Discussion of "Monetary policy pass-through to consumer prices: Evidence from granular price data" by Anastasia Allayioti, Lucyna Gornicka, Sarah Holton and Catalina Martınez Hernandez

Raphael Schoenle

Brandeis University

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Summary

- Very nice paper!
  - Provides an assessment of the impact of an identified monetary policy shock on 72 consumption prices in the euro area.
  - Shows extensive heterogeneity in estimated "sensitivity."
- Integration with theoretical work can provide guidance to modelers and policymakers.

Summary: Three Questions

Three Questions:

1. What is the "sensitivity" of Euro Area consumption prices to identified monetary policy shocks?

2. What are some characteristics that correlate with estimated sensitivity?

3. What are (time-varying) characteristics of the dynamics of price responses?

Data and Methodology 1/2

Data:

- Monthly data on 72 consumer prices included in the euro area HICPX (core) basket, aggregate at COICOP-4 level, 1999-2023.

Identify consumption price responses to monetary policy shocks:

- Estimate item-specific Bayesian Vector Autoregressions (BVARs) for each of $j = 1, ..., 72$ HICPX prices:

$$Y_{t,j} = A_{0,j} + A_{1,j} Y_{t-1,j} + A_{p,j} Y_{t-p,j} + u_{t,j} \quad (1)$$

  Robustness: (Smooth) local projections, SLP, Barnichon and Brownless (2019).

- Monetary policy shock: pure monetary policy surprise in the change of the policy rate (Jarocinski and Karadi (2020)).

Data and Methodology 2/2: Classification as "Sensitive"

When is an item sensitive to monetary policy?

- Identify periods of at least 3 consecutive months of a negative and statistically significant response to a tightening shock.
- Occurrence within 36 months after the shock.
- Items for which ≥ 1 such period exists are categorized as sensitive.

Which are some characteristics of sensitive items?

- Consider distribution of sensitive goods according to discretionary spending status (consumption shares by income)/administered prices (Eurostat)

Complementary approach:

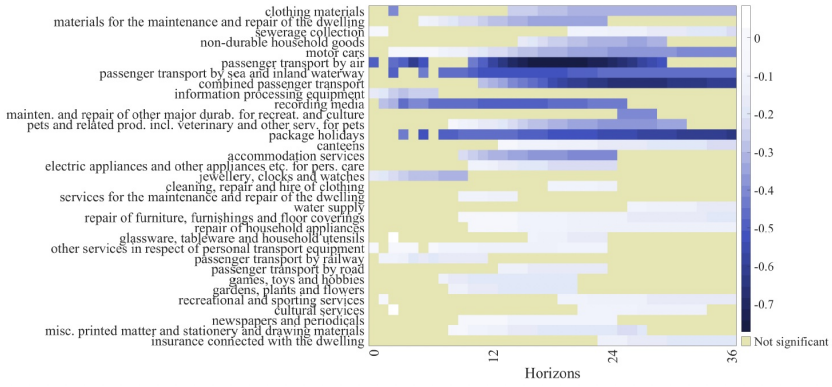
- Use local projections to assess price responses as a function of the credit channel, or the frequency of price changes, in combination with "sensitivity" status

Results 1/3

1. Sensitivity:
   - Sensitive items account for around 33% of the HICPX basket, even goods/services split.
2. Related characteristics:
   - Discretionary items and items with a more prominent role of credit in financing are more sensitive to monetary policy shocks (durables, maintenance and recreation services).
     - More prevalent in consumption baskets of wealthier households.
   - Items that typically have administered prices are not sensitive (rent, medical services).
   - The frequency of price changes appears to not correlate with insensitivity of core items to monetary policy shocks.
3. Dynamics:
   - Considerable heterogeneity in magnitude of response by sensitivity:
     - Approximately 2.5 times larger for highly sensitive items than moderately sensitive items.
   - Time-varying dynamics: stronger impact during 2022-2023 tightening cycle.

Results 2/3

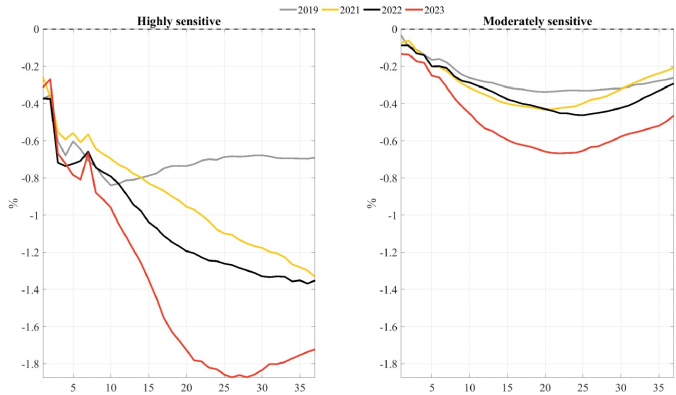
Figure 1: Monetary policy pass-through across sensitive components



- Large persistent effect on some series; few respond on impact

Results 3/3

Figure 6: Monetary policy pass-through to core inflation over time



- Including inflationary period leads to substantially larger impact

Comment 1: What Do We Learn About Price-Setting?

Step Back: Why Study (Disaggregated) Prices?

- Macro: $\max u(C_t)$
  - Role of prices:

$$
\begin{aligned}
D_t &= P_t C_t && (2)\\
\Delta D_t &= \pi_t + \Delta C_t && (3)\\
\Delta D_t &= \rho \Delta D_{t-1} + \epsilon_t^D && (4)
\end{aligned}
$$

Effect of demand on consumption depends on extent of prices absorbing shocks. Caveat Bhattarai et al. (2018) – how do prices adjust, and absorb shocks?

- Micro (1) – "IO":
  - Understand price adjustment behavior of *firms and retailers*:

$$p_{it} = \mu_{it} mc_{it} \quad (5)$$

Frictions (financial, price rigidity,...), complementarities especially network effects, competition, wage dynamics, consumer behavior, . . .

Comment 1: What Do We Learn About Price-Setting?

Step Back: Why Study (Disaggregated) Prices?

- Micro (2) – "abstract":
  - Measure (unconditional) pricing moments that characterize the price-setting process at the goods/firm level.
  - Use pricing moments to discipline model choice.
  - Does the model-implied response to a monetary shock differ? Big differences, e.g. Calvo versus classic menu cost models.

Micro informs macro:

- conduct better (optimal) policy according to models in line with empirical regularities about pricing
- use models to run policy counterfactuals

Comment 1: What Do We Learn About Price-Setting?

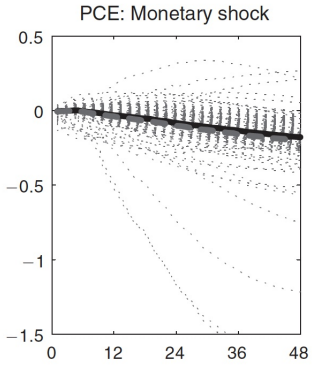
This paper falls on the micro side

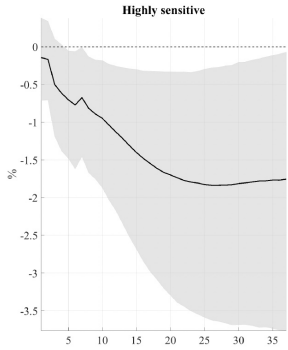
- Interesting consumption side heterogeneity – aligning with efforts to bring IO into macro

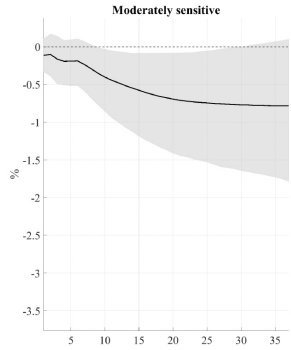
  But, what is new and surprising? Role of durable goods; financial frictions; contracts? Large literature.

- Why do the findings matter *more precisely* on the macro side?
  - Are our macro/policy models mis-specified by neglecting some of the consumer heterogeneity and how grave is the omission in terms of counterfactuals or optimal policy? What is the one takeaway for modeling?
  - Purely statistically, do we make a mistake in characterizing the aggregate CPI response to a monetary shock? (e.g. aggregation bias of heterogeneously persistent processes, Imbs et al. (2005))
  - Do your specific results matter because they are tied to salient consumption goods which may affect (aggregate) inflation expectations?
  - etc.
- Valuable to highlight: What does a policymaker do differently after reading your paper?

Comment 2: General Validity 1/3







- How does the magnitude of your IRF (36 month average: 0.7%) compare to the literature (Romer and Romer, Nakamura Steinsson, Boivin et al. (2009), etc.)? In range, but...
- How sensitive are your estimates to choice of time frame? Only 24 years of data, much characterized by ELB.

Comment 2: General Validity 2/3

- Can you show all 72 IRFs jointly? Are there any price puzzles? UK CPI
- Why not include food and energy prices (20% of consumption basket) into the main analysis?
- How robust are your findings when you consider other (demand) shocks?
  - government spending
  - aggregate and sectoral productivity
  - energy price shocks
  - credit supply shocks (EBP)
- How to interpret your main result on sensitivity?
  - Only 33% of consumption categories *ever* exhibit sensitivity to monetary policy? How about alternative metrics: (CIR^P) 12-month and 24-month responses? "Wrong" positive responses? (cf. UK IRFs)
  - How about the consumption side: positive correlation?

Comment 2: General Validity 3/3

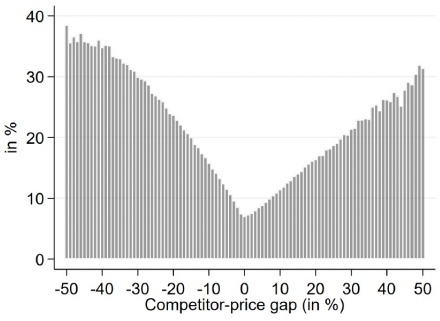
- How robust is your instrument for credit growth?
  $y_{i,t+h} - y_{i,t} = \alpha_i^{(h)} + \beta_1^{(h)} \Delta CCredit_t + \beta_2^{(h)} \Delta CCredit_t \times I_i + \sum_{j=1}^{M} \gamma_j^{(h)} x_{i,t-j} + u_{i,t+h}$
- Current instrument: monetary policy shocks
- Exclusion restriction violated? Need some further analysis and discussion.

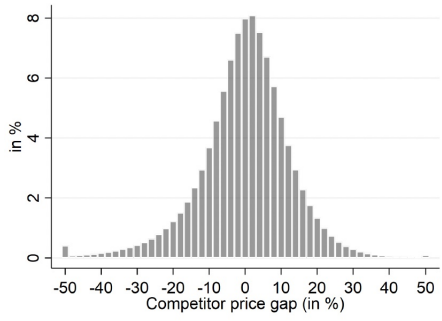
Comment 3: Another Kind of Sensitivity 1/3

- The distribution of price gaps $x_{i,t} = p_{i,t} - p^*_{i,t}$ and their hazard function allow us to gauge effects of (monetary) shocks on real outcomes (see e.g. Alvarez et al. (QJE, 2022))
- Why? Capture degree of selection in prices in the economy. A few prices can react disproportionately, aggregate prices move a lot while consumption effects are dampened.
- Karadi et al (2024): using detailed retail price data and identified monetary policy shocks, find evidence for linear hazard function. Narrow selection is nearly zero, but there is an extensive margin effect shifting between positive/negative price changes.
- Model-free guide for imposing discipline on models: Calvo model vs first vs second generation state-dependent menu cost models.

Another Kind of Sensitivity 2/3

(w/o unobs. heterogeneity)





Another Kind of Sensitivity 3/3

Table 4: Relative strength of adjustment channels

	Empirical moments	Baseline linear hazard	Calvo (1983) time dependent	Golosov and Lucas (2007) (S,s)
Intensive margin (%)	73.7	71.3	100.0	22.7
Gross extensive margin (%)	25.5	28.7	0.0	38.7
Narrow selection (%)	0.7	0.0	0.0	38.6

- Goal: Based on hazard function and distribution, what can we say about model choices?
- Worth studying using CPI micro price data for the Euro Area (PRISMA data)?

Comment 4: Which Pricing Moments?

- Potentially surprising finding: Frequency does not explain the (in)sensitivity of sample core price responses.
- How robust is this finding? E.g. different shocks, different measures of sensitivity (eg *CIR*), consumption responses.
- How about (jointly) including other pricing moments, e.g. kurtosis over frequency (Alvarez et al. (2021, 2016)); volatility of price spell durations (Carvalho and Schwartzman (2015)); dispersion of price changes (Berger and Vavra (2019)); skewness of price changes (Luo and Villar (2021)); synchronization of price changes (Bhattarai and Schoenle (2014) Bonomo et al. (2020)); fraction of small price changes (Midrigan (2011)); fraction of positive price changes (Nakamura and Steinsson (2008))? How about non-pricing moments?

Comment 4: Which Pricing Moments?

- Estimation of the role of frequency of price changes:
  $y_{i,t+h} - y_{i,t} = \alpha_i^{f,(h)} + \beta_1^{f,(h)} MP_t + \beta_2^{f,(h)} MP_t \times Freq_i + \sum_{j=1}^{M} \gamma_j^{(h)} X_{i,t-j} + u_{i,t+h}^f$
- Potential concern: Heterogeneity of nominal demand and marginal cost responses to a monetary shock may bias $\hat{\beta}_2$

  Example: Demand in category X responds more than in category Y. So do marginal costs and prices. But, if frequency is lower in X, we expect a lower price response.
- One remedy: estimate in two steps (Hong et al. 2023)
  1. $P_{k,t+h} = \alpha_{k,h} + \gamma_{k,h} MP_t + \theta_h X_t + \epsilon_{k,t+h}$
  2. $\gamma_{k,h} = \alpha_h + \alpha_{j,h} + \beta_h^{'} M_k + \epsilon_{k,h}$

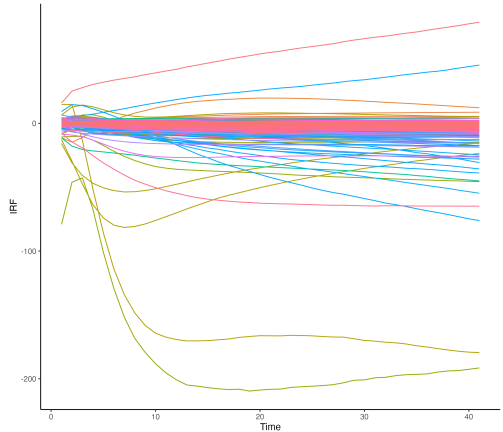
  Approach uses an unbiased IRF to a monetary policy shock, then filters out heterogeneity at some level j.

Conclusion

- Very nice paper, lots of detailed work and food for thought.
- Call for further empirical study, and theoretical integration of findings

Evidence from UK CPI

Price responses for individual categories of the UK CPI (N=1000):



- 48% of the items responded positively on impact, following contractionary shock
- 87.1% (48.6%) of IRFs of items negative (positive) for 3 consecutive periods following contractionary shock Back