Firms' Exchange Rate Exposure, Hedging, and Prices*

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Abstract

We propose a survey-based approach to causally measure firm-level exchange-rate pass-through (ERPT) to selling prices and link it to firms' exposure and hedging. We find that a 1% exchange-rate movement leads to a 0.06% price change over 12 months among affected firms. This is significantly lower than reduced-form estimates, consistent with the experiment isolating the causal effect of exchange-rate changes on firms' prices. Pass-through rises sharply with gross cost exposure. However, neither natural nor financial hedging attenuates pass-through, suggesting that prices respond mainly to marginal-cost rather than net exchange-rate exposure. We also find evidence of pricing-to-market: firms with greater market power adjust prices less strongly, although this weakens once cost exposure is controlled for.

Keywords: pass-through, exchange rate, hedging, firm survey

JEL Codes: E31, F31, F41

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1. Introduction

Exchange rate movements are among the most visible external shocks faced by firms. A currency depreciation can raise the costs of firms' imported inputs, increase the competitiveness of their exports, and thereby directly affect their profits. Yet firms' prices typically respond only partially to exchange rate movements, and the response differs substantially across firms. This raises a basic question: how do firms pass exchange-rate movements into prices, and through which channel?

A natural starting point is exposure. Firms differ in the extent to which exchange rates affect their costs, their revenues, or both. For price setting, however, the relevant exposure margin is not obvious. In standard price-setting models, desired prices depend on marginal costs and markups, suggesting that pass-through only depends on gross cost exposure: the effect of an exchange-rate movement on costs before any offsetting revenue effects. However, this is not necessarily the case when firms face financial frictions. If exchange-rate-induced changes in profits affect financing constraints, net profit exposure can itself affect desired prices. Firms whose cost and revenue effects offset, or firms that use financial hedging instruments, may then have less need to adjust prices in response to exchange rate movements. Distinguishing these views requires observing not only firms' price responses, but also the cost, revenue, and hedging margins through which exchange rates affect them.

This is difficult in standard data. Realized exchange-rate movements often coincide with changes in monetary policy, aggregate demand, commodity prices, financial conditions, or geopolitical news. Reduced-form estimates of exchange rate pass-through (ERPT) may therefore confound the direct response of firms' prices to exchange rates with the response to other contemporaneous shocks. At the same time, the firm-level exposure is usually unobserved. Firm-level datasets can indicate how much firms import or export, but they typically cannot measure how a given exchange-rate movement ultimately affects firms' costs after suppliers' own price adjustment and indirect supply-chain transmission, nor how these cost effects interact with net profit exposure and financial hedging positions.

This paper addresses both problems using a randomized vignette experiment in a representative survey of German firms. Firms are randomly assigned to one of four hypothetical exchange-rate scenarios: a 10% appreciation or depreciation[1] of the euro against all other currencies, either for one year or over the long term. They then report how the scenario would affect their costs and revenues, and how they would adjust their average selling prices over the next 6 and 12 months. The survey also asks whether firms use financial

[1] Throughout, we define the exchange rate as the foreign-currency price of one euro. An appreciation (depreciation) of the euro is an increase (decrease) in this exchange rate, such that one euro buys more (less) foreign currency.

instruments such as forwards, options, or swaps to hedge exchange-rate exposure. The design addresses two identification challenges. First, random assignment identifies the causal effect of the assigned exchange-rate scenario on firms' intended price responses under a common information set. Because the exchange-rate movement is hypothetical and assigned randomly, the price response is not contaminated by the aggregate shocks that typically accompany realized exchange-rate movements. Second, jointly observing costs, revenues, and hedging allows us to distinguish the marginal-cost exposure relevant in standard pricing models from net-profit exposure that may matter when financial conditions affect pricing.

Using this survey module, we obtain several new results on exchange rate pass-through. First, we find that exchange-rate exposure is widespread but uneven. About 42% of firms report that the scenario would affect their costs, with cost exposure more common under euro depreciations than appreciations. By contrast, only 26% report an effect on revenues. This asymmetry is consistent with a smaller share of German imports being invoiced in euro than exports as well as widespread use of imported inputs even among small firms, whereas exporting firms tend to be larger. These measures of cost and revenue exposure are reduced-form composites and therefore combine the perceived exposure via imported inputs, foreign sales, or supplier price adjustments. Combining cost and revenue responses, around one-third of firms report that profits would be affected by the exchange-rate movement, while only a small share report offsetting cost and revenue effects consistent with natural hedging. Despite this exposure, reported use of financial hedging instruments is low: only 9% of firms report using financial instruments to hedge exchange-rate risk, either partially or completely.

Second, we find that the response of average selling prices is positive but modest. On the extensive margin, fewer than half of affected firms report any price adjustment within one year. On the intensive margin, a 1% exchange-rate movement leads to a 0.06% change in intended selling prices on average after 12 months. This elicited price response is also a reduced-form composite and combines the sensitivity of firms' prices to their own costs, the share of imported inputs in production, and the extent to which exchange-rate movements pass through into input prices. Since not all firms are affected by exchange-rate movements, a back-of-the-envelope calculation that assigns zero pass-through to unaffected firms implies an overall pass-through of roughly 0.04% after 12 months.

Third, natural and financial hedging do not attenuate pass-through once gross cost exposure is taken into account. Firms that report no cost exposure have close to zero pass-through, while pass-through rises sharply among firms with higher cost exposure. By contrast, revenue exposure and net profit exposure explain little additional variation conditional on cost exposure. Firms whose cost and revenue exposure offset in net-profit terms still adjust prices, indicating that natural hedging does not necessarily eliminate

the marginal-cost channel. Similarly, firms that report using financial hedging instruments exhibit larger pass-through unconditionally, but this difference disappears once cost exposure is taken into account. This is true even for firms that report financing constraints, for which a cash-flow channel should be particularly relevant. The evidence therefore suggests that exchange rates affect prices mainly through gross cost exposure rather than through net profit exposure. We also find suggestive evidence of pricing-to-market. Firms with greater market power adjust prices less strongly in response to exchange-rate movements, although this relationship weakens once cost exposure is controlled for. Pass-through is strongest in the wholesale and retail sector, followed by manufacturing, and weakest in services, while we find little additional heterogeneity by firm size or labor productivity.

Finally, we link the survey module with panel data on realized and expected own-price growth to validate our experimental pass-through measure. Firms with higher vignette-based pass-through exhibit a stronger co-movement of both realised and expected price growth with realised exchange-rate changes. Furthermore, reduced-form panel estimates of firm-level price pass-through are significantly correlated with the vignette-based pass-through measure. In a final step, we compare our survey-based pass-through measure to a pooled pass-through estimate based on realised exchange-rate movements in the same panel; this estimate is larger in magnitude and sensitive to conditioning on macro controls, consistent with the view that reduced-form ERPT identified from time-series data may be confounded by contemporaneous shocks, whereas the experiment identifies the causal effect of an exogenously assigned exchange-rate scenario on intended prices.

Literature Early work on exchange rate pass-through, such as Goldberg and Knetter (1997), emphasized the importance of pricing-to-market and incomplete pass-through, while later work documented substantial heterogeneity across countries, sectors, and stages of price adjustment (Campa and Goldberg, 2005; Ortega and Osbat, 2020). As emphasized by Burstein and Gopinath (2014), observed pass-through reflects a combination of nominal rigidities, markup adjustment, invoicing choices, imported input use, and general-equilibrium forces.

The subsequent firm-level literature links this heterogeneity in ERPT to firms' currency choice, market structure, imported input use, financial constraints, and markup adjustment. Pass-through varies with invoicing currency (Gopinath et al., 2010, 2020), firms' participation in import and export markets (Amiti et al., 2014), financial constraints (Strasser, 2013), and market power and variable markups (Auer and Schoenle, 2016; Amiti et al., 2019). Relatedly, micro evidence shows that more productive or larger firms absorb a greater share of exchange-rate movements in their markups, consistent with pricing-to-market (Berman et al., 2012; Fitzgerald and Haller, 2014). Evidence from

large exchange-rate shocks further documents incomplete transmission from border to retail prices and highlights the role of both the frequency and size of retail price adjustments (Auer et al., 2021).

Our paper makes two main contributions to this literature. First, our randomized vignette experiment allows us to identify the causal effect of exchange-rate changes on intended selling prices. This avoids the confounding effects of contemporaneous macroeconomic shocks that may drive both firms' pricing decisions and realised exchange-rate movements. Second, we separate the role of gross cost exposure from that of net profit exposure in firms' exchange rate pass-through. In related work, Amiti et al. (2014) show that exporting firms with greater import intensity adjust their prices more strongly, resulting in a lower pass-through to destination-currency prices. Relative to their paper, we directly elicit the expected response of firms' costs to exchange rate movements, also capturing expected supplier price adjustment and indirect cost exposure irrespective of where or in which currency inputs are purchased. We then elicit the expected response of firms' revenues to the same exchange-rate movement and test whether a revenue exposure that offsets these cost changes, i.e. a natural hedge, attenuates the response of average selling prices conditional on gross cost exposure. We find that pass-through rises strongly with gross cost exposure, while net exposure explains little additional variation once cost exposure is held fixed, even for financially constrained firms.

Similarly, financial hedging might affect exchange rate pass-through by insulating profits from exchange rate movements. In this respect, our paper is most closely related to Fraschini et al. (2026), who document lower pass-through to export prices among firms that use financial hedging instruments. Their pass-through estimates, however, do not condition on firms' cost exposure. We elicit cost exposure directly and show that firms using financial hedging are more exposed to exchange-rate-induced cost changes, but that hedgers and non-hedgers exhibit similar pass-through once gross cost exposure is held fixed. This suggests that differences in pass-through across hedging status may partly reflect the endogenous choice of highly exposed firms to hedge their profits. More generally, our paper relates to a broader literature that studies how firms combine operational and financial hedging strategies to manage exchange-rate exposure (Allayannis et al., 2001; Bartram et al., 2010; Kuzmina and Kuznetsova, 2018; Alfaro et al., 2021). We complement this work by asking whether these hedging margins also shape exchange-rate pass-through to firms' own selling prices once gross cost exposure is held fixed.

Methodologically, the paper also relates to the growing survey literature on firms' price-setting and expectation formation, where vignette survey experiments have become increasingly established (e.g. Andre et al., 2022; Haaland et al., 2023). The closest paper in design is Gödl-Hanisch and Menkhoff (2023), who use a survey vignette to study firms' price adjustment in response to cost shocks. We apply this approach to exchange-rate

movements and combine it with measures of firms' cost exposure, revenue exposure, and financial hedging. Relatedly, Delgado et al. (2024) implement an information treatment to change firms' exchange-rate expectations and test the resulting adjustment in import demand, illustrating how changes in exchange-rate expectations can affect firm decisions. More broadly, recent work suggests that responses to hypothetical scenarios and information treatments contain economically meaningful information about behavior (Coibion et al., 2018; Binder et al., 2026).

The remaining part of the paper is structured as follows: Section 2 presents a conceptual framework and our survey design. Section 3 discusses the main results on exposure and hedging and how these factors affect our estimated ERPT. Finally, Section 4 concludes.

2. Survey Experiment

2.1. Conceptual Framework

To discipline the distinction between gross cost exposure and net exposure, consider the channels through which an exchange-rate movement can affect firms' desired prices. In standard price-setting models, desired prices depend on marginal costs and desired markups. Natural and financial hedging can offset the effect of exchange-rate movements on firms' profits but do not necessarily change their marginal costs. Conditional on cost exposure, net exposure therefore has no effect on desired prices.

Net exposure can nevertheless affect prices if profits influence a cost or constraint relevant to price setting. Appendix A develops such a mechanism based on working-capital financing: firms accept and price orders before production takes place, so an unexpected exchange-rate movement can generate cash-flow gains or losses on old orders. This changes the liquidity available to finance production of new orders and hence their expected effective marginal cost. Desired prices for new orders therefore respond to both expected marginal costs and, under financial frictions, to net profit exposure through its effect on liquidity. The resulting pricing equation is

$$\Delta p_{i,t}^{N,*} = \underbrace{\left[\alpha_i \kappa_{i,1}^{f} + (1-\alpha_i)\kappa_{i,1}^{d}\right] \Delta s_t}_{\text{expected marginal-cost channel}} + \underbrace{\Delta \mu_{i,t}}_{\text{markup channel}} + \underbrace{\chi_{i,t}(1-\delta_i) n_{i,t}}_{\text{net-exposure channel}}, \tag{1}$$

where $\Delta s_t > 0$ denotes an appreciation of the euro. The first term captures the response of expected marginal cost, including both the response of foreign input prices, $\kappa_{i,1}^{f}$, and the response of domestic input prices, $\kappa_{i,1}^{d}$, via domestic supply chains and other general-equilibrium effects. The second term, $\Delta \mu_{i,t}$, captures changes in the desired markup arising from changes in demand and competitive conditions. The final term captures the effect of net exposure on working-capital costs, where $n_{i,t}$ denotes the exchange-rate-

induced operating cash-flow loss, δ_i the share offset by financial hedging, and $\chi_{i,t}$ the sensitivity of financing costs to liquidity.

Equation (1) motivates both the survey design and the empirical analysis. The survey elicits firms' perceived cost response as a reduced-form proxy for the expected marginal-cost channel. Combining their cost and revenue responses provides a proxy for net operating exposure, while reported use of financial hedging indicates whether part of this exposure may be offset. Finally, we use measures of firms' ex ante market power to examine heterogeneity potentially associated with markup adjustment.

2.2. Survey Design

The Survey The Bundesbank Online Panel – Firms (BOP-F) is a firm survey conducted by the Deutsche Bundesbank to collect firm-level data on the economic situation and expectations of businesses in Germany. The survey uses a rotating panel design in which approximately 9,000 firms are surveyed each quarter, with each firm participating once per quarter (i.e., approximately 3,000 firms are surveyed each month).

The Experiment In the 2025Q1 wave of the BOP-F, firms are randomly assigned to one of four vignettes that vary along two dimensions: the direction of the euro move (10% appreciation or 10% depreciation against all currencies) and the persistence of the move (one year or long term). This yields four equally sized treatment groups: 1) a 10% appreciation of the euro against all other currencies over the long term; 2) a 10% appreciation of the euro against all other currencies for one year; 3) a 10% depreciation of the euro against all other currencies over the long term; 4) a 10% depreciation of the euro against all other currencies for one year.

Random assignment to one of the four vignette groups implies that firms' characteristics are comparable across arms (see Table 1, Panel A), so differences in reported price adjustments across groups identify the causal effect of exchange-rate changes. Because the scenarios are hypothetical, the assigned exchange-rate change is not confounded by contemporaneous macro shocks, unlike reduced-form pass-through estimates based on observed exchange-rate movements. However, random assignment cannot guarantee that firms have the same beliefs about the source of the exchange-rate scenario or how it propagates through the economy. The experiment therefore identifies firms' total intended response to the exchange-rate scenario, including these anticipated consequences, but does not separate direct exposure from expected general-equilibrium effects.[2]

[2]This distinction is not specific to hypothetical scenarios. Responses to information treatments and naturally occurring shocks may likewise depend on agents' subjective models of how the treatment or shock propagates through the economy; see, for example, Andre et al. (2022), Haaland et al. (2023), and Binder et al. (2026).

Table 1: Summary Statistics

	Group 1	Group 2	Group 3	Group 4	All	p-value
Panel A: Full sample						
Age	36.89	37.07	35.94	37.82	36.92	0.54
	(39.25)	(38.79)	(37.33)	(39.46)	(38.72)	
Employees	144.91	152.53	174.32	210.63	169.65	0.67
	(633.20)	(818.29)	(1,796.67)	(2,428.55)	(1,569.84)	
Turnover (m€)	62.41	131.81	54.49	88.73	84.80	0.78
	(570.42)	(4,604.98)	(481.26)	(1,617.78)	(2,503.36)	
Market Share (%)	0.27	0.30	0.25	0.39	0.30	0.79
	(1.90)	(2.25)	(2.29)	(3.65)	(2.61)	
Observations	2,182	2,113	1,994	1,950	8,239	
Panel B: Final sample						
Age	37.33	37.04	37.63	39.42	37.85	0.54
	(34.25)	(37.96)	(41.20)	(40.34)	(38.60)	
Employees	155.99	168.43	199.66	185.71	177.92	0.90
	(720.31)	(1,002.75)	(2,225.78)	(1,860.41)	(1,594.72)	
Turnover (m€)	68.15	216.90	53.03	78.69	101.95	0.80
	(726.68)	(6,511.85)	(463.17)	(1,220.82)	(3,254.48)	
Market Share (%)	0.28	0.46	0.31	0.33	0.34	0.78
	(2.27)	(3.05)	(2.83)	(2.37)	(2.64)	
Observations	1,155	1,066	1,199	1,134	4,554	

Note: This table reports summary statistics (means and standard deviations in parentheses) for the four different treatment groups and the pooled sample along with the test statistic for equality across treatment groups (allowing heterogeneous covariance matrices across groups), applying survey weights. Panel A reports the summary statistics of the full sample. Panel B reports the summary statistics from the sample of firms that answer the price question and for whom sector information is available.

Motivated by the channels in Equation (1), the survey module elicits firms' cost exposure, revenue exposure, intended price response, and financial hedging status in four questions. The first three questions vary with the assigned exchange rate scenario, while the fourth is common across treatment groups. Question 1 begins by asking firms how their costs would respond to the hypothetical exchange-rate movement:

> The value of the euro fluctuates in relation to other currencies. As a result, the prices of foreign products change compared to domestic products. We would like to better understand how such fluctuations affect businesses in Germany.
>
> If the euro [increases / decreases] against other currencies, products from countries outside the eurozone generally become [cheaper / more expensive].ℹ How would your costs change if the value of the euro [increased / decreased] by 10% against all other currencies [in the long term / for one year]?
>
> *Note: Please select an answer option.*
>
> ◦ Our costs would decrease significantly.

- ○ Our costs would decrease slightly.
- ○ Our costs would not change.
- ○ Our costs would increase slightly.
- ○ Our costs would increase significantly.
- ○ The impact is unclear.

Upon clicking ℹ, respondents would be shown the following information text:

> ℹ *When the euro is [stronger / weaker], it becomes [cheaper / more expensive] to purchase products from countries that do not use the euro, such as coffee from South America or oil products from the Middle East. If you or your suppliers source such products, your costs could be affected.*

The second question asks for the response of firms' revenues to the same hypothetical exchange-rate scenario:

> If the euro [increases / decreases] against other currencies, German products will generally become [more expensive / cheaper] for customers outside the euro area.ℹ How would your revenues change if the value of the euro [increased / decreased] by 10% against all other currencies [in the long term / for one year]?
>
> *Note: Please select an answer option.*
>
> - ○ Our revenues would decrease significantly.
> - ○ Our revenues would decrease slightly.
> - ○ Our revenues would not change.
> - ○ Our revenues would increase slightly.
> - ○ Our revenues would increase significantly.
> - ○ The impact is unclear.

Upon clicking ℹ, respondents would be shown the following information text:

> ℹ *When the euro is [stronger / weaker], it becomes [more expensive / cheaper] for all customers outside the euro area to buy German products such as cars or beer. If you have customers outside the euro area, your revenues could be affected.*

The first two questions serve two roles. First, they elicit firms' self-assessed cost and revenue exposure to exchange rate changes. We do so using qualitative response categories rather than quantitative import or export shares, reflecting a design trade-off between measurement precision and ease of comprehension. While exact trade shares would provide a more granular measure of exposure, they are harder to report reliably

in a short survey setting and would miss other determinants of exchange-rate exposure, such as invoicing currency, supply-chain structure, the response of supplier prices, and the elasticity of demand. The qualitative format therefore allows us to capture whether firms perceive the exchange-rate movement as relevant for their costs or revenues in a way that is easy to answer. Second, the first two questions serve as filter questions: firms that report "no change" for both costs and revenues exit the module, while all other firms proceed to Question 3 (see Table 1, Panel B, for summary statistics of the resulting subsample).

The third question asks potentially affected firms how much they would change their average selling prices over the next 6 and 12 months in response to the assigned exchange-rate scenario:

> By what percentage would you change your sales prices if the value of the euro [increased / decreased] by 10% against all other currencies [in the long term / for one year]?ℹ
>
> *Note: If you would not change your prices, please enter 0. If you are unable to estimate the change, please provide a value to the best of your judgment.*
>
> In the next 6 months: change by _____ %
>
> In the next 12 months: change by _____ %

Upon clicking ℹ, respondents would be shown the following information text:

> ℹ *When the euro is [stronger / weaker], products from countries outside the euro area become [cheaper / more expensive]. At the same time, German products become [more expensive / cheaper] for customers outside the euro area. If you have business partners outside the euro area, your costs and revenues could be affected.*

Question 3 provides a reduced-form measure of the total intended adjustment of average selling prices associated with the assigned scenario, combining the expected marginal-cost, markup, and net-exposure channels in Equation (1).

The fourth and final question is used to establish whether firms engage in any form of financial hedging and is identical across all four groups (conditional on firms reporting any exposure in the first two questions).

> Do you use financial instruments (e.g., forward contracts, options, swaps) in your company to hedge against exchange rate fluctuations?
>
> *Note: Please select an answer option.*
>
> - ○ Yes, we fully hedge against exchange rate fluctuations.
> - ○ Yes, we partially hedge against exchange rate fluctuations.

- No, we do not hedge against exchange rate fluctuations.
- I am not aware of this.

2.3. Other Data and Cleaning

Other Data We merge the survey data from the BOP-F with balance sheet data obtained from Orbis. This allows us to obtain i) granular industry identifiers and ii) industry-wide information on firm sales. Using the latter, we compute the Herfindahl-Hirschman index (HHI) as an industry-level measure of market concentration at the three-digit industry level. Furthermore, using the granular industry identifiers obtained from Orbis, we merge the survey data with industry-level i) import and export penetration (constructed from the input-output table provided by Destatis) and ii) turnover (provided by Destatis). Turnover data then allow us to compute firm-level market shares.

Attrition and Cleaning Appendix Table C.6 reports sample counts along the survey by treatment arm. As expected from the filter design, the number of firms falls sharply when firms are screened into the ERPT follow-up question (between questions 2 and 3) and then again if firms opt for "Don't know" or "Not Applicable" in question 3. Finally, some firms lack sector information so these firms are excluded from our baseline specification with sector fixed effects (see next section). Panel B of Table 1 shows that key observables remain balanced across treatment arms in the final estimation sample even after this selection.

We trim responses exceeding the vignette shock magnitude since reported price changes outside ±10% in response to a ±10% exchange rate change imply a pass-through well above 100%, an implausible magnitude given that firms' costs are very unlikely to consist entirely of imported goods.

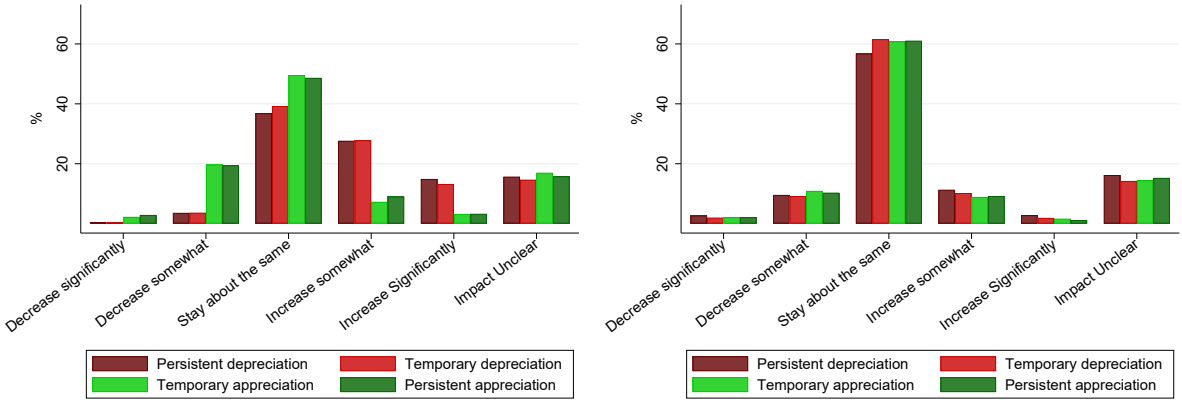
3. Results

3.1. Exposure and Hedging

Exposure We begin by characterizing the empirical counterparts of the exposure terms in Equation (1): reported cost exposure, revenue exposure, the resulting measure of net exposure, and use of financial hedging instruments. Figure 1a summarizes firms' self-assessed cost exposure. Overall, about 42% report that exchange-rate movements affect their costs, while 43% report no cost effect and 15% choose "impact unclear." Reported cost exposure is more common under euro depreciations than appreciations: in the depreciation vignette, 43% expect costs to increase, whereas in the appreciation vignette 24% expect costs to decrease.

A small minority reports a counter-intuitive cost response: 4% (11 %) of firms in the depreciation (appreciation) scenario respond that their costs would go down (up). One interpretation is that some respondents conflate exchange-rate movements with broader macro conditions (e.g., associating depreciation with weak demand and lower input prices). Alternatively, these responses may reflect confusion about the direction of the exchange-rate movement, limited attention, or other response noise. The survey responses alone do not allow us to distinguish these explanations and firm characteristics similarly provide limited evidence.[3]

Abstracting from the group of firms that report a counter-intuitive cost response, we find that firms that operate in industries with high import shares are also more likely to report a non-zero exchange-rate cost exposure (Table C.2), indicating that firms' self-reported cost exposure provides a realistic measure.



(a) FX pass-through to costs

(b) FX pass-through to sales

Note: All frequencies are computed using survey weights.

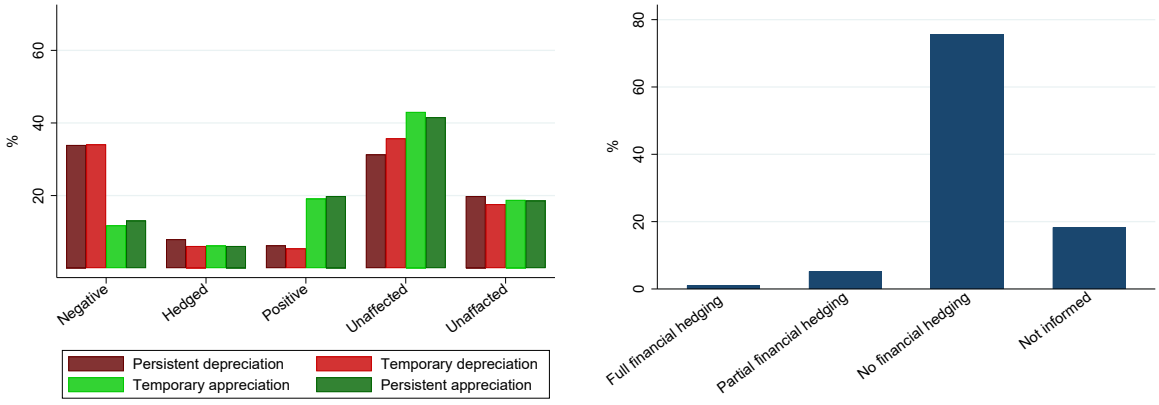
Figure 1: FX pass-through to costs and sales

A smaller share of firms, around 27%, report that their sales would be affected by exchange rate movements, while 59% report no effect and a further 15% of firms report that the response of sales would be unclear. Figure 1b shows that there does not seem to be any meaningful difference between the effect of depreciations and appreciations, with 15% (11%) of firms in the depreciation scenario reporting a sales decrease (increase) and 14% (11%) of firms in the appreciation scenario reporting a sales decrease (increase).[4] The response of sales also does not vary meaningfully with either the direction or duration. As with cost exposure, we find that firms that operate in industries with high export

[3]Table C.1 shows that medium-sized firms, firms with lower sales uncertainty, and firms that are pure exporters or are in the services sector are less likely to report counter-intuitive cost responses. Meanwhile, firms that are both importers and exporters are more likely to report counter-intuitive cost responses.

[4]Unlike the cost response, an exchange rate appreciation can in principle cause both a decrease and an increase in sales, depending on the invoicing currency and the elasticity of demand.

shares are also more likely to report a non-zero exchange rate exposure of sales (Table C.2), indicating that firms' self-reported sales exposure provides a realistic measure. Furthermore, the difference between the cost and sales exposure is consistent with a smaller share of German imports than exports being invoiced in euro (45.3 % vs 55.7%) as well as widespread use of imported inputs even among small firms, whereas exporting firms are typically relatively large.



(a) Net exposure to FX changes

(b) Use of financial hedging instruments

Note: The left panel displays the distribution of net exposure by hypothetical scenario, where net exposure is defined to be negative when firms' costs decrease (increase) by less (more) than their sales. Net exposure is defined to be positive when firms' costs decrease (increase) by more (less) than their sales. Firms are defined to be naturally hedged when they report that their costs and sales change but select the same qualitative magnitude in Questions 1 and 2. The right panel displays the distribution of firms' financial hedging status. All frequencies are computed using survey weights.

Figure 2: FX exposure and hedging

Combining cost and revenue responses, we construct a net exposure measure that summarizes whether a given exchange-rate movement is expected to raise or lower profits.[5] Figure 2a shows that around 37% of firms report that neither sales nor costs would be affected. A further 8% of firms report that their costs and sales would be affected to a similar degree, i.e., report that their costs and sales change but select the same qualitative magnitude in Questions 1 and 2. 24% of firms report that their costs would increase more (or decrease less) than their sales, resulting in an overall reduction of profits. Similarly, 14% of firms report that their costs would increase less (or decrease more) than their sales, resulting in an increase of profits, while the remaining firms report unclear effects. As with cost, more firms expect their profits to be affected by exchange rate depreciations than appreciations: 41% of firms in the depreciation scenario would see

[5]Net exposure is defined by encoding the cost and sales response on a scale from 1 (decrease significantly) to 5 (increase significantly). Firms are defined to be negatively affected if the difference between their sales and cost response is equal to or smaller than -1. Conversely, firms are defined to be positively affected if the difference between their sales and cost response is equal to or larger than 1. Firms are defined to be hedged if the difference between their sales and cost response is equal to 0, as long as either component is non-zero.

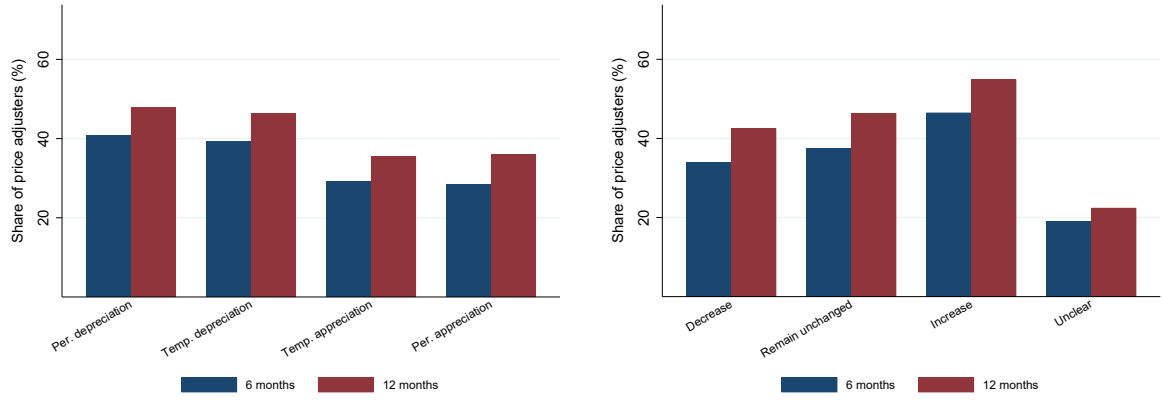
their profits change while only 33% of firms in the appreciation scenario would see their profits change. In the case of a depreciation, 35% (7%) of firms would expect a decrease (increase) in profits, while an appreciation would lead to a decrease (increase) in profits for 13% (20%) of firms.

Financial Hedging Despite widespread exposure, only about 9% of exposed firms report hedging with forwards/options/swaps, while 15% report that they are unaware of their firms' hedging activities (Figure 2b). Using a linear probability model, we find that large firms are more likely to use financial instruments to hedge their exchange rate exposure (see Table C.3), whereas age and average sales growth uncertainty (relative to other firms in their respective industry on average throughout the survey) are not linked to the use of financial instruments to hedge their exposure. Furthermore, the likelihood of using financial hedging instruments increases with firms' cost and sales exposure.

3.2. Exchange-rate Pass-through

Of the 8,239 firms participating in the survey, 5,148 (62%) report that they are affected by exchange rate movements and are subsequently asked about their price response.

Extensive Margin A large share of firms does not adjust their prices at all in response to exchange rate movements. Among firms that reach the price question, only 38% (46%) of firms adjust their prices within 6 (12) months,[6] with adjustments happening more frequently under depreciations than appreciations (see Figure 3a) and when costs increase rather than decrease (see Figure 3b).



(a) Share of price adjusters by scenario (b) Share of price adjusters by cost exposure

Figure 3: Extensive Margin of ERPT

[6] Approximately 8% of firms that were asked the price question do not provide an answer to the price question. We treat these nonresponses as zero price adjustments.

Table C.4 indicates that the likelihood of a price adjustment does not vary significantly with firm size, average sales uncertainty, or the duration of the exchange-rate scenario. Instead, the likelihood of adjustment is strongly related to reported exposure, especially for firms that both import and export. We also find a positive association between reported financial hedging and price adjustment. However, this relationship weakens when we control for exposure categories (column (3)), consistent with the interpretation that hedging is more common among firms with greater exchange-rate exposure.

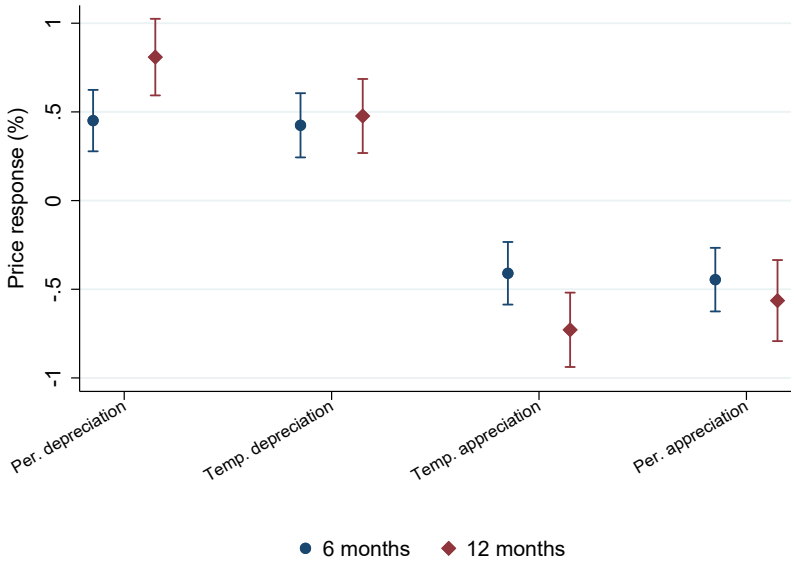
Intensive Margin In the next step, we investigate the intensive margin of exchange-rate pass-through, depicted in Figure 4 across the four scenarios (normalized by the average response). We quantify pass-through (conditional on exposure) by regressing firms' reported price changes over horizon h on the assigned exchange-rate scenario Δ €$^v \in \{-10, 10\}$, i.e.,

$$\pi_{i,t|t+h} = \alpha_s^h + \beta^h \Delta€^v + u_{i,t}^h \tag{2}$$

The resulting coefficient can be interpreted as a semi-elasticity: the average percent change in the firm's average selling price associated with a 1% change in the exchange rate across all affected firms. In our baseline sample, we omit firms that report counter-intuitive cost responses, i.e., firms that report increasing (decreasing) costs following an appreciation (depreciation), but we include them as part of a subsequent sensitivity analysis.

Table 2 shows that a 1% exchange-rate movement leads to a 0.04% (0.06%) price change over the next 6 (12) months (columns 1 and 2). Conditioning only on those firms that adjust their prices, pass-through increases to 0.06% (0.09%) over the subsequent 6 (12) months (columns 3 and 4). Taken together, these results indicate that most price adjustment occurs within the first 6 months, on both the extensive and intensive margins.

Because only 57% of firms receive and answer the price questions, conditional on reporting some exchange-rate exposure, we can calculate overall pass-through by assigning a price response of zero to firms that report no direct exposure to the exchange-rate scenario. Under this back-of-the-envelope-calculation, the implied overall pass-through is 0.02 (0.04) within 6 (12) months, abstracting from general-equilibrium effects. Since exposure is elicited after treatment assignment and determines whether firms receive the price question, this back-of-the-envelope-calculation is sensitive to the selected sample and the imputed price response of firms that report no exposure. Appendix Table C.5 reports sample-definition robustness for this back-of-the-envelope calculation at the 12-month horizon. Depending on the sample used for the conditional pass-through estimate, the implied aggregate pass-through ranges from 0.024 to 0.040, indicating that the qualitative magnitude remains similar across these sample specifications. Furthermore, assigning



Note: All responses are weighted using survey weights

Figure 4: Average Price Change by Exchange Rate Scenario

firms that report no exposure the same pass-through as exposed firms yields an overall pass-through of 0.06 over twelve months, which yields an upper limit for the implied overall pass-through.

Table 2: Intensive Margin of ERPT

	(1) $\pi_{i,t\|t+6}$ b/se	(2) $\pi_{i,t\|t+12}$ b/se	(3) $\pi_{i,t\|t+6}\|_{\pi\neq 0}$ b/se	(4) $\pi_{i,t\|t+12}\|_{\pi\neq 0}$ b/se
Δ €^{v}	-0.04***	-0.06***	-0.06***	-0.09***
	(0.01)	(0.01)	(0.01)	(0.01)
Constant	1.43***	1.97***	4.09***	4.66***
	(0.05)	(0.06)	(0.12)	(0.12)
R^2	0.03	0.04	0.03	0.06
N	3,990	3,888	1,442	1,700

Note: All regressions include industry fixed effects and are estimated using survey weights. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

This price response does not differ significantly between the one-year and long-term scenarios (Appendix Table C.7). The expected duration of the exchange rate movement can matter by changing expected future input costs, demand conditions, or liquidity effects. However, persistence beyond the one-year scenario does not significantly affect firms' intended prices within the horizons considered.

Sensitivity We provide three sensitivity analyses for our intensive margin pass-through estimates. First, columns (1) - (2) of Table C.8 show that the pass-through estimate shrinks to 0.04 at the 12-month horizon when we include all firms, i.e., also those reporting *falling* (*rising*) costs following a *depreciation* (*appreciation*). Columns (3) - (4) allow pass-through to differ by the sign of the cost response and show that the pass-through of firms with counter-intuitive cost responses, defined as $\mathbb{I}_{\partial \Delta cost/\partial \Delta e^v > 0}$, is close to zero and statistically insignificant, causing the attenuation of the full-sample estimate. If these counter-intuitive cost responses reflected a common alternative mental model in which indirect effects systematically reversed the direct cost effects of the exchange-rate movement, one might expect a corresponding price response in the opposite direction. The absence of such a response suggests that misunderstanding, limited attention, or heterogeneous response noise accounts for at least part of this pattern. Second, Table C.9 shows that the estimated pass-through over 12 months increases from 0.06 to 0.10 when we do not remove outliers from the surveyed price responses.

A third potential concern is that respondents may interpret the hypothetical exchange-rate scenario through the lens of contemporaneous macro news. As a result, the effect of the assigned exchange-rate change on intended price adjustments could vary with the information environment at the time of the interview such as news about German fiscal expansion in March 2025 that was associated with a significant appreciation of the euro against the US dollar. Table C.10 addresses this by allowing the vignette effect to differ by survey month within 2025Q1. The month-specific treatment effects do not differ significantly across January–March at either horizon, indicating no detectable state dependence of the pass-through response within the quarter. This stability suggests that firms' interpretation of the vignette is not materially altered by within-quarter changes in macro conditions or salient news during 2025Q1, and is consistent with the experiment effectively holding fixed the relevant environment.

External validation A potential concern with survey vignettes is whether the intended price responses map into firms' actual pricing behavior. We conduct a validation exercise for our pass-through estimates by comparing vignette-based measures to reduced-form evidence in the panel of reported own-price growth. To do so, we use the full panel data (i.e., data from 2020-2025) on realised year-on-year own-price growth, $\pi_{i,t-12|t}$, and expected year-on-year own-price growth one year ahead, $\mathbb{E}_{i,t}\pi_{i,t|t+12}$.

We first construct a firm-specific vignette-based selling-price ERPT measure, $\hat{\beta}_i^s$, by normalizing each firm's 12-month reported price response by the exchange-rate scenario, $\hat{\beta}_i^s = \mathbb{E}_{i,t}\pi_{i,t|t+12}/\Delta e^v$. Next, we estimate a firm-specific reduced-form pass-through coefficient $\hat{\beta}_i^{rf}$ from the panel by regressing realised, year-on-year own-price growth on realised year-on-year changes in the effective euro exchange rate (controlling for the growth of real

GDP, the harmonised index of consumer prices, and the ECB main deposit rate). We then estimate the correlation between $\hat{\beta}_i^{rf}$ and $\hat{\beta}_i^s$ in a cross-sectional regression. Table 3 shows that firms with a higher vignette-based pass-through also tend to exhibit a higher empirically estimated pass-through in the panel. While the firm-level reduced-form estimates are noisy and should not be interpreted as structural pass-through parameters, these patterns provide a direct consistency check for the survey-based measures.

Table 3: Surveyed and estimated pass-through

	(1) β_i^{rf} b/se
β_i^s	0.27*
	(0.15)
Constant	-0.03
	(0.05)
R^2	0.00
N	2,410

Note: All regressions are estimated using survey weights. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

We next test whether firms with a higher vignette-based pass-through display a stronger co-movement between (expected) own-price growth and realised exchange-rate changes in the pooled panel. Because the vignette responses can embed non-zero firm- and wave-specific baseline price growth unrelated to the exchange-rate scenario, we focus on the magnitude $|\widehat{\beta}_i^s|$ in this validation exercise. In particular, we estimate

$$y_{i,t} = \alpha_i + \lambda_t + \gamma \left(|\hat{\beta}_i^s| \times \Delta e_t \right) + \varepsilon_{i,t}, \tag{3}$$

where $y_{i,t}$ is either realised own-price growth $\pi_{i,t-12|t}$ or the revision of expected own-price growth between two consecutive survey waves, $\Delta_3 \mathbb{E}_{i,t} \pi_{i,t|t+12}$, and Δe_t denotes the realised change in the effective euro exchange rate or the EUR/USD exchange rate over the relevant horizon (i.e., year-on-year or quarter-on-quarter). We include reference-month fixed effects for the regressions that use realised own-price growth[7] and wave fixed effects for the regressions that use expected own-price growth.

Table 4 reports the results from Equation (3). Columns (1) and (2) use realised own-price growth, $\pi_{i,t-12|t}$, and interact $|\hat{\beta}_i^s|$ with the change in the effective euro exchange rate and

[7] All firms surveyed in a given quarter share the same reference period when asked about their realized price growth. Therefore, the reference-month fixed effects are equivalent to quarter-fixed effects.

Table 4: Empirical Validation

	(1) $\pi_{i,t-12\|t}$ b/se	(2) $\pi_{i,t-12\|t}$ b/se	(3) $\Delta_3\mathbb{E}_{i,t}\pi_{i,t\|t+12}$ b/se	(4) $\Delta_3\mathbb{E}_{i,t}\pi_{i,t\|t+12}$ b/se
$\hat{\beta}_i^s \times \Delta_{12}$ €	-0.20**			
	(0.07)			
$\hat{\beta}_i^s \times \Delta_{12}$ €/$		-0.07*		
		(0.03)		
$\hat{\beta}_i^s \times \Delta_3$ €			-0.42**	
			(0.14)	
$\hat{\beta}_i^s \times \Delta_3$ €/ $				-0.18***
				(0.05)
FE	Firm, ref. month	Firm, ref. month	Firm, wave	Firm, wave
Cluster	Firm, ref. month	Firm, ref. month	Firm, wave	Firm, wave
R^2	0.00	0.00	0.00	0.00
N	34,558	34,558	25,220	25,112

Note: All regressions are estimated using survey weights. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

the EUR/USD rate over the past 12 months, respectively. The interaction coefficient is negative and statistically significant in both variants. This implies that realised euro appreciations are associated with lower realised own-price growth for firms with a larger experimentally elicited pass-through measure. Columns (3) and (4) repeat the exercise for revisions of expected own-price growth one year ahead, $\Delta_3\mathbb{E}_{i,t}\pi_{i,t|t+12}$. Here we interact $|\hat{\beta}_i^s|$ with the change in the effective euro exchange rate or the EUR/USD rate over the preceding three months. The estimated interaction coefficients are again negative and statistically significant.

These results provide a consistency check for our main pass-through estimates: firms with a higher pass-through in the survey experiment also exhibit a higher co-movement between own-price growth (expectations) and realised exchange-rate changes.

Finally, to provide a benchmark for the magnitude of the experimentally elicited exchange-rate pass-through, we estimate an average reduced-form relationship between firms' realised own-price growth and realised exchange-rate movements in the pooled panel:

$$\pi_{i,t-12|t} = \alpha_i + \beta\,\Delta_{12}e_t + \Gamma\Delta_{12}x_t + \varepsilon_{i,t}, \tag{4}$$

where $\Delta_{12}e_t$ denotes the realised 12-month change in the effective euro exchange rate or the bilateral EUR/USD rate and x_t is a vector of macro controls that contains German real GDP growth, German consumer-price inflation, and the ECB main deposit rate.

Table 5 reports the results from Equation (4). Without aggregate controls, an appreciation of the effective euro exchange rate is associated with significantly lower realised

Table 5: Reduced-form ERPT

	(1) $\pi_{i,t-12\|t}$ b/se	(2) $\pi_{i,t-12\|t}$ b/se	(3) $\pi_{i,t-12\|t}$ b/se	(4) $\pi_{i,t-12\|t}$ b/se
Δ_{12} €	-0.28***	-0.08***		
	(0.06)	(0.02)		
Δ_{12} €/ $			-0.19***	-0.05***
			(0.02)	(0.01)
Δ_{12} HICP		0.05**		0.07**
		(0.02)		(0.02)
Δ_{12} RGDP		0.51***		0.47***
		(0.03)		(0.04)
Δ_{12} r		0.40***		0.41***
		(0.04)		(0.04)
FE	Firm	Firm	Firm	Firm
Cluster	Firm, wave	Firm, wave	Firm, wave	Firm, wave
R^2	0.02	0.08	0.04	0.08
N	63,321	63,321	63,321	63,321

Note: All regressions are estimated using survey weights. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

own-price growth, with an estimated coefficient of -0.28; using EUR/USD yields a smaller (in absolute value) but still significant coefficient of -0.19. Introducing aggregate controls reduces the magnitude of these co-movements substantially, to -0.08 for the effective exchange rate and -0.05 for the EUR/USD rate.[8]

This sensitivity to the conditioning set indicates that the unconditional reduced-form coefficients bundle (i) any direct pricing response to the exchange rate with (ii) contemporaneous aggregate disturbances and policy responses that are correlated with exchange-rate fluctuations. Even conditional on macro controls, the coefficients should be interpreted as conditional co-movements rather than responses to an exogenous exchange-rate shock, as realised exchange-rate changes may still reflect unobserved shocks. By contrast, the experimental pass-through measure $\hat{\beta}_i^s$ can be interpreted as a causal first-order measure of firms' intended pricing response to an exchange-rate change because the vignette holds fixed the information set and abstracts from realised aggregate co-movements by design. The lower magnitude of $\hat{\beta}_i^s$ is consistent with the experiment isolating the causal effect of exchange-rate changes on firms' prices.

The vignette-based measure and the reduced-form panel regressions provide complementary pass-through benchmarks. The reduced-form coefficients reflect the average correlation between realised own-price growth and exchange rates in the sample period, and

[8]To put this into perspective, the aggregate correlation between German inflation and changes in the effective euro exchange rate over the same sample ranges from -0.38 to -0.73 depending on the horizon and the set of controls (see Table C.11).

their magnitudes change noticeably when controlling for contemporaneous macro states. This sensitivity highlights how the results of standard reduced-form regressions are confounded by contemporaneous macro shocks and policy responses. In contrast, $\hat{\beta}_i^s$ isolates firms' intended pricing response under a controlled information set. Comparing the two therefore offers a way to assess the extent to which reduced-form ERPT measures reflect macro correlations rather than firms' underlying pricing rule. The back-of-the-envelope aggregation of the experimentally elicited pass-through to firms' selling prices suggests that firms' direct response is roughly half as large as the reduced-form estimate.

3.3. Heterogeneous Pass-through

We next explore how exchange rate pass-through varies with firms' subjective exposure and observable characteristics. Specifically, we interact the hypothetical exchange rate shock, Δe^v, with firms' self-reported exposure indicators and other observable characteristics and estimate the same baseline specification as in Section 3.2.

Table 6: ERPT by Exposure

	(1)	(2)	(3)	(4)	(5)	(6)
	$\pi_{i,t\|t+6}$	$\pi_{i,t\|t+12}$	$\pi_{i,t\|t+6}$	$\pi_{i,t\|t+12}$	$\pi_{i,t\|t+6}$	$\pi_{i,t\|t+12}$
	b/se	b/se	b/se	b/se	b/se	b/se
Δ €^{v} × Costs unaffected	-0.02	-0.01				
	(0.02)	(0.02)				
Δ €^{v} × Costs slightly affected	-0.03***	-0.05***				
	(0.01)	(0.01)				
Δ €^{v} × Costs strongly affected	-0.10***	-0.16***				
	(0.03)	(0.03)				
Δ €^{v} × Sales unaffected			-0.04***	-0.07***		
			(0.01)	(0.01)		
Δ €^{v} × Sales slightly affected			-0.06***	-0.08***		
			(0.01)	(0.01)		
Δ €^{v} × Sales strongly affected			-0.04	-0.11**		
			(0.03)	(0.04)		
Δ €^{v} × Profits unaffected					-0.05**	-0.09***
					(0.02)	(0.02)
Δ €^{v} × Profits Slightly Affected					-0.03***	-0.04***
					(0.01)	(0.01)
Δ €^{v} × Profits Strongly Affected					-0.07***	-0.13***
					(0.01)	(0.02)
Exp.: low = mid (p-val)	0.62	0.07	0.24	0.70	0.43	0.04
Exp.: low = high (p-val)	0.02	0.00	0.98	0.35	0.53	0.24
Exp.: mid = high (p-val)	0.02	0.00	0.71	0.43	0.03	0.00
R^2	0.06	0.07	0.08	0.09	0.07	0.05
N	2,973	2,889	3,037	2,952	2,799	2,719

Note: All regressions include industry fixed effects and are estimated using survey weights. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Exposure and hedging We first distinguish the expected marginal-cost and net-exposure channels in Equation (1). If the former dominates, pass-through should rise with reported cost exposure, while net profit exposure (natural hedging) and financial hedging should contribute little once cost exposure is held fixed. If profit exposure drives price adjustment, pass-through should be systematically lower for firms that are naturally hedged, financially hedged, or have less difficulty accessing external finance conditional on cost exposure.

Table 6 shows the relation between exposure and ERPT. Along the cost dimension, pass-through is close to zero for firms that report being unaffected, but rises sharply with reported exposure, reaching around -0.16 at 12 months for strongly cost-exposed firms. Along the sales dimension, however, firms report no statistically significant differences in pass-through regardless of their exposure. Finally, columns (5) and (6) show that price pass-through is not a monotonic function of profit exposure: firms without any profit exposure (i.e., firms whose reported cost and sales exposures largely offset in net terms among those asked the price question) exhibit a price response that is significantly larger than that of firms with a low profit exposure and comparable to that of firms with a high profit exposure. This provides initial evidence that firms can adjust prices even when the implied net profit effect is approximately zero.

To assess the relative roles of cost and sales exposure more directly, Appendix Table C.12 estimates pass-through by jointly conditioning on cost and sales or profit exposure. Conditional on cost exposure, differences across sales- and profit-exposure categories are not associated with significantly different degrees of exchange rate pass-through. That is, once cost exposure is taken into account, firms with different degrees of sales or profit exposure do not adjust their prices differently. We therefore do not find evidence that natural hedging attenuates exchange rate pass-through once reported exposure is accounted for. Instead, firms may reprice even when cost and sales effects offset each other, consistent with pricing reflecting both marginal-cost pressures and desired markups. Tables C.15-C.16 also shows that there are no significant differences in pass-through between firms reporting difficulties accessing external finance and those reporting none.[9] This provides additional evidence against a quantitatively large working-capital channel.

Table 7 then examines whether financial hedging (use of forwards/options/swaps) is associated with different pass-through. Unconditionally, hedgers exhibit larger pass-through

[9]Table C.15 compares the pass-through of firms reporting difficulties accessing external finance with the pass-through of firms reporting no difficulties, conditional on their cost exposure. Table C.16 tests whether, among cost-exposed firms, pass-through differs depending on whether exchange-rate-induced profit exposure is offset, either naturally through offsetting cost and revenue effects or through financial hedging, and whether this differs by firms' financial-constraint status. To ensure sufficiently large cell sizes, Table C.16 uses a binary measure of cost exposure and combines natural and financial hedging into a single measure of whether profit exposure is offset.

Table 7: ERPT by Financial Hedging and Exposure

	(1) $\pi_{i,t\|t+6}$ b/se	(2) $\pi_{i,t\|t+12}$ b/se	(3) $\pi_{i,t\|t+6}$ b/se	(4) $\pi_{i,t\|t+12}$ b/se
Δ €^{v} × No Hedging	-0.04***	-0.06***		
	(0.01)	(0.01)		
Δ €^{v} × Hedging	-0.10***	-0.12***		
	(0.02)	(0.03)		
Δ€^{v} × Costs unaffected × No Hedging			-0.01	-0.01
			(0.02)	(0.02)
Δ€^{v} × Costs unaffected × Hedging			-0.07	-0.04
			(0.07)	(0.06)
Δ€^{v} × Costs slightly affected × No Hedging			-0.03***	-0.06***
			(0.01)	(0.01)
Δ€^{v} × Costs slightly affected × Hedging			-0.09**	-0.08**
			(0.03)	(0.03)
Δ€^{v} × Costs strongly affected × No Hedging			-0.11***	-0.19***
			(0.03)	(0.04)
Δ€^{v} × Costs strongly affected × Hedging			-0.12***	-0.20**
			(0.04)	(0.06)
hedge = no hedge	0.01	0.04		
hedge = no hedge (p-val, no exp.)			0.41	0.66
hedge = no hedge (p-val, mid exp.)			0.05	0.50
hedge = no hedge (p-val, high exp.)			0.84	0.92
R^2	0.03	0.05	0.07	0.08
N	3,412	3,338	2,646	2,584

Note: All regressions include industry fixed effects and are estimated using survey weights. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

than non-hedgers (e.g., Δ€^{v} × Hedging around -0.10 at 6 months and -0.12 at 12 months, compared to -0.04 and -0.06 among non-hedgers). However, once we allow the hedging effect to vary by cost exposure, differences between hedgers and non-hedgers shrink significantly: among slightly and strongly cost-affected firms, pass-through coefficients are similar across hedging status and pairwise tests fail to reject equality. Table C.13 shows that this pattern remains similar when we treat respondents who are unaware of whether their firms use financial hedging instruments as missing instead of non-hedgers. Furthermore, Table C.14 shows that the pass-through of hedgers does not differ by scenario persistence.

Taken together, the patterns are consistent with pass-through arising because exchange rates move marginal costs and/or desired markups. Net exposure and financial hedging play a limited role after accounting for gross cost exposure.

Market share and market structure. The markup term in Equation (1) illustrates how exchange-rate-induced changes in desired markups can affect price setting. Since we do not directly observe how firms' desired markups change in response to our vignette,

we investigate how ex ante differences in market shares and industry concentration can affect firms' exchange rate pass-through.

Table 8 shows that ERPT varies somewhat with firms' market share. Without accounting for cost exposure, the interaction between the exchange-rate vignette and market share is positive, and the quadratic specification points to a non-linear relationship, especially at the 12-month horizon. This is consistent with the idea that firms with greater market power may adjust their prices less strongly in response to exchange-rate movements. However, Table C.18 shows that this heterogeneity largely disappears once we condition on reported cost exposure. One exception is the group of firms that reports unaffected costs, for which market-share interactions are significant in some specifications, especially in the non-linear specification. This pattern is suggestive of pricing-to-market: among firms that report unaffected costs, any exchange-rate response is unlikely to operate through marginal costs and is more naturally interpreted as reflecting markup or demand-side adjustment. At the same time, we interpret this evidence cautiously, since the relevant coefficients are imprecisely estimated. Finally, Table C.19 provides little evidence that broader industry concentration, as measured by the HHI, systematically shapes ERPT. Taken together, these results suggest that market structure does shape the pass-through of exchange rate changes, but gross cost exposure remains the main source of heterogeneity in pass-through.

Table 8: ERPT by market share

	(1)	(2)	(3)	(4)
	$\pi_{i,t\|t+6}$	$\pi_{i,t\|t+6}$	$\pi_{i,t\|t+12}$	$\pi_{i,t\|t+12}$
	b/se	b/se	b/se	b/se
$\Delta€^v$	-0.05***	-0.05***	-0.07***	-0.08***
	(0.01)	(0.01)	(0.01)	(0.01)
$\Delta€^v$ × Mkt. Share	0.01	0.02	0.02	0.04*
	(0.01)	(0.01)	(0.01)	(0.02)
$\Delta€^v$ × Mkt. Share^2		-0.00**		-0.00**
		(0.00)		(0.00)
Mkt. Share	0.09	0.25*	0.14	0.40*
	(0.07)	(0.14)	(0.13)	(0.23)
Mkt. Share^2		-0.02**		-0.03**
		(0.01)		(0.01)
R^2	0.04	0.05	0.06	0.07
N	1,403	1,403	1,377	1,377

Note: All regressions include industry fixed effects and are estimated using survey weights. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Firm size and productivity. To test whether ERPT varies by firm size or productivity, we interact the vignette variable with the reported cost exposure as well as dummies

for firm size (small: ≤49 employees, medium: 50–249 employees, large: ≥250 employees) and labor productivity (below- or above-median). Table C.17 shows that within the strongly cost-affected group, medium-sized firms report the largest price response (about -0.15 at 6 months and -0.25 at 12 months), which is suggestive of a hump-shaped relationship between pass-through and size, but the differences across size groups are not significant. For productivity, pass-through is typically higher for high-productivity firms in exposed bins, yet differences are again not statistically significant. Overall, most of the heterogeneity runs through exposure; conditional on exposure, size and productivity add limited additional variation.

Sectoral heterogeneity. Finally, Table C.20 documents sizeable differences across broad sectors. Pass-through is strongest in wholesale and retail (e.g., around -0.08 to -0.09 at 6 months and -0.11 to -0.14 at 12 months), followed by manufacturing (around -0.06 and -0.08). Services display the lowest, though still statistically significant, pass-through (around -0.03 and -0.04). These patterns are consistent with greater import content and/or tighter competitive pricing links to traded goods in goods-related sectors relative to services.

4. Conclusion

We use a randomized vignette experiment in a representative survey of German firms to estimate exchange-rate pass-through (ERPT) to firms' average selling prices and to link pass-through to firms' reported natural and financial hedging. Among firms that report being affected by the assigned exchange-rate scenario, a 1% exchange-rate movement implies a 0.04% change in intended prices over the next 6 months and a 0.06% change over the next 12 months. At the same time, fewer than half of affected firms report any price adjustment within a year.

The expected marginal-cost channel accounts for most of the observed heterogeneity in pass-through. ERPT rises significantly with reported cost exposure, whereas revenue exposure explains little additional variation once cost exposure is accounted for. We similarly find little evidence that natural hedging, financial hedging, or reported financing constraints attenuate pass-through, suggesting a limited average role for the net-exposure channel. We also find suggestive evidence that firms with greater market power adjust prices less strongly in response to exchange-rate movements, although this relationship weakens once we condition on cost exposure and the remaining heterogeneity is concentrated among firms that report no cost exposure, consistent with pricing-to-market.

Finally, the survey-based pass-through measure is meaningfully related to reduced-form evidence from the same panel: firms with higher vignette-based ERPT exhibit a stronger

co-movement of realized and expected price growth with realized exchange-rate changes. At the same time, pooled reduced-form estimates are larger and sensitive to macro controls, consistent with the view that time-series estimates of ERPT may be confounded by contemporaneous macro shocks in addition to firms' direct pricing responses. Taken together, our results suggest that pass-through into firms' own prices is shaped primarily by gross cost exposure, and that experimental survey evidence provides a useful complement to reduced-form estimates based on realized exchange-rate movements.

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Appendix A. A Model of Exchange-rate Pass-through

This section outlines a stylised model of firm-level exchange rate pass-through under working-capital financing and a time-to-build assumption.

Production. A representative firm i produces output using foreign and domestic inputs according to

$$Y_{i,t} = A_i \left(Q^f_{i,t}\right)^{\alpha_i} \left(Q^d_{i,t}\right)^{1-\alpha_i}, \qquad \alpha_i \in (0,1), \tag{5}$$

where A_i denotes productivity, $Q^f_{i,t}$ and $Q^d_{i,t}$ denote foreign and domestic inputs, and α_i is the foreign-input share. Let $P^f_{i,t}$ and $P^d_{i,t}$ denote the euro prices of foreign and domestic inputs. Cost minimization gives nominal marginal cost

$$MC_{i,t} = \frac{1}{A_i} \left(\frac{P^f_{i,t}}{\alpha_i}\right)^{\alpha_i} \left(\frac{P^d_{i,t}}{1-\alpha_i}\right)^{1-\alpha_i}. \tag{6}$$

Define s_t as the log foreign-currency price of one euro, so that an increase in s_t is an appreciation of the euro. Throughout, Δ denotes the difference between the exchange-rate states s_t and s_{t-1}, and E_t denotes expectations conditional on the firm's information in period t. Define the expected next-period log input-price responses as

$$\kappa^f_{i,1} \equiv \frac{E_t\left[\Delta p^f_{i,t+1}\right]}{\Delta s_t}, \qquad \kappa^d_{i,1} \equiv \frac{E_t\left[\Delta p^d_{i,t+1}\right]}{\Delta s_t}, \tag{7}$$

where lower-case letters denote logs. The elasticity $\kappa^f_{i,1}$ is (weakly) negative because an appreciation makes foreign inputs cheaper in euro terms. The elasticity $\kappa^d_{i,1}$ captures the response of domestic input prices through domestic supply chains and other general-equilibrium effects. Equation (6) and a first-order approximation around the deterministic baseline imply

$$E_t\left[\Delta mc_{i,t+1}\right] = \left[\alpha_i \kappa^f_{i,1} + (1-\alpha_i)\kappa^d_{i,1}\right] \Delta s_t. \tag{8}$$

Working-capital finance. Variable inputs must be paid before the corresponding sales revenue is received. Let $B_{i,t-1}$ denote the liquid funds with which the firm enters period t. Given liquidity B, let $\rho(B) \geq 1$ denote the gross cost of financing variable input expenditure, with

$$\rho'(B) < 0. \tag{9}$$

Lower liquidity therefore raises the effective cost of production. The same financing schedule applies to all orders and is evaluated using the liquidity available when the corresponding production is financed.

Order timing and net exposure. Orders accepted in period $t-1$ are produced and settled in period t, with all production costs incurred in period t. When these orders were accepted, they were priced using expected effective marginal cost $\rho(B_{i,t-1})E_{t-1}[MC_{i,t}]$ following the pricing rule derived below. Their quantities, quoted prices, and invoicing currencies are therefore predetermined when the exchange-rate movement is observed in period t. The firm produces and settles this cohort before pricing the orders that arrive in period t.

Let $Y^N_{i,t-1}$ denote the quantity ordered in period $t-1$, so that $Y_{i,t} = Y^N_{i,t-1}$. Production takes place in period t using the technology in equation (5). Variable inputs are financed using beginning-of-period liquidity $B_{i,t-1}$, so the total period t cost of producing orders received in $t-1$ in exchange-rate state s is

$$C_{i,t}(s, B_{i,t-1}) = \rho(B_{i,t-1})MC_{i,t}(s)Y^N_{i,t-1}. \tag{10}$$

Let $R_{i,t}(s)$ denote the euro revenue received in period t from these orders. Net operating cash flow from the cohort is

$$\mathrm{CF}_{i,t}(s, B_{i,t-1}) = R_{i,t}(s) - C_{i,t}(s, B_{i,t-1}). \tag{11}$$

The exchange-rate-induced loss in current operating cash flow, relative to pre-shock revenue $R_{i,t-1}$, is

$$\begin{aligned} n_{i,t} &\equiv -\frac{1}{R_{i,t-1}}\left[\mathrm{CF}_{i,t}(s_t, B_{i,t-1}) - \mathrm{CF}_{i,t}(s_{t-1}, B_{i,t-1})\right] \\ &\simeq \frac{1}{R_{i,t-1}}\left(\frac{\partial C_{i,t}}{\partial s_t} - \frac{\partial R_{i,t}}{\partial s_t}\right)\Delta s_t, \end{aligned} \tag{12}$$

A positive (negative) value of $n_{i,t}$ denotes a current operating cash-flow loss (profit). Natural hedging arises when the contemporaneous cost and revenue effects offset, i.e., when $n_{i,t} = 0$.

The firm also enters period t with a predetermined financial hedge portfolio. The portfolio choice is taken as given. Let $H_{i,t}(s)$ denote its euro payoff realized in period t at exchange rate s. Its payoff due to the exchange-rate movement, relative to pre-shock revenue $R_{i,t-1}$, is

$$h_{i,t} = \frac{H_{i,t}(s_t) - H_{i,t}(s_{t-1})}{R_{i,t-1}}. \tag{13}$$

Net exposure after accounting for the exchange-rate-induced loss in current operating cash flow and the payoff of the financial hedge is

$$\widetilde{n}_{i,t} = n_{i,t} - h_{i,t}. \tag{14}$$

If the firm hedges only a fraction $\delta_i \in [0,1]$ of the operating exposure, then

$$h_{i,t} = \delta_i n_{i,t}, \qquad \widetilde{n}_{i,t} = (1-\delta_i) n_{i,t}. \tag{15}$$

Settlement and liquidity. After last period's orders and financial hedges are settled, liquidity in exchange-rate state s is

$$B_{i,t}(s) = B_{i,t-1} + \mathrm{CF}_{i,t}(s, B_{i,t-1}) + H_{i,t}(s). \tag{16}$$

The exchange-rate-induced change in liquidity is therefore

$$\begin{aligned} B_{i,t}(s_t) - B_{i,t}(s_{t-1}) &= \mathrm{CF}_{i,t}(s_t, B_{i,t-1}) - \mathrm{CF}_{i,t}(s_{t-1}, B_{i,t-1}) \\ &\quad + H_{i,t}(s_t) - H_{i,t}(s_{t-1}) \\ &= -R_{i,t-1}\widetilde{n}_{i,t}. \end{aligned} \tag{17}$$

Prices for new orders. After settlement, the firm sets price $P^N_{i,t}$ for orders accepted in period t and produced and settled in period $t+1$. The price denotes expected euro revenue per unit at settlement, irrespective of the order's invoicing currency. Demand for newly priced orders is

$$Y^N_{i,t} = \mathcal{D}_{i,t}(P^N_{i,t}, s_t), \tag{18}$$

where $\mathcal{D}_{i,t}(P, s_t)$ is the firm's residual demand schedule and incorporates the relevant competitor price indices across its domestic and foreign destinations. Define the elasticity of residual demand, evaluated at the optimal price, as

$$\varepsilon_{i,t} \equiv -\left.\frac{\partial \log \mathcal{D}_{i,t}(P, s_t)}{\partial \log P}\right|_{P=P^{N,*}_{i,t}} > 1. \tag{19}$$

Post-settlement liquidity $B_{i,t}(s_t)$ is carried into period $t+1$ and finances the variable inputs required to produce these orders so that the expected effective marginal cost is $\rho(B_{i,t}(s_t))E_t\left[MC_{i,t+1}\right]$. The risk-neutral firm therefore solves

$$\max_{P^N_{i,t}} \left\{ \left[P^N_{i,t} - \rho(B_{i,t}(s_t))E_t\left[MC_{i,t+1}\right]\right] Y^N_{i,t}(P^N_{i,t}, s_t) \right\} \tag{20}$$

with the associated first-order condition

$$P^{N,*}_{i,t} = \frac{\varepsilon_{i,t}}{\varepsilon_{i,t}-1} \rho(B_{i,t}(s_t))E_t\left[MC_{i,t+1}\right]. \tag{21}$$

The optimal log price is therefore

$$p_{i,t}^{N,*} = \log E_t \left[MC_{i,t+1} \right] + \mu_{i,t} + \log \rho(B_{i,t}(s_t)), \tag{22}$$

where $\mu_{i,t} = \log \left(\varepsilon_{i,t} / (\varepsilon_{i,t} - 1) \right)$ is the desired log markup. The exchange rate may change the shape of the firm's residual demand schedule and hence the elasticity evaluated at the optimal price. We leave the resulting change $\Delta\mu_{i,t}$ unrestricted. Linearizing the financing term around post-settlement liquidity in the no-shock state, $B_{i,t}(s_{t-1})$, yields

$$\begin{aligned} \Delta \log \rho(B_{i,t}) &\equiv \log \rho \left(B_{i,t}(s_t) \right) - \log \rho \left(B_{i,t}(s_{t-1}) \right) \\ &\simeq \chi_{i,t} \widetilde{n}_{i,t}, \qquad \chi_{i,t} \equiv -R_{i,t-1} \frac{\partial \log \rho(B)}{\partial B} \bigg|_{B = B_{i,t}(s_{t-1})} \geq 0. \end{aligned} \tag{23}$$

Combining equations (8), (15), (22), and (23) yields the change in the optimal price

$$\Delta p_{i,t}^{N,*} = \left[\alpha_i \kappa_{i,1}^f + (1 - \alpha_i) \kappa_{i,1}^d \right] \Delta s_t + \Delta \mu_{i,t} + \chi_{i,t} (1 - \delta_i) n_{i,t}, \tag{24}$$

where $\left[\alpha_i \kappa_{i,1}^f + (1 - \alpha_i) \kappa_{i,1}^d \right] \Delta s_t$ is the exchange-rate-induced change in expected marginal cost when the new orders are produced, $\Delta\mu_{i,t}$ is the change in the desired markup, and $\chi_{i,t}(1 - \delta_i) n_{i,t}$ is the change in the working-capital financing wedge. The first term is the expected-input-cost channel. The final term is the liquidity channel: an operating cash-flow loss, $n_{i,t} > 0$, lowers liquidity and raises the financing wedge, while an operating cash-flow gain, $n_{i,t} < 0$, has the opposite effect. An appreciation therefore lowers the new quoted price through liquidity only when its current cost savings exceed any associated revenue losses, after accounting for financial hedging.

Appendix B. Survey Experiment

B.1. Survey Questions

Group	Statement for screen
All	The value of the euro fluctuates in relation to other currencies. As a result, the prices of foreign products change compared to domestic products. We would like to better understand how such fluctuations affect businesses in Germany.
1	If the euro increases against other currencies, products from countries outside the eurozone generally become cheaper.ℹHow would your costs change if the value of the euro increased by 10% against all other currencies in the long term? ℹ *When the euro is stronger, it becomes cheaper to purchase products from countries that do not use the euro, such as coffee from South America or oil products from the Middle East. If you or your suppliers source such products, your costs could be affected.*
2	If the euro increases against other currencies, products from countries outside the eurozone generally become cheaper.ℹHow would your costs change if the value of the euro increased by 10% against all other currencies for one year? ℹ *When the euro is stronger, it becomes cheaper to purchase products from countries that do not use the euro, such as coffee from South America or oil products from the Middle East. If you or your suppliers source such products, your costs could be affected.*
3	If the euro decreases against other currencies, products from countries outside the eurozone generally become more expensive.ℹHow would your costs change if the value of the euro decreased by 10% against all other currencies in the long term? ℹ *When the euro is weaker, it becomes more expensive to purchase products from countries that do not use the euro, such as coffee from South America or oil products from the Middle East. If you or your suppliers source such products, your costs could be affected.*
4	If the euro decreases against other currencies, products from countries outside the eurozone generally become more expensive.ℹHow would your costs change if the value of the euro decreased by 10% against all other currencies for one year? ℹ *When the euro is weaker, it becomes more expensive to purchase products from countries that do not use the euro, such as coffee from South America or oil products from the Middle East. If you or your suppliers source such products, your costs could be affected.*
All	*Note: Please select one of the following answer options:* ∘ Our costs would decrease significantly. ∘ Our costs would decrease slightly. ∘ Our costs would not change. ∘ Our costs would increase slightly. ∘ Our costs would increase significantly. ∘ The impact is unclear.

Table B.1: Impact of Euro Fluctuations on Costs

Group	Statement for screen
1	If the euro increases against other currencies, German products will generally become more expensive for customers outside the euro area. How would your revenues change if the value of the euro increased by 10% against all other currencies in the long term? *When the euro is stronger, it becomes more expensive for all customers outside the euro area to buy German products such as cars or beer. If you have customers outside the euro area, your revenues could be affected.*
2	If the euro increases against other currencies, German products will generally become more expensive for customers outside the euro area. How would your revenues change if the value of the euro increased by 10% against all other currencies for one year? *When the euro is stronger, it becomes more expensive for all customers outside the euro area to buy German products such as cars or beer. If you have customers outside the euro area, your revenues could be affected.*
3	If the euro decreases against other currencies, German products will generally become cheaper for customers outside the euro area. How would your revenues change if the value of the euro decreased by 10% against all other currencies in the long term? *When the euro is weaker, it becomes cheaper for all customers outside the euro area to buy German products such as cars or beer. If you have customers outside the euro area, your revenues could be affected.*
4	If the euro decreases against other currencies, German products will generally become cheaper for customers outside the euro area. How would your revenues change if the value of the euro decreased by 10% against all other currencies for one year? *When the euro is weaker, it becomes cheaper for all customers outside the euro area to buy German products such as cars or beer. If you have customers outside the euro area, your revenues could be affected.*
All	*Note: Please select an answer option.* ∘ Our revenues would decrease significantly. ∘ Our revenues would decrease slightly. ∘ Our revenues would not change. ∘ Our revenues would increase slightly. ∘ Our revenues would increase significantly. ∘ The impact is unclear.

Table B.2: Impact of Euro Fluctuations on Revenues

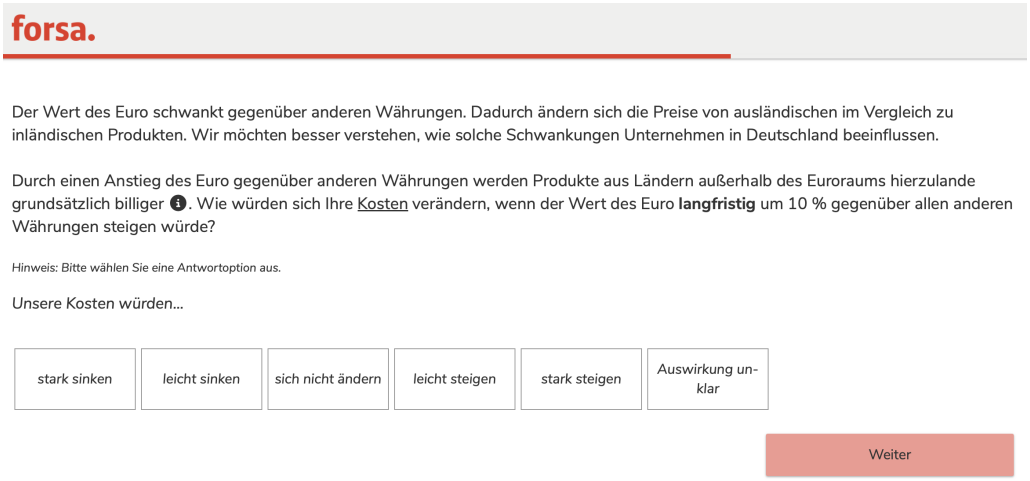
Group	Statement for screen
1	By what percentage would you change your sales prices if the value of the euro increased by 10% against all other currencies in the long term?ℹ ℹ *When the euro is stronger, products from countries outside the euro area become cheaper. At the same time, German products become more expensive for customers outside the euro area. If you have business partners outside the euro area, your costs and revenues could be affected.*
2	By what percentage would you change your sales prices if the value of the euro increased by 10% against all other currencies for one year?ℹ ℹ *When the euro is stronger, products from countries outside the euro area become cheaper. At the same time, German products become more expensive for customers outside the euro area. If you have business partners outside the euro area, your costs and revenues could be affected.*
3	By what percentage would you change your sales prices if the value of the euro decreased by 10% against all other currencies in the long term?ℹ ℹ *When the euro is weaker, products from countries outside the euro area become more expensive. At the same time, German products become cheaper for customers outside the euro area. If you have business partners outside the euro area, your costs and revenues could be affected.*
4	By what percentage would you change your sales prices if the value of the euro decreased by 10% against all other currencies for one year?ℹ ℹ *When the euro is weaker, products from countries outside the euro area become more expensive. At the same time, German products become cheaper for customers outside the euro area. If you have business partners outside the euro area, your costs and revenues could be affected.*
All	*Note: If you would not change your prices, please enter 0. If you are unable to estimate the change, please provide a value to the best of your judgment.* In the next 6 months: change by _____ % In the next 12 months: change by _____ %

Table B.3: Impact of Euro Fluctuations on Prices

Group	Statement for screen
All	Do you use financial instruments (e.g., forward contracts, options, swaps) in your company to hedge against exchange rate fluctuations? *Note: Please select an answer option.* ∘ Yes, we fully hedge against exchange rate fluctuations. ∘ Yes, we partially hedge against exchange rate fluctuations. ∘ No, we do not hedge against exchange rate fluctuations. ∘ I am not aware of this.

Table B.4: Use of Financial Hedging Instruments

B.2. Original Questionnaire (Group 1)


forsa.

Der Wert des Euro schwankt gegenüber anderen Währungen. Dadurch ändern sich die Preise von ausländischen im Vergleich zu inländischen Produkten. Wir möchten besser verstehen, wie solche Schwankungen Unternehmen in Deutschland beeinflussen.

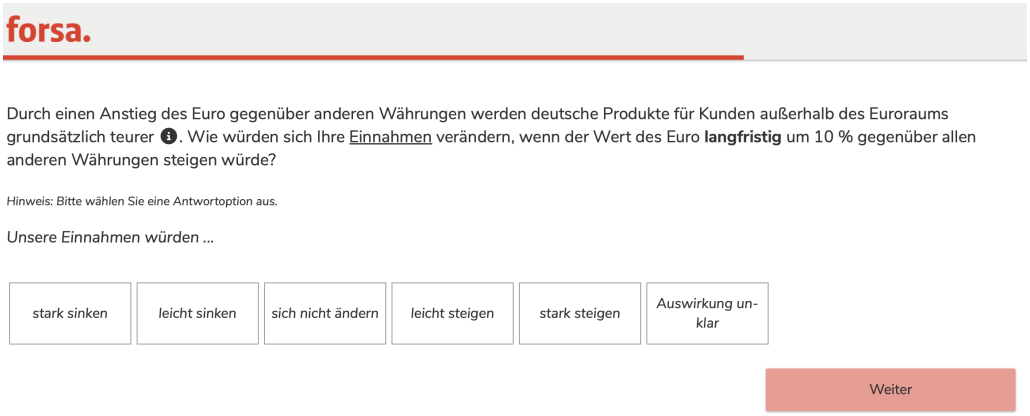
Durch einen Anstieg des Euro gegenüber anderen Währungen werden Produkte aus Ländern außerhalb des Euroraums hierzulande grundsätzlich billiger. Wie würden sich Ihre Kosten verändern, wenn der Wert des Euro **langfristig** um 10 % gegenüber allen anderen Währungen steigen würde?

Hinweis: Bitte wählen Sie eine Antwortoption aus.

Unsere Kosten würden...

stark sinken	leicht sinken	sich nicht ändern	leicht steigen	stark steigen	Auswirkung unklar

Weiter


forsa.

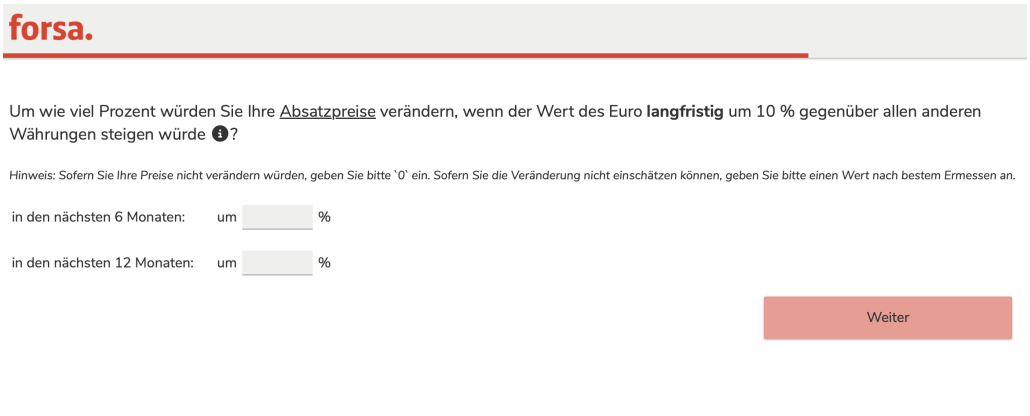
Durch einen Anstieg des Euro gegenüber anderen Währungen werden deutsche Produkte für Kunden außerhalb des Euroraums grundsätzlich teurer. Wie würden sich Ihre Einnahmen verändern, wenn der Wert des Euro **langfristig** um 10 % gegenüber allen anderen Währungen steigen würde?

Hinweis: Bitte wählen Sie eine Antwortoption aus.

Unsere Einnahmen würden ...

stark sinken	leicht sinken	sich nicht ändern	leicht steigen	stark steigen	Auswirkung unklar

Weiter


forsa.

Um wie viel Prozent würden Sie Ihre Absatzpreise verändern, wenn der Wert des Euro **langfristig** um 10 % gegenüber allen anderen Währungen steigen würde?

Hinweis: Sofern Sie Ihre Preise nicht verändern würden, geben Sie bitte `0` ein. Sofern Sie die Veränderung nicht einschätzen können, geben Sie bitte einen Wert nach bestem Ermessen an.

in den nächsten 6 Monaten: um _____ %

in den nächsten 12 Monaten: um _____ %

Weiter

forsa.

Nutzen Sie in Ihrem Unternehmen Finanzinstrumente (z. B. Terminkontrakte, Optionen, Swaps), um sich gegen Wechselkursschwankungen zu versichern?

Hinweis: Bitte wählen Sie eine Antwortoption aus.

- ○ Ja, wir versichern uns vollständig gegen Wechselkursschwankungen.
- ○ Ja, wir versichern uns teilweise gegen Wechselkursschwankungen.
- ○ Nein, wir versichern uns nicht gegen Wechselkursschwankungen.
- ○ Ich weiß darüber nicht Bescheid.

Weiter

Appendix C. Additional Results

Table C.1: Determinants of Counter-intuitive Cost Responses

	(1) $\Pr(\partial \Delta cost / \partial \Delta e^v > 0)$ b/se	(2) $\Pr(\partial \Delta cost / \partial \Delta e^v > 0)$ b/se
Size: Medium	-0.01	-0.03*
	(0.01)	(0.02)
Size: Large	-0.00	-0.03
	(0.01)	(0.02)
Age: 11y - 25y	0.01	0.02
	(0.01)	(0.03)
Age: 30y +	0.02	0.03
	(0.01)	(0.03)
Sales uncertainty (log)	-0.00	-0.02*
	(0.01)	(0.01)
Services	-0.03**	
	(0.01)	
Wholesale	-0.02	
	(0.02)	
Retail	-0.01	
	(0.02)	
Construction	0.00	
	(0.02)	
Utilities & Primary	-0.03	
	(0.02)	
Sales exposed		-0.13***
		(0.01)
Costs & Sales Exposed		0.12***
		(0.02)
Constant	0.09***	0.15***
	(0.02)	(0.04)
R^2	0.004	0.055
N	5,947	2,864

Note: The baseline category consists of firms that are small and young (column 1 - 2) and who are (i) active in the manufacturing sector (column 1), (ii) only affected in terms of costs (column 2). All regressions are estimated using survey weights. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table C.2: Exposure and Sectoral Im-/Export Penetration

	(1) Pr(Costs exposed) b/se	(2) Pr(Sales exposed) b/se
Sectoral Import Share	1.39***	
	(0.26)	
Sectoral Export Share		0.48***
		(0.13)
Constant	0.47***	0.36***
	(0.01)	(0.01)
R^2	0.01	0.00
N	4,084	4,084

Note: The table reports the correlation between firms' reported cost (sales) exposure and sectoral import/export penetration.

Table C.3: Determinants of Financial Hedging

	(1) Pr(Fin. Hdg.) b/se	(2) Pr(Fin. Hdg.) b/se	(3) Pr(Fin. Hdg.) b/se
Size: Medium	0.04**	0.04**	0.04**
	(0.02)	(0.01)	(0.02)
Size: Large	0.16***	0.15***	0.15***
	(0.03)	(0.02)	(0.03)
Age: 11y - 25y	-0.01	-0.01	-0.01
	(0.02)	(0.02)	(0.02)
Age: 30y +	0.03	0.03	0.03
	(0.02)	(0.02)	(0.02)
Avg. sales uncertainty (log)	0.00	0.00	0.00
	(0.01)	(0.01)	(0.01)
Costs Somewhat Affected	0.01		
	(0.02)		
Costs Strongly Affected	0.09***		
	(0.02)		
Sales Somewhat Affected		0.07***	
		(0.01)	
Sales Strongly Affected		0.11***	
		(0.03)	
Sales exposed			0.02
			(0.02)
Costs & Sales Exposed			0.09***
			(0.02)
Constant	0.02	0.01	0.01
	(0.03)	(0.02)	(0.03)
Exp.: Mid = High (p-val)	0.000	0.222	
Exp.: Sales = Costs & Sales (p-val)			0.001
R^2	0.09	0.09	0.10
N	2,242	2,274	2,125

Note: The baseline category consists of firms that are small and young (column 1 - 3) and who are (i) not affected in terms of costs (column 1), (ii) not affected in terms of sales (column 2) or (iii) only affected in terms of costs (column 3). All regressions include industry fixed effects and are estimated using survey weights. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table C.4: Extensive Margin of ERPT - Determinants

	(1) $\Pr(Adj._{t\|t+12})$ b/se	(2) $\Pr(Adj._{t\|t+12})$ b/se	(3) $\Pr(Adj._{t\|t+12})$ b/se
Size: Medium	-0.02	-0.03	-0.03
	(0.03)	(0.03)	(0.03)
Size: Large	-0.03	-0.03	-0.04
	(0.04)	(0.04)	(0.04)
Age: 11y - 25y	-0.03	-0.02	-0.02
	(0.05)	(0.05)	(0.05)
Age: 30y +	-0.03	-0.03	-0.03
	(0.05)	(0.04)	(0.05)
Avg. sales uncertainty (log)	-0.02	-0.02	-0.02
	(0.01)	(0.01)	(0.01)
Persistent scenario	-0.00	-0.01	-0.01
	(0.02)	(0.02)	(0.02)
Fin. hedging	0.13***	0.09**	0.08**
	(0.04)	(0.04)	(0.04)
Costs Somewhat Affected	-0.03		
	(0.03)		
Costs Strongly Affected	0.14***		
	(0.04)		
Sales Somewhat Affected		0.23***	
		(0.03)	
Sales Strongly Affected		0.32***	
		(0.05)	
Sales exposed			0.13***
			(0.04)
Costs & Sales Exposed			0.27***
			(0.03)
Constant	0.56***	0.44***	0.46***
	(0.06)	(0.05)	(0.06)
Exp.: Mid = High (p-val)	0.000	0.078	
Exp.: Sales = Costs & Sales (p-val)			0.000
R^2	0.05	0.09	0.09
N	2,126	2,149	2,013

Note: The baseline category consists of firms that are small, young and do not use financial hedging (column 1 - 3) and who are (i) not affected in terms of costs (column 1), (ii) not affected in terms of sales (column 2) or (iii) only affected in terms of costs (column 3). All regressions include industry fixed effects and are estimated using survey weights. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table C.5: Back-of-the-envelope ERPT: Sample-definition Robustness

Scenario	$\widehat{PT}_{12m}^{cond}$	N_{used}	$N_{used}(\%)$	$\widehat{PT}_{12m}^{agg}$
Baseline sample	-0.064	3,888	47.2	-0.030
Including counter-intuitive cost responses	-0.044	4,436	53.8	-0.024
All firms answering the ERPT question	-0.064	4,683	56.8	-0.036
All firms receiving the ERPT question	-0.064	5,148	62.5	-0.040
ERPT answers with sector information	-0.064	4,554	55.3	-0.035

Note: The table reports implied aggregate pass-through at the 12-month horizon using $\widehat{PT}_{12m}^{agg} = \widehat{PT}_{12m}^{cond} \times (N_{used}(\%)/100)$. Here, $\widehat{PT}_{12m}^{cond}$ is the conditional 12-month pass-through estimated in the indicated sample, and $N_{used}(\%)$ reports $100 \times N_{used}/8239$. Intuitively, each row combines (i) the strength of pass-through within the estimation sample and (ii) how much of the full survey that sample represents, under the same zero-imputation benchmark for firms outside the estimation sample. The baseline conditional estimate is -0.0635, and the conditional estimate including counter-intuitive cost responses is -0.0436.

Table C.6: Sample Attrition by Treatment Arm

	Arm 1	Arm 2	Arm 3	Arm 4	All
Exposure Q. Answered	1,984	1,935	2,093	2,169	8,181
	(99.5)	(99.2)	(99.1)	(99.4)	(99.3)
ERPT Q. Received	1,372	1,276	1,204	1,296	5,148
	(68.8)	(65.4)	(57.0)	(59.4)	(62.5)
ERPT Q. Answered	1,238	1,167	1,095	1,183	4,683
	(62.1)	(59.8)	(51.8)	(54.2)	(56.8)
Sector observed	1,199	1,134	1,066	1,155	4,554
	(60.1)	(58.2)	(50.4)	(52.9)	(55.3)

Note: The table reports sample counts by treatment arm along the survey funnel, with row percentages in parentheses relative to initial arm size.

Table C.7: ERPT by Scenario Duration

	(1)	(2)
	$\pi_{i,t\|t+6}$	$\pi_{i,t\|t+12}$
	b/se	b/se
$\Delta€^v$ × Temp. Scenario	-0.04***	-0.06***
	(0.01)	(0.01)
$\Delta€^v$ × Per. Scenario	-0.05***	-0.07***
	(0.01)	(0.01)
Constant	1.44***	1.85***
	(0.08)	(0.09)
Temp. Scenario = Per. Scenario (p-val)	0.64	0.38
R^2	0.03	0.04
N	3,990	3,888

Note: All regressions are estimated using survey weights and sector fixed effects. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table C.8: ERPT Sensitivity: Including Counter-intuitive Cost Responses

	(1)	(2)	(3)	(4)
	$\pi_{i,t\|t+6}$	$\pi_{i,t\|t+12}$	$\pi_{i,t\|t+6}$	$\pi_{i,t\|t+12}$
	b/se	b/se	b/se	b/se
Δ €^{v}	-0.03***	-0.04***		
	(0.01)	(0.01)		
Δ €^{v} $\times \mathbb{I}_{\partial\Delta cost/\partial\Delta e^v<0}$			-0.04***	-0.06***
			(0.01)	(0.01)
Δ €^{v} $\times \mathbb{I}_{\partial\Delta cost/\partial\Delta e^v>0}$			0.00	0.03
			(0.02)	(0.02)
$\mathbb{I}_{\partial\Delta cost/\partial\Delta e^v<0}$			1.07***	1.18***
			(0.19)	(0.22)
Constant	1.60***	2.19***	1.43***	1.97***
	(0.05)	(0.06)	(0.05)	(0.06)
R^2	0.01	0.02	0.04	0.04
N	4,557	4,436	4,557	4,436

Note: All regressions are estimated using survey weights and sector fixed effects. $\mathbb{I}_{\partial\Delta cost/\partial\Delta e^v}$ is a dummy indicating whether a firm reports a positive or a negative correlation between exchange rate and cost changes. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table C.9: ERPT Sensitivity: No Trimming

	(1)	(2)
	$\pi_{i,t\|t+6}$	$\pi_{i,t\|t+12}$
	b/se	b/se
Δ €^{v}	-0.06***	-0.10***
	(0.01)	(0.01)
Constant	1.87***	2.80***
	(0.10)	(0.12)
R^2	0.01	0.02
N	4,069	4,062

Note: All regressions are estimated using survey weights and include month and sector fixed effects. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table C.10: ERPT Sensitivity: Month Fixed Effects

	(1) $\pi_{i,t\|t+6}$ b/se	(2) $\pi_{i,t\|t+12}$ b/se	(3) $\pi_{i,t\|t+6}$ b/se	(4) $\pi_{i,t\|t+12}$ b/se
Δ €^{v}	-0.04***	-0.06***		
	(0.01)	(0.01)		
Δ €^{v} × January			-0.04***	-0.05***
			(0.01)	(0.01)
Δ €^{v} × February			-0.05***	-0.07***
			(0.01)	(0.01)
Δ €^{v} × March			-0.04***	-0.07***
			(0.01)	(0.01)
February	0.03	0.15	0.02	0.13
	(0.13)	(0.15)	(0.13)	(0.15)
March	-0.06	-0.03	-0.07	-0.05
	(0.13)	(0.15)	(0.13)	(0.15)
Constant	1.44***	1.93***	1.45***	1.95***
	(0.10)	(0.11)	(0.10)	(0.11)
Jan. = Feb (p-val)			0.45	0.39
Jan. = March (p-val)			0.63	0.35
Feb. = March (p-val)			0.78	0.94
R^2	0.03	0.04	0.03	0.04
N	3,990	3,888	3,990	3,888

Note: All regressions are estimated using survey weights and include month and sector fixed effects. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table C.11: Aggregate Inflation-NEER Correlation

	(1) Δ_{12} HICP b/se	(2) Δ_{12} HICP b/se	(3) Δ_3 HICP b/se	(4) Δ_3 HICP b/se
Δ_{12} €	-0.56***	-0.60***		
	(0.08)	(0.08)		
Δ_{12} GDP		0.05		
		(0.08)		
Δ_{12} r		1.02***		
		(0.13)		
Δ_3 €			-0.35***	-0.38***
			(0.09)	(0.10)
Δ_3 GDP				-0.05
				(0.04)
Δ_3 r				0.68**
				(0.24)
Constant	4.48***	3.94***	1.11***	1.03***
	(0.31)	(0.24)	(0.14)	(0.14)
R^2	0.36	0.66	0.19	0.28
N	62	62	62	62

Note: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table C.12: ERPT by Joint Cost-Sales/Cost-Profit Exposure

	(1) $\pi_{i,t\|t+6}$ b/se	(2) $\pi_{i,t\|t+12}$ b/se	(3) $\pi_{i,t\|t+6}$ b/se	(4) $\pi_{i,t\|t+12}$ b/se
$\Delta\text{€}^v$ × Costs unaffected × Sales slightly affected	-0.03	-0.02		
	(0.02)	(0.02)		
$\Delta\text{€}^v$ × Costs unaffected × Sales strongly affected	0.07	-0.01		
	(0.08)	(0.10)		
$\Delta\text{€}^v$ × Costs slightly affected × Sales unaffected	-0.03***	-0.05***		
	(0.01)	(0.01)		
$\Delta\text{€}^v$ × Costs slightly affected × Sales slightly affected	-0.05***	-0.07***		
	(0.01)	(0.02)		
$\Delta\text{€}^v$ × Costs slightly affected × Sales strongly affected	-0.02	0.00		
	(0.05)	(0.07)		
$\Delta\text{€}^v$ × Costs strongly affected × Sales unaffected	-0.11***	-0.18***		
	(0.03)	(0.03)		
$\Delta\text{€}^v$ × Costs strongly affected × Sales slightly affected	-0.08**	-0.14**		
	(0.04)	(0.05)		
$\Delta\text{€}^v$ × Costs strongly affected × Sales strongly affected	-0.07	-0.17**		
	(0.06)	(0.07)		
$\Delta\text{€}^v$ × Costs unaffected × Profits slightly affected			-0.03	-0.01
			(0.02)	(0.02)
$\Delta\text{€}^v$ × Costs unaffected × Profits strongly affected			0.07	-0.02
			(0.08)	(0.10)
$\Delta\text{€}^v$ × Costs slightly affected × Profits unaffected			-0.05**	-0.08***
			(0.02)	(0.02)
$\Delta\text{€}^v$ × Costs slightly affected × Profits slightly affected			-0.03***	-0.05***
			(0.01)	(0.01)
$\Delta\text{€}^v$ × Costs slightly affected × Profits strongly affected			-0.03*	-0.06**
			(0.02)	(0.02)
$\Delta\text{€}^v$ × Costs strongly affected × Profits unaffected			-0.02	-0.10
			(0.09)	(0.11)
$\Delta\text{€}^v$ × Costs strongly affected × Profits slightly affected			-0.13**	-0.19**
			(0.06)	(0.07)
$\Delta\text{€}^v$ × Costs strongly affected × Profits strongly affected			-0.09***	-0.16***
			(0.02)	(0.03)
Exp.: low = mid (p-val)	0.40	0.90	0.39	0.86
Exp.: low = high (p-val)	0.92	0.46	0.53	0.48
Exp.: mid = high (p-val)	0.53	0.88	0.43	0.60
R^2	0.11	0.11	0.09	0.09
N	2,799	2,719	2,799	2,719

Note: All regressions are estimated using survey weights and industry fixed effects. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table C.13: Hedging Sensitivity: Omitting Not-informed Responses

	(1) $\pi_{i,t\|t+6}$ b/se	(2) $\pi_{i,t\|t+12}$ b/se	(3) $\pi_{i,t\|t+6}$ b/se	(4) $\pi_{i,t\|t+12}$ b/se
$\Delta\text{€}^v$ × No Hedging	-0.04***	-0.06***		
	(0.01)	(0.01)		
$\Delta\text{€}^v$ × Hedging	-0.10***	-0.12***		
	(0.02)	(0.03)		
$\Delta\text{€}^v$ × Costs unaffected × No Hedging			-0.01	-0.01
			(0.02)	(0.02)
$\Delta\text{€}^v$ × Costs unaffected × Hedging			-0.07	-0.04
			(0.07)	(0.06)
$\Delta\text{€}^v$ × Costs slightly affected × No Hedging			-0.03***	-0.06***
			(0.01)	(0.01)
$\Delta\text{€}^v$ × Costs slightly affected × Hedging			-0.09**	-0.08**
			(0.03)	(0.03)
$\Delta\text{€}^v$ × Costs strongly affected × No Hedging			-0.11***	-0.19***
			(0.03)	(0.04)
$\Delta\text{€}^v$ × Costs strongly affected × Hedging			-0.12***	-0.20**
			(0.04)	(0.06)
hedge = no hedge (p-val)	0.01	0.04		
hedge = no hedge (p-val, no exp.)			0.41	0.66
hedge = no hedge (p-val, mid exp.)			0.05	0.50
hedge = no hedge (p-val, high exp.)			0.84	0.92
R^2	0.03	0.05	0.07	0.08
N	3,412	3,338	2,646	2,584

Note: All regressions are estimated using survey weights and sector fixed effects. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table C.14: ERPT by Financial Hedging and Scenario Duration

	(1) $\pi_{i,t\|t+6}$ b/se	(2) $\pi_{i,t\|t+12}$ b/se
$\Delta\text{€}^v$ × Temp. Scenario × No Hedging	-0.04***	-0.06***
	(0.01)	(0.01)
$\Delta\text{€}^v$ × Temp. Scenario × Hedging	-0.07**	-0.11***
	(0.03)	(0.03)
$\Delta\text{€}^v$ × Per. Scenario × No Hedging	-0.04***	-0.06***
	(0.01)	(0.01)
$\Delta\text{€}^v$ × Per. Scenario × Hedging	-0.13***	-0.13**
	(0.03)	(0.04)
Temp. = Per. (No Hedging)	0.59	0.81
Temp. = Per. (Hedging)	0.12	0.68
R^2	0.03	0.04
N	3,412	3,338

Note: All regressions include industry fixed effects and are estimated using survey weights. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table C.15: ERPT by Financial Constraints

	(1)	(2)	(3)	(4)
	$\pi_{i,t\|t+6}$	$\pi_{i,t\|t+12}$	$\pi_{i,t\|t+6}$	$\pi_{i,t\|t+12}$
	b/se	b/se	b/se	b/se
$\Delta\text{€}^v$ × Unconstrained	-0.05***	-0.08***		
	(0.01)	(0.01)		
$\Delta\text{€}^v$ × Constrained	-0.05**	-0.07***		
	(0.02)	(0.02)		
$\Delta\text{€}^v$ × Costs unaffected × Unconstrained			-0.04*	-0.03
			(0.02)	(0.03)
$\Delta\text{€}^v$ × Costs unaffected × Constrained			-0.01	0.03
			(0.04)	(0.05)
$\Delta\text{€}^v$ × Costs slightly affected × Unconstrained			-0.03**	-0.05***
			(0.01)	(0.01)
$\Delta\text{€}^v$ × Costs slightly affected × Constrained			-0.04**	-0.07**
			(0.02)	(0.03)
$\Delta\text{€}^v$ × Costs strongly affected × Unconstrained			-0.09**	-0.15***
			(0.03)	(0.04)
$\Delta\text{€}^v$ × Costs strongly affected × Constrained			-0.10	-0.21**
			(0.07)	(0.08)
Constrained = Unconstrained (p-val)	0.78	0.97		
Constrained = Unconstrained (p-val, no exp.)			0.56	0.27
Constrained = Unconstrained (p-val, mid exp.)			0.55	0.69
Constrained = Unconstrained (p-val, high exp.)			0.81	0.49
R^2	0.04	0.05	0.06	0.08
N	2,309	2,236	2,309	2,236

Note: All regressions include industry fixed effects and are estimated using survey weights. Constrained is a dummy variable indicating whether firms report that access to finance is a (very) important problem for them. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table C.16: ERPT by Profit Exposure and Financial Constraints

	(1)	(2)	(3)	(4)
	$\pi_{i,t\|t+6}$	$\pi_{i,t\|t+12}$	$\pi_{i,t\|t+6}$	$\pi_{i,t\|t+12}$
	b/se	b/se	b/se	b/se
$\Delta€^v$ × Unconstrained	-0.05***	-0.08***		
	(0.01)	(0.01)		
$\Delta€^v$ × Constrained	-0.05**	-0.07***		
	(0.02)	(0.02)		
$\Delta€^v$ × Costs affected × Profits affected × Unconstrained			-0.05***	-0.09***
			(0.01)	(0.01)
$\Delta€^v$ × Costs affected × Profits unaffected × Unconstrained			-0.06**	-0.07**
			(0.03)	(0.03)
$\Delta€^v$ × Costs affected × Profits affected × Constrained			-0.07***	-0.09**
			(0.02)	(0.03)
$\Delta€^v$ × Costs affected × Profits unaffected × Constrained			-0.03	-0.11*
			(0.05)	(0.06)
Constrained = Unconstrained (p-val)	0.78	0.97		
Profits affected = Profits unaffected (p-val, unconstrained)			0.80	0.58
Profits affected = Profits unaffected (p-val, constrained)			0.80	0.58
R^2	0.04	0.05	0.05	0.05
N	2,309.00	2,236.00	2,287.00	2,216.00

Note: All regressions include industry fixed effects and are estimated using survey weights. Constrained is a dummy variable indicating whether firms report that access to finance is a (very) important problem for them. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table C.17: ERPT by Exposure and Size / Labor Productivity

	(1) $\pi_{i,t\|t+6}$ b/se	(2) $\pi_{i,t\|t+12}$ b/se	(3) $\pi_{i,t\|t+6}$ b/se	(4) $\pi_{i,t\|t+12}$ b/se
$\Delta\text{€}^v$ × Costs unaffected × Small	-0.02	-0.02		
	(0.02)	(0.02)		
$\Delta\text{€}^v$ × Costs unaffected × Medium	-0.01	0.01		
	(0.03)	(0.03)		
$\Delta\text{€}^v$ × Costs unaffected × Large	-0.08	-0.06		
	(0.06)	(0.06)		
$\Delta\text{€}^v$ × Costs slightly affected × Small	-0.02*	-0.04**		
	(0.01)	(0.01)		
$\Delta\text{€}^v$ × Costs slightly affected × Medium	-0.05***	-0.06***		
	(0.01)	(0.02)		
$\Delta\text{€}^v$ × Costs slightly affected × Large	-0.04**	-0.07**		
	(0.02)	(0.03)		
$\Delta\text{€}^v$ × Costs strongly affected × Small	-0.08**	-0.13***		
	(0.03)	(0.04)		
$\Delta\text{€}^v$ × Costs strongly affected × Medium	-0.15**	-0.25***		
	(0.06)	(0.06)		
$\Delta\text{€}^v$ × Costs strongly affected × Large	-0.05	-0.13		
	(0.10)	(0.11)		
$\Delta\text{€}^v$ × Costs unaffected × Low Prod.			-0.03	0.00
			(0.03)	(0.03)
$\Delta\text{€}^v$ × Costs unaffected × High Prod.			-0.03	-0.04
			(0.02)	(0.03)
$\Delta\text{€}^v$ × Costs slightly affected × Low Prod.			-0.04***	-0.05***
			(0.01)	(0.02)
$\Delta\text{€}^v$ × Costs slightly affected × High Prod.			-0.02	-0.04**
			(0.01)	(0.01)
$\Delta\text{€}^v$ × Costs strongly affected × Low Prod.			-0.03	-0.12**
			(0.05)	(0.06)
$\Delta\text{€}^v$ × Costs strongly affected × High Prod.			-0.12***	-0.19***
			(0.02)	(0.04)
Size: small = mid (p-val, high exp.)	0.32	0.12		
Size: mid = high (p-val, high exp.)	0.38	0.37		
Prod.: mid = high (p-val, high exp.)			0.15	0.32
R^2	0.06	0.07	0.05	0.07
N	2,801	2,725	2,145	2,091

Note: All regressions include industry fixed effects and are estimated using survey weights. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table C.18: Market Share Sensitivity: Controlling for Cost Exposure

	(1)	(2)	(3)	(4)
	$\pi_{i,t\|t+6}$	$\pi_{i,t\|t+6}$	$\pi_{i,t\|t+12}$	$\pi_{i,t\|t+12}$
	b/se	b/se	b/se	b/se
$\Delta\in^v$ × Costs Unaffected × Mkt. Share	0.06**	0.22**	0.01	0.21
	(0.02)	(0.10)	(0.03)	(0.16)
$\Delta\in^v$ × Costs Slightly Affected × Mkt. Share	0.01	-0.00	0.02	0.00
	(0.01)	(0.02)	(0.02)	(0.03)
$\Delta\in^v$ × Costs Strongly Affected × Mkt. Share	0.06	0.17	0.01	-0.26
	(0.08)	(0.42)	(0.18)	(0.59)
$\Delta\in^v$ × Costs Unaffected × Mkt. Share^2		-0.05**		-0.06**
		(0.02)		(0.03)
$\Delta\in^v$ × Costs Slightly Affected × Mkt. Share^2		0.00		0.00
		(0.00)		(0.00)
$\Delta\in^v$ × Costs Strongly Affected × Mkt. Share^2		-0.11		0.36
		(0.38)		(0.51)
R^2	0.08	0.08	0.10	0.10
N	1,084	1,084	1,064	1,064

Note: All regressions are estimated using survey weights and sector fixed effects. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table C.19: ERPT by HHI

	(1)	(2)	(3)	(4)
	$\pi_{i,t\|t+6}$	$\pi_{i,t\|t+6}$	$\pi_{i,t\|t+12}$	$\pi_{i,t\|t+12}$
	b/se	b/se	b/se	b/se
$\Delta\in^v$	-0.05***	-0.04***	-0.07***	-0.06***
	(0.01)	(0.01)	(0.01)	(0.01)
$\Delta\in^v$ × HHI	0.04	-0.30	0.06	-0.29
	(0.06)	(0.20)	(0.07)	(0.26)
$\Delta\in^v$ × HHI^2		1.01*		1.06
		(0.58)		(0.76)
HHI	0.42	0.73	0.23	0.30
	(0.56)	(2.05)	(0.68)	(2.60)
HHI^2		-0.69		0.04
		(5.97)		(7.65)
R^2	0.04	0.04	0.04	0.04
N	2,129	2,129	2,085	2,085

Note: All regressions include industry fixed effects and are estimated using survey weights. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table C.20: ERPT by Sector

	(1)	(2)
	$\pi_{i,t\|t+6}$	$\pi_{i,t\|t+12}$
	b/se	b/se
$\Delta€^v$ × Manufacturing	-0.06***	-0.08***
	(0.01)	(0.01)
$\Delta€^v$ × Services	-0.03***	-0.04***
	(0.01)	(0.01)
$\Delta€^v$ × Wholesale	-0.08***	-0.11***
	(0.02)	(0.03)
$\Delta€^v$ × Retail	-0.09***	-0.14***
	(0.02)	(0.02)
$\Delta€^v$ × Construction	-0.02	-0.06***
	(0.01)	(0.02)
$\Delta€^v$ × Utilities & Primary	-0.01	-0.03
	(0.02)	(0.03)
R^2	0.03	0.04
N	3,990	3,888

Note: All regressions are estimated using survey weights. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.