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**FIRMS' PASS-THROUGH
DYNAMICS: A SURVEY
APPROACH**



EUROPEAN CENTRAL BANK

EUROSYSTEM

Firms' Pass-Through Dynamics: A Survey Approach

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This Paper

How do firms adjust prices after cost increases?

New survey approach:

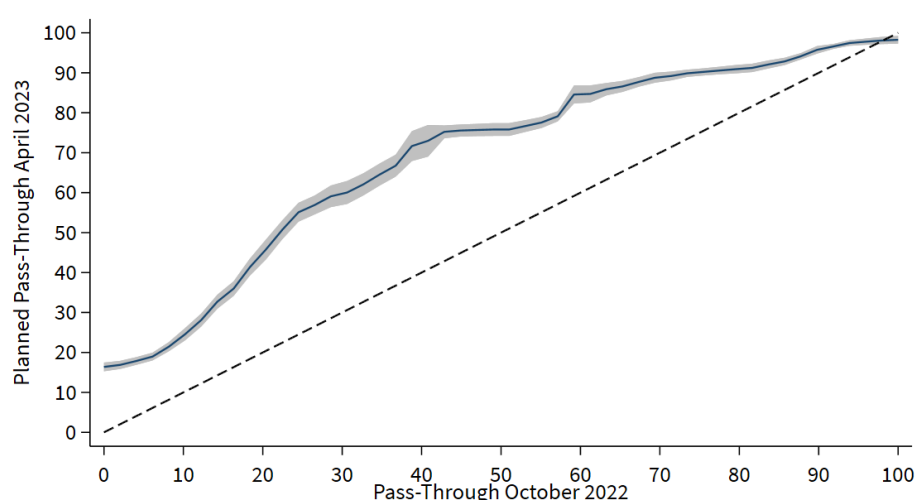
Directly elicit pass-through across multiple horizons after an increase in costs at the firm level.

- + Combine advantages of a quantitative measure with the richness of firm characteristics and beliefs captured in surveys
- + Evidence from the field and survey experiments
- + Direct mapping to impulse responses in general equilibrium price-setting models

Five Facts on Pass-Through

- **Data:** Ifo Business Survey (>6000 German firms)
- Exploit large increase in firms' input prices in 2021-2022
- **Question:** *To what extent do you [the firm] pass through higher prices for energy, raw material, and intermediate inputs to your customers? ___% (Jun '21, Apr '22, Oct '22)*
- + Forward-looking pass-through over the next six months

I: Firms pass through cost increases only gradually over time due to nominal and real rigidities.

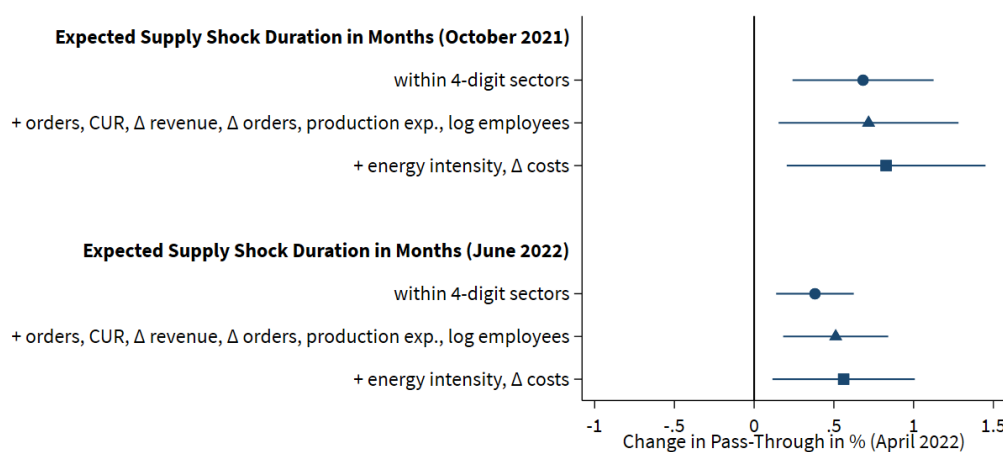


→ Firms list competitive pressure as #1 limiting factor (71%)

II: There is substantial heterogeneity in pass-through across and within industries.

→ 70% of cross-sectional variation within narrow industries

III: Pass-through increases in the expected duration of the shock.



IV: Pass-through increases with idiosyncratic uncertainty. Theoretical ambiguous relation: wait-and-see vs. larger shocks

→ Intuition for positive relation: Larger shocks → more flexible price-setting → overcome real rigidities

V: Pass-through increases in firms' past price-setting frequency.

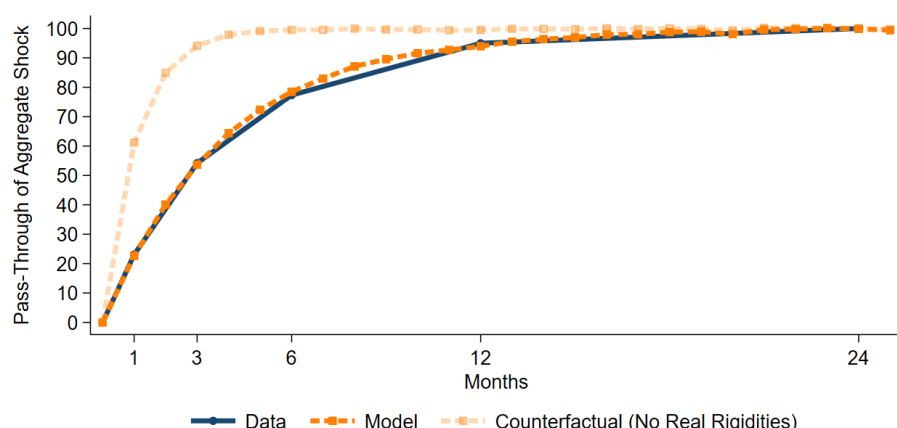
→ More price changes (lower nominal rigidities) facilitate price coordination

General Equilibrium Price-Setting Model

Standard price-setting model with menu costs
+ micro real rigidities
+ transitory aggregate shocks

Firms' demand equation with superelasticity ϵ :

$$y_t^i = \left[1 - \epsilon \ln \left(\frac{p_t^i}{P_t} \right) \right]^{\frac{\theta}{\epsilon}} Y_t$$



Survey Experiments

Hypothetical vignette:

Suppose that purchase prices for you and your competitors in the industry permanently increase by 20% due to a global supply shock. All other factors, such as interest rates and fiscal policy measures, remain unchanged. Assume good economic conditions with normal capacity utilization for your company and the overall economy.

To what extent would you pass through the cost increase to your customers in this scenario? Indicate the level of pass-through at the respective point in time.

| Months: | 1 | 3 | 6 | 12 | 24 |
|-----------------------------|---|---|---|----|----|
| Pass-through after ... in % | | | | | |

no pass-through (pt) = 0%, full pt = 100%, disprop. pt > 100%

Data: Ifo Management Survey (>300 German firms)

Varying the nature of the shock within and between firms to estimate the causal effects of...

Shock level (within firms):

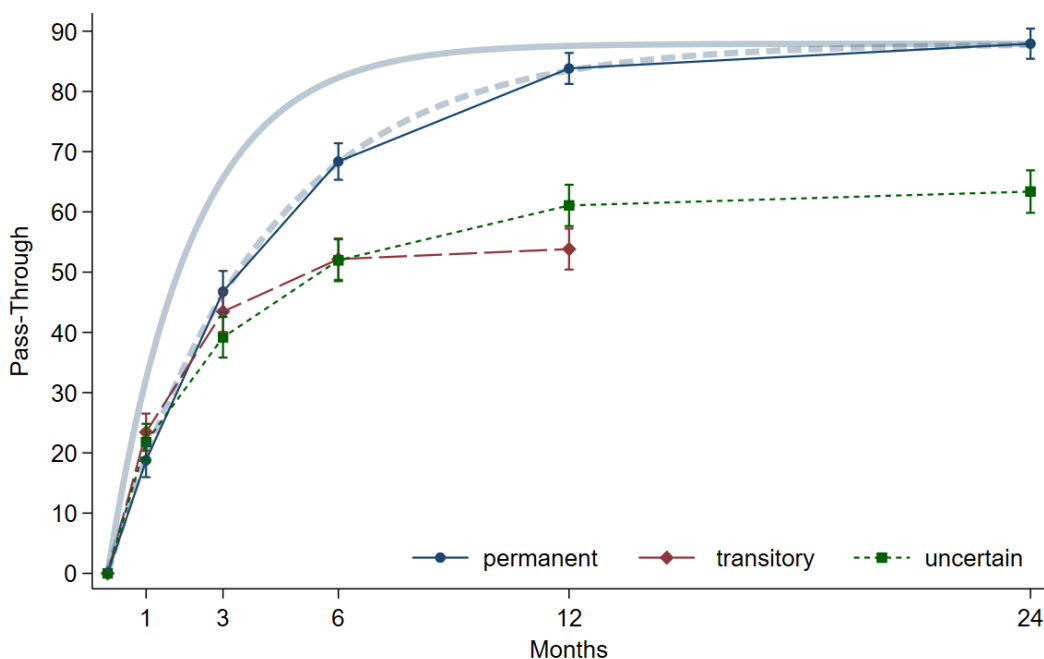
Sectoral vs. idiosyncratic

Shock duration (within firms):

Permanent, transitory (12m), vs. uncertain (90% survival)

Economic environment (across firms):

Good vs. bad economic conditions



Notes: Average pass-through of an aggregate increase in purchase prices (+20%) over time for different shock durations in an economy with good economic conditions.

Direct evidence for micro real rigidities:

- Firms raise prices multiple times in response to a permanent aggregate shock
- Idiosyncratic shocks of the same size have a lower pass-through than aggregate shocks

Implications for the Phillips curve:

- Pass-through estimates can be directly mapped to the slope coefficient of the Phillips curve (PC) (Auclert et al., 2023)

| Nominal Rigidities | Nominal + Real Rigidities | |
|--------------------|---------------------------|------------------------------|
| | Calvo counterfact. | Based on idios. PT |
| $\theta = 0.37$ | $\theta = 0.22$ | $\theta = 0.37, \chi = 0.63$ |
| PC Slope 0.22 | PC Slope 0.06 | PC Slope 0.14 |

→ Flat Phillips curve due to real rigidities

Implications for Monetary Policy

- Sluggish pass-through implies **persistent effects of monetary policy**
→ empirical micro-foundation for NK models relying on a high degree of real rigidities
- Supply shocks lead to **prolonged inflationary pressure**
- **Pass-through is faster** in times of higher **uncertainty**
- **Communication** about the **duration of the shock** could significantly **affect and amplify aggregate transmission**