude and persistence. Early contributions document stronger real effects of monetary contractions than expansions while more recent works emphasize nonlinear amplification mechanisms that operate unevenly with respect to the sign of the policy shock. These asymmetries have become particularly salient in many advanced economies over the past decades, as monetary policy has alternated between periods of accommodation and periods of tightening. Assessing whether monetary policy transmits symmetrically between contractionary and expansionary actions – and identifying the mechanisms through which nonlinearities arise – remains a first-order issues for both macroeconomic theory and the design of effective monetary policy.

This paper provides new evidence on the transmission of monetary policy shocks to the euro-area manufacturing sector using monthly data on output and prices from 2003 to 2024. Manufacturing offers a particularly informative setting for studying monetary policy transmission, as output and producer prices are timely indicators of economic activity and closely linked to consumer inflation.[2] Moreover, manufacturing industries are especially sensitive to financial conditions and interest rates through both supply- and demand-side channels, reflecting the importance of investment, inventories, and working-capital financing and differences in interest-rate sensitivity between durable and non-durable goods. As a result, aggregate responses to monetary policy may mask substantial heterogeneity along the production structure. Exploiting this heterogeneity is therefore essential for understanding not only whether monetary policy effects are asymmetric, but also the channels through which, and the sectors in which, such asymmetries arise.

Our empirical analysis combines three key elements. First, we use externally identified euro-area monetary policy shocks based on high-frequency financial market surprises around ECB announcements (Jarociński and Karadi, 2020). This approach yields shocks with a clear interpretation across policy directions, allowing us to distinguish contractionary from expansionary actions. Second, we estimate impulse responses using nonlinear local projections, which allow the dynamic effects of monetary policy

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[1] We are grateful to Donato Ceci, Oscar Jordà, Lorenzo Mori, Gert Peersman, Marianna Riggi, Alessandro Secchi, Fabrizio Venditti and Giordano Zevi for useful suggestions. The opinions expressed in this paper are those of the authors and do not necessarily reflect the views of the Bank of Italy.

[2] Producer prices and consumer prices are linked through the production chain, as upstream cost pressures gradually pass through to downstream prices. In the euro area over 2001:M12–2025:M11, the contemporaneous correlation between year-on-year manufacturing PPI inflation and HICP inflation is 0.77, rising to 0.86 when allowing for a four-month pass-through lag. Manufacturing activity is also a key monthly indicator of short-term GDP dynamics and economic turning points (Golinelli and Parigi, 2007; Banbura et al., 2011; Baumeister and Guérin, 2021; Martínez-García et al., 2015).

to vary flexibly with the sign of the shock while avoiding the restrictive cross-equation assumptions inherent in VAR-based approaches. Third, we exploit rich sectoral variation in manufacturing output and producer prices to uncover heterogeneous and asymmetric transmission patterns.

Our main results can be summarized as follows. First, we document pronounced directional asymmetries in monetary policy transmission. At the aggregate level, contractionary shocks lead to persistent declines in production, with peak effects materializing several months after the shock. Producer prices respond more gradually and exhibit persistent adjustment dynamics, consistent with the presence of nominal rigidities. In contrast, expansionary shocks generate smaller responses in both output and prices, which are typically short-lived and statistically weak.

Second, these asymmetries are far from uniform across industries. Intermediate goods and capital goods industries experience particularly strong and persistent contractions following monetary tightening, while responding only weakly to monetary easing. Consumer goods industries, by contrast, respond more moderately overall, with durable goods displaying somewhat larger contractions than non-durables, reflecting the greater interest-rate sensitivity of demand for durables. Price responses display similar patterns, with upstream industries adjusting more rapidly and asymmetrically than downstream sectors, consistent with cost pass-through along production chains.

Third, beyond documenting asymmetries, we provide evidence on the mechanisms underlying nonlinear monetary transmission. We show that cross-industry differences in financial fragility, internal liquidity buffers, pricing capacity, and demand sensitivity related to durability play a central role. In particular, industries with higher leverage experience significantly larger declines in output and prices following contractionary shocks, consistent with amplification through the credit channel emphasized in the financial-frictions literature (e.g. Bernanke and Gertler, 1995; Alessandri et al., 2025). Similarly, industries producing durable goods exhibit stronger output and prices responses to monetary tightening, while no significant effects are detectable for monetary easing. More generally, this evidence indicates that these mechanisms operate more strongly following contractionary than expansionary shocks, providing an interpretation for the observed asymmetries.

Fourth, we assess the quantitative relevance of these findings using a forecast error variance decomposition based on the local-projection framework proposed by Gorodnichenko and Lee (2020). We show that monetary policy shocks explain a sizable share of manufacturing fluctuations, particularly at medium-term horizons. Strikingly, this contribution is overwhelmingly driven by contractionary shocks, which account for a disproportionately large share of the variance in both output and prices across sectors. This result reinforces the conclusion that monetary tightening dominates easing not only in marginal impulse responses, but also in shaping observed manufacturing dynamics.

Relative to the existing literature, this paper makes three main contributions. First, we provide new empirical evidence on the asymmetric effects of monetary policy shocks on the euro-area manufacturing output and producer prices. While several studies examined the effects of monetary policy on real activity, evidence on the response of sectoral producer prices remains comparatively scarce, especially in the context of asymmetric monetary transmission. Early contributions already emphasized that contractionary monetary policy shocks tend to generate larger effects than expansionary shocks of comparable size (for an early survey see Florio, 2004). Subsequent works have confirmed the presence of sign asymmetries in monetary transmission at the aggregate level, including in environments characterized by unconventional monetary policy (e.g. Romer and Romer, 2004; Karras, 2013; Angrist et al., 2018; Debortoli et al., 2023; Alessandri et al., 2025; Perez-Orive et al., 2026; Pfarrhofer and Stelzer, 2026). More recent contributions document asymmetric transmission across euro-area economies and relate it to cross-country structural characteristics, while continuing to focus on aggregate outcomes (e.g. Georgiadis, 2015). However, less is known about how these asymmetries originate from and differ across manufacturing industries. We fill this gap by estimating industry-level responses to contractionary and expansionary monetary policy shocks at a granular level, allowing for directional asymmetries in both real activity and producer prices. Second, we relate the observed heterogeneity in sectoral responses to economically meaningful industry characteristics, providing direct evidence on the mechanisms underlying asymmetric monetary transmission. A growing literature shows that financial structure, liquidity needs, durability, and exposure to interest-sensitive demand shape industry-level sensitivity to monetary policy (e.g. Barth and Ramey, 2001; Dedola and Lippi, 2005; Barsky et al., 2007). More recent industry-level evidence further highlights the role of financial frictions and demand composition in shaping monetary transmission across countries (Choi et al., 2024). We extend this literature by showing that these mechanisms operate asymmetrically across monetary policy actions: financial fragility and demand sensitivity significantly amplify the effects of contractionary shocks, while playing a much more limited role following monetary easing. Third, we provide updated evidence on sectoral monetary policy transmission in the euro area by combining manufacturing data with externally identified monetary policy shocks based on high-frequency financial-market surprises. Relative to earlier sectoral studies relying on country-level data and VAR-based identification (e.g. Peersman and Smets, 2005; Dedola and Lippi, 2005), this approach enables a transparent characterization of directional asymmetries using nonlinear local projections that allow impulse responses to differ by the sign of the policy shock.

The papers most closely related to ours are Peersman and Smets (2005) and Dedola and Lippi (2005), which provide seminal evidence on the heterogeneous effects of monetary policy across manufacturing industries. Peersman and Smets (2005) document substantial cross-industry heterogeneity in the euro area using structural VARs, while Dedola and Lippi (2005) show that differences in durability and financial structure explain cross-sector variation in monetary transmission across OECD countries. More recently, Auer et al. (2021) examine the role of corporate leverage in shaping the sensitivity of industrial production to monetary policy shocks in the euro-area manufacturing sector and document that industries with higher leverage exhibit stronger real responses to monetary policy shocks. While Auer et al. (2021) find limited evidence that leverage effects differ systematically between contractionary and expansionary shocks, their analysis focuses on time-varying liabilities-to-assets ratios, which primarily capture overall indebtedness. By contrast, our analysis relies on liabilities-to-equity ratios and a broader set of persistent industry characteristics related to financial fragility, liquidity conditions, and demand sensitivity. In addition, our sample extends through the recent monetary tightening cycle, during which financing constraints may have become more binding. We further contribute to this literature by considering a broader set of industry characteristics capturing both sectoral financial conditions – including leverage and liquidity measures – and differences in demand sensitivity related to output durability. Most importantly, we extend existing work by explicitly allowing for asymmetric effects of monetary policy, distinguishing between contractionary and expansionary shocks and by jointly analyzing the responses of both real activity and producer prices. This approach provides a more comprehensive characterization of how monetary policy propagates through the manufacturing sector.[3]

Our findings have direct implications for monetary policy. Because contractionary policy actions generate large and persistent adjustments, especially in financially constrained and interest-sensitive sectors, while expansionary actions elicit more muted responses, policy assessments that abstract from directional asymmetries and sectoral heterogeneity may fail to fully gauge the economic effects of monetary interventions. Moreover, the asymmetric responses of producer prices indicate that monetary tightening transmits more strongly through upstream, input-producing stages of the production chain than monetary easing, with implications for the pace and extent of cost pass-through to downstream prices. Incorporating sectoral information on financial structure, demand sensitivity, and price adjustment into policy analysis can therefore improve the calibration of monetary policy and the assessment of its real and nominal consequences.

The remainder of the paper is organized as follows. Section 2 describes the data and monetary policy shock identification. Section 3 outlines the econometric framework. Section 4 presents the empirical results on asymmetric responses of manufacturing output and producer prices, including

[3] A growing literature studies non-linearities in monetary policy in the US economy by contrasting its effects across monetary expansions and contractions (Angrist et al., 2018; Barnichon and Matthes, 2018), and with a specific focus on credit markets and financial frictions (Alessandri et al., 2025). Our results on the euro area are consistent with the sign asymmetry documented by these studies and highlight the role of the output durability and sectoral financial conditions in the transmission of the monetary policy shocks.

forecast error variance decompositions. Section 5 investigates the industry-level mechanisms underlying these asymmetries. Section 6 reports robustness checks, and Section 7 concludes.

## 2. Data description

Our empirical analysis combines sectoral measures of manufacturing activity and prices with high-frequency identified monetary policy shocks, complemented macroeconomic controls and industry-level structural data. This combination allows us to study the dynamic and nonlinear transmission of exogenous monetary policy shocks to real activity and prices while exploiting rich cross-industry heterogeneity as a lens to uncover asymmetric propagation mechanisms.

### 2.1 Manufacturing output and prices

The main outcome variables are monthly indices of industrial production and producer prices for the euro-area manufacturing sector, obtained from Eurostat and spanning the period from December 2003 to August 2024. We exploit data at three levels of disaggregation – total manufacturing, main industrial groupings[4] and NACE two-digit industries – allowing us to assess both aggregate and sector-specific responses to monetary policy shocks.

Manufacturing provides a particularly informative setting for studying nonlinear monetary transmission. Output and prices in this sector tend to respond more quickly and more strongly to monetary policy shocks than aggregate macroeconomic indicators, reflecting the central role of investment, inventories, and external financing conditions. At the same time, manufacturing industries differ sharply in their exposure to interest-sensitive demand, cost structures, working-capital requirements, and financial constraints, implying that aggregate responses may mask substantial heterogeneity and asymmetric propagation across the production structure.

Exploiting this heterogeneity is central to our analysis. By moving beyond average effects, we assess not only whether monetary policy transmission is asymmetric, but also how such asymmetries arise across sectors. Figure 1 provides visual motivation by documenting pronounced differences in the dynamics of production volumes and producer prices across main industrial groupings, highlighting both the cyclical sensitivity of manufacturing activity and the uneven adjustment across sectors. Additional details on data construction and industry classification are reported in Appendix A.

[4] The classification by main industrial groupings (in later parts of the paper referred to by MIG) distinguishes manufacturing production among capital goods, intermediate goods, durable consumer goods, and non-durable consumer goods.

## 2.2 Monetary policy shocks

Monetary policy shocks are taken from Jarociński and Karadi (2020), who identify euro-area monetary policy surprises (related to conventional and unconventional policies) using high-frequency changes in financial market prices within a narrow window around ECB policy announcements. Their approach distinguishes between two types of shocks: (i) pure monetary policy shocks, reflecting exogenous changes in the policy stance; and (ii) information shocks, capturing central bank communication about the economic outlook. Identification is based on a sign-restriction Bayesian VAR applied to high-frequency movements in short-term interest rates and equity prices. A contractionary pure monetary policy shock is characterized by rising interest rates and falling stock prices, whereas a positive information shock is associated with increases in both variables.

A central advantage of this identification strategy in our setting is that it yields monetary policy shocks whose sign has a direct and unambiguous economic interpretation. Contractionary and expansionary shocks are obtained using the same identification procedure and information set and therefore represent symmetric exogenous shifts in the monetary policy stance that differ only in direction. This feature is essential for our analysis, as it allows us to interpret differences in responses to tightening and easing as reflecting nonlinear transmission, rather than differences in the macroeconomic environment or in the type of policy actions being identified.

In the empirical analysis, we focus exclusively on pure monetary policy shocks in order to study the causal impact of changes in the policy stance, and use the median rotation innovations from the Jarociński and Karadi (2020) original empirical setup.[5] Figure 2 plots the monthly series of pure monetary policy shocks for the euro area over the period December 2003 to October 2023, while Table 1 reports summary statistics. Two features are worth emphasizing. First, the shocks are small in magnitude: their standard deviation is 3.2 basis points, and the median absolute realization is well below the size of a policy rate adjustment of the magnitude typically implemented by central banks. Shocks comparable to a 25-basis-point policy move are virtually absent, with most realizations clustered tightly around zero: only a few contractionary shocks exceed three standard deviations and no expansionary shocks fall below minus three standard deviations. Second, contractionary and expansionary shocks occur with similar frequency and comparable standard deviations, providing balanced variation across shocks of opposite sign for assessing asymmetric transmission effects.

[5] Shocks from a Bayesian VAR follow a distribution that can be summarized through various statistics (e.g., the median, as in our case), and are specific to the estimated empirical framework — meaning that altering the set of variables included in the VAR may yield different shock estimates.

## 2.3 Macroeconomic controls and auxiliary data

Our baseline specifications include a set of control variables that capture broader macroeconomic and global dynamics and are included to improve the precision of the estimated impulse responses by reducing residual variation in the local-projection regressions. These controls comprise the euro-area HICP inflation rate, the unemployment rate, the Global Supply Chain Pressure Index (GSCPI, henceforth)[6], and the information shocks identified by Jarociński and Karadi (2020). Because monetary policy shocks are identified externally using high-frequency data, the inclusion of these controls does not affect identification, but helps control for predictable macroeconomic dynamics and mitigate residual correlations that can arise in finite samples. All controls enter the regressions with appropriate lags, as detailed in Section 3.

In addition, we use sector-level balance-sheet data from the Bank for the Accounts of Companies Harmonized (BACH) to construct industry characteristics employed in the cross-sectional analysis in Section 5. These variables capture slow-moving, structural differences in financial conditions across industries rather than short-run cyclical fluctuations. Further details on variable construction and data sources are provided in Appendix A.

# 3. Econometric strategy

This section describes the empirical strategy used to estimate the dynamic effects of monetary policy shocks on manufacturing output and prices. We employ local projections to trace impulse responses to externally identified monetary policy shocks and extend this framework to allow for sign asymmetries between contractionary and expansionary policy actions. This approach provides a transparent characterization of nonlinear monetary transmission while preserving the advantages of external shock identification.

To study the dynamic effects of monetary policy shocks on manufacturing activity and prices, we employ local projections following Jordà (2005). This approach allows us to estimate impulse response functions (IRFs) directly, without imposing the strong dynamic or cross-equation restrictions inherent in VAR models. Local projections are particularly well suited to our setting because they allow us to trace the dynamic effects of externally identified monetary policy shocks in a flexible manner, without imposing cross-equation restrictions on the data. Moreover, the local-projection framework naturally accommodates nonlinear specifications, making it especially appropriate for analysing directional asymmetries in monetary transmission.

[6] The GSCPI is an indicator developed by the Federal Reserve Bank of New York that summarizes disruptions and stress in global supply chains based on information from transportation costs, delivery times, and backlogs.

## 3.1 Baseline LP specification

Our baseline local projection specification is given by:

$$\Delta_h y_t = \alpha_h + \beta_h \, shock_t + X_t' \gamma_h + \epsilon_t, \tag{1}$$

where $\Delta_h y_t \equiv y_{t+h} - y_{t-1}$ denotes the cumulative change in the dependent variable $y_t$ (expressed in logarithms) between period $t-1$ and $t+h$. The variable $shock_t$ represents the pure monetary policy shock, while $X_t$ includes a set of control variables capturing broader macroeconomic and global conditions, namely the one-period lagged euro area HICP inflation rate, the one-period lagged euro area unemployment rate, the one-period lagged GSCPI and a set of dummy variables.[7] The error term is denoted by $\epsilon_t$.

Equation (1) is estimated by ordinary least squares for each horizon $h$. We compute Newey–West standard errors to account for heteroskedasticity and serial correlation in the residuals. The coefficient $\beta_h$ measures the cumulative response of the outcome variable at horizon $h$ to a one-basis-point monetary policy shock. Estimating this coefficient for successive horizons $h$ yields the impulse response function $y_t$.

## 3.2 Asymmetric LP specification

From an economic perspective, there are compelling reasons to expect the transmission of monetary policy to differ between tightening and easing episodes. Asymmetries may arise from financial constraints that bind more tightly during monetary contractions, from precautionary behaviour that amplifies downside risks, and from nonlinearities in price and quantity adjustment. Motivated by these considerations, we allow the effects of monetary policy shocks to depend explicitly on their direction. To examine whether monetary transmission differs between contractionary and expansionary policy actions, we extend the baseline specification by introducing sign asymmetries.

Specifically, we decompose the monetary policy shock into contractionary and expansionary components:

$$\Delta_h y_t = \alpha_h + \beta_h^+ \, shock_t^+ + \beta_h^- \, shock_t^- + X_t' \gamma_h + \epsilon_t \tag{2}$$

where

[7] Dummy variables are constructed as follows. For each local projection horizon $h$, a time dummy for period $t$ is included if at least one of the two observations entering $\Delta_h y_t$ (i.e. either $y_{t+h}$ or $y_{t-1}$) falls within the period April 2020 to September 2020, corresponding to the peak phase of the Covid-19 pandemic. This procedure ensures that extreme pandemic-related observations are appropriately controlled for across all horizons, without distorting the dynamic responses to monetary policy shocks. Results are robust to alternative definitions of the pandemic window.

$$shock_t^+ = \begin{cases} shock_t & \text{if } shock_t > 0 \\ 0 & \text{otherwise} \end{cases} \quad \text{and} \quad shock_t^- = \begin{cases} shock_t & \text{if } shock_t < 0 \\ 0 & \text{otherwise} \end{cases}$$

In this specification, $\beta_h^+$ captures the responses of $y_t$ to contractionary monetary policy shocks, while $\beta_h^-$ captures the response to expansionary shocks. To test the presence of asymmetry in the transmission mechanism at a given horizon $h$, we estimate the following regression:

$$\Delta_h y_t = \alpha_h + \delta_h shock_t + \delta_h^+ \; shock_t^+ + \; X_t' \gamma_h + \epsilon_t, \qquad (3)$$

where $shock_t = shock_t^- + shock_t^+$. In this specification, $\delta_h$ captures the response to expansionary shocks, while $\delta_h + \delta_h^+$ captures the response to contractionary shocks. A statistically significant $\delta_h^+$ indicates asymmetric effects. Finally, this sign-based decomposition allows us to isolate directional asymmetries in monetary transmission without conditioning on specific business-cycle states or financial regimes. As such, it provides a transparent and policy-relevant characterization of nonlinear effects that is directly linked to the stance of monetary policy.

# 4. Empirical results

In this Section we first document the dynamic responses of aggregate manufacturing output and producer prices to contractionary and expansionary monetary policy shocks. We then examine how these responses vary across levels of sectoral disaggregation. Finally, we assess the quantitative importance of monetary policy shocks in driving sectoral fluctuations using a forecast error variance decomposition.

## 4.1 Baseline effects of monetary policy on manufacturing activity and prices

Figure 3 reports impulse response functions of euro-area manufacturing production and producer prices to a one-basis-point contractionary monetary policy shock, estimated using the baseline local projection specification.[8] Manufacturing production declines significantly following the shock, with the maximum contraction by around 0.2 percent – occurring approximately six to eight months after the policy tightening. Output then recovers gradually over the subsequent months. This dynamic pattern is consistent with standard monetary transmission mechanisms, whereby higher interest rates tighten financial conditions, restrain consumption and investment demand, and induce a delayed adjustment in production due to investment frictions and adjustment costs.[9]

[8] The size of the shock corresponds to approximately one third of the historical standard deviation of the full distribution of shocks, encompassing both expansionary and contractionary episodes.

[9] Jarociński and Karadi (2020) also conduct an exercise for the euro area. They find that a one-standard-deviation contractionary monetary policy shock leads to an increase in 1-year policy rate (i.e. German 1-year government bond) by almost 2 b.p. at impact, to a decline in monthly-interpolated real GDP of roughly 0.2 percent after about ten months, while

Producer prices also respond negatively, but with a more gradual and delayed profile than output. Prices decline gradually and reach a trough of about 0.1 percent roughly nine months after the shock, before recovering only slowly over the medium run. This sluggish price adjustment is consistent with the presence of nominal rigidities, such as menu costs and strategic complementarities in price setting, that slow the pass-through of monetary policy shocks to firm-level prices, a central feature of New Keynesian models.

Figure 4 disaggregates these baseline responses across main industrial groupings and reveals substantial heterogeneity in the transmission of monetary policy. On the output side, production in capital goods and intermediate goods industries exhibits the largest and most persistent declines, with trough responses comparable in magnitude to those observed for total manufacturing. These patterns are consistent with the strong interest-rate sensitivity of investment spending in capital goods industries and with the central position of intermediate goods producers within input–output networks, which amplifies demand fluctuations along supply chains. In particular, the pronounced response of intermediate goods production is consistent with the importance of working-capital requirements and supply-chain financing frictions in these industries (Kim and Shin, 2024).[10] Consumer goods industries, by contrast, respond more moderately overall, with durable goods displaying somewhat larger contractions than non-durables, reflecting their dual role as consumption and investment goods.

Price responses also display meaningful heterogeneity across sectors. Producer prices in intermediate goods industries decline more sharply and adjust earlier than those in downstream consumer goods sectors, suggesting that cost adjustments along supply chains constitute an important channel of monetary policy transmission. Prices in consumer goods industries, by comparison, respond more gradually and persistently, consistent with the presence of pricing contracts and staggered price adjustments that limit short-run flexibility.

Taken together, the baseline results indicate that monetary policy shocks generate sizable and heterogeneous effects across manufacturing industries even before accounting for nonlinearities or asymmetries. Detailed impulse responses at the NACE two-digit industry level, which confirm and refine these patterns, are reported in Appendix B. In the next subsection, we examine whether the effects documented here differ systematically depending on the direction of the monetary policy shock.

the response of the monthly-interpolated GDP deflator is more muted on impact and more persistent over time. Compared to our results – obtained assuming a one-basis-point shock in the linear local projection specification – the implied effects are smaller. This difference is consistent with the fact that our analysis focuses on manufacturing activity, which is more cyclical and more sensitive to monetary policy than real GDP, as it excludes labor-intensive services sectors that typically respond less strongly to monetary policy shocks (see, for example, de Groot et al., 2023).

[10] Kim and Shin (2024) show that the working capital required to sustain production chains increases disproportionately with their length, implying that tighter financial conditions have stronger real effects on industries operating in longer and more complex supply chains.

## 4.2 Asymmetric effects of contractionary and expansionary monetary policy shocks

Figure 5 reports impulse response functions to asymmetric monetary policy shocks, distinguishing between contractionary and expansionary pure monetary policy innovations. The left panel shows responses of manufacturing production, while the right panel reports responses of producer prices. Furthermore, in each panel diamonds on the x-axis indicate the horizons at which the null of symmetric transmission is rejected at the 10 percent significance level based on the test described in specification (3).[11]

A significant sign asymmetry – especially in the first six months after the shock – emerges in the response of manufacturing output. Contractionary monetary policy shocks induce a statistically significant decline in production, with output falling by approximately 0.4 percent at the trough around six months after the shock. The contraction is persistent, with effects remaining significant over much of the subsequent horizon. In contrast, expansionary monetary policy shocks generate considerably weaker responses: estimated effects on production are smaller in magnitude (roughly 0.2 percent, at the peak) and generally statistically insignificant. Overall, these results indicate that monetary tightening has stronger real effects than monetary easing.

Producer prices also display asymmetric dynamics in response to shocks, which persist for slightly more than a year. Following a contractionary shock, prices decline gradually, reaching a trough, of almost 0.2 percent, eight months after the shock. Expansionary shocks, by contrast, lead to a more modest price increases that peak earlier at 0.15 percent and are less persistent. Overall, price responses exhibit a similar asymmetry to that observed in real activity, with contractionary shocks generating more pronounced and sustained effects than expansionary ones.

These findings are consistent with theoretical mechanisms emphasizing financial frictions, precautionary behaviour, and nonlinear adjustment dynamics, which tend to amplify the effects of monetary tightening relative to easing. When monetary policy tightens, deteriorating financial conditions and heightened uncertainty can reinforce the contraction in activity, whereas during easing episodes firms and households may respond more cautiously, for example by strengthening balance sheets rather than expanding spending (e.g., Tenreyro and Thwaites, 2016; Angrist et al., 2018; Alessandri et al., 2025). Recent work by Perez-Orive et al. (2026) further shows that when firms face multiple financing constraints simultaneously, monetary tightening can generate disproportionately large effects because the most binding constraint becomes dominant, whereas monetary easing may remain less effective if at least one financing constraint continues to bind.

[11] The same graphical representation is used throughout to highlight asymmetries in impulse responses to contractionary and expansionary monetary policy shocks.

Figure 6 extends the analysis to main industrial groupings and shows that the aggregate asymmetry masks substantial sectoral heterogeneity. On the output side, intermediate goods and capital goods industries exhibit particularly strong and persistent contractions following contractionary shocks, while responses to expansionary shocks are considerably weaker and often statistically insignificant. In the former case, the asymmetry emerges immediately and persists for approximately the first six months. In the latter case, the asymmetry arises with a delay and is more short-lived, materializing roughly in the second quarter after the shock. Durable consumer goods display moderate responses, whereas non-durable consumer goods are the least sensitive to monetary policy shocks of either sign. Also in these cases the asymmetry in the responses is short-lived, approximately in the first quarter after the shock for durable goods and in the third for non-durable. Price responses also vary across sectors, with more pronounced and more persistent asymmetries in upstream industries, consistent with differential cost pass-through and pricing rigidities along the production chain.

Finally, we examine the response of manufacturing activity and prices at a finer level of disaggregation using NACE two-digit industries. The corresponding impulse responses, reported in Tables 4–7 and summarized in Appendix B, confirm that contractionary monetary policy shocks affect a broader set of industries and generate larger responses than expansionary shocks. Taken together, these results indicate that sign asymmetry is a pervasive feature of monetary policy transmission in the manufacturing sector, rather than an artifact of aggregation.

## 4.3 The role of monetary policy shocks in manufacturing fluctuations

The impulse responses presented above characterize the dynamic effects of manufacturing output and prices in response to a one-basis-point monetary policy shock. We now provide complementary evidence on the quantitative relevance of these shocks by assessing the share of forecast error variance – that is, the unpredictable component of production and producer prices – attributable to unexpected monetary policy shocks.

To this end, we conduct a forecast error variance decomposition based on the local-projection $R^2$ approach proposed by Gorodnichenko and Lee (2020). For each horizon $h$, this approach measures the contribution of monetary policy shocks by regressing the $h$-step-ahead forecast error of the variable of interest on the sequence of monetary policy shocks realized between $t$ and $t+h$, and interpreting the resulting coefficient of determination as the share of forecast variance attributable to those shocks. We first report variance contributions based on the linear specification and then distinguish between contractionary and expansionary shocks within the asymmetric framework. Technical details of the procedure are provided in Appendix C.

*Variance contributions in the linear specification*. Figures 7 and 8 report the share of forecast error variance in manufacturing production (left panels) and producer prices (right panels) explained by linear monetary policy shocks across horizons. Two main findings emerge. First, monetary policy shocks account for a meaningful share of forecast uncertainty in manufacturing activity. At a 24-month horizon, they explain around 40 percent of the forecast error variance in manufacturing production and roughly 20 percent in producer prices.[12] Second, variance contributions vary systematically across main industrial groupings, with a more limited role for monetary policy shocks in non-durable consumer goods industries, consistent with their weaker impulse responses documented in Section 4.1.[13]

*Asymmetric variance contributions*. Figures 9 and 10 decompose variance contributions into contractionary and expansionary monetary policy shocks. A clear asymmetry emerges. Across most horizons, contractionary shocks account for a larger share of forecast error variance in both manufacturing production and producer prices, while expansionary shocks contribute relatively little. These patterns are consistent with the asymmetric impulse responses documented in Section 4.2 and indicate that monetary policy tightening episodes play a particularly important role in shaping forecast uncertainty in the manufacturing sector.[14]

Unlike standard VAR-based variance decompositions, the local-projection $R^2$ measure is not mechanically linked to the estimated impulse responses and does not provide a structural decomposition of unconditional volatility. Rather, it captures the explanatory power of realized monetary policy shocks for forecast errors at different horizons. Accordingly, the results are best interpreted as complementary evidence on the relative importance of contractionary versus expansionary shocks in accounting for manufacturing fluctuations, rather than as a structural decomposition in the VAR sense.

Overall, the variance decomposition reinforces the central message of the paper: contractionary monetary policy shocks play a more prominent role than expansionary shocks in shaping monetary-policy-induced fluctuations in manufacturing output and prices. In the next section, we investigate whether cross-industry differences in these effects can be systematically related to observable industry characteristics.

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[12] Gorodnichenko and Lee (2020) estimate the forecast error variance decomposition of GDP and consumer price inflation in the US attributable to monetary policy shocks. In a linear setup, they find that these shocks account for up to 20 percent of output variability and 40 percent of inflation variability. Although our analysis focuses on the manufacturing sector in the euro area, our estimates for output and producer prices associated with monetary policy shocks are in the same order magnitude.

[13] Appendix Table C.1 reports forecast error variance contributions of monetary policy shocks for manufacturing production and prices at the 6- and 12-month horizons at a finer level of industry disaggregation.

[14] Appendix Tables C.2 and C.3 report forecast error variance contributions of contractionary and expansionary monetary policy shocks, respectively, at a finer level of industry disaggregation.

## 5. Industry characteristics and asymmetric monetary policy transmission

The heterogeneity of industry responses documented in Section 4 raises the question of whether these differences can be systematically related to observable sectoral characteristics. A large literature emphasizes the role of the interest rate and credit channels in transmitting monetary policy to real activity (Bernanke and Gertler, 1995) and their relevance for manufacturing industries has been extensively documented in linear frameworks (e.g. Dedola and Lippi, 2005; Peersman and Smets, 2005; Durante et al., 2022; Choi et al., 2024; Albrizio et al., 2026). Less is known, however, about whether these channels operate differently following contractionary and expansionary monetary policy shocks and to what extent they apply to the responses of both nominal and real variables, although recent work has emphasized that multiple financing constraints may generate asymmetric responses to monetary policy (Perez-Orive et al., 2026). In this section, we investigate whether cross-industry differences in financial structure, liquidity needs, profitability and demand sensitivity – by the durability of goods – help explain the asymmetric transmission of monetary policy shocks to output and prices. We do so by relating industry-level output and price responses to a set of balance-sheet and income-statement indicators, explicitly distinguishing between expansionary and contractionary shocks.

### 5.1 Transmission channels and measurement

We focus on two broad sets of mechanisms. First, the credit channel operates through changes in external finance premia and is expected to have stronger effects on industries facing tighter financing constraints. We proxy exposure to the credit channel using several industry-level indicators constructed at the NACE two-digit level from BACH database for the four largest euro-area economies (Germany, France, Italy, and Spain) over the period 2000-2024. These indicators include leverage (liability to equity ratio), short-term debt (current debt to total assets ratio), and the interest burden (interest and similar charges to gross operating profit ratio), capturing balance-sheet fragility, refinancing risk, and cash-flow stress (Bernanke et al., 1999; Gilchrist and Zakrajšek, 2012).

Second, we consider the role of internal liquidity buffers and pricing capacity. We proxy these characteristics using profitability measures – return on equity (ROE) and return on sales (ROS) – together with working-capital intensity. These indicators capture differences in firms' ability to absorb tighter financial conditions through prices and margin adjustment rather than through reductions in real activity.

All industry characteristics are constructed as time averages to isolate persistent cross-sectional differences and avoid confounding structural features with cyclical variation. Summary statistics are reported in Table 2.

## 5.2 Financial structure, profitability, and asymmetric transmission

We relate industry-level responses to monetary policy shocks – measured by 12-month output and price elasticities from the local projection estimates – to observable industry characteristics.[15] Figure 11 reports the resulting cross-industry coefficients from both a linear specification, which captures average amplification effects, and an asymmetric specification, which allows these effects to differ between contractionary and expansionary shocks.

Panel (a) shows that industry characteristics systematically shape the strength of monetary policy transmission. In both the linear and asymmetric specifications, industries with higher leverage, greater short-term debt exposure, and higher working-capital intensity experience significantly larger output contractions, by roughly 0.1 percentage points, following monetary tightening. These results point to an amplification mechanism operating through balance-sheet constraints and refinancing risk, whereby tighter financial conditions disproportionately restrict production in financially fragile and liquidity-intensive sectors. In contrast, the associated price responses are small and statistically insignificant, indicating that adjustment occurs primarily through quantities when financial constraints bind. Profitability indicators display the opposite pattern. Industries with higher ROE and ROS exhibit significantly smaller output contractions, by respectively 0.05 and 0.1 percentage points, following tightening, consistent with greater internal buffers and pricing capacity. Even in these sectors, however, price responses remain muted, reinforcing the view that contractionary monetary policy transmits mainly through real activity at the industry level.

Panel (b) indicates that these relationships are substantially weaker for expansionary shocks when examined using the asymmetric specification.[16] Output responses are generally insignificant for indicators of financial fragility, while statistically significant effects emerge only for a limited set of characteristics, most notably ROE and working-capital intensity, amplifying the expansionary effects by 0.1 percentage points. Price responses are again largely insignificant across all characteristics. Overall, heterogeneity under monetary easing is narrower in scope and less systematically related to balance-sheet conditions than under tightening.

Taken together, Figure 11 highlights a pronounced directional asymmetry in monetary policy transmission. Industry characteristics related to financial fragility and liquidity needs play a central role in amplifying the effects of contractionary shocks, while the transmission of expansionary shocks

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[15] The cross-sectional dimension of the data is limited to 24 manufacturing industries. To preserve statistical power and avoid overfitting, we therefore estimate parsimonious specifications that include industry characteristics individually. The main results are robust to specifications that include small groups of characteristics. For ease of comparison and graphical presentation, all industry characteristics are standardized to have zero mean and unit variance. Accordingly, the estimated coefficients should be interpreted as the effect of a one-standard-deviation increase in the corresponding industry characteristic.

[16] Panel (b) does not include estimates from the linear (symmetric) local projection specification, as responses to expansionary shocks would mechanically equal the negative of those reported for contractionary shocks in Panel (a).

appears weaker and more selective. This pattern provides a structural interpretation for the asymmetric responses documented in Section 4, indicating that credit-channel mechanisms become operative primarily when monetary policy tightens.

### 5.3 Durability and demand sensitivity

Beyond financial structure and internal buffers, demand sensitivity to interest rates represents an additional channel through which monetary policy affects real activity. Spending on durable goods is more interest-sensitive than spending on non-durables, as purchases can be postponed in response to changes in borrowing costs (Dedola and Lippi, 2005). We assess this channel by classifying industries according to the durability of their output and relating their industry-level responses to monetary policy shocks to this characteristic.[17]

The results shown in Figure 12 indicate that durability plays an important role in shaping the real effects of monetary policy, particularly in response to contractionary shocks. Industries producing durable goods experience significantly larger declines in output, by almost 0.3 percentage points, following monetary tightening compared to non-durable goods industries.[18] By contrast, price responses in durable-goods industries are comparatively muted, suggesting that adjustment primarily occurs through quantities rather than prices when demand is highly interest-sensitive. In line with the broader asymmetry documented in the paper, the role of durability is substantially weaker for expansionary monetary policy shocks. Output and price responses to monetary easing do not differ systematically between durable and non-durable goods industries, consistent with the view that expansionary policy is less effective in stimulating interest-sensitive demand.

## 6. Robustness checks

We assess the robustness of our main findings along several dimensions, including alternative monetary policy shock identification strategies, the treatment of extreme shocks, sample composition, and econometric specifications. Overall, the evidence confirms that the asymmetric transmission patterns documented in the previous sections are not driven by specific modelling choices, outliers, or exceptional episodes.

*Outliers and large monetary policy shocks.* As shown in Figure 2, the distribution of high-frequency monetary policy surprises includes several large realizations, raising the concern that extreme

[17] Industries are classified according to the economic destination of their output, following the approach in Durante et al. (2022). Durable-goods industries include: wood and products of wood and cork; other non-metallic mineral products; basic metals; fabricated metal products; computer, electronic and optical products; electrical equipment; machinery and equipment n.e.c; motor vehicles, trailers and semi-trailers; other transport equipment; and furniture.

[18] Consistent results are obtained by Georgiadis (2015), whereby euro area economies in which a larger share of aggregate output is due to durable manufacturing industries exhibit a stronger decline in real GDP in response to a monetary policy tightening.

observations may disproportionately influence the estimated asymmetries. To address this issue, we re-estimate the asymmetric local projection model after winsorising monetary policy shocks exceeding 10 basis points in absolute value, corresponding approximately to the 98th percentile of the distribution. The resulting impulse responses remain qualitatively and quantitatively similar to the baseline estimates (Figure 13 and Figure 14). In particular, contractionary shocks continue to generate large and persistent declines in manufacturing output and producer prices, while expansionary shocks produce substantially weaker responses. This indicates that the documented asymmetries are not driven by a small number of extreme events. Although the average absolute magnitude of positive shocks remains somewhat larger than that of negative shocks even after trimming, this residual difference in scale does not account for the pronounced asymmetry in real and price responses.

*Alternative monetary policy shock identification.* We further assess robustness using an alternative high-frequency identification of monetary policy shocks based on the *target* surprises of Altavilla et al. (2019), defined as changes in the one-month OIS rate within narrow event windows around ECB policy announcements. These shocks capture unexpected changes in the current policy rate, as opposed to surprises related to forward guidance or asset purchase programs. Figures 15 and 16 show that the estimated responses obtained with this alternative measure are qualitatively similar to the baseline results in terms of sign, timing, and persistence. Both contractionary and expansionary target shocks generate economically meaningful responses of output and prices, with dynamics that broadly mirror those obtained under the baseline identification. Overall, these findings indicate that our results are not sensitive to the specific high-frequency identification scheme employed, while suggesting that evidence of directional asymmetries is weaker when focusing on target-rate surprises alone.

*Excluding the Covid period.* To examine the role of the Covid period, we re-estimate the model restricting the sample to the pre-pandemic period ending in December 2019. Figures 17 and 18 show that the asymmetric responses of output and prices to contractionary versus expansionary shocks remain clearly visible, both at the aggregate and sectoral levels. This exercise confirms that the documented asymmetries are not driven by pandemic-related disruptions or extraordinary policy interventions and further underscores the robustness of the baseline econometric specification.

*Additional robustness checks.* We have conducted a range of further robustness analyses. First, the results are robust to alternative specifications of the local projection framework, including the inclusion of additional lags of the dependent variable and alternative sets of control variables. Second, in the cross-industry analysis, the results remain stable when industry characteristics are measured using alternative horizons or when time averages are computed excluding the Covid period. Overall, these robustness checks reinforce the conclusion that the asymmetric and heterogeneous transmission of monetary policy documented in this paper reflects genuine economic mechanisms rather than specific modelling choices or sample composition.

## 7. Conclusions

This paper provides new evidence on the asymmetric transmission of monetary policy shocks to manufacturing activity and producer prices in the euro area. Using externally identified monetary policy shocks and nonlinear local projection method, we show that contractionary policy actions generate large and persistent declines in both output and prices, whereas expansionary shocks produce weaker and often short-lived responses. These asymmetries are robust across levels of sectoral disaggregation and quantitatively important: the contribution of monetary policy to forecast error variance in manufacturing output and prices is driven primarily by contractionary shocks.

A central contribution of the paper is to link directional asymmetries in monetary policy transmission to heterogeneous sectoral channels. Exploiting rich cross-industry heterogeneity, we show that the real effects of monetary tightening are amplified in industries characterized by greater financial fragility, higher liquidity needs, and stronger exposure to interest-sensitive demand. By contrast, expansionary shocks elicit weaker responses through the same channels. These findings provide direct evidence that key transmission mechanisms operate asymmetrically with respect to the sign of the policy shock.

The analysis also highlights important asymmetries in price adjustment along production chains. Producer prices respond more strongly and persistently to monetary tightening than to easing, particularly in upstream, input-producing industries. This pattern suggests that contractionary monetary policy propagates through the cost structure of firms more forcefully than expansionary policy, with implications for the pace and extent of cost pass-through to downstream prices and inflation dynamics.

From a policy perspective, our results imply that assessments of monetary policy that abstract from directional asymmetries and sectoral heterogeneity may fail to fully capture the real and nominal consequences of policy actions. Incorporating information on industry-level financial structure, demand sensitivity, and price adjustment into policy analysis can improve the calibration of monetary policy and enhance the understanding of how policy actions transmit through the economy.

Future research could extend this analysis beyond the manufacturing sector, exploit firm-level data to further refine the identification of transmission mechanisms, or explore how asymmetric monetary policy transmission interacts with broader economic conditions, such as periods of heightened uncertainty.

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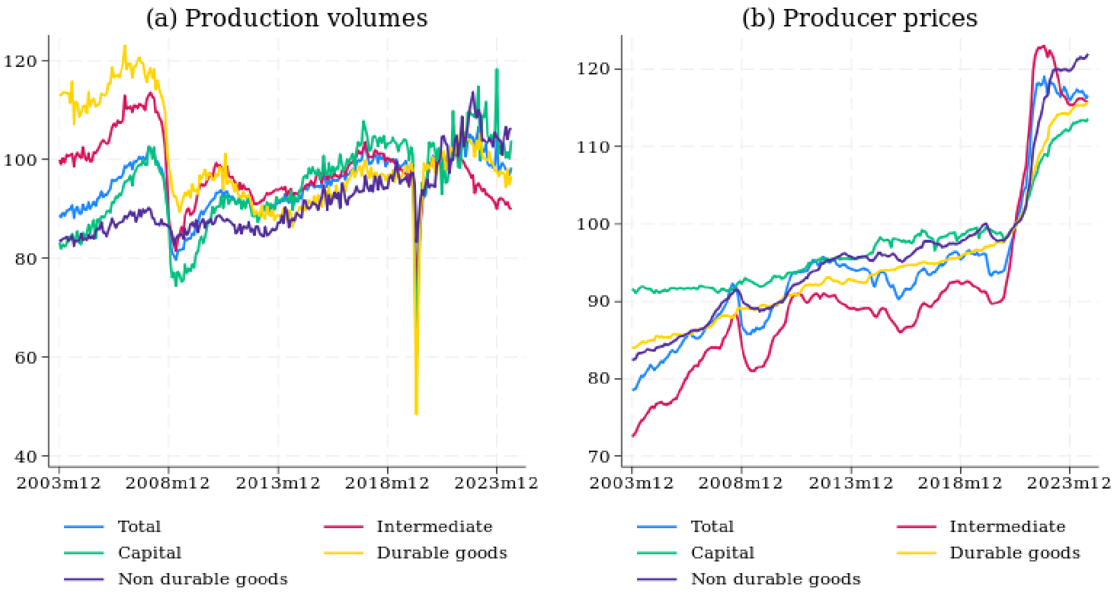
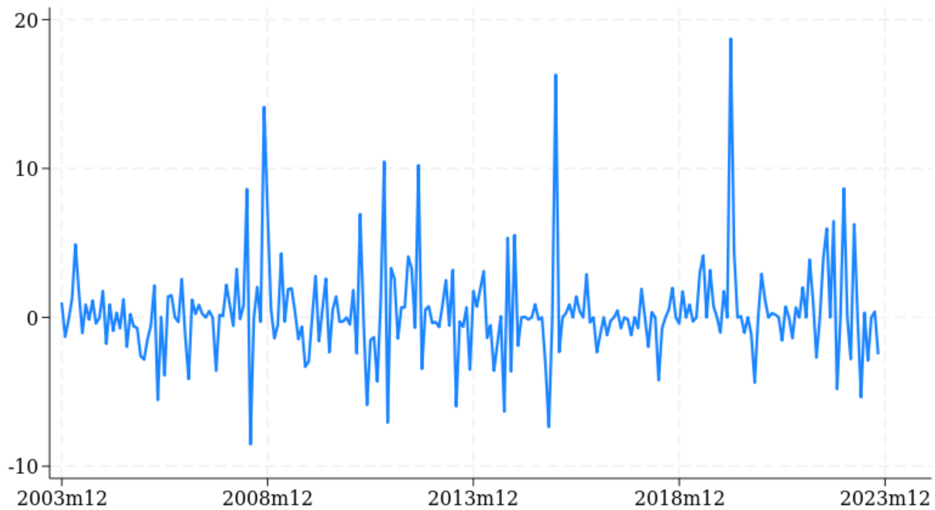
**Figure 1**. Heterogeneity in manufacturing output and prices across industrial groups



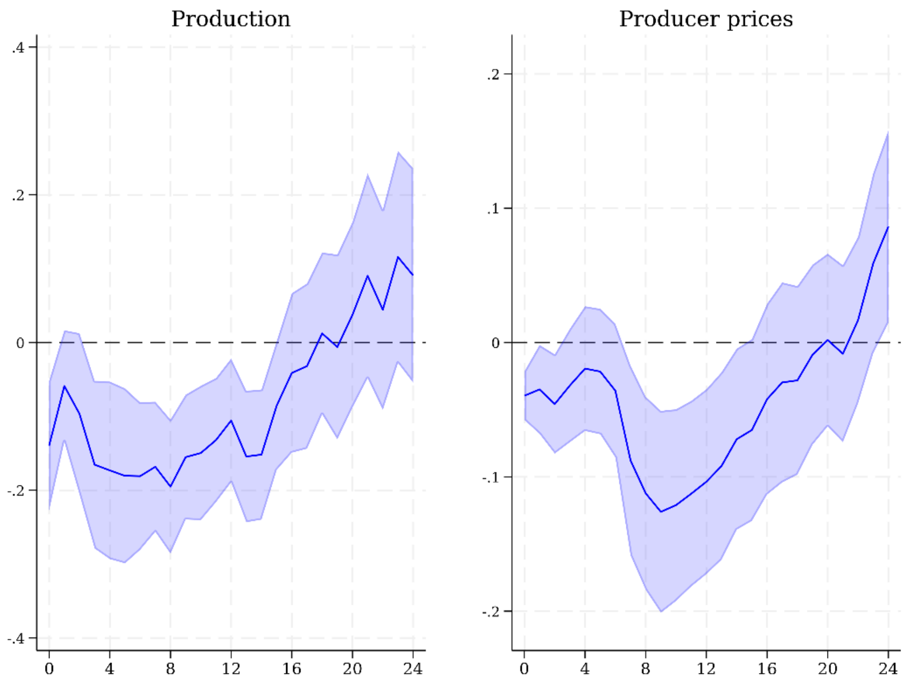

*Notes:* The figure plots monthly indices of manufacturing production volumes (left panel) and producer prices (right panel) in the euro area, for total manufacturing and for the main industrial groupings (durable consumer goods, non-durable consumer goods, intermediate goods, and capital goods). All series are calendar- and seasonally adjusted and normalized to 2021 = 100. Production volumes are shown as three-month moving averages to smooth high-frequency fluctuations. The sample spans December 2003 to August 2024

**Figure 2.** High-frequency identified *pure* monetary policy shocks in the euro area




*Notes:* The figure displays monthly series of high-frequency *pure* monetary policy shocks for the euro area, measured in basis points, identified following Jarociński and Karadi (2020). The shocks are constructed from financial market surprises around ECB policy announcements and isolate exogenous changes in the monetary policy stance from information effects. Positive (negative) values refer to contractionary (expansionary) shocks. The sample spans December 2003 to October 2023.

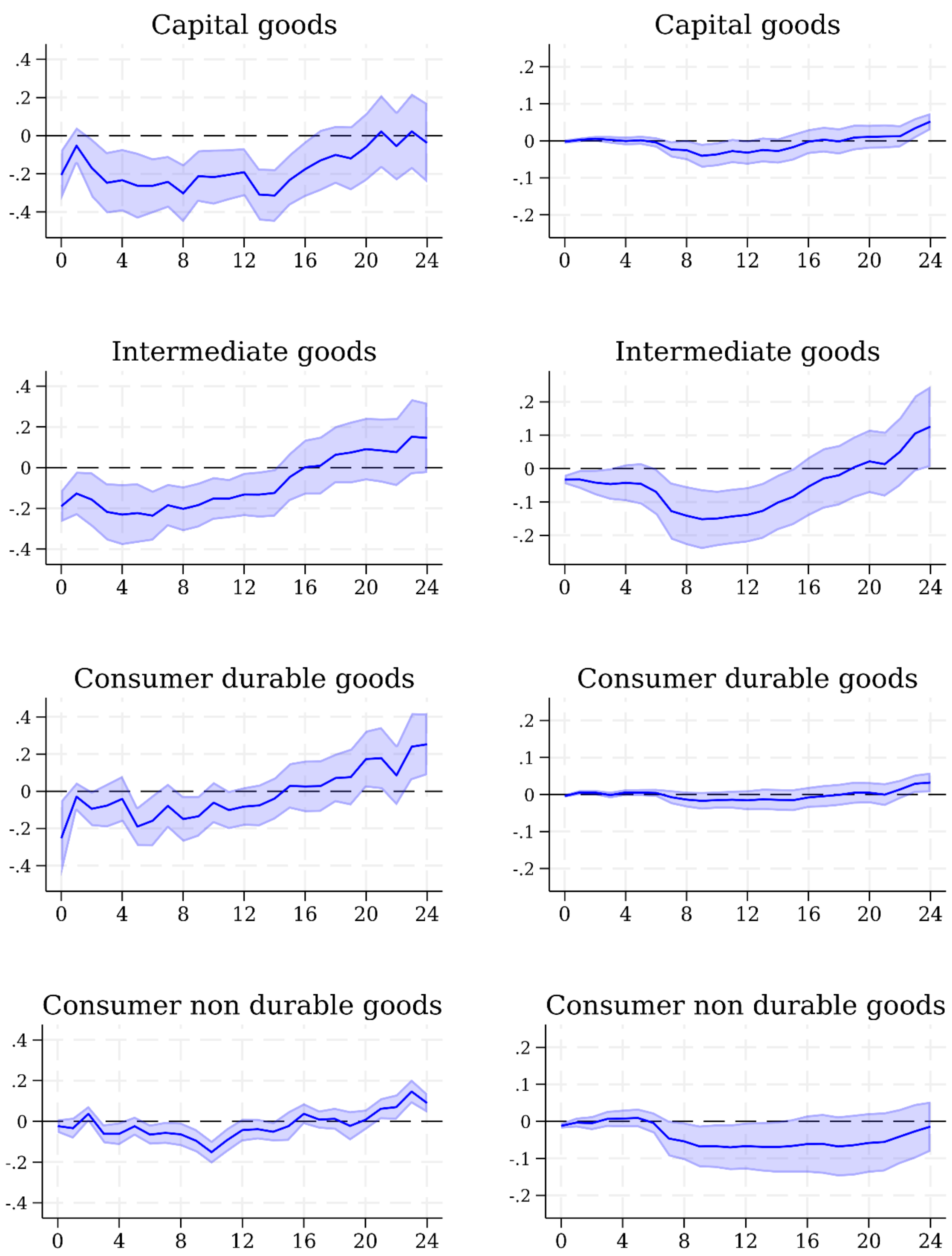
**Figure 3**. Impulse responses of manufacturing output and prices to a contractionary monetary policy shock




*Notes:* The figure reports impulse response functions to a 1 basis point contractionary monetary policy shock identified following Jarocinski and Karadi (2020). Solid lines denote point estimates and shaded areas indicate 68% confidence intervals. Unit of measure: percentage points.

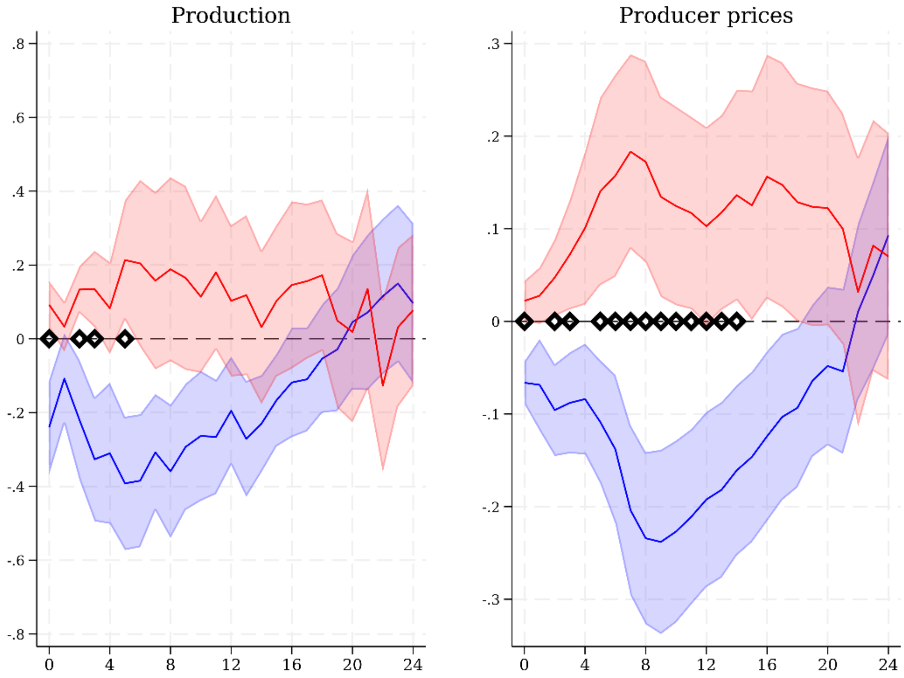
**Figure 4**. Impulse responses of manufacturing output and prices to a contractionary monetary policy shock across main industrial groupings

**Production** **Producer prices**




*Notes:* The figure reports impulse response functions of manufacturing production and producer prices to a contractionary pure monetary policy shock of one basis point. Responses are shown separately for total manufacturing and main industrial groupings. Solid lines denote point estimates and shaded areas indicate 68 percent confidence intervals. Monetary policy shocks are from Jarociński and Karadi (2020). Unit of measure: percentage points.

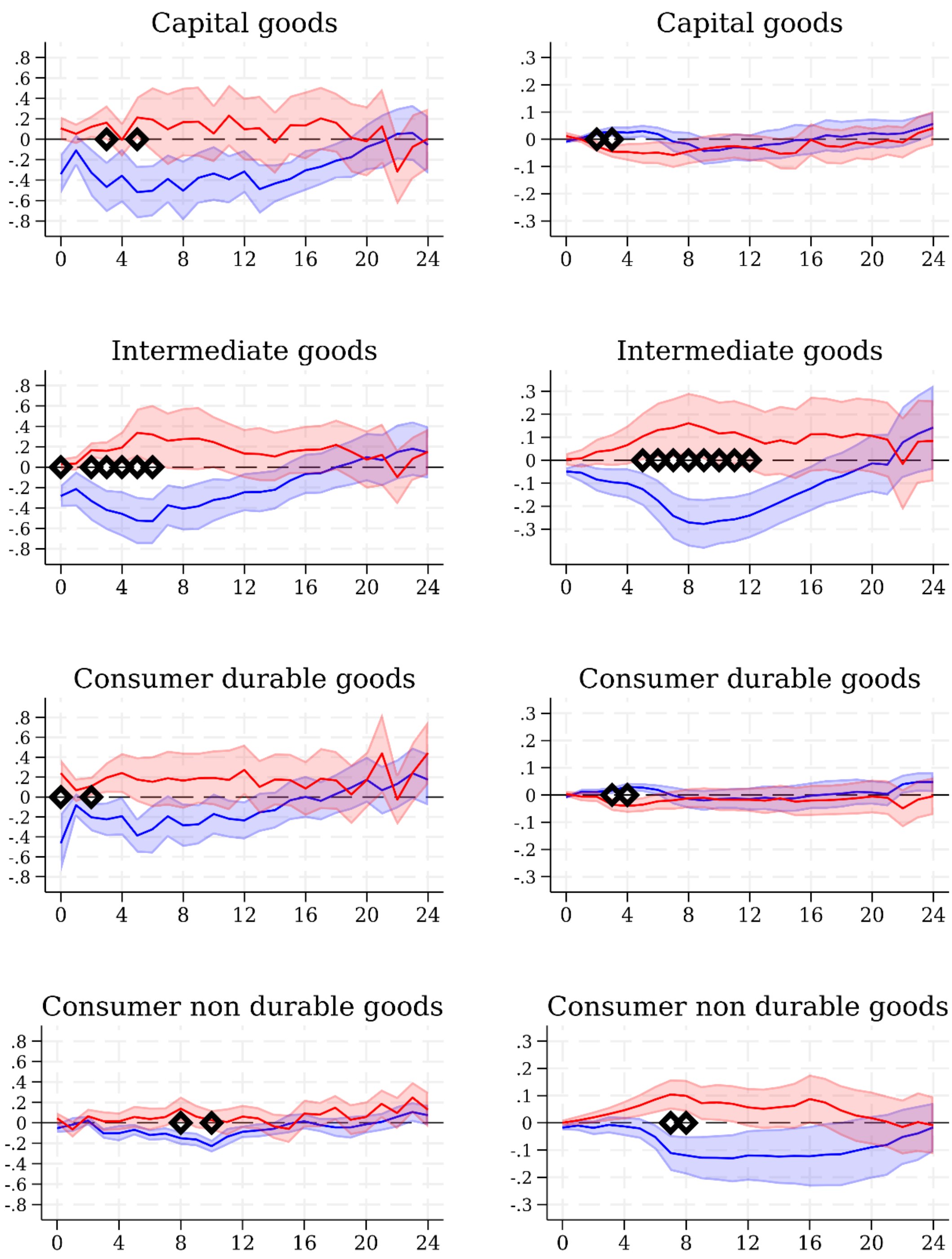
**Figure 5**. Impulse responses to expansionary and contractionary monetary policy shocks




*Notes*: The figure reports impulse response functions of manufacturing production and producer prices to expansionary (red) and contractionary (blue) pure monetary policy shocks of one basis point. Solid lines denote point estimates and shaded areas indicate 68 percent confidence intervals. Diamonds on the x-axis indicate horizons at which the null hypothesis of symmetric transmission is rejected at the 10 percent significance level, with the full test specification reported in equation 3. Monetary policy shocks are from Jarociński and Karadi (2020). Unit of measure: percentage points.

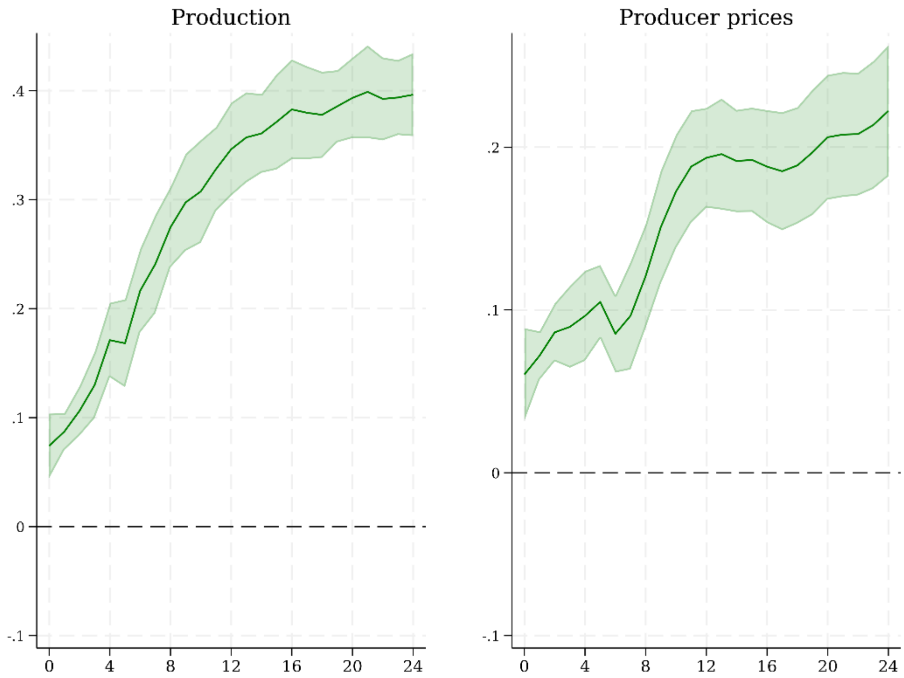
**Figure 6**. Impulse responses to expansionary and contractionary monetary policy shocks across main industrial groupings

**Production** **Producer prices**



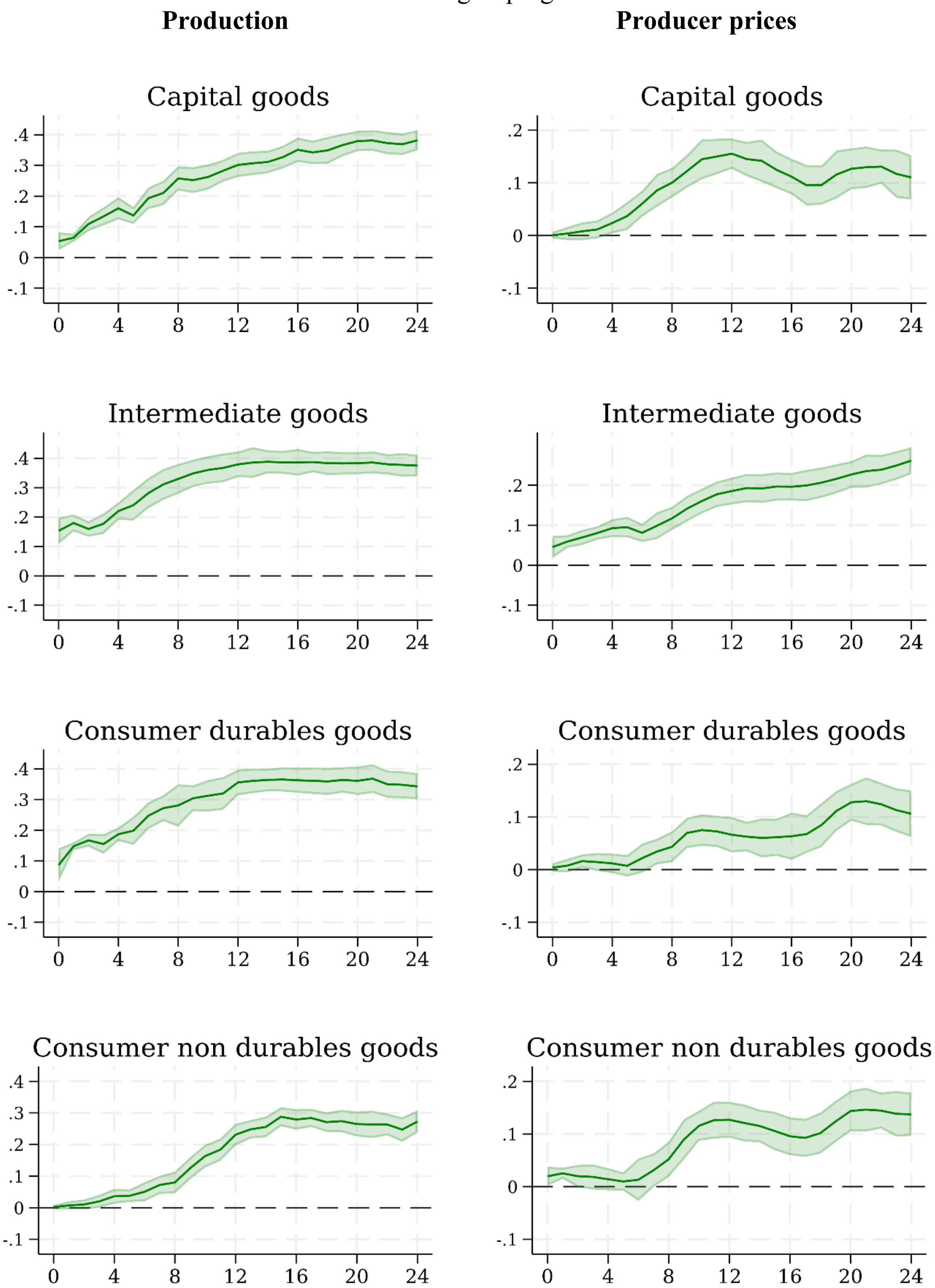

*Notes*. The figure reports impulse response functions of manufacturing production and producer prices to expansionary (red) and contractionary (blue) pure monetary policy shocks of one basis point. Responses are shown separately for main industrial groupings. Solid lines denote point estimates and shaded areas indicate 68 percent confidence intervals. Diamonds on the x-axis indicate horizons at which the null hypothesis of symmetric transmission is rejected at the 10 percent significance level, with the full test specification reported in equation 3. Monetary policy shocks are from Jarociński and Karadi (2020). The definition of Main Industrial Groupings is reported in Appendix A. Unit of measure: percentage points.

**Figure 7**. Contribution of monetary policy shocks to manufacturing fluctuations



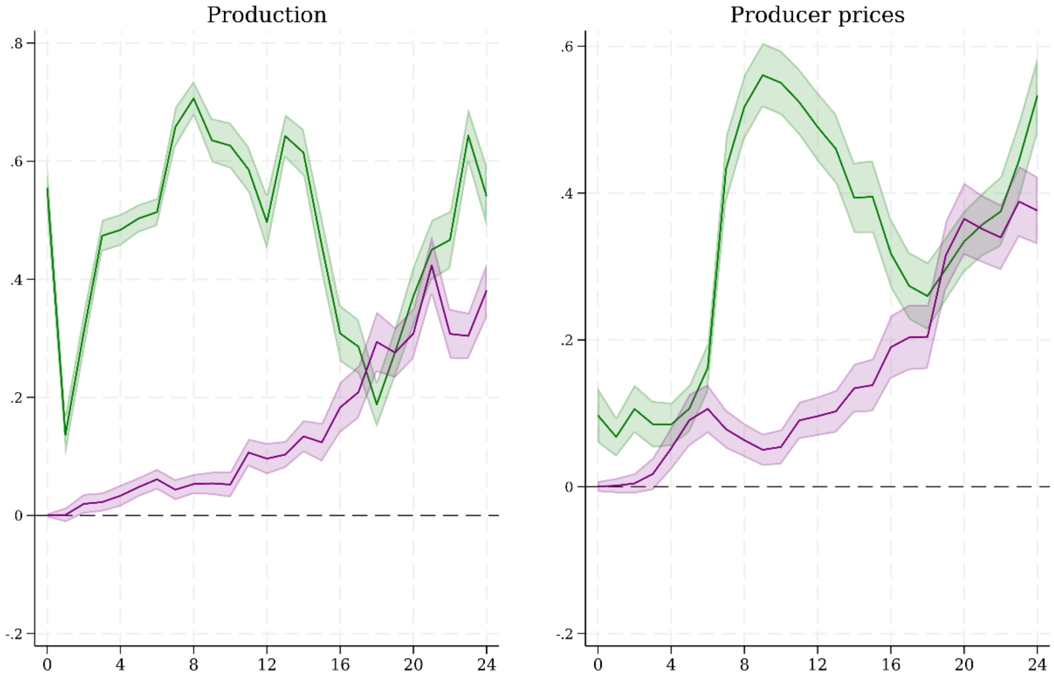

*Notes*: The figure reports the share of forecast error variance in manufacturing production and producer prices attributable to monetary policy shocks identified by Jarociński and Karadi (2020). Variance contributions are computed using the local-projection $R^2$ methodology of Gorodnichenko and Lee (2020). Solid lines denote point estimates and shaded areas indicate 68 percent confidence intervals, based on 100 bootstrap replications at each horizon.

**Figure 8**. Contribution of monetary policy shocks to manufacturing fluctuations across main industrial groupings



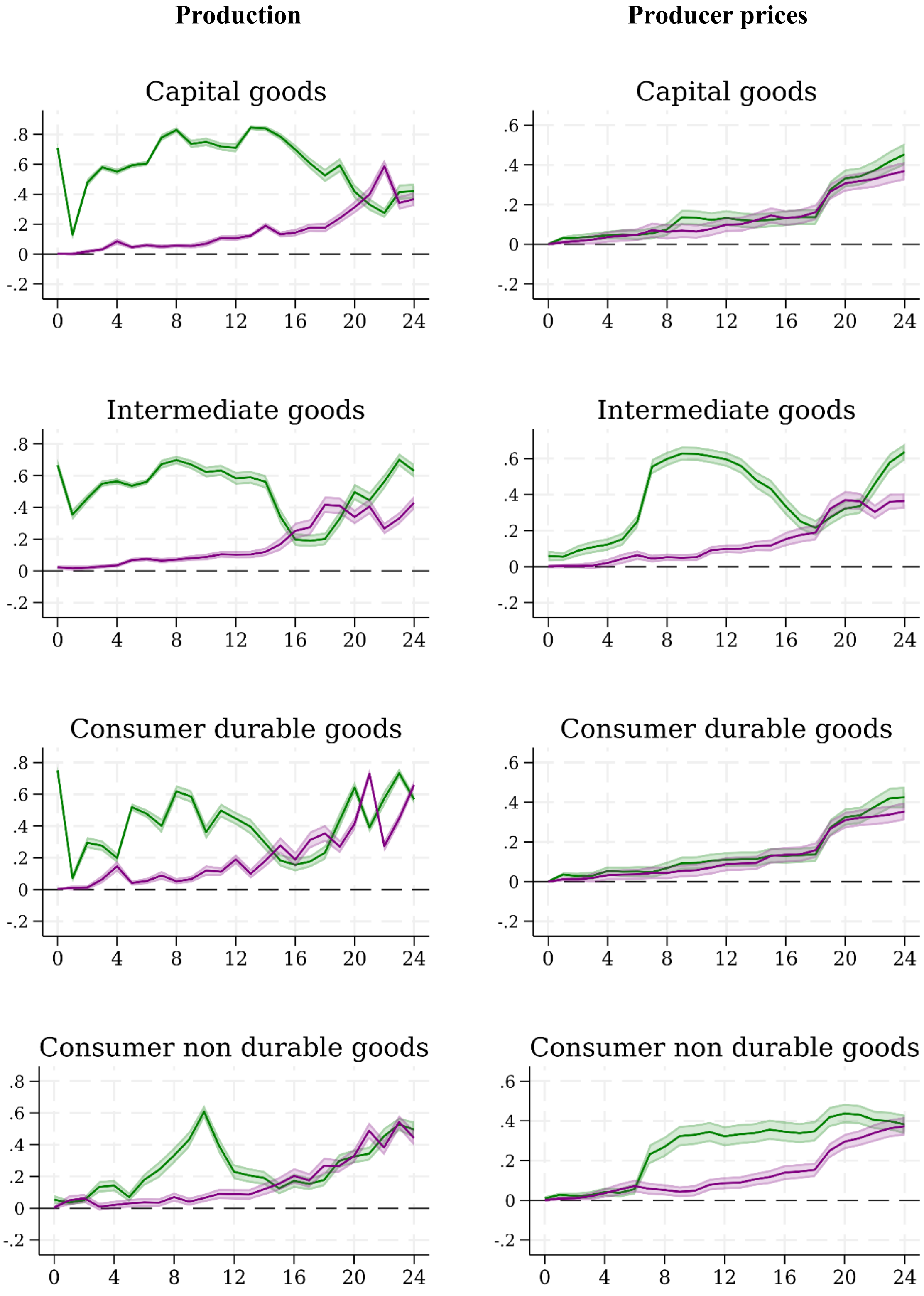

*Notes*. The figure reports the share of forecast error variance in manufacturing production and producer prices attributable to monetary policy shocks, shown separately for main industrial groupings. Monetary policy shocks are from Jarociński and Karadi (2020). Variance contributions are computed using the local-projection $R^2$ methodology of Gorodnichenko and Lee (2020). Solid lines denote point estimates and shaded areas indicate 68 percent confidence intervals, based on 100 bootstrap replications at each horizon. The definition of Main Industrial Groupings is reported in Appendix A.

**Figure 9**. Forecast error variance contributions of contractionary and expansionary monetary policy shocks




*Notes*: The figure reports the share of forecast error variance in manufacturing production and producer prices attributable to contractionary (green) and expansionary (purple) monetary policy shocks. Monetary policy shocks are from Jarociński and Karadi (2020). Variance contributions are computed using the local-projection $R^2$ methodology of Gorodnichenko and Lee (2020). Solid lines denote point estimates and shaded areas indicate 68 percent confidence intervals, based on 100 bootstrap replications at each horizon.

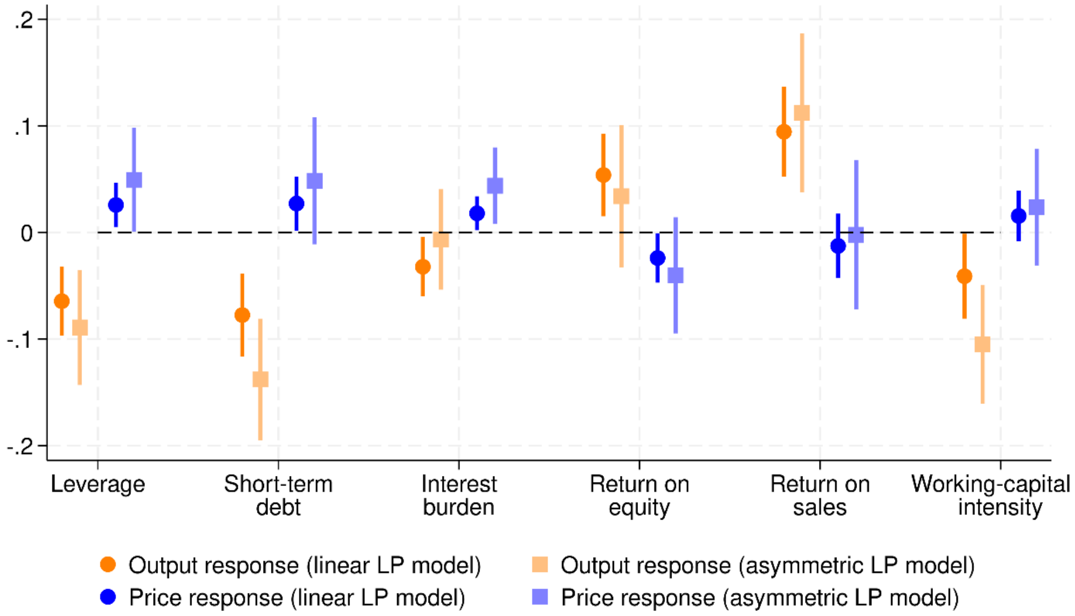
**Figure 10**. Forecast error variance contributions of contractionary and expansionary shocks across industries across main industrial groupings



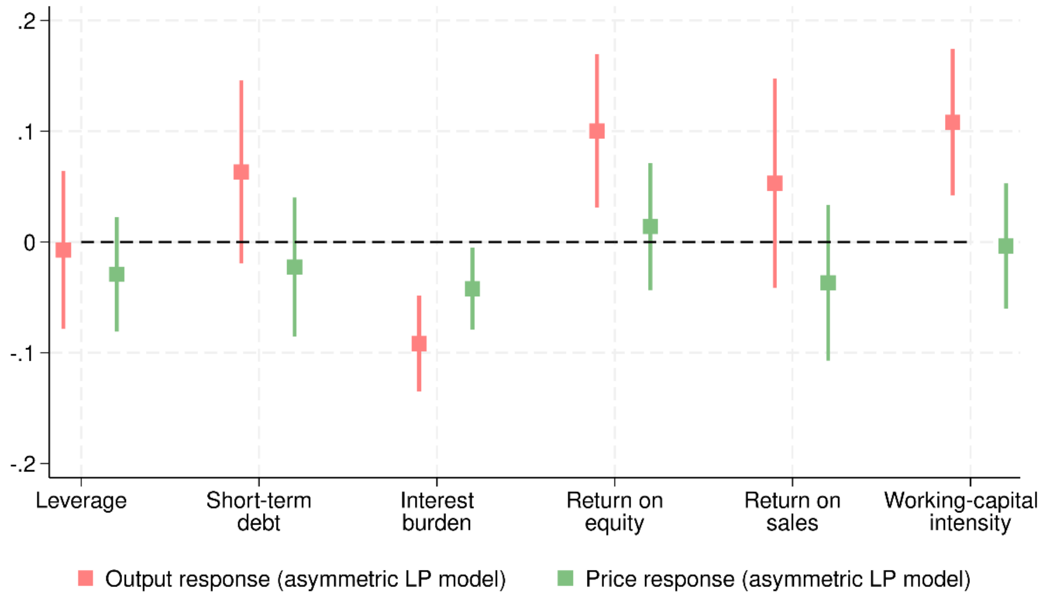

*Notes*. The figure reports the share of forecast error variance in manufacturing production and producer prices attributable to contractionary (green) and expansionary (purple) monetary policy shocks, shown separately for main industrial groupings. Monetary policy shocks are from Jarociński and Karadi (2020). Variance contributions are computed using the local-projection $R^2$ methodology of Gorodnichenko and Lee (2020). Solid lines denote point estimates and shaded areas indicate 68 percent confidence intervals, based on 100 bootstrap replications at each horizon. The definition of Main Industrial Groupings is reported in Appendix A.

**Figure 11**. Industry characteristics and the transmission of monetary policy shocks

Panel (a): Contractionary monetary policy shocks

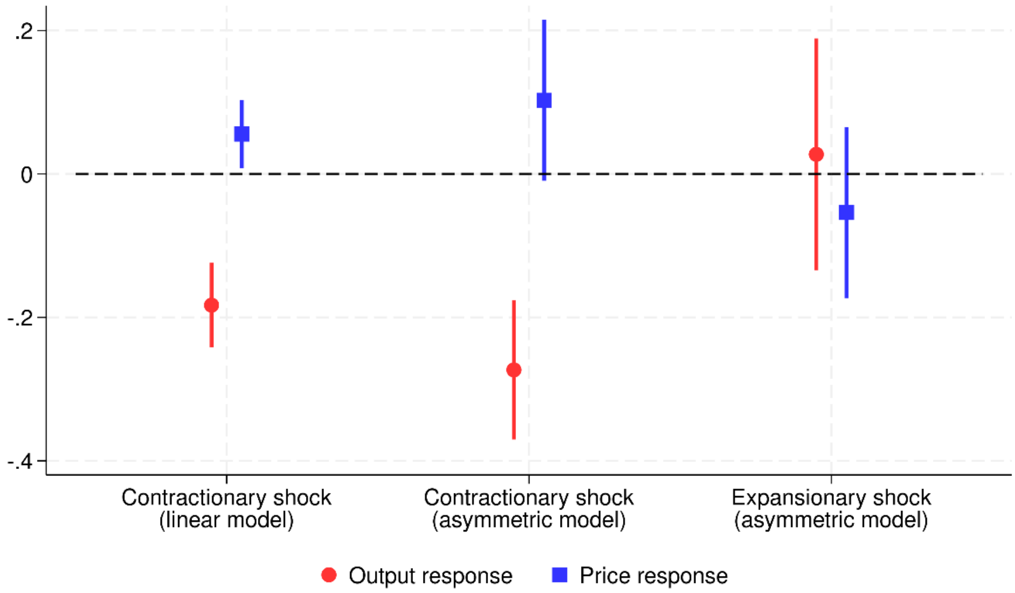



Panel (b): Expansionary monetary policy shocks



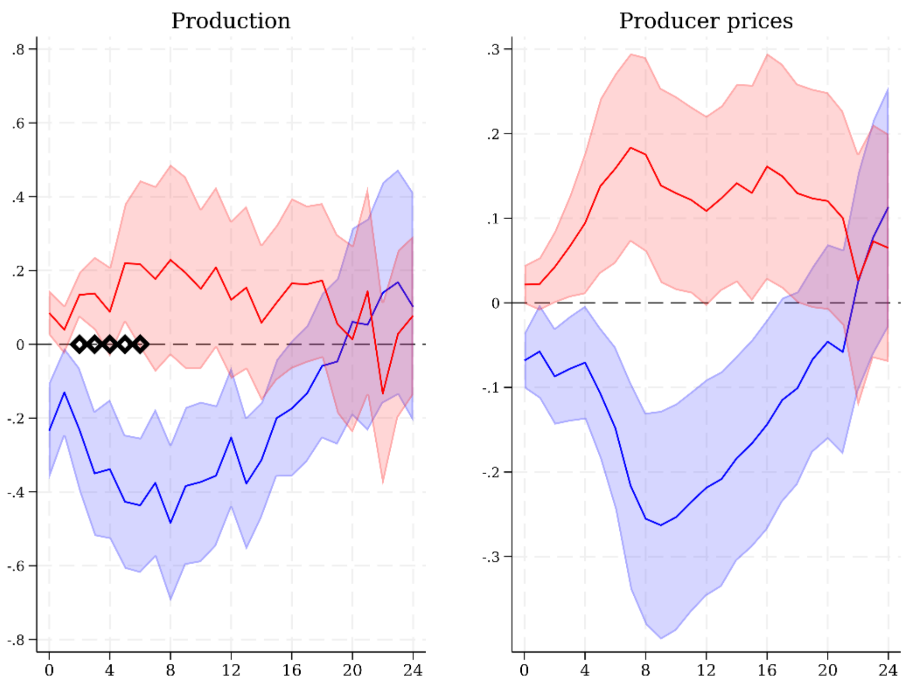

*Notes*. The figure reports cross-industry regression coefficients linking sectoral impulse responses to monetary policy shocks to standardized industry characteristics. Panel (a) shows responses to contractionary monetary policy shocks, while Panel (b) shows responses to expansionary shocks. Circles (squares) denote estimates from linear (asymmetric) local projection models. Orange/red markers correspond to output responses, while blue/green markers correspond to price responses. Vertical bars indicate 90 percent confidence intervals based on heteroskedasticity-robust standard errors. All characteristics are standardized to have zero mean and unit variance. The horizontal dashed line denotes zero. Unit of measure on the y-axis: percentage points.

**Figure 12**. Durability and the transmission of monetary policy shocks



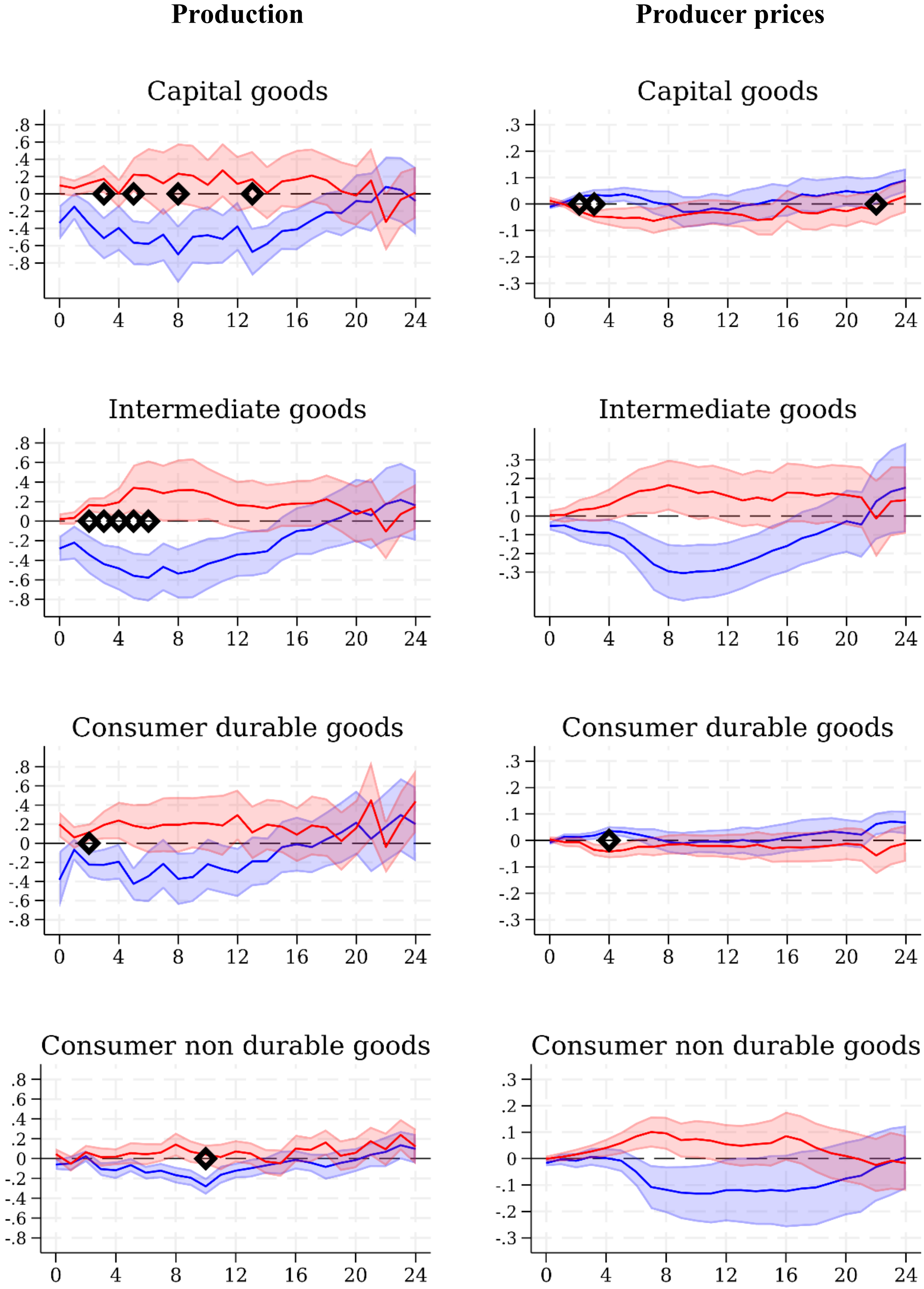

*Notes*. The figure reports cross-industry regression coefficients linking sectoral impulse responses to monetary policy shocks to an indicator of output durability. The coefficients summarize responses at the 12-month horizon. The left and middle groups refer to contractionary monetary policy shocks estimated using, respectively, a linear and an asymmetric local projection model, while the right group reports responses to expansionary shocks from the asymmetric specification. Circles (squares) denote output responses (price responses). Vertical bars indicate 90 percent confidence intervals based on heteroskedasticity-robust standard errors. The horizontal dashed line denotes zero. Unit of measure on the y-axis: percentage points.

**Figure 13**. IRFs to an expansionary (red) and a contractionary (blue) monetary policy surprise without extreme contractionary shocks: asymmetric specification



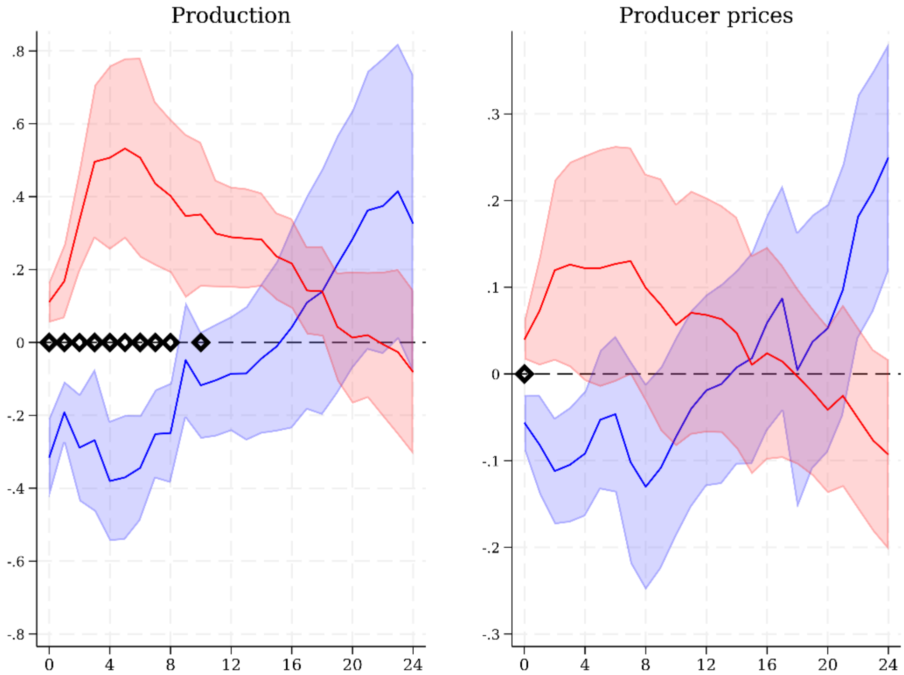

*Notes*: Impulse response functions to contractionary (blue) and expansionary (red) monetary policy shocks. The shocks are obtained from Jarocinski and Karadi (2020). The size of the shocks is 1 basis point, and the contractionary shocks are winsorized at the 10 basis point threshold (roughly the 98$^{\text{th}}$ percentile of the contractionary shock distribution). Solid lines: point estimates; shaded area: 68% confidence intervals. Diamonds on the x-axis indicate horizons at which the null hypothesis of symmetric transmission is rejected at the 10 percent significance level, with the full test specification reported in equation 3. Unit of measure: percentage points.

**Figure 14**. IRFs to an expansionary (red) and a contractionary (blue) monetary policy surprise without extreme contractionary shocks: asymmetric specification




*Notes*. Impulse response functions to contractionary (blue) and expansionary (red) monetary policy shocks. The shocks are obtained from Jarocinski and Karadi (2020). The size of the shocks is 1 basis point, and the contractionary shocks are winsorized at the 10 basis point threshold (roughly the 98th percentile of the contractionary shock distribution) Solid lines: point estimates; shaded area: 68% confidence intervals. Diamonds on the x-axis indicate horizons at which the null hypothesis of symmetric transmission is rejected at the 10 percent significance level, with the full test specification reported in equation 3.  Unit of measure: percentage points.

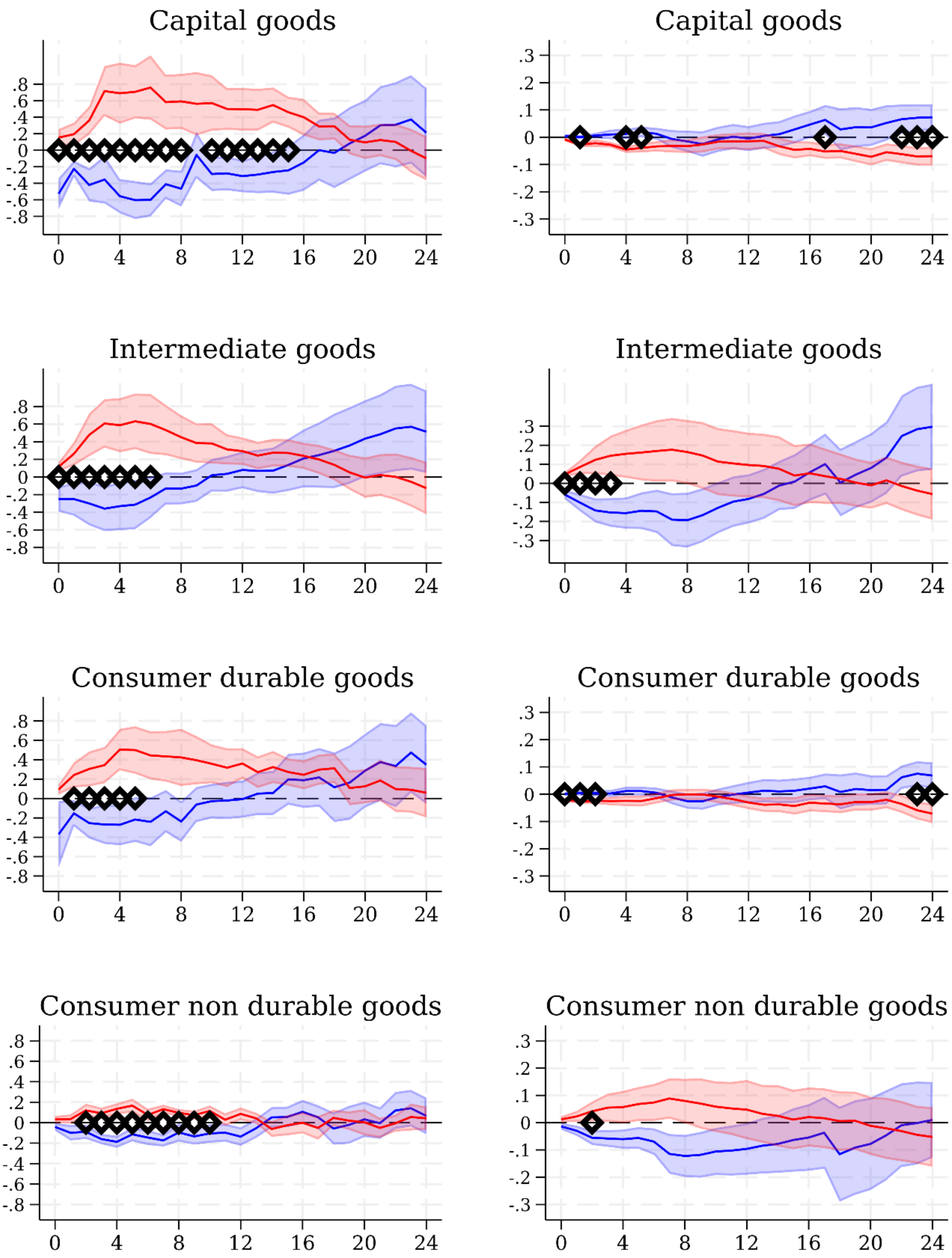
**Figure 15**. IRFs to an expansionary (red) and a contractionary (blue) monetary policy surprise from Altavilla et al. (2019): asymmetric specification




*Notes*: Impulse response functions to contractionary (blue) and expansionary (red) monetary policy shocks. The shocks are obtained from Altavilla et al. (2019). The size of the shocks is 1 basis point. Solid lines: point estimates; shaded area: 68% confidence intervals. Diamonds on the x-axis indicate horizons at which the null hypothesis of symmetric transmission is rejected at the 10 percent significance level, with the full test specification reported in equation 3. Unit of measure: percentage points.

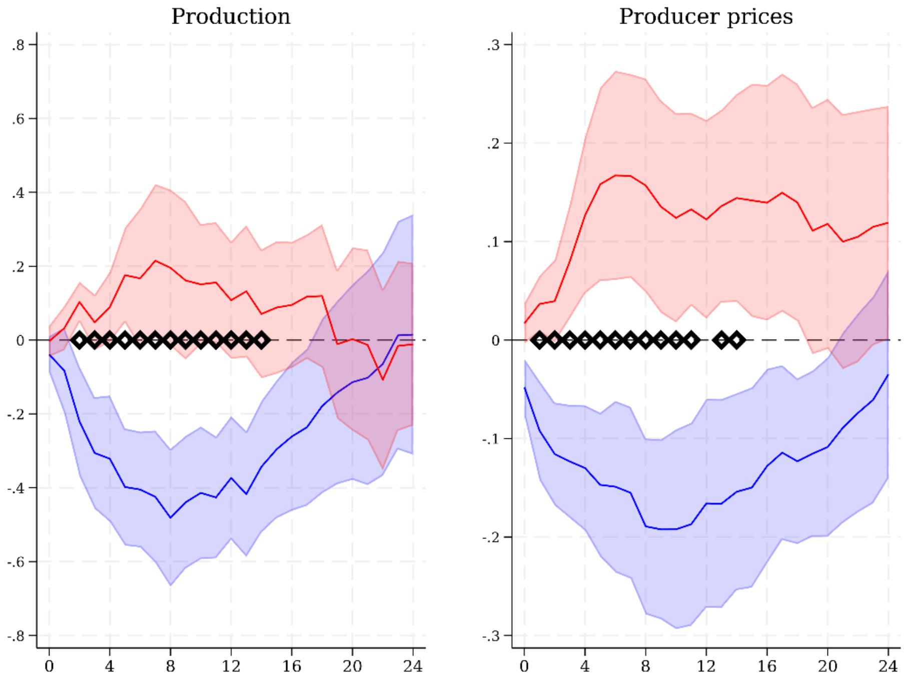
**Figure 16.** IRFs to an expansionary and a contractionary monetary policy surprise from Altavilla et al. (2019): asymmetric specification

**Production** **Producer prices**




*Notes*. Impulse response functions to contractionary (blue) and expansionary (red) monetary policy shocks. The shocks are obtained from Altavilla et al. (2019). The size of the shocks is 1 basis point. Solid lines: point estimates; shaded area: 68% confidence intervals. Diamonds on the x-axis indicate horizons at which the null hypothesis of symmetric transmission is rejected at the 10 percent significance level, with the full test specification reported in equation 3. Unit of measure: percentage points.

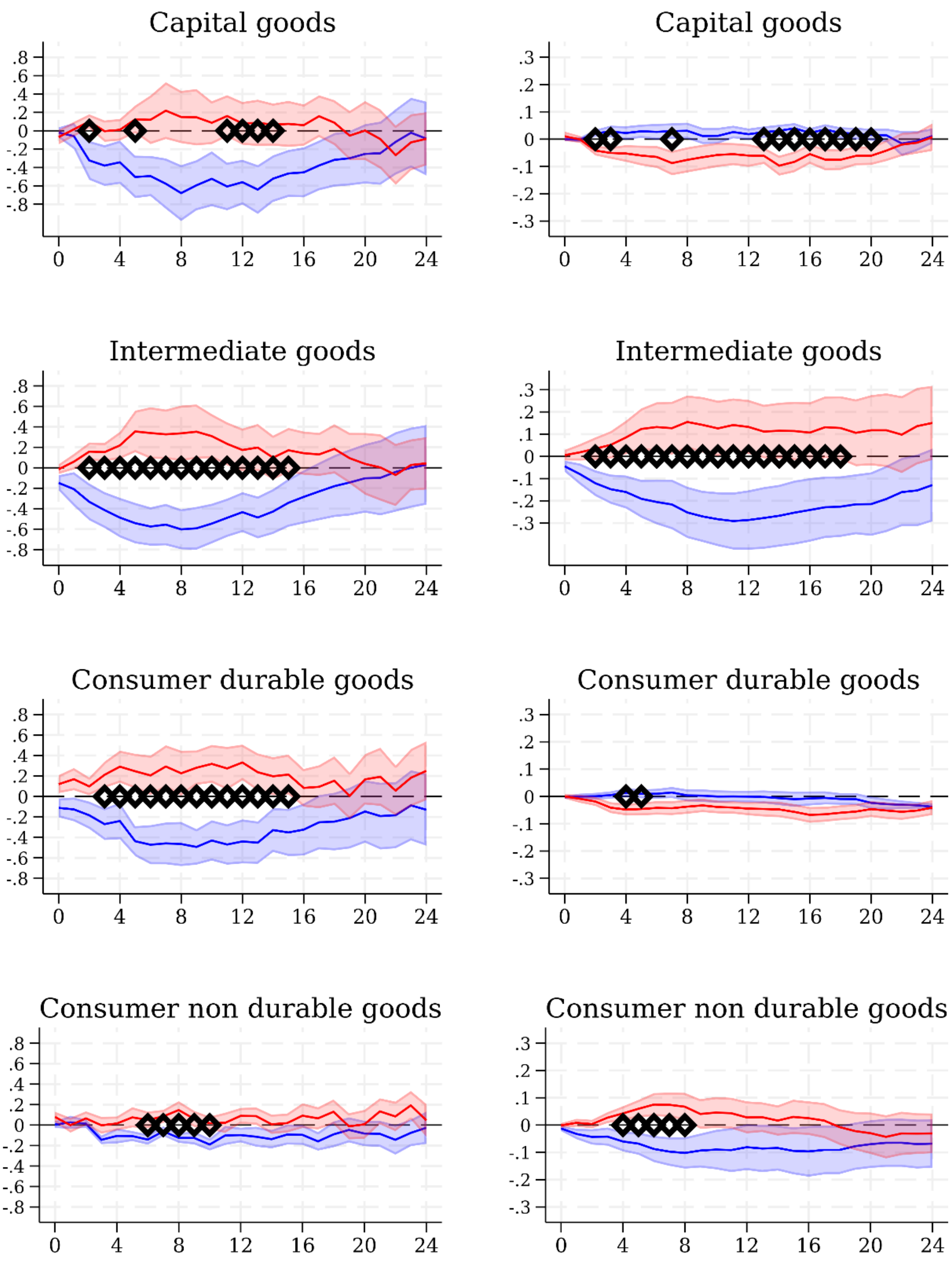
**Figure 17**. IRFs to an expansionary (red) and a contractionary (blue) monetary policy surprise pre-Covid: asymmetric specification




*Notes*: Impulse response functions to contractionary (blue) and expansionary (red) monetary policy shocks. The shocks are obtained from Jarocinski and Karadi (2020). The size of the shocks is 1 basis point. Solid lines: point estimates; shaded area: 68% confidence intervals. Diamonds on the x-axis indicate horizons at which the null hypothesis of symmetric transmission is rejected at the 10 percent significance level, with the full test specification reported in equation 3. Unit of measure: percentage points.

**Figure 18**. IRFs to an expansionary and a contractionary monetary policy surprise pre-Covid: asymmetric specification

**Production** **Producer prices**




*Notes*. Impulse response functions to contractionary (blue) and expansionary (red) monetary policy shocks. The shocks are obtained from Jarocinski and Karadi (2020). The size of the shocks is one basis point. Solid lines: point estimates; shaded area: 68% confidence intervals. Diamonds on the x-axis indicate horizons at which the null hypothesis of symmetric transmission is rejected at the 10 percent significance level, with the full test specification reported in equation 3. Unit of measure: percentage points.

**Table 1.** Pure monetary policy shocks: Basic descriptive statistics

| | Mean | Standard deviation | Min & Max | Number of observations |
|---|---|---|---|---|
| All shocks | 0.4 | 3.2 | [-8.5; 18.7] | 239 |
| Contractionary shocks | 2.6 | 3.3 | [0.0; 18.7] | 104 |
| Expansionary shocks | -1.8 | 1.9 | [-8.5; -0.0] | 99 |

*Notes:* This table reports basic descriptive statistics for pure monetary policy shocks in the euro area over the period December 2003–October 2023. All values are expressed in basis points. The statistics include the mean, standard deviation, minimum and maximum, and the number of observations, reported for all shocks as well as separately for contractionary and expansionary shocks.

**Table 2**. Industry characteristics by manufacturing sector

| Code | Sector | Leverage | Short-term debt | Interest burden | ROE | ROS | Working-capital intensity |
|---|---|---|---|---|---|---|---|
| C10 | Food products | 157.5 | 53.7 | 39.4 | 15.3 | 7.5 | 3.1 |
| C11 | Beverages | 120.8 | 58.8 | 31.2 | 11.8 | 9.9 | 9.5 |
| C12 | Tobacco products | 255.2 | 42.5 | 37.9 | 40.2 | 18.3 | 24.2 |
| C13 | Textiles | 165.3 | 66.0 | 41.1 | 22.5 | 3.0 | 4.2 |
| C14 | Wearing apparel | 157.8 | 67.1 | 42.8 | 18.6 | 7.2 | 8.9 |
| C15 | Leather and footwear | 189.1 | 71.8 | 47.4 | 15.2 | 8.9 | 7.2 |
| C16 | Wood products | 172.5 | 60.3 | 38.8 | 19.9 | 5.9 | 5.1 |
| C17 | Paper products | 153.4 | 51.7 | 35.6 | 17.5 | 7.2 | 4.4 |
| C18 | Printing and media | 197.9 | 58.7 | 39.5 | 16.1 | 5.6 | 3.5 |
| C19 | Coke and refined petroleum | 198.8 | 51.4 | 43.8 | 24.8 | 9.9 | 1.9 |
| C20 | Chemicals | 150.7 | 45.2 | 32.6 | 31.7 | 11.2 | 8.4 |
| C21 | Pharmaceuticals | 139.9 | 45.7 | 34.2 | 15.3 | 15.1 | 14.3 |
| C22 | Rubber and plastics | 165.2 | 57.1 | 39.8 | 18.3 | 10.3 | 6.6 |
| C23 | Non-metallic minerals | 130.8 | 46.7 | 31.7 | 26.6 | 5.1 | 6.5 |
| C24 | Basic metals | 212.2 | 56.2 | 39.3 | 27.3 | 6.2 | 1.8 |
| C25 | Fabricated metal products | 183.2 | 65.3 | 43.9 | 13.4 | 8.8 | 5.3 |
| C26 | Computers and electronics | 224.8 | 56.4 | 44.2 | 50.8 | 7.8 | 6.7 |
| C27 | Electrical equipment | 191.1 | 56.3 | 38.4 | 29.3 | 9.9 | 6.2 |
| C28 | Machinery and equipment | 190.3 | 68.7 | 44.4 | 15.4 | 10.6 | 5.3 |
| C29 | Motor vehicles | 271.8 | 47.2 | 38.9 | 50.1 | 3.4 | 1.2 |
| C30 | Other transport equipment | 413.0 | 71.3 | 50.8 | 28.1 | 9.5 | 5.7 |
| C31 | Furniture | 212.2 | 64.7 | 46.3 | 20.8 | 4.3 | 4.4 |
| C32 | Other manufacturing | 147.9 | 60.2 | 35.4 | 18.4 | 10.9 | 7.5 |
| C33 | Repair and installation | 259.8 | 75.7 | 52.8 | 13.6 | 12.9 | 5.2 |

| Cross-sector statistics | Leverage | Short-term debt | Interest burden | ROE | ROS | Working-capital intensity |
|---|---|---|---|---|---|---|
| Mean | 194.2 | 58.3 | 40.4 | 23.4 | 8.7 | 6.6 |
| Standard deviation | 60.1 | 9.0 | 5.5 | 10.6 | 3.5 | 4.6 |

*Notes*. The table reports summary statistics for industry-level characteristics used in the cross-sectional analysis of monetary policy transmission. Industries are defined at the NACE Rev.2 two-digit level (C10–C33). All variables are constructed as time averages over the sample period 2000-2024. Leverage is measured as the liabilities-to-equity ratio. Short-term debt corresponds to the share of current debt in total assets. Interest burden is defined as interest and similar charges relative to gross operating profit. Return on equity (ROE) and return on sales (ROS) capture industry-level profitability and internal buffers. Working-capital intensity is measured as the ratio of current assets to total assets. The underlying firm-level data are drawn from the Bank for the Accounts of Companies Harmonized (BACH) database and aggregated to the industry level for the four largest euro-area economies (Germany, France, Italy, and Spain). All variables are expressed in percentage terms.

# Appendices

## Appendix A. Data construction and industry classification

This appendix documents the construction of the datasets and classifications used in the empirical analysis. It complements Section 2 by providing technical details that are not essential for the main narrative.

*Manufacturing production and producer prices*. Monthly indices of industrial production and producer prices for the euro-area manufacturing sector are obtained from Eurostat. All series are calendar- and seasonally adjusted and expressed as indices with 2021 = 100. The sample covers December 2003 to August 2024, subject to data availability. Manufacturing activity is analysed at three levels of aggregation: total manufacturing, main industrial groupings, NACE Rev. 2 two-digit industries. Industries related to the production of energy and utilities are excluded.

*Industry classification*. The main industrial groupings follow Eurostat's standard classification and distinguish among five categories of goods: (i) durable consumer goods (e.g. household appliances, furniture, cars, motorcycles, electronics), (ii) non-durable consumer goods (e.g. food, beverages, clothing, personal care products, medicines), (iii) capital goods (e.g. machinery, equipment for manufacturing, commercial vehicles), (iv) intermediate goods (e.g. steel, aluminium, chemicals, plastics, textile fabrics) and (v) energy goods (e.g. electricity, gas, refined petroleum products). Given its peculiarity, the latter sector is excluded from the analysis. NACE Rev. 2 two-digit industries are mapped into these groupings according to the economic destination of production. This mapping is used consistently across the impulse-response analysis, the forecast error variance decomposition, and the cross-industry regressions. Table A.1 reports the full mapping between NACE two-digit industries and the corresponding Main Industrial Groupings.

*Monetary policy shocks*. Monetary policy shocks are taken from Jarociński and Karadi (2020) and are identified using high-frequency changes in financial market variables around ECB policy announcements. The identification distinguishes between: pure monetary policy shocks, and information effects. The empirical analysis focuses on pure monetary policy shocks, measured in basis points. The information effect component is included as a control variable in all specifications. The shock series spans December 2003 to October 2023.

*Macroeconomic controls.* The local-projection specifications include the following lagged controls: euro-area HICP inflation, euro-area unemployment rate, Global Supply Chain Pressure Index (GSCPI).

*Industry characteristics*. Industry characteristics used in the cross-sectional analysis are constructed at the NACE two-digit level. Durability is measured using a binary indicator identifying industries producing durable goods, based on the economic destination of production. Leverage is constructed using sector-level balance-sheet data from the Bank for the Accounts of Companies Harmonized (BACH) for Germany, France, Italy, and Spain over the period 2000–2024, subject to data availability.

For the regression analysis in Section 5, industry characteristics are averaged over time to capture persistent cross-industry differences.

**Table A.1.** NACE two-digit manufacturing sectors and main industrial groupings (MIG)

| | NACE 2-digits | Description | Weights | Official weights |
|---|---|---|---|---|
| **MIG consumer durable** | | | **2.6%** | **2.8%** |
| | C18 | Printing and reproduction of recorded media | | |
| | C31 | Manufacture of furniture | | |
| **MIG consumer non durable** | | | **20.9%** | **19.7%** |
| | C10 | Manufacture of food products | | |
| | C11 | Manufacture of beverages | | |
| | C12 | Manufacture of tobacco products | | |
| | C13 | Manufacture of textiles | | |
| | C14 | Manufacture of wearing apparel | | |
| | C15 | Manufacture of leather and related products | | |
| | C21 | Manufacture of basic pharmaceutical products, etc. | | |
| **Mig Intermediate** | | | **33.0%** | **32.4%** |
| | C16 | Manufacture of wood and of products of wood, etc. | | |
| | C17 | Manufacture of paper and paper products | | |
| | C20 | Manufacture of chemicals and chemical products | | |
| | C22 | Manufacture of rubber and plastic products | | |
| | C23 | Manufacture of other non-metallic mineral products | | |
| | C24 | Manufacture of basic metals | | |
| | C25 | Manufacture of fabricated metal products | | |
| **MIG capital** | | | **35.6%** | **33.2%** |
| | C26 | Manufacture of computer electronic and optical products | | |
| | C27 | Manufacture of electrical equipment | | |
| | C28 | Manufacture of machinery and equipment n.e.c. | | |
| | C29 | Manufacture of motor vehicles trailers and semi-trailers | | |
| | C30 | Manufacture of other transport equipment | | |
| **Other classifications** | | | **7.8%** | **NA** |
| | C19 | Manufacture of coke and refined petroleum products | | |
| | C32 | Other manufacturing | | |
| | C33 | Repair and installation of machinery and equipment | | |

*Notes*: This table reports the NACE two-digit manufacturing sectors included in the analysis and their classification into main industrial groupings (MIG). The assignment is based on the predominant economic destination of production characterizing each sector, following Eurostat conventions. Energy-related activities are excluded. Data source: Eurostat; authors' elaboration.

## Appendix B. Industry-level impulse responses (NACE Rev. 2)

This appendix reports detailed impulse response estimates at the NACE Rev. 2 two-digit industry level, complementing the aggregate and main industrial grouping (MIG) evidence presented in Section 4. The purpose of this appendix is to document the breadth, consistency, and robustness of heterogeneity in the transmission of monetary policy across individual manufacturing industries. By presenting industry-level results in a dedicated appendix, we provide full transparency while preserving the focus of the main text on aggregate patterns, asymmetries, and economic mechanisms.

*Linear impulse responses to contractionary monetary policy shocks*. Table B.1 reports impulse responses of industry-level output and producer prices, respectively, to a contractionary pure monetary policy shock estimated using the baseline (linear) local projection specification. For each NACE two-digit industry, the tables report estimated responses at selected horizons, together with confidence intervals constructed using Newey–West standard errors. The results reveal substantial heterogeneity across industries. Consistent with the MIG-level evidence discussed in Section 4.1, industries producing capital goods and intermediate goods tend to exhibit larger and more persistent declines in output following monetary tightening, whereas consumer-goods industries, particularly non-durable goods, generally display more muted responses. Price responses also vary across industries, with upstream and intermediate-goods industries showing comparatively stronger and earlier price adjustments than downstream consumer-goods industries. While individual industries differ in the timing and magnitude of their responses, the overall pattern aligns closely with the aggregate and MIG-level impulse responses, indicating that the latter are not driven by a small subset of sectors.

*Asymmetric impulse responses*. Tables B.2 and B.3 extend the analysis by reporting industry-level impulse responses to contractionary and expansionary monetary policy shocks estimated using the asymmetric specification described in Section 3. Responses are reported separately for positive and negative policy surprises. The asymmetric results confirm that the heterogeneity observed at the aggregate and MIG levels is also present at finer levels of sectoral disaggregation. Across a large share of industries, contractionary shocks generate larger and more statistically significant declines in output and prices than expansionary shocks generate increases. Expansionary responses, when present, tend to be smaller in magnitude and less persistent. These patterns indicate that the asymmetric transmission of monetary policy documented in the main text is widespread across manufacturing industries, rather than being driven by a limited number of highly responsive sectors.

*Visual summary of industry heterogeneity*. To facilitate a compact overview of the industry-level results, Figures B.1–B.6 present heatmaps summarizing the magnitude and statistical significance of impulse responses across industries and horizons for both output and prices, under the linear and asymmetric specifications. The heatmaps provide a visual representation of the dispersion of responses across industries and highlight systematic differences across industrial segments. In particular, they illustrate that stronger and more persistent responses are concentrated among industries producing capital and intermediate goods, while responses among consumer-goods industries are generally weaker and less uniform. At the same time, considerable within-group heterogeneity remains, underscoring the value of the cross-industry analysis conducted in Section 5.

**Table B.1.** Industry-level impulse response coefficients to linear monetary policy shocks

| | | Manufacturing production | | | | Manufacturing prices | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 6-month elasticity | | 12-month elasticity | | 6-month elasticity | | 12-month elasticity | |
| | NACE 2-digits | Coeff. | p-value | Coeff. | p-value | Coeff. | p-value | Coeff. | p-value |
| MIG consumer durable | C18 | -0.17 | 0.01 | -0.26 | 0.00 | 0.01 | 0.45 | -0.04 | 0.48 |
| | C31 | -0.17 | 0.25 | -0.15 | 0.22 | 0.00 | 0.76 | -0.03 | 0.44 |
| MIG consumer non durable | C10 | -0.04 | 0.16 | -0.04 | 0.12 | 0.00 | 1.00 | -0.10 | 0.30 |
| | C11 | -0.04 | 0.49 | -0.06 | 0.51 | 0.01 | 0.74 | -0.03 | 0.39 |
| | C12 | -0.02 | 0.95 | 0.29 | 0.07 | 0.01 | 0.53 | 0.02 | 0.56 |
| | C13 | -0.10 | 0.34 | 0.03 | 0.77 | 0.00 | 0.95 | -0.05 | 0.37 |
| | C14 | -0.17 | 0.31 | -0.20 | 0.24 | -0.01 | 0.61 | -0.04 | 0.07 |
| | C15 | -0.03 | 0.85 | -0.03 | 0.77 | -0.02 | 0.32 | -0.03 | 0.06 |
| | C21 | -0.14 | 0.36 | 0.07 | 0.60 | -0.06 | 0.06 | -0.11 | 0.02 |
| Mig Intermediate | C16 | -0.17 | 0.10 | -0.02 | 0.91 | -0.05 | 0.32 | -0.12 | 0.15 |
| | C17 | -0.17 | 0.02 | -0.09 | 0.21 | -0.09 | 0.14 | -0.19 | 0.12 |
| | C20 | -0.16 | 0.13 | -0.05 | 0.55 | -0.08 | 0.44 | -0.18 | 0.08 |
| | C22 | -0.15 | 0.09 | -0.03 | 0.65 | -0.02 | 0.62 | -0.07 | 0.18 |
| | C23 | -0.21 | 0.11 | -0.10 | 0.50 | 0.02 | 0.42 | -0.06 | 0.46 |
| | C24 | -0.33 | 0.13 | -0.15 | 0.28 | -0.24 | 0.21 | -0.25 | 0.15 |
| | C25 | -0.28 | 0.08 | -0.15 | 0.26 | -0.03 | 0.42 | -0.09 | 0.13 |
| MIG capital | C26 | -0.43 | 0.09 | -0.22 | 0.41 | 0.00 | 0.98 | 0.00 | 1.00 |
| | C27 | -0.26 | 0.14 | -0.10 | 0.41 | -0.01 | 0.59 | -0.04 | 0.24 |
| | C28 | -0.34 | 0.14 | -0.35 | 0.09 | 0.00 | 0.79 | -0.04 | 0.23 |
| | C29 | -0.31 | 0.10 | -0.24 | 0.07 | 0.00 | 0.80 | -0.02 | 0.25 |
| | C30 | -0.01 | 0.90 | -0.23 | 0.21 | 0.00 | 0.94 | -0.04 | 0.12 |
| Other classification | C19 | -0.24 | 0.01 | -0.22 | 0.03 | -0.07 | 0.80 | -0.29 | 0.27 |
| | C32 | -0.06 | 0.45 | 0.02 | 0.81 | 0.01 | 0.53 | -0.02 | 0.43 |
| | C33 | -0.20 | 0.14 | -0.31 | 0.03 | -0.02 | 0.34 | -0.05 | 0.04 |
| MIG consumer durable | | -0.16 | 0.25 | -0.08 | 0.43 | 0.00 | 0.69 | -0.02 | 0.56 |
| MIG consumer non durable | | -0.07 | 0.19 | -0.04 | 0.44 | 0.00 | 0.88 | -0.07 | 0.29 |
| MIG intermediate | | -0.24 | 0.06 | -0.13 | 0.22 | -0.07 | 0.32 | -0.14 | 0.10 |
| MIG capital | | -0.26 | 0.07 | -0.19 | 0.13 | 0.00 | 0.75 | -0.03 | 0.33 |
| Manufacturing | | -0.18 | 0.07 | -0.11 | 0.21 | -0.04 | 0.47 | -0.10 | 0.13 |

*Notes:* The table reports impulse response coefficients of sectoral manufacturing production and producer prices to a 1 basis point contractionary (linear) monetary policy shock, estimated using local projections. Responses are reported at the 6-month and 12-month horizons. Rows correspond to NACE 2 two-digit industries, aggregates by main industrial groupings (MIG), and total manufacturing. P-values refer to tests of the null hypothesis that the impulse response coefficient is equal to zero. For consistency with the impulse-response figures and heatmaps in Appendix B, statistical significance is assessed using 68 percent confidence intervals; coefficients whose 68 percent confidence intervals include zero correspond to p-values above 0.32. Unit of measure: percentage points.

**Table B.2.** Industry-level impulse response coefficients to contractionary monetary policy shocks

| | | Manufacturing production | | | | Manufacturing prices | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 6-month elasticity | | 12-month elasticity | | 6-month elasticity | | 12-month elasticity | |
| | NACE 2-digits | Coeff. | p-value | Coeff. | p-value | Coeff. | p-value | Coeff. | p-value |
| MIG consumer durable | C18 | -0.33 | 0.00 | -0.39 | 0.00 | 0.01 | 0.69 | -0.08 | 0.38 |
| | C31 | -0.34 | 0.18 | -0.29 | 0.19 | 0.01 | 0.72 | -0.05 | 0.36 |
| MIG consumer non durable | C10 | -0.03 | 0.36 | -0.06 | 0.06 | -0.11 | 0.22 | -0.19 | 0.19 |
| | C11 | -0.06 | 0.41 | -0.05 | 0.72 | 0.01 | 0.75 | -0.05 | 0.32 |
| | C12 | -0.06 | 0.88 | 0.37 | 0.10 | -0.03 | 0.55 | -0.03 | 0.53 |
| | C13 | -0.31 | 0.08 | -0.01 | 0.93 | -0.02 | 0.43 | -0.09 | 0.20 |
| | C14 | 0.02 | 0.93 | -0.04 | 0.85 | -0.04 | 0.07 | -0.05 | 0.06 |
| | C15 | -0.19 | 0.39 | -0.18 | 0.17 | -0.02 | 0.58 | -0.04 | 0.20 |
| | C21 | -0.20 | 0.35 | 0.04 | 0.83 | -0.04 | 0.48 | -0.12 | 0.11 |
| Mig Intermediate | C16 | -0.40 | 0.03 | -0.11 | 0.67 | -0.08 | 0.19 | -0.15 | 0.05 |
| | C17 | -0.32 | 0.01 | -0.12 | 0.34 | -0.15 | 0.05 | -0.29 | 0.04 |
| | C20 | -0.49 | 0.03 | -0.06 | 0.64 | -0.24 | 0.09 | -0.32 | 0.02 |
| | C22 | -0.35 | 0.06 | -0.06 | 0.58 | -0.07 | 0.16 | -0.13 | 0.07 |
| | C23 | -0.51 | 0.02 | -0.24 | 0.34 | 0.00 | 0.96 | -0.11 | 0.29 |
| | C24 | -0.75 | 0.06 | -0.35 | 0.17 | -0.49 | 0.05 | -0.49 | 0.06 |
| | C25 | -0.53 | 0.06 | -0.30 | 0.22 | -0.07 | 0.09 | -0.15 | 0.02 |
| MIG capital | C26 | -0.70 | 0.16 | -0.23 | 0.64 | 0.15 | 0.22 | 0.12 | 0.48 |
| | C27 | -0.51 | 0.10 | -0.29 | 0.21 | -0.02 | 0.46 | -0.07 | 0.16 |
| | C28 | -0.62 | 0.09 | -0.63 | 0.08 | 0.00 | 0.98 | -0.06 | 0.17 |
| | C29 | -0.54 | 0.15 | -0.27 | 0.05 | 0.02 | 0.54 | -0.02 | 0.57 |
| | C30 | -0.08 | 0.60 | -0.50 | 0.05 | 0.00 | 0.99 | -0.06 | 0.14 |
| Other classification | C19 | -0.41 | 0.00 | -0.31 | 0.05 | -0.90 | 0.11 | -0.79 | 0.07 |
| | C32 | -0.03 | 0.81 | 0.03 | 0.87 | 0.05 | 0.23 | -0.02 | 0.75 |
| | C33 | -0.41 | 0.04 | -0.58 | 0.00 | -0.05 | 0.28 | -0.09 | 0.02 |
| MIG consumer durable | | -0.32 | 0.19 | -0.23 | 0.22 | 0.02 | 0.34 | -0.01 | 0.72 |
| MIG consumer non durable | | -0.12 | 0.03 | -0.09 | 0.15 | -0.05 | 0.26 | -0.12 | 0.20 |
| MIG intermediate | | -0.53 | 0.02 | -0.25 | 0.19 | -0.18 | 0.05 | -0.24 | 0.02 |
| MIG capital | | -0.50 | 0.05 | -0.32 | 0.14 | 0.02 | 0.48 | -0.03 | 0.52 |
| Manufacturing | | -0.38 | 0.03 | -0.20 | 0.18 | -0.14 | 0.09 | -0.19 | 0.04 |

*Notes*: The table reports impulse response coefficients of sectoral manufacturing production and producer prices to a 1 basis point contractionary monetary policy shock, estimated using local projections. Responses are shown at the 6-month and 12-month horizons. Rows correspond to NACE 2 two-digit industries, aggregates by main industrial groupings (MIG), and total manufacturing. P-values refer to tests of the null hypothesis that the impulse response coefficient is equal to zero. For consistency with the impulse-response figures and heatmaps in Appendix B, statistical significance is assessed using 68 percent confidence intervals; coefficients whose 68 percent confidence intervals include zero correspond to p-values above 0.32. Unit of measure: percentage points.

**Table B.3.** Industry-level impulse response coefficients to expansionary monetary policy shocks

| | | Manufacturing production | | | | Manufacturing prices | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 6-month elasticity | | 12-month elasticity | | 6-month elasticity | | 12-month elasticity | |
| | NACE 2-digits | Coeff. | p-value | Coeff. | p-value | Coeff. | p-value | Coeff. | p-value |
| MIG consumer durable | C18 | 0.12 | 0.24 | 0.04 | 0.79 | 0.02 | 0.62 | 0.04 | 0.60 |
| | C31 | 0.16 | 0.49 | 0.19 | 0.47 | 0.00 | 0.91 | 0.02 | 0.72 |
| MIG consumer non durable | C10 | -0.04 | 0.46 | 0.01 | 0.81 | 0.21 | 0.04 | 0.10 | 0.44 |
| | C11 | 0.01 | 0.94 | -0.09 | 0.57 | 0.00 | 0.97 | 0.02 | 0.66 |
| | C12 | 0.06 | 0.91 | 0.10 | 0.78 | 0.10 | 0.20 | 0.13 | 0.26 |
| | C13 | 0.30 | 0.23 | 0.12 | 0.61 | 0.04 | 0.33 | 0.06 | 0.40 |
| | C14 | -0.52 | 0.11 | -0.57 | 0.11 | 0.06 | 0.12 | -0.01 | 0.81 |
| | C15 | 0.28 | 0.31 | 0.31 | 0.20 | -0.02 | 0.56 | -0.02 | 0.63 |
| | C21 | -0.03 | 0.94 | 0.14 | 0.67 | -0.09 | 0.30 | -0.08 | 0.38 |
| Mig Intermediate | C16 | 0.25 | 0.22 | 0.20 | 0.36 | 0.00 | 0.97 | -0.03 | 0.85 |
| | C17 | 0.10 | 0.53 | -0.03 | 0.81 | 0.02 | 0.85 | 0.06 | 0.70 |
| | C20 | 0.47 | 0.14 | -0.03 | 0.86 | 0.23 | 0.16 | 0.13 | 0.46 |
| | C22 | 0.23 | 0.37 | 0.03 | 0.89 | 0.08 | 0.17 | 0.06 | 0.40 |
| | C23 | 0.36 | 0.16 | 0.21 | 0.44 | 0.06 | 0.27 | 0.07 | 0.44 |
| | C24 | 0.48 | 0.30 | 0.32 | 0.37 | 0.24 | 0.44 | 0.30 | 0.42 |
| | C25 | 0.18 | 0.45 | 0.18 | 0.55 | 0.05 | 0.35 | 0.07 | 0.43 |
| MIG capital | C26 | 0.09 | 0.90 | -0.18 | 0.80 | -0.27 | 0.10 | -0.27 | 0.21 |
| | C27 | 0.22 | 0.47 | 0.34 | 0.26 | 0.01 | 0.87 | 0.01 | 0.82 |
| | C28 | 0.20 | 0.55 | 0.30 | 0.49 | -0.01 | 0.75 | 0.01 | 0.70 |
| | C29 | 0.11 | 0.85 | -0.17 | 0.72 | -0.04 | 0.35 | -0.03 | 0.43 |
| | C30 | 0.12 | 0.54 | 0.39 | 0.01 | 0.00 | 0.94 | 0.00 | 0.96 |
| Other classification | C19 | 0.10 | 0.64 | -0.02 | 0.93 | 1.48 | 0.09 | 0.87 | 0.25 |
| | C32 | -0.11 | 0.50 | 0.02 | 0.93 | -0.06 | 0.34 | -0.02 | 0.76 |
| | C33 | 0.19 | 0.20 | 0.30 | 0.09 | 0.03 | 0.64 | 0.04 | 0.51 |
| MIG consumer durable | | 0.15 | 0.55 | 0.27 | 0.28 | -0.02 | 0.45 | -0.02 | 0.70 |
| MIG consumer non durable | | 0.04 | 0.74 | 0.06 | 0.59 | 0.09 | 0.09 | 0.06 | 0.42 |
| MIG intermediate | | 0.32 | 0.27 | 0.13 | 0.58 | 0.13 | 0.27 | 0.10 | 0.49 |
| MIG capital | | 0.19 | 0.54 | 0.10 | 0.75 | -0.05 | 0.25 | -0.03 | 0.53 |
| Manufacturing | | 0.20 | 0.37 | 0.10 | 0.62 | 0.16 | 0.15 | 0.10 | 0.34 |

*Notes*: The table reports impulse response coefficients of sectoral manufacturing production and producer prices to a 1 basis point expansionary monetary policy shock, estimated using local projections. Responses are shown at the 6-month and 12-month horizons. Rows correspond to NACE two-digit industries, aggregates by main industrial groupings (MIG), and total manufacturing. P-values refer to tests of the null hypothesis that the impulse response coefficient is equal to zero. For consistency with the impulse-response figures and heatmaps in Appendix B, statistical significance is assessed using 68 percent confidence intervals; coefficients whose 68 percent confidence intervals include zero correspond to p-values above 0.32. Unit of measure: percentage points.

**Figure B.1.** Industry-level impulse responses of manufacturing production to a monetary policy shock (linear specification)

| | NACE 2-digits | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MIG consumer durable** | C18 | -0.1 | -0.1 | -0.1 | -0.1 | -0.2 | -0.2 | -0.2 | -0.2 | -0.3 | -0.2 | -0.2 | -0.3 | -0.3 | -0.2 | -0.3 | -0.2 | -0.1 | -0.2 | -0.1 | -0.1 | -0.2 | -0.1 | -0.1 | -0.1 | -0.1 |
| | C31 | -0.2 | | | | | -0.1 | -0.2 | | -0.2 | -0.1 | | -0.2 | -0.1 | -0.2 | -0.1 | | | | | | | | | | |
| **MIG consumer non durable** | C10 | 0.0 | | 0.0 | 0.0 | 0.0 | | 0.0 | -0.1 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | -0.1 | 0.0 | | | 0.0 | | | | | | | |
| | C11 | | 0.1 | | | | | | | -0.2 | | -0.1 | | | -0.2 | -0.1 | | -0.1 | | | | | | | 0.1 | |
| | C12 | | | | | 0.2 | | | | | | | | 0.3 | 0.2 | 0.2 | 0.2 | 0.3 | | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.4 | 0.5 |
| | C13 | | | | -0.1 | | -0.1 | | | | | | | | | 0.1 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 |
| | C14 | | | | | -0.3 | | -0.2 | -0.3 | -0.3 | -0.3 | -0.5 | -0.3 | -0.2 | -0.2 | | | -0.3 | -0.4 | -0.3 | | | | | | |
| | C15 | -0.4 | | | | | | | | -0.2 | -0.2 | | | | | | | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 | 0.4 | 0.3 | 0.5 | 0.6 |
| | C21 | 0.3 | -0.2 | 0.2 | | | | | | | -0.1 | -0.2 | | | | | | 0.2 | | | | | | 0.2 | 0.3 | 0.1 |
| **Mig Intermediate** | C16 | -0.1 | -0.1 | | -0.1 | -0.1 | -0.2 | -0.2 | | | | | | | | | | | | | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 |
| | C17 | | -0.1 | | -0.1 | -0.2 | -0.1 | -0.2 | -0.2 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | | | | | | | | | | 0.1 | |
| | C20 | -0.1 | -0.2 | -0.2 | -0.2 | -0.2 | -0.1 | -0.2 | -0.1 | -0.1 | | | -0.1 | | | | | | | | 0.2 | 0.2 | 0.2 | | 0.2 | 0.2 |
| | C22 | -0.2 | -0.1 | | -0.1 | -0.1 | -0.2 | -0.1 | -0.1 | -0.1 | | | | | | | | | | | | | 0.1 | | 0.2 | |
| | C23 | -0.2 | | -0.2 | | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | | -0.2 | | | | | | | | | | 0.2 | 0.2 |
| | C24 | -0.2 | | | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.2 | -0.1 | -0.2 | -0.1 | -0.1 | -0.1 | | | | | 0.2 | | 0.2 | 0.2 | | 0.3 | 0.3 |
| | C25 | -0.2 | | -0.1 | -0.2 | -0.2 | -0.3 | -0.3 | -0.2 | -0.3 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | | | | | | | | | | |
| **MIG capital** | C26 | -0.3 | | | -0.4 | -0.3 | -0.3 | -0.4 | | | | | | | | | -0.3 | | | | | | | | | |
| | C27 | -0.1 | -0.1 | | -0.2 | -0.2 | -0.2 | -0.3 | -0.2 | -0.2 | -0.2 | -0.1 | | | | | | | | | | | | | | |
| | C28 | -0.2 | -0.1 | -0.2 | -0.3 | -0.3 | -0.4 | -0.3 | -0.4 | -0.4 | -0.4 | -0.4 | -0.4 | -0.4 | -0.4 | -0.4 | -0.3 | -0.3 | -0.3 | | | | | | | |
| | C29 | -0.5 | -0.4 | -0.3 | -0.4 | -0.3 | -0.4 | -0.3 | | -0.3 | | -0.2 | -0.2 | -0.2 | -0.3 | -0.3 | | | | | | | | | | |
| | C30 | | | | | | | | -0.2 | -0.3 | -0.3 | -0.2 | -0.2 | -0.2 | -0.4 | -0.3 | -0.3 | -0.3 | -0.3 | -0.4 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 |
| **Other classification** | C19 | -0.1 | -0.1 | -0.1 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.3 | -0.3 | -0.3 | -0.2 | -0.2 | -0.3 | -0.4 | -0.3 | -0.1 | -0.1 | -0.1 | | -0.1 | | -0.2 | | |
| | C32 | | 0.1 | | | | | | -0.1 | -0.1 | -0.1 | | | | -0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.3 | 0.3 |
| | C33 | | | -0.1 | -0.1 | -0.1 | | -0.2 | -0.2 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.4 | -0.4 | -0.3 | -0.3 | -0.3 | -0.2 |
| **MIG consumer durable** | | -0.3 | | -0.1 | | | -0.2 | -0.2 | | -0.1 | -0.1 | | | | | | | | | | | 0.2 | 0.2 | | 0.2 | 0.3 |
| **MIG consumer non durable** | | | | | -0.1 | -0.1 | | -0.1 | -0.1 | -0.1 | -0.1 | -0.2 | -0.1 | | | -0.1 | | | | | | | 0.1 | 0.1 | 0.1 | 0.1 |
| **MIG intermediate** | | -0.2 | -0.1 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.1 | -0.1 | -0.1 | | | | | | | | | | |
| **MIG capital** | | -0.2 | | -0.2 | -0.2 | -0.2 | -0.3 | -0.3 | -0.2 | -0.3 | -0.2 | -0.2 | -0.2 | -0.2 | -0.3 | -0.3 | -0.2 | -0.2 | | | | | | | | |
| **Manufacturing** | | -0.1 | | | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.1 | -0.1 | -0.1 | -0.2 | -0.2 | | | | | | | | | | |

Notes: This heatmap summarizes impulse response coefficients of sectoral manufacturing production to a 1 basis point contractionary monetary policy shock, estimated using the linear local-projection specification. Rows correspond to NACE two-digit industries, grouped by main industrial groupings (MIG), while columns denote monthly horizons following the shock (from 0 to 24 months). Color intensity reflects the magnitude and sign of the estimated response: red (yellow) shades indicate stronger (weaker) negative responses, while green shades indicate positive responses. Blank cells indicate responses whose 68 percent confidence intervals include zero. The heatmap highlights substantial heterogeneity in the transmission of monetary policy across industries and horizons**.** Unit of measure: percentage points.

**Figure B.2.** Industry-level impulse responses of manufacturing producer prices to a monetary policy shock (linear specification)

| | NACE 2-digits | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MIG consumer durable** | C18 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | 0.1 | 0.1 |
| | C31 | | 0.0 | 0.0 | | 0.0 | | | | | | | | | | | | | | | | | | | | |
| **MIG consumer non durable** | C10 | 0.0 | | | | | | | | | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | | | | | | | | | | | |
| | C11 | | 0.0 | 0.0 | | | | | | | | | 0.0 | | | | | | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | | |
| | C12 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | | | 0.0 | 0.0 | | | | | | | | | | |
| | C13 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | 0.1 | 0.1 |
| | C14 | 0.0 | 0.0 | 0.0 | | | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | |
| | C15 | 0.0 | | 0.0 | | | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | |
| | C21 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 |
| **Mig Intermediate** | C16 | 0.0 | 0.0 | | | | | | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | | | | | | | | | | | |
| | C17 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.1 | | | | | | | | 0.1 | 0.1 |
| | C20 | 0.0 | -0.1 | -0.1 | -0.1 | | | | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.1 | | | | | | | | | 0.1 | 0.2 |
| | C22 | 0.0 | | | | | | | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | | | | | | | | | 0.1 | 0.1 |
| | C23 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | |
| | C24 | -0.1 | -0.1 | -0.1 | -0.1 | -0.2 | -0.2 | -0.2 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.2 | | | | | | | | | | 0.3 | 0.3 |
| | C25 | 0.0 | | | | | | | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | | | | | | | | |
| **MIG capital** | C26 | | | | | | | | | | | | | | | | | 0.1 | 0.2 | | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 |
| | C27 | 0.0 | | | | | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | |
| | C28 | 0.0 | 0.0 | 0.0 | | 0.0 | | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | |
| | C29 | | | | | | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | |
| | C30 | | 0.0 | 0.0 | | | | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 |
| **Other classification** | C19 | -0.4 | -0.3 | -0.4 | | | | | | -0.6 | -0.6 | -0.5 | -0.4 | -0.3 | | | | | | | | 0.2 | | | 0.4 | 0.6 |
| | C32 | | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | 0.0 | 0.0 | | | | | | | | | |
| | C33 | | | | | | 0.0 | | 0.0 | -0.1 | -0.1 | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 |
| **MIG consumer durable** | | | | | | | | | | | | | | | | | | | | | | | | | 0.0 | 0.0 |
| **MIG consumer non durable** | | 0.0 | | | | | | | | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | | | | | | | | | | |
| **MIG intermediate** | | 0.0 | 0.0 | 0.0 | | | | -0.1 | -0.1 | -0.1 | -0.2 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | | | | | | | | | | 0.1 |
| **MIG capital** | | | | | | | | | 0.0 | | 0.0 | 0.0 | | | | | | | | | | | | | 0.0 | 0.1 |
| **Manufacturing** | | 0.0 | 0.0 | 0.0 | | | | | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | | | | | | | | | | 0.1 |

*Notes:* This heatmap summarizes impulse response coefficients of sectoral manufacturing producer prices to a 1 basis point contractionary monetary policy shock, estimated using the linear local-projection specification. Rows correspond to NACE 2 two-digit industries, grouped by main industrial groupings (MIG), while columns denote monthly horizons following the shock (from 0 to 24 months). Color intensity reflects the magnitude and sign of the estimated response: red (yellow) shades indicate stronger (weaker) negative responses, while green shades indicate positive responses. Blank cells indicate responses whose 68 percent confidence intervals include zero. The heatmap highlights substantial heterogeneity in price adjustment across industries and over time. Unit of measure: percentage points.

**Figure B.3.** Industry-level impulse responses of manufacturing production to a contractionary monetary policy shock (asymmetric specification)

| | NACE 2-digits | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MIG consumer durable** | C18 | -0.3 | -0.1 | -0.2 | -0.2 | -0.2 | -0.3 | -0.3 | -0.4 | -0.5 | -0.4 | -0.4 | -0.5 | -0.4 | -0.4 | -0.4 | -0.4 | -0.3 | -0.3 | -0.3 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.3 |
| | C31 | -0.5 | -0.1 | -0.2 | -0.2 | | -0.4 | -0.3 | | -0.3 | -0.2 | -0.2 | -0.3 | -0.3 | -0.3 | -0.2 | | | | | | | | | | |
| **MIG consumer non durable** | C10 | | 0.1 | | | | | | -0.1 | -0.1 | 0.0 | -0.1 | -0.1 | -0.1 | -0.1 | | | | | | | | | | | |
| | C11 | | 0.1 | | | | | | -0.2 | -0.3 | | -0.2 | | | -0.2 | -0.1 | | -0.2 | | | | | | | | |
| | C12 | 0.1 | 0.2 | 0.2 | | 0.4 | | | | | | | | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.4 | 0.2 | 0.3 | 0.5 | 0.5 |
| | C13 | -0.3 | | -0.3 | -0.4 | -0.3 | -0.4 | -0.3 | -0.2 | -0.2 | | | | | | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.5 | 0.6 | 0.5 | 0.6 | 0.7 | 0.7 |
| | C14 | | 0.3 | 0.2 | | | | | | | -0.4 | -0.4 | | | | | | -0.2 | | | | | | | | |
| | C15 | -0.7 | | -0.1 | -0.2 | -0.2 | -0.2 | | -0.1 | -0.5 | -0.4 | -0.2 | -0.1 | -0.2 | | | | 0.2 | | 0.2 | 0.3 | 0.4 | 0.3 | 0.5 | 0.7 | 0.8 |
| | C21 | 0.3 | | 0.2 | | | | | | | -0.2 | -0.4 | | | | | | | | -0.3 | | | | | | |
| **Mig Intermediate** | C16 | -0.2 | -0.2 | -0.3 | -0.3 | -0.3 | -0.4 | -0.4 | | | | | | | | | | | | | | | | 0.3 | 0.4 | |
| | C17 | | -0.1 | -0.1 | -0.2 | -0.3 | -0.3 | -0.3 | -0.2 | -0.2 | -0.2 | -0.2 | -0.1 | | | | | | | | | | | | 0.2 | |
| | C20 | -0.3 | -0.3 | -0.4 | -0.4 | -0.4 | -0.5 | -0.5 | -0.3 | -0.2 | -0.2 | -0.2 | -0.1 | | | | | | | | | 0.3 | 0.2 | | 0.2 | 0.2 |
| | C22 | -0.3 | -0.2 | -0.2 | -0.3 | -0.3 | -0.4 | -0.3 | -0.2 | -0.2 | -0.1 | | -0.1 | | | | | | | | | | | 0.2 | 0.3 | |
| | C23 | -0.4 | -0.2 | -0.3 | -0.3 | -0.4 | -0.5 | -0.5 | -0.4 | -0.4 | -0.4 | -0.3 | -0.4 | | -0.4 | | | | | | | | | | | |
| | C24 | -0.4 | -0.3 | -0.4 | -0.6 | -0.7 | -0.8 | -0.8 | -0.6 | -0.5 | -0.5 | -0.4 | -0.3 | -0.3 | -0.3 | | | | | | | | | | | |
| | C25 | -0.3 | | -0.3 | -0.4 | -0.4 | -0.5 | -0.5 | -0.4 | -0.5 | -0.5 | -0.4 | -0.3 | -0.3 | -0.3 | -0.3 | | | | | | | | | | |
| **MIG capital** | C26 | -0.6 | | | -0.8 | | -0.7 | -0.7 | | | | | | | | | -0.5 | | | | | | | | | |
| | C27 | -0.2 | | -0.2 | -0.4 | -0.4 | -0.5 | -0.5 | -0.4 | -0.4 | -0.5 | -0.4 | -0.3 | -0.3 | -0.3 | -0.3 | | | | | | | | | | |
| | C28 | -0.3 | -0.2 | -0.4 | -0.4 | -0.5 | -0.6 | -0.6 | -0.7 | -0.7 | -0.7 | -0.6 | -0.7 | -0.6 | -0.6 | -0.6 | -0.5 | -0.5 | -0.4 | -0.3 | -0.3 | | | | | |
| | C29 | -0.7 | -0.5 | -0.5 | -0.7 | -0.5 | -0.8 | -0.5 | | -0.4 | -0.4 | -0.2 | -0.3 | -0.3 | -0.3 | -0.5 | | | | | | | | | | |
| | C30 | | 0.1 | | | | | | -0.4 | -0.6 | -0.5 | -0.4 | -0.5 | -0.5 | -0.6 | -0.5 | -0.5 | -0.6 | -0.6 | -0.6 | -0.5 | -0.6 | -0.7 | -0.5 | -0.5 | -0.6 |
| **Other classification** | C19 | -0.2 | -0.2 | -0.2 | -0.3 | -0.3 | -0.4 | -0.4 | -0.4 | -0.5 | -0.4 | -0.4 | -0.3 | -0.3 | -0.4 | -0.5 | -0.4 | -0.3 | -0.3 | -0.2 | | -0.1 | -0.1 | -0.2 | | |
| | C32 | | 0.1 | | | | | | | -0.2 | -0.1 | | | | | | | | 0.1 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.4 |
| | C33 | | -0.1 | -0.2 | -0.3 | -0.2 | -0.3 | -0.4 | -0.3 | -0.5 | -0.5 | -0.5 | -0.6 | -0.6 | -0.6 | -0.5 | -0.5 | -0.6 | -0.6 | -0.6 | -0.6 | -0.6 | -0.6 | -0.5 | -0.5 | -0.5 |
| **MIG consumer durable** | | -0.5 | | -0.2 | -0.2 | | -0.4 | -0.3 | | -0.3 | -0.3 | | -0.2 | -0.2 | | | | | | | | | | | | |
| **MIG consumer non durable** | | -0.1 | | | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.2 | -0.2 | -0.2 | -0.1 | -0.1 | -0.1 | | | | | | | | | | 0.1 | |
| **MIG intermediate** | | -0.3 | -0.2 | -0.3 | -0.4 | -0.5 | -0.5 | -0.5 | -0.4 | -0.4 | -0.4 | -0.3 | -0.3 | -0.2 | -0.2 | -0.2 | | | | | | | | | | |
| **MIG capital** | | -0.3 | | -0.3 | -0.5 | -0.4 | -0.5 | -0.5 | -0.4 | -0.5 | -0.4 | -0.3 | -0.4 | -0.3 | -0.5 | -0.4 | -0.4 | -0.3 | -0.3 | -0.2 | | | | | | |
| **Manufacturing** | | -0.2 | | -0.2 | -0.3 | -0.3 | -0.4 | -0.4 | -0.3 | -0.4 | -0.3 | -0.3 | -0.3 | -0.2 | -0.3 | -0.2 | -0.2 | | | | | | | | | |

*Notes:* This heatmap reports impulse response coefficients of sectoral manufacturing production to a 1 basis point contractionary monetary policy shock, estimated using the asymmetric local-projection specification. Rows correspond to NACE two-digit industries, grouped by main industrial groupings (MIG), while columns denote monthly horizons following the shock (from 0 to 22 months). Color intensity reflects the magnitude and sign of the estimated response: red (yellow) shades indicate stronger (weaker) negative responses, while green shades indicate positive responses. Blank cells indicate responses whose 68 percent confidence intervals include zero. The figure highlights pronounced heterogeneity in the timing and magnitude of output adjustments across industries following monetary tightening. Unit of measure: percentage points.

**Figure B.4**. Industry-level impulse responses of manufacturing production to an expansionary monetary policy shock (asymmetric specification)

| | NACE 2-digits | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MIG consumer durable** | C18 | 0.1 | | | | | | 0.1 | | 0.1 | 0.1 | 0.1 | 0.1 | | | | | | | | | | | | | |
| | C31 | 0.3 | 0.1 | 0.1 | 0.2 | 0.3 | 0.3 | | | | | 0.3 | | | | | | | | | | | | | | 0.4 |
| **MIG consumer non durable** | C10 | | -0.1 | | -0.1 | | | | | | | -0.1 | | | | | | | | | | | | | | |
| | C11 | | | | | -0.2 | | | | | | | | | | | | | | | | | | | | |
| | C12 | | -0.5 | | | | | | | | | | | | | | | | | | | | | | | |
| | C13 | 0.3 | 0.1 | 0.3 | 0.3 | 0.3 | 0.4 | 0.3 | | 0.4 | | | | | | | | | | | | | | | | |
| | C14 | | -0.4 | -0.5 | | -0.5 | | -0.5 | -0.6 | | | -0.6 | -0.7 | -0.6 | -0.6 | | | | -0.8 | -0.8 | -0.5 | -0.6 | | -0.8 | -0.8 | -0.8 |
| | C15 | 0.3 | | 0.3 | 0.3 | | 0.3 | 0.3 | | 0.4 | | 0.3 | 0.4 | 0.3 | | | | | | | | 0.3 | 0.7 | | | |
| | C21 | | | | | | | | 0.3 | | | | | | | | | | 0.5 | 0.5 | | | | 0.7 | 1.1 | |
| **Mig Intermediate** | C16 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | | 0.2 | 0.2 | 0.3 | 0.2 | | | | | 0.3 | 0.2 | 0.3 | 0.4 | 0.2 | | | 0.3 | 0.3 |
| | C17 | | | | | | 0.2 | | | 0.2 | | | | | | | | | | | | | | | | |
| | C20 | 0.2 | 0.1 | 0.2 | 0.1 | 0.3 | 0.5 | 0.5 | 0.4 | 0.3 | 0.2 | 0.2 | | | | | | | | | | | | | | |
| | C22 | | | | 0.1 | | 0.3 | | | | | | | | | | | | | | | | | | | |
| | C23 | 0.1 | 0.1 | 0.1 | 0.3 | | 0.3 | 0.4 | 0.3 | | | | | | | | 0.3 | 0.3 | 0.3 | 0.4 | 0.3 | | | | 0.3 | 0.5 |
| | C24 | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 | 0.5 | 0.5 | | 0.6 | 0.6 | 0.5 | | | | | | 0.4 | 0.4 | 0.5 | | | | | | 0.4 |
| | C25 | | | 0.1 | 0.1 | | | | | | | | | | | | | | | | | | | | | |
| **MIG capital** | C26 | 0.5 | | 0.5 | | -0.7 | | | | | | | | | | | | | | | | | | -0.8 | | |
| | C27 | | | 0.1 | | | 0.3 | | | | | 0.4 | | 0.3 | | | | | | | | | | | | |
| | C28 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | C29 | | | | | | | | | | | | | | | | | | | | | | | -0.9 | | |
| | C30 | 0.2 | | 0.2 | | | | | 0.2 | 0.3 | 0.3 | 0.2 | 0.4 | 0.4 | 0.3 | 0.3 | | 0.4 | | | | | 0.5 | | | |
| **Other classification** | C19 | | | | | | 0.2 | | | | | | | | | | | | | | | | | | | |
| | C32 | 0.1 | | | | | -0.1 | | | | | | | | | | | 0.2 | 0.2 | | | | | | | |
| | C33 | 0.1 | 0.2 | | 0.1 | | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 | 0.4 | 0.3 | 0.2 | 0.3 | | 0.3 | 0.3 | 0.4 | | | 0.4 | | 0.3 | 0.4 |
| **MIG consumer durable** | | 0.2 | | 0.1 | 0.2 | 0.2 | | | | | | | | 0.3 | | | | | | | | | 0.4 | | | 0.4 |
| **MIG consumer non durable** | | | | | | | | | | 0.1 | | | | | | | | | | 0.1 | | | 0.2 | | 0.2 | |
| **MIG intermediate** | | | | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | | | | | | | | | | | | | | | | | | |
| **MIG capital** | | | | 0.1 | | | 0.2 | | | | | | | | | | | | | | | | | | | |
| **Manufacturing** | | 0.1 | | 0.1 | 0.1 | | 0.2 | | | | | | | | | | | | | | | | | | | |

*Notes*: This heatmap reports impulse response coefficients of sectoral manufacturing production to a 1 basis point expansionary monetary policy shock, estimated using the asymmetric local-projection specification. Rows correspond to NACE two-digit industries, grouped by main industrial groupings (MIG), while columns denote monthly horizons following the shock (from 0 to 24 months). Colour intensity reflects the magnitude and sign of the estimated response: green (yellow) shades indicate stronger (weaker) positive responses, while red shades indicate negative responses. Blank cells indicate responses whose 68 percent confidence intervals include zero. The figure highlights the generally weaker and less persistent production responses associated with monetary easing, as well as substantial heterogeneity across industries. Unit of measure: percentage points.

**Figure B.5**. Industry-level impulse responses of producer prices to a contractionary monetary policy shock (asymmetric specification)

| | NACE 2-digits | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MIG consumer durable** | C18 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | |
| | C31 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | |
| **MIG consumer non durable** | C10 | 0.0 | | | | | | -0.1 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | | | | | | | |
| | C11 | 0.0 | | | | | | | | | | | -0.1 | | | | | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | | | |
| | C12 | | 0.0 | 0.0 | | | | | | | 0.0 | | | | | | | | | | | | | | | |
| | C13 | 0.0 | | | | | | | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | | | | | | | | | | 0.1 |
| | C14 | | | | | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | | | |
| | C15 | | | | 0.0 | | | | | | | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | |
| | C21 | 0.0 | | | | | | | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.2 | -0.2 | -0.2 | -0.1 | -0.2 | -0.2 | -0.2 | -0.2 | -0.1 | -0.2 | -0.2 | -0.2 |
| **Mig Intermediate** | C16 | 0.0 | | | | | 0.0 | -0.1 | -0.1 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.1 | | | | | | | | | | 0.2 | 0.3 |
| | C17 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.2 | -0.2 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.2 | -0.2 | -0.2 | | | | | | 0.1 | 0.2 | 0.2 |
| | C20 | -0.1 | -0.1 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.4 | -0.4 | -0.4 | -0.4 | -0.4 | -0.3 | -0.3 | -0.2 | -0.2 | -0.2 | -0.1 | | | | | | | |
| | C22 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | | | | | | | | | |
| | C23 | 0.0 | | 0.0 | | 0.0 | | | | | | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | | | |
| | C24 | -0.1 | -0.2 | -0.2 | -0.3 | -0.3 | -0.4 | -0.5 | -0.6 | -0.6 | -0.6 | -0.6 | -0.5 | -0.5 | -0.4 | -0.3 | | | | | | | | | | |
| | C25 | 0.0 | | | | 0.0 | 0.0 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.2 | -0.2 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | | | |
| **MIG capital** | C26 | | | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | | | | | | | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | 0.5 |
| | C27 | 0.0 | | | | | | | 0.0 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | | | | | | | | | | |
| | C28 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | -0.1 | 0.0 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | | -0.1 | -0.1 | | | |
| | C29 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | |
| | C30 | | | 0.0 | | | | | | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 |
| **Other classification** | C19 | -0.7 | -0.7 | -1.0 | -0.8 | -0.7 | -0.9 | -0.9 | -1.3 | -1.5 | -1.3 | -1.1 | -0.9 | -0.8 | -0.8 | -0.7 | -0.7 | -0.6 | -0.5 | -0.5 | | | | | | 0.6 |
| | C32 | 0.0 | | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | | | | | | | | | | -0.1 | | -0.1 | 0.0 | | | | -0.1 | |
| | C33 | | | 0.0 | | | -0.1 | 0.0 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 |
| **MIG consumer durable** | | 0.0 | | | | | | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | | | | | | | |
| **MIG consumer non durable** | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | 0.0 | 0.0 | 0.0 |
| **MIG intermediate** | | 0.0 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.2 | -0.2 | -0.3 | -0.3 | -0.3 | -0.3 | -0.2 | -0.2 | -0.2 | -0.2 | -0.1 | | | | | | | | |
| **MIG capital** | | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | 0.1 |
| **Manufacturing** | | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.1 | -0.1 | -0.1 | -0.1 | | | | | | |

*Notes:* This heatmap reports impulse response coefficients of sectoral producer prices to a 1 basis point contractionary monetary policy shock, estimated using the asymmetric local-projection specification. Rows correspond to NACE two-digit industries, grouped by main industrial groupings (MIG), while columns denote monthly horizons following the shock (from 0 to 17 months). Color intensity reflects the magnitude and sign of the estimated response: red (yellow) shades indicate stronger (weaker) price declines, while green shades indicate price increases. Blank cells indicate responses whose 68 percent confidence intervals include zero. The figure highlights pronounced heterogeneity in price adjustment across industries, with stronger and more persistent declines concentrated in upstream and intermediate-goods sectors. Unit of measure: percentage points.

**Figure B.6**. Industry-level impulse responses of producer prices to an expansionary monetary policy shock (asymmetric specification)

| | NACE 2-digits | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MIG consumer durable** | C18 | 0.0 | | 0.0 | 0.0 | | | | | | | | | | | | | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | | 0.1 | 0.1 |
| | C31 | | | | | 0.0 | | | | | | | | | | | | | | | | | | | | |
| **MIG consumer non durable** | C10 | | 0.0 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | | | | | | | | | | | | | | |
| | C11 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | |
| | C12 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | | | | | | | |
| | C13 | | | 0.0 | | | | | 0.1 | 0.1 | | | 0.1 | | | | | | | | | | | | | |
| | C14 | 0.0 | 0.0 | | 0.0 | | 0.1 | 0.1 | | | | | | | -0.1 | | | | | | | | | | | |
| | C15 | | | -0.1 | -0.1 | 0.0 | | | | 0.0 | -0.1 | | | | | | | | | | | | | | | |
| | C21 | | | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | | -0.1 | -0.1 | | | | | | | | | | | | | | | |
| **Mig Intermediate** | C16 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | C17 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | C20 | | | | | | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | | | | | 0.2 | 0.2 | | | | | | | |
| | C22 | | | | | | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | | | | | | | | | | | | | |
| | C23 | | | | | | | 0.1 | | 0.1 | | | | | | | | | | 0.1 | | | | | | |
| | C24 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | C25 | | | | | | | | | 0.1 | | | | | | | | | | | | | | | | |
| **MIG capital** | C26 | | | -0.1 | -0.2 | -0.2 | -0.3 | -0.3 | -0.3 | -0.3 | -0.2 | -0.2 | -0.2 | -0.3 | -0.3 | -0.4 | -0.4 | | -0.4 | -0.4 | -0.3 | -0.3 | | | | |
| | C27 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | |
| | C28 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | C29 | | | | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | |
| | C30 | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Other classification** | C19 | 0.3 | 0.4 | 0.6 | 0.9 | 1.2 | 1.4 | 1.5 | 1.7 | 1.5 | 1.1 | 1.0 | 0.8 | 0.9 | 1.2 | 1.5 | 1.5 | 1.4 | 1.4 | 1.4 | 1.2 | 1.3 | 1.1 | | | |
| | C32 | 0.0 | 0.0 | | | 0.0 | | | -0.1 | | | | | | | | | | | | | | | | | |
| | C33 | | | | | | | | | | | | | | | | | | | | | | | | | |
| **MIG consumer durable** | | | | | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | | | | | | | | | | | | | |
| **MIG consumer non durable** | | | | | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | |
| **MIG intermediate** | | | | | | | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | | | | | | | | | | | | | | | |
| **MIG capital** | | | | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | -0.1 | | | | | | | | | | | | | | | | | |
| **Manufacturing** | | 0.0 | | 0.0 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | | | | | | |

*Notes*: This heatmap reports impulse response coefficients of sectoral producer prices to a 1 basis point expansionary monetary policy shock, estimated using the asymmetric local-projection specification. Rows correspond to NACE two-digit industries, grouped by main industrial groupings (MIG), while columns denote monthly horizons following the shock (from 0 to 24 months). Colour intensity reflects the magnitude and sign of the estimated response: green (yellow) shades indicate stronger (weaker) price increases, while red shades indicate price declines. Blank cells indicate responses whose 68 percent confidence intervals include zero. Compared with contractionary shocks, expansionary monetary policy generates weaker and less pervasive price adjustments across industries, highlighting pronounced asymmetries in price-setting behavior. Unit of measure: percentage points.

## Appendix C. Forecast Error Variance Decomposition with Local Projections

This appendix provides additional details on the forecast error variance decomposition (FEVD) methodology used in Section 4.3. We follow the local-projection $R^2$ approach proposed by Gorodnichenko and Lee (2020), which allows for a flexible decomposition of forecast error variance without imposing the dynamic restrictions inherent in VAR-based frameworks.

Let $y_t$ denote the logarithm of manufacturing output or producer prices. For each forecast horizon $h$, we define the cumulative change

$$\Delta_h y_t \equiv y_{t+h} - y_{t-1}.$$

The FEVD is implemented using a two-step procedure.

*Step 1: Forecast error extraction*. For each horizon $h$, we regress $\Delta_h y_t$ on a set of variables observable at time $t-1$,

$$\Delta_h\, y_t \;= \alpha_h \;+ \Gamma_h' X_{t-1}^* \;+\; e_{t+h},$$

where $X_{t-1}^*$ includes lagged macroeconomic controls such as the euro-area HICP inflation rate, the unemployment rate, and the Global Supply Chain Pressure Index. The residual $e_{t+h}$represents the $h$-period-ahead forecast error. □

*Step 2: Variance attribution*. We then regress the forecast error on the sequence of monetary policy shocks realized between $t$ and $t+h$,

$$e_{t+h} \;= \textstyle\sum_{i=0}^{h} \vartheta_{h,i}\, \text{shock}_{t+i} + \; u_{t+h},$$

where $\text{shock}_{t+i}$ denotes the monetary policy shock at time $t+i$. The coefficient of determination $R_h^2$ from this regression measures the fraction of the $h$-period-ahead forecast error variance attributable to monetary policy shocks. The reported variance contributions correspond to the average $R_h^2$ across the sample for each horizon $h$. □

To assess the relative importance of contractionary and expansionary monetary policy shocks, we extend the second-step regression by decomposing the shock series into its positive and negative components,

$$\text{shock}_t^+ \;=\; max(\text{shock}_t\,, 0) \;\text{ and } \text{shock}_t^- \;=\; min(\text{shock}_t\,, 0).$$

Forecast errors are then regressed on the corresponding sequences of contractionary or expansionary shocks,

$$e_{t+h} \;= \textstyle\sum_{i=0}^{h} \vartheta_{h,i}^+\, \text{shock}_{t+i}^+ + u_{t+h}^+ \text{ or } e_{t+h} \;= \sum_{i=0}^{h} \vartheta_{h,i}^-\, \text{shock}_{t+i}^- + \; u_{t+h}^-,$$

The resulting $R_h^2$ values provide a decomposition of forecast error variance into contributions from contractionary and expansionary monetary policy shocks, respectively.

Statistical inference for variance contributions is conducted using a bootstrap procedure. We resample the time series with replacement and re-estimate both steps of the FEVD for each bootstrap draw. Confidence intervals are constructed from the empirical distribution of the bootstrapped variance shares. Throughout the paper, we report 68 percent confidence intervals, consistent with standard practice in the impulse response and local projection literature.

It is important to emphasize that the FEVD measures the share of forecast error variance attributable to monetary policy shocks *within the information set considered*. As such, the reported variance contributions should be interpreted as conditional on the set of controls included in the first-step forecasting regression. Unlike VAR-based FEVDs, the local-projection approach does not require orthogonalization of shocks or assumptions about the joint dynamics of all variables in the system, making it particularly suitable for analysing asymmetric and nonlinear transmission mechanisms.

## Appendix D. Additional forecast error variance decomposition results

This appendix reports additional forecast error variance decomposition (FEVD) results that complement the evidence presented in Section 5.3. The purpose is to provide a more detailed characterization of the contribution of monetary policy shocks to manufacturing fluctuations across main industrial groupings and forecast horizons.

*FEVD by Main Industrial Groupings*. Table D.1 reports the share of forecast error variance in manufacturing output and producer prices attributable to monetary policy shocks at selected horizons (6 and 12 months), separately for total manufacturing and for each Main Industrial Grouping. The results indicate that the importance of monetary policy shocks varies systematically across industrial segments. Consistent with the impulse-response analysis, monetary policy accounts for a larger share of output and price fluctuations in capital goods and intermediate goods industries than in consumer goods, particularly non-durable consumer goods. These differences are already visible at short horizons and tend to persist over time.

*Asymmetric variance contributions*. Tables D.2 and D.3 decomposes forecast error variance into contributions associated with contractionary and expansionary monetary policy shocks. For both output and prices, contractionary shocks explain a substantially larger fraction of forecast error variance across most horizons and industrial groupings. The dominance of contractionary shocks is especially pronounced in capital and intermediate goods industries, where monetary tightening accounts for a sizable share of medium-run fluctuations. Expansionary shocks, by contrast, contribute relatively little to forecast error variance across sectors.

*Discussion*. Taken together, the results in this appendix reinforce the main conclusions of the paper. First, monetary policy shocks – particularly contractionary ones – play a quantitatively important role in driving manufacturing fluctuations. Second, this importance is not uniform across industries but is systematically related to industrial characteristics, consistent with the heterogeneity documented in Sections 4 and 5. The additional FEVD evidence reported here confirms that the main-text results are robust to the level of aggregation and the choice of forecast horizon.

**Table D.1**. Forecast error variance contributions of monetary policy shocks by industry (linear specification)

| | | Manufacturing production | | | | | | Manufacturing prices | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6-month horizon | | | 12-month horizon | | | 6-month horizon | | | 12-month horizon | | |
| | NACE 2-digits | FEVD | 68% conf. Interval | | FEVD | 68% conf. Interval | | FEVD | 68% conf. Interval | | FEVD | 68% conf. Interval | |
| MIG consumer durable | C18 | 0.13 | 0.10 | 0.15 | 0.30 | 0.26 | 0.34 | 0.01 | -0.01 | 0.04 | 0.12 | 0.08 | 0.16 |
| | C31 | 0.18 | 0.14 | 0.21 | 0.28 | 0.24 | 0.32 | 0.01 | -0.01 | 0.03 | 0.08 | 0.05 | 0.12 |
| MIG consumer non durable | C10 | 0.07 | 0.05 | 0.10 | 0.26 | 0.23 | 0.30 | 0.01 | -0.01 | 0.04 | 0.07 | 0.04 | 0.11 |
| | C11 | 0.04 | 0.02 | 0.06 | 0.16 | 0.12 | 0.20 | 0.05 | 0.03 | 0.08 | 0.11 | 0.08 | 0.14 |
| | C12 | 0.02 | -0.01 | 0.04 | 0.04 | 0.01 | 0.07 | 0.03 | 0.00 | 0.06 | 0.03 | -0.03 | 0.09 |
| | C13 | 0.19 | 0.16 | 0.22 | 0.28 | 0.25 | 0.32 | 0.02 | -0.01 | 0.04 | 0.13 | 0.10 | 0.17 |
| | C14 | 0.07 | 0.05 | 0.09 | 0.19 | 0.14 | 0.25 | 0.07 | 0.04 | 0.09 | 0.16 | 0.12 | 0.19 |
| | C15 | 0.12 | 0.08 | 0.15 | 0.22 | 0.18 | 0.26 | 0.05 | 0.03 | 0.06 | 0.14 | 0.11 | 0.17 |
| | C21 | 0.07 | 0.04 | 0.09 | 0.12 | 0.09 | 0.15 | 0.02 | -0.01 | 0.05 | 0.15 | 0.11 | 0.19 |
| Mig Intermediate | C16 | 0.20 | 0.17 | 0.23 | 0.36 | 0.32 | 0.40 | 0.05 | 0.01 | 0.09 | 0.12 | 0.08 | 0.16 |
| | C17 | 0.22 | 0.18 | 0.25 | 0.39 | 0.35 | 0.44 | 0.05 | 0.03 | 0.08 | 0.21 | 0.18 | 0.25 |
| | C20 | 0.14 | 0.10 | 0.19 | 0.30 | 0.26 | 0.35 | 0.08 | 0.06 | 0.10 | 0.15 | 0.11 | 0.18 |
| | C22 | 0.18 | 0.15 | 0.21 | 0.32 | 0.27 | 0.36 | 0.06 | 0.04 | 0.08 | 0.14 | 0.10 | 0.17 |
| | C23 | 0.15 | 0.12 | 0.18 | 0.33 | 0.29 | 0.37 | 0.05 | 0.03 | 0.08 | 0.13 | 0.09 | 0.17 |
| | C24 | 0.19 | 0.15 | 0.23 | 0.34 | 0.29 | 0.39 | 0.12 | 0.09 | 0.14 | 0.22 | 0.19 | 0.26 |
| | C25 | 0.21 | 0.17 | 0.25 | 0.33 | 0.28 | 0.37 | 0.05 | 0.03 | 0.06 | 0.12 | 0.09 | 0.15 |
| MIG capital | C26 | 0.04 | 0.01 | 0.07 | 0.19 | 0.15 | 0.23 | 0.08 | 0.06 | 0.10 | 0.19 | 0.16 | 0.22 |
| | C27 | 0.17 | 0.14 | 0.21 | 0.28 | 0.24 | 0.33 | 0.07 | 0.05 | 0.09 | 0.16 | 0.12 | 0.19 |
| | C28 | 0.18 | 0.14 | 0.21 | 0.29 | 0.26 | 0.33 | 0.01 | -0.01 | 0.03 | 0.15 | 0.11 | 0.19 |
| | C29 | 0.08 | 0.05 | 0.10 | 0.18 | 0.13 | 0.23 | 0.02 | -0.01 | 0.04 | 0.08 | 0.05 | 0.11 |
| | C30 | 0.07 | 0.03 | 0.12 | 0.24 | 0.20 | 0.27 | 0.02 | 0.00 | 0.03 | 0.12 | 0.09 | 0.14 |
| Other classification | C19 | 0.06 | 0.03 | 0.08 | 0.15 | 0.12 | 0.17 | 0.13 | 0.11 | 0.15 | 0.19 | 0.16 | 0.22 |
| | C32 | 0.07 | 0.04 | 0.10 | 0.25 | 0.21 | 0.29 | 0.03 | 0.00 | 0.06 | 0.03 | 0.00 | 0.06 |
| | C33 | 0.13 | 0.10 | 0.15 | 0.31 | 0.27 | 0.34 | 0.06 | 0.03 | 0.09 | 0.22 | 0.17 | 0.26 |
| MIG consumer durable | | 0.20 | 0.15 | 0.24 | 0.32 | 0.27 | 0.37 | 0.01 | -0.01 | 0.03 | 0.07 | 0.04 | 0.10 |
| MIG consumer non durable | | 0.04 | 0.02 | 0.06 | 0.18 | 0.15 | 0.22 | 0.01 | -0.01 | 0.03 | 0.13 | 0.09 | 0.16 |
| MIG intermediate | | 0.24 | 0.19 | 0.29 | 0.37 | 0.32 | 0.42 | 0.10 | 0.07 | 0.12 | 0.18 | 0.15 | 0.21 |
| MIG capital | | 0.14 | 0.11 | 0.16 | 0.28 | 0.25 | 0.32 | 0.04 | 0.01 | 0.06 | 0.15 | 0.12 | 0.18 |
| Manufacturing | | 0.17 | 0.13 | 0.21 | 0.33 | 0.29 | 0.37 | 0.10 | 0.08 | 0.13 | 0.19 | 0.15 | 0.22 |

*Notes*: The table reports the share of the forecast error variance of sectoral manufacturing production and producer prices attributable to linear monetary policy shocks at the 6-month and 12-month horizons. Variance contributions are computed using the local-projection-based $R^2$ methodology proposed by Gorodnichenko and Lee (2020). Point estimates are reported together with 68 percent confidence intervals, obtained from 100 bootstrap replications at each horizon. Rows correspond to NACE two-digit industries, main industrial groupings (MIG), and total manufacturing.

**Table D.2.** Forecast error variance contributions of expansionary monetary policy shocks by industry

| | | Manufacturing production | | | | | | Manufacturing prices | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6-month horizon | | | 12-month horizon | | | 6-month horizon | | | 12-month horizon | | |
| | NACE 2-digits | FEVD | 68% conf. Interval | | FEVD | 68% conf. Interval | | FEVD | 68% conf. Interval | | FEVD | 68% conf. Interval | |
| MIG consumer durable | C18 | 0.07 | 0.04 | 0.09 | 0.10 | 0.09 | 0.12 | 0.04 | 0.01 | 0.06 | 0.07 | 0.04 | 0.10 |
| | C31 | 0.08 | 0.06 | 0.10 | 0.10 | 0.08 | 0.12 | 0.03 | 0.01 | 0.06 | 0.07 | 0.03 | 0.10 |
| MIG consumer non durable | C10 | 0.03 | 0.00 | 0.05 | 0.07 | 0.04 | 0.11 | 0.17 | 0.13 | 0.22 | 0.09 | 0.07 | 0.12 |
| | C11 | 0.12 | 0.07 | 0.17 | 0.12 | 0.09 | 0.15 | 0.03 | 0.01 | 0.05 | 0.07 | 0.04 | 0.10 |
| | C12 | 0.22 | 0.18 | 0.26 | 0.10 | 0.07 | 0.13 | 0.10 | 0.06 | 0.14 | 0.15 | 0.11 | 0.20 |
| | C13 | 0.15 | 0.12 | 0.17 | 0.36 | 0.31 | 0.41 | 0.03 | 0.01 | 0.06 | 0.08 | 0.05 | 0.11 |
| | C14 | 0.24 | 0.19 | 0.30 | 0.78 | 0.76 | 0.79 | 0.05 | 0.02 | 0.08 | 0.07 | 0.04 | 0.10 |
| | C15 | 0.21 | 0.17 | 0.24 | 0.46 | 0.43 | 0.50 | 0.03 | 0.00 | 0.06 | 0.07 | 0.04 | 0.10 |
| | C21 | 0.03 | 0.00 | 0.05 | 0.08 | 0.05 | 0.11 | 0.14 | 0.09 | 0.19 | 0.17 | 0.13 | 0.22 |
| Mig Intermediate | C16 | 0.07 | 0.05 | 0.08 | 0.18 | 0.14 | 0.21 | 0.03 | 0.00 | 0.05 | 0.11 | 0.08 | 0.15 |
| | C17 | 0.05 | 0.03 | 0.07 | 0.10 | 0.06 | 0.13 | 0.03 | 0.00 | 0.07 | 0.10 | 0.08 | 0.12 |
| | C20 | 0.15 | 0.14 | 0.17 | 0.08 | 0.05 | 0.11 | 0.09 | 0.06 | 0.12 | 0.10 | 0.08 | 0.12 |
| | C22 | 0.07 | 0.05 | 0.09 | 0.08 | 0.05 | 0.11 | 0.04 | 0.01 | 0.07 | 0.08 | 0.05 | 0.11 |
| | C23 | 0.06 | 0.04 | 0.07 | 0.11 | 0.09 | 0.13 | 0.05 | 0.02 | 0.08 | 0.08 | 0.04 | 0.11 |
| | C24 | 0.07 | 0.06 | 0.08 | 0.17 | 0.14 | 0.19 | 0.05 | 0.03 | 0.07 | 0.11 | 0.10 | 0.13 |
| | C25 | 0.05 | 0.03 | 0.06 | 0.11 | 0.09 | 0.13 | 0.03 | 0.00 | 0.05 | 0.08 | 0.05 | 0.11 |
| MIG capital | C26 | 0.09 | 0.08 | 0.10 | 0.13 | 0.09 | 0.17 | 0.23 | 0.19 | 0.27 | 0.25 | 0.20 | 0.29 |
| | C27 | 0.06 | 0.04 | 0.07 | 0.15 | 0.13 | 0.18 | 0.03 | 0.00 | 0.05 | 0.07 | 0.04 | 0.10 |
| | C28 | 0.07 | 0.06 | 0.09 | 0.11 | 0.09 | 0.12 | 0.03 | 0.00 | 0.05 | 0.07 | 0.04 | 0.10 |
| | C29 | 0.05 | 0.04 | 0.06 | 0.13 | 0.11 | 0.16 | 0.04 | 0.01 | 0.06 | 0.08 | 0.04 | 0.12 |
| | C30 | 0.03 | 0.00 | 0.06 | 0.15 | 0.13 | 0.16 | 0.03 | 0.00 | 0.05 | 0.07 | 0.04 | 0.11 |
| Other classification | C19 | 0.04 | 0.02 | 0.06 | 0.12 | 0.09 | 0.14 | 0.44 | 0.43 | 0.45 | 0.17 | 0.16 | 0.18 |
| | C32 | 0.21 | 0.16 | 0.26 | 0.07 | 0.04 | 0.11 | 0.04 | 0.01 | 0.07 | 0.08 | 0.04 | 0.11 |
| | C33 | 0.05 | 0.03 | 0.07 | 0.14 | 0.12 | 0.15 | 0.03 | 0.00 | 0.06 | 0.07 | 0.04 | 0.11 |
| MIG consumer durable | | 0.04 | 0.03 | 0.06 | 0.11 | 0.09 | 0.14 | 0.04 | 0.01 | 0.06 | 0.07 | 0.04 | 0.11 |
| MIG consumer non durable | | 0.03 | 0.00 | 0.06 | 0.09 | 0.06 | 0.12 | 0.05 | 0.02 | 0.09 | 0.08 | 0.05 | 0.11 |
| MIG intermediate | | 0.07 | 0.05 | 0.08 | 0.10 | 0.08 | 0.13 | 0.04 | 0.02 | 0.07 | 0.09 | 0.07 | 0.11 |
| MIG capital | | 0.05 | 0.03 | 0.06 | 0.11 | 0.09 | 0.12 | 0.04 | 0.01 | 0.07 | 0.08 | 0.04 | 0.11 |
| Manufacturing | | 0.05 | 0.03 | 0.06 | 0.11 | 0.08 | 0.13 | 0.09 | 0.06 | 0.13 | 0.09 | 0.07 | 0.12 |

*Notes*: The table reports the share of the forecast error variance of sectoral manufacturing production and producer prices attributable to expansionary monetary policy shocks at the 6-month and 12-month horizons. Variance contributions are computed using the local-projection-based $R^2$ methodology proposed by Gorodnichenko and Lee (2020). Point estimates are reported together with 68 percent confidence intervals, obtained from 100 bootstrap replications at each horizon. Rows correspond to NACE two-digit industries, main industrial groupings (MIG), and total manufacturing.

**Table D.3**. Forecast error variance contributions of contractionary monetary policy shocks by industry

| | | Manufacturing production | | | | | | Manufacturing prices | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6-month horizon | | | 12-month horizon | | | 6-month horizon | | | 12-month horizon | | |
| | NACE 2-digits | FEVD | 68% conf. Interval | | FEVD | 68% conf. Interval | | FEVD | 68% conf. Interval | | FEVD | 68% conf. Interval | |
| MIG consumer durable | C18 | 0.54 | 0.51 | 0.56 | 0.81 | 0.79 | 0.83 | 0.05 | 0.03 | 0.08 | 0.20 | 0.15 | 0.24 |
| | C31 | 0.45 | 0.42 | 0.47 | 0.65 | 0.61 | 0.68 | 0.05 | 0.02 | 0.08 | 0.14 | 0.10 | 0.18 |
| MIG consumer non durable | C10 | 0.04 | 0.01 | 0.06 | 0.19 | 0.14 | 0.23 | 0.06 | 0.03 | 0.08 | 0.50 | 0.45 | 0.55 |
| | C11 | 0.04 | 0.01 | 0.06 | 0.56 | 0.51 | 0.60 | 0.05 | 0.02 | 0.07 | 0.15 | 0.11 | 0.20 |
| | C12 | 0.19 | 0.16 | 0.22 | 0.53 | 0.48 | 0.57 | 0.04 | 0.02 | 0.06 | 0.12 | 0.09 | 0.16 |
| | C13 | 0.36 | 0.34 | 0.39 | 0.14 | 0.11 | 0.17 | 0.04 | 0.02 | 0.06 | 0.24 | 0.19 | 0.28 |
| | C14 | 0.18 | 0.15 | 0.21 | 0.28 | 0.26 | 0.30 | 0.04 | 0.01 | 0.06 | 0.15 | 0.11 | 0.19 |
| | C15 | 0.19 | 0.16 | 0.22 | 0.18 | 0.15 | 0.21 | 0.04 | 0.01 | 0.06 | 0.13 | 0.09 | 0.17 |
| | C21 | 0.04 | 0.01 | 0.06 | 0.43 | 0.38 | 0.48 | 0.04 | 0.01 | 0.06 | 0.32 | 0.27 | 0.36 |
| Mig Intermediate | C16 | 0.50 | 0.48 | 0.52 | 0.38 | 0.34 | 0.43 | 0.05 | 0.03 | 0.08 | 0.48 | 0.43 | 0.52 |
| | C17 | 0.42 | 0.39 | 0.45 | 0.38 | 0.33 | 0.43 | 0.11 | 0.07 | 0.14 | 0.70 | 0.67 | 0.73 |
| | C20 | 0.42 | 0.40 | 0.44 | 0.39 | 0.34 | 0.44 | 0.19 | 0.15 | 0.22 | 0.71 | 0.68 | 0.74 |
| | C22 | 0.45 | 0.43 | 0.48 | 0.34 | 0.29 | 0.39 | 0.04 | 0.02 | 0.07 | 0.37 | 0.32 | 0.42 |
| | C23 | 0.54 | 0.52 | 0.56 | 0.71 | 0.68 | 0.74 | 0.06 | 0.03 | 0.08 | 0.25 | 0.21 | 0.30 |
| | C24 | 0.59 | 0.58 | 0.60 | 0.58 | 0.55 | 0.62 | 0.51 | 0.49 | 0.53 | 0.77 | 0.75 | 0.79 |
| | C25 | 0.59 | 0.58 | 0.61 | 0.66 | 0.63 | 0.70 | 0.04 | 0.02 | 0.07 | 0.40 | 0.35 | 0.45 |
| MIG capital | C26 | 0.55 | 0.53 | 0.56 | 0.27 | 0.22 | 0.31 | 0.17 | 0.14 | 0.20 | 0.21 | 0.18 | 0.25 |
| | C27 | 0.55 | 0.53 | 0.56 | 0.56 | 0.53 | 0.60 | 0.04 | 0.01 | 0.06 | 0.19 | 0.14 | 0.23 |
| | C28 | 0.66 | 0.64 | 0.67 | 0.86 | 0.85 | 0.87 | 0.04 | 0.02 | 0.07 | 0.17 | 0.13 | 0.21 |
| | C29 | 0.64 | 0.63 | 0.65 | 0.71 | 0.67 | 0.74 | 0.04 | 0.02 | 0.07 | 0.11 | 0.08 | 0.15 |
| | C30 | 0.23 | 0.19 | 0.27 | 0.70 | 0.68 | 0.72 | 0.04 | 0.02 | 0.07 | 0.15 | 0.11 | 0.19 |
| Other classification | C19 | 0.51 | 0.49 | 0.53 | 0.71 | 0.68 | 0.74 | 0.25 | 0.24 | 0.26 | 0.73 | 0.72 | 0.74 |
| | C32 | 0.07 | 0.04 | 0.09 | 0.11 | 0.07 | 0.16 | 0.07 | 0.04 | 0.10 | 0.10 | 0.07 | 0.14 |
| | C33 | 0.40 | 0.37 | 0.43 | 0.74 | 0.72 | 0.75 | 0.06 | 0.04 | 0.09 | 0.22 | 0.18 | 0.27 |
| MIG consumer durable | | 0.52 | 0.50 | 0.54 | 0.50 | 0.45 | 0.54 | 0.05 | 0.02 | 0.08 | 0.11 | 0.07 | 0.14 |
| MIG consumer non durable | | 0.07 | 0.04 | 0.10 | 0.39 | 0.34 | 0.44 | 0.04 | 0.01 | 0.06 | 0.34 | 0.29 | 0.39 |
| MIG intermediate | | 0.54 | 0.52 | 0.55 | 0.63 | 0.60 | 0.67 | 0.15 | 0.12 | 0.19 | 0.61 | 0.57 | 0.65 |
| MIG capital | | 0.59 | 0.58 | 0.61 | 0.72 | 0.69 | 0.75 | 0.05 | 0.02 | 0.07 | 0.12 | 0.09 | 0.16 |
| Manufacturing | | 0.50 | 0.48 | 0.53 | 0.59 | 0.55 | 0.62 | 0.11 | 0.07 | 0.14 | 0.52 | 0.48 | 0.57 |

*Notes*: The table reports the share of the forecast error variance of sectoral manufacturing production and producer prices attributable to contractionary monetary policy shocks at the 6-month and 12-month horizons. Variance contributions are computed using the local-projection-based $R^2$ methodology of Gorodnichenko and Lee (2020). Point estimates are reported together with 68 percent confidence intervals, obtained from 100 bootstrap replications at each horizon. Rows correspond to NACE two-digit industries, main industrial groupings (MIG), and total manufacturing.