

Subjective Inflation Expectations of Households: Implications for Inflation Targeting

Michael Weber
University of Chicago, CEPR, & NBER

November 18, 2024

Motivation

Subjective Inflation Expectations

Inflation expectations are terribly important. We spend a lot of time watching them.

Jerome Powell (2021)

The Role of Expectations for Household Decisions...

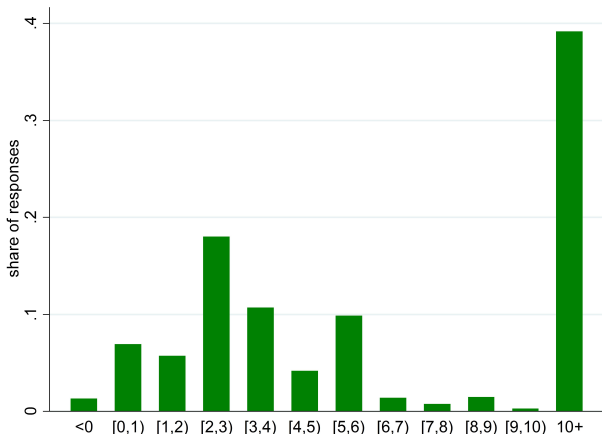
- Key variable for economic decisions: perceived real interest rate

$$r_t^i = i_t - \mathbb{E}_t^i \pi_{t+1}$$

- Most **households'** choices depend on inflation expectations
 - ▶ Consumption/saving choices (D'Acunto, Hoang, and Weber, 2018)
 - ▶ Mortgage Uptaking, Type (Malmendier and Steiny, 2024)
 - ▶ Stock Market Participation (Das, Kuhnen, et al, 2019)
 - ▶ **Wage bargaining** (role of size of informal sector?)
- **Normal times:** $\Delta i_t \rightarrow \Delta r_t$ if **expectations anchored?**
- **Especially important when nominal rates low!**
(Coibion, Gorodnichenko, Kumar, and Pedemonte, 2018)
 - ▶ Policy needs to manage households' expectations
 - ▶ Examples: Unconventional Fiscal Policy, Forward Guidance

Stylized Facts

...BUT Households have dispersed knowledge

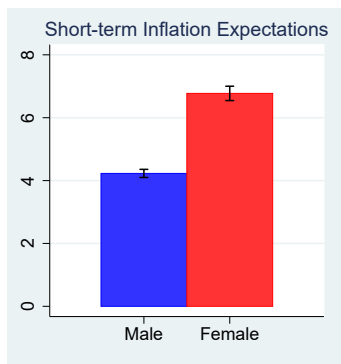


Source: Coibion, Gorodnichenko, Weber, JPE (2022):

"Monetary Policy Communication and Households' Inflation Expectations"

- More than 40% of 25,000 Americans thought inflation target was $> 10\%$ in 2018
- Expectations do react to info and determine actual consumption in scanner data

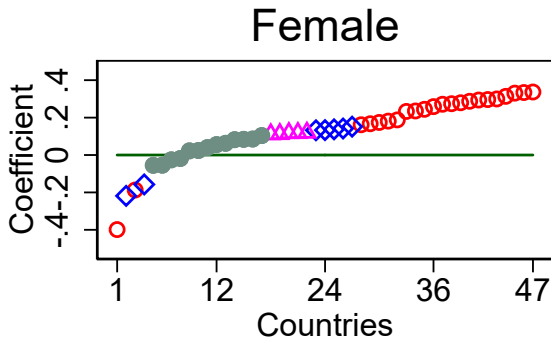
Within-Household Inflation Expectations: Gender Gap



Source: D'Acunto, Malmendier, Weber, PNAS (2021):
"Gender Roles Produce Divergent Economic Expectations"

- Realized inflation in 2016: $< 2\%$
- Average expected inflation for 2016: $> 5\%$
- Women have (more) positively biased inflation expectations

The Gender Gap Truly Global Phenomenon



Source: D'Acunto and Weber (2023):
"Global Evidence on the Formation of Subjective Expectations"

- New survey on subjective expectations from 47,000 individuals in 47 countries
- Gender gap in inflation expectations truly global phenomenon
- Exception: Argentina, Egypt, Turkey, Zimbabwe

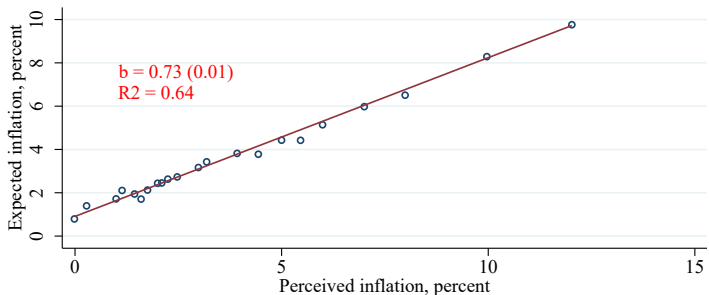
Why Are Women (More) Biased? They Do the Groceries!



Source: D'Acunto, Malmendier, Weber, PNAS (2021):
“*Gender Roles Produce Divergent Economic Expectations*”

- Large difference in inflation expectations by gender *within* household
- Unconditional difference driven by differences in grocery shopping

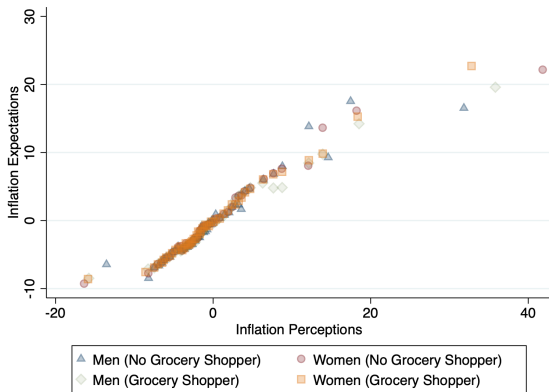
From Perceived Inflation to Inflation Expectations



Source: Weber, D'Acunto, Gorodnichenko, Coibion, JEP (2022):
"The Subjective Inflation Expectations of Households and Firms"

- Strong link between what individuals perceive and expect to happen to inflation
- Need to understand which signals individuals see and notice

Mapping from Perceptions to Expectations by Gender



Source: D'Acunto, Malmendier, Weber, PNAS (2021):

“Gender Roles Produce Divergent Economic Expectations”

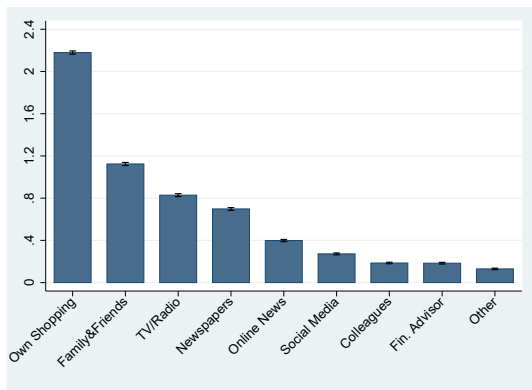
- Mapping from perceptions to expectations does not differ across genders
- Both true for shoppers and non-shoppers: observed signals crucial

Two Sources of Signals: Local vs. Aggregate Economy

- When forming expectations, two non-exclusive sources of signals:
 - ▶ **Local Economy Sources:**
 - ▶ Like in Lucas (1975)'s islands: info from local economic environment
 - ▶ Examples: Shopping activities, Family & friends, Work...
 - ▶ **Aggregate Economy Sources:**
 - ▶ Sources covering signals based on the aggregate economy
 - ▶ Examples: Gov't reports, Central bank communication, newspapers...

Source: D'Acunto and Weber, Annual Review of Economics (2024):
"Why Survey-based Expectations are Meaningful and Important"

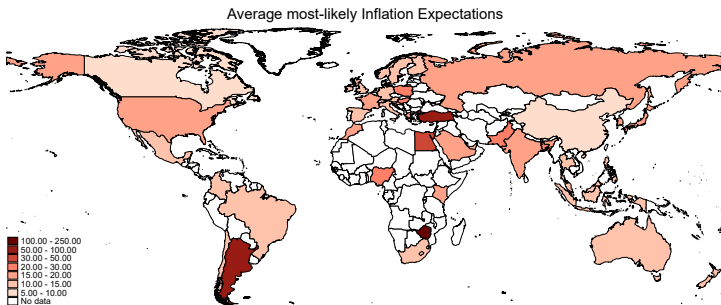
Shopping is the Most Important Source of Information in US



Source: D'Acunto, Malmendier, Ospina, Weber, JPE (2021):
"Exposure to Grocery Prices and Inflation Expectations"

- Most relevant sources of information when we asked their inflation expectations
- Own (and family) shopping much more common than media, other sources

Large Heterogeneity in Expectations around the World

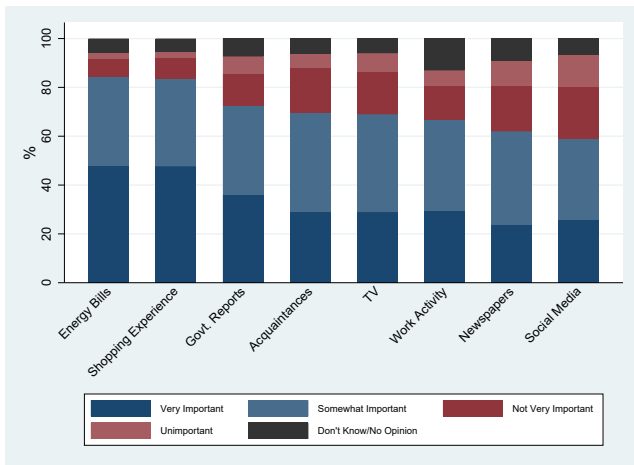


Source: D'Acunto and Weber (2023):

“Global Evidence on the Formation of Subjective Expectations”

- Large differences in average expected inflation rates globally

Shopping Important for Inflation Expectations Globally ...

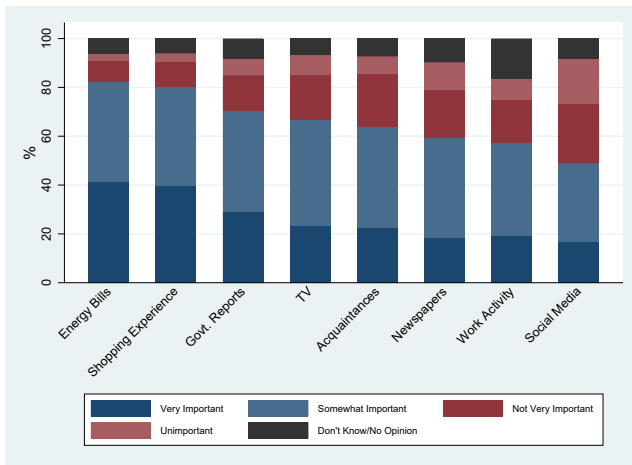


Source: D'Acunto and Weber (2023):

"Global Evidence on the Formation of Subjective Expectations"

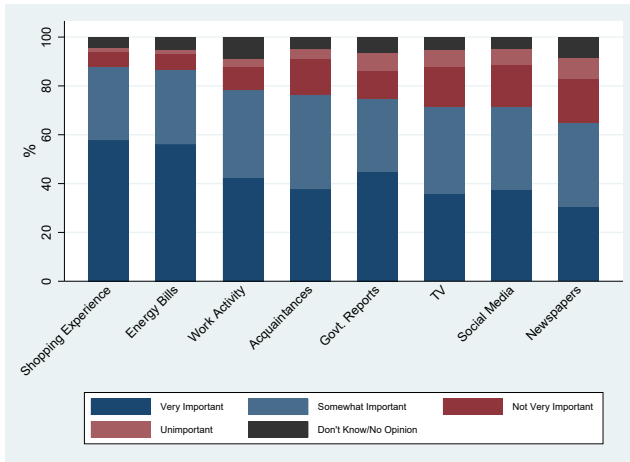
- Shopping important source of information for inflation globally

... in Low ...



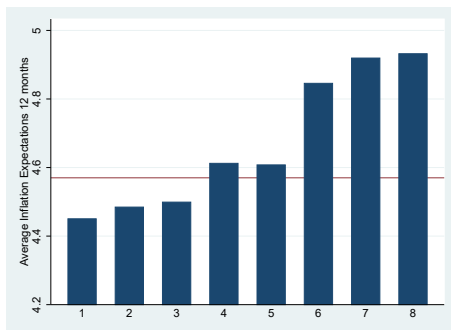
- In countries with historically low inflation
- Examples: Canada, Germany, Japan, Switzerland

... and in High Inflation Countries ...



- Shopping even more important in high inflation countries
- Examples: Argentina, Brazil, Turkey, Zimbabwe
- In general more attention to all information sources

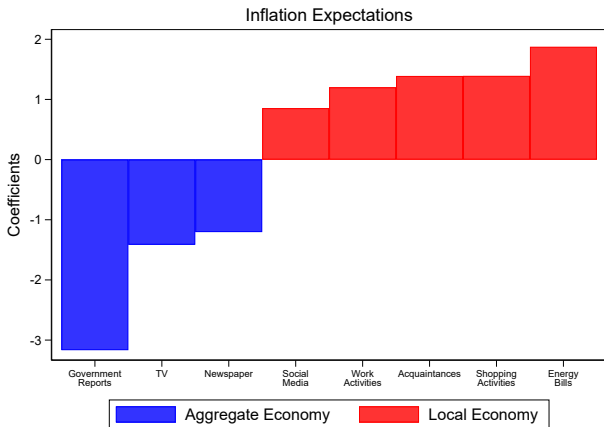
Variation in Households' Bundles → Inflation Expectations



Source: D'Acunto, Malmendier, Ospina, Weber, JPE (2021):
"Exposure to Grocery Prices and Inflation Expectations"

- Sort households into bins by realized inflation in grocery bundles
- High-low portfolio: difference in expected inflation of 0.5 percentage points
- Economically sizeable given inflation target of 2%
- **Higher weight on positive prices changes of frequently purchased goods**

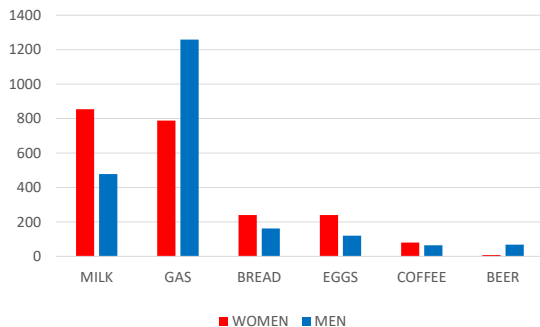
Different Inflation Expectations by Info Sources Globally



Source: D'Acunto and Weber , Annual Review of Economics (2024):
"Why Survey-Based Expectations are Meaningful and Important"

- Reliance on local information sources results in higher inflation expectations

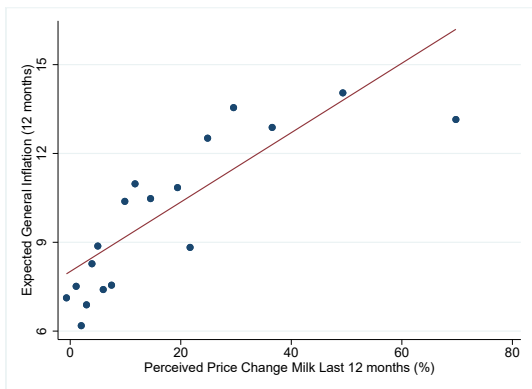
Men and Women often Think about Individual Goods



Source: D'Acunto, Malmendier, Weber, PNAS (2021):
"Gender Roles Produce Divergent Economic Expectations"

- Individuals often focus on price changes of specific items
- NB: gas price changes largely uniform across US, can't drive dispersion in $\mathbb{E}\pi$
- Inflationary impulse in narrow categories can result in spike in $\mathbb{E}\pi$

From Recalled Good-Specific Signals to Aggregate Beliefs



Source: D'Acunto and Weber (2022):

"Memory and Beliefs: Evidence from the Field"

- **Survey January 2022:** Elicit recalled milk prices, milk inflation
- Perceived milk inflation correlates with general inflation expectations

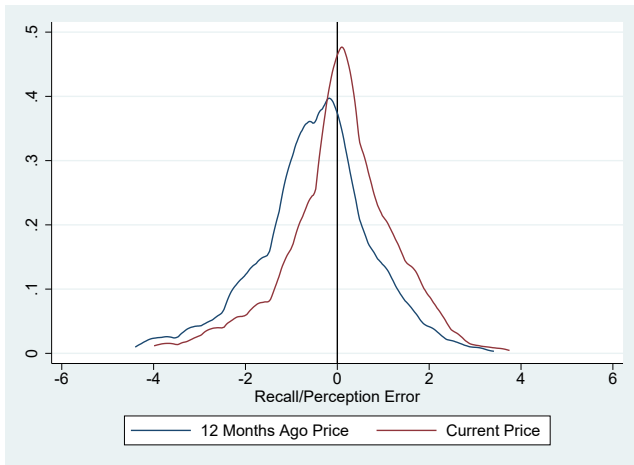
Selective Recall: The Role of Interference

- **Proactive Interference:**

older memories formed in same context crowd out newer memories

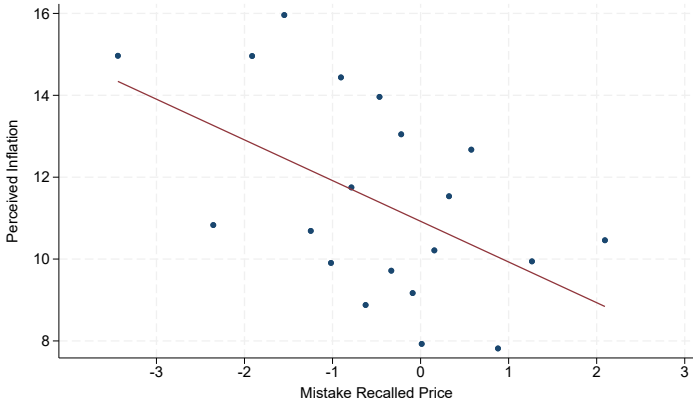
- ▶ If recall price 12 months before, earlier stored price signals recalled
- ▶ Prices grow over time→underestimate price 12 months before
- ▶ Potential driver of systematic upward bias inflation expectations

Proactive Interference: Recalling Lower Past Prices



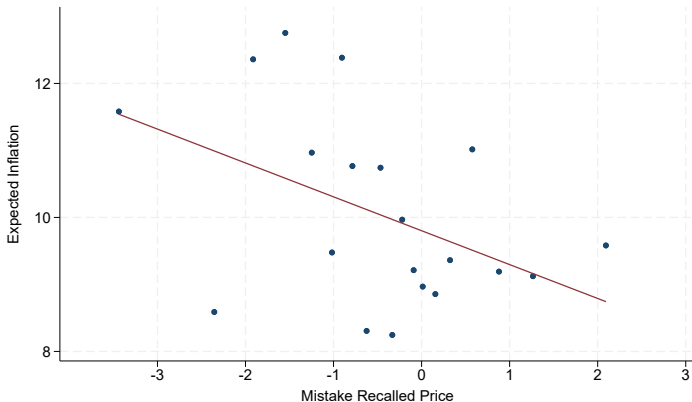
- Many agents recall past prices of milk that are lower than actual prices they paid
- No similar recall error for current prices of milk
- Do we observe an upward bias in perceived milk inflation?

Lower Past Price Perception → Higher Perceived Inflation



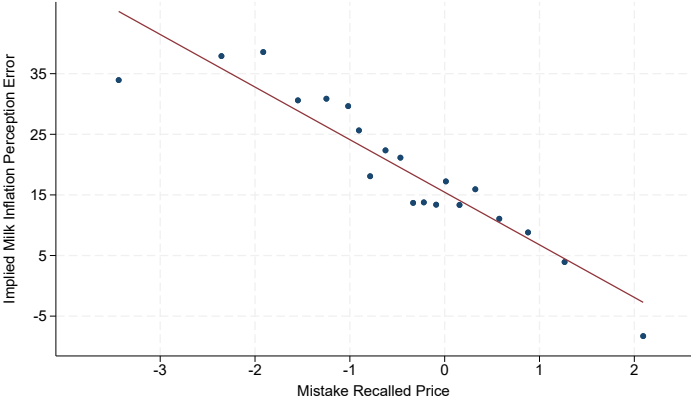
- Lower perceived prices for milk associated with higher perceived overall inflation

Lower Past Price Perception \rightarrow Higher Expected Inflation



- Lower perceived prices for milk associated with higher expected overall inflation

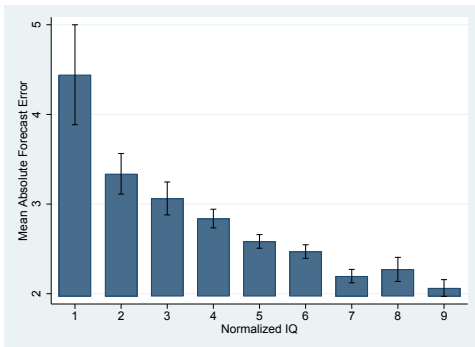
Proactive Interference: Lower Past Price & Error



- Lower perceived past prices associated with higher milk inflation perception error

Managing Expectations: Communication

Forecast Accuracy and Expectations

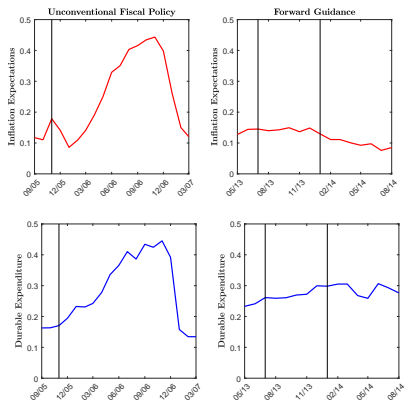


Source: D'Acunto, Hoang, Paloviita, Weber, Restud (2023):

"IQ, Expectations, and Choice"

- IQ data for all men in Finland from military
- Men with low IQ: absolute forecast error for inflation of 4.5%
- Decreases monotonically with IQ
- Effect unrelated to income and education

Simple Policies vs Complex Policies



Source: D'Acunto, Hoang, Weber, RFS (2022):

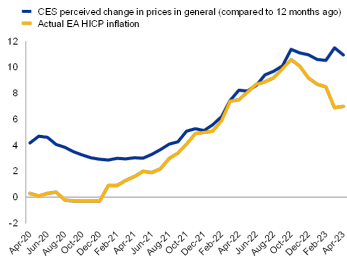
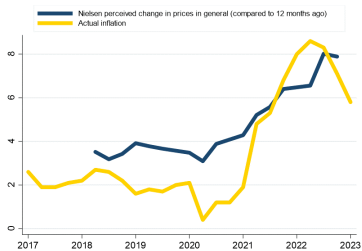
“Managing Household Expectations with Unconventional Policies”

- Pre-announced VAT increase (left): inflation expectations AND spending react
- Fwd guidance announcements (right): nothing moves
- Both policies theoretically operate through identical channel: Euler equation

Communication as Monetary Policy Tool

- Policy communication can manage expectations
- Policy medium matters
Coibion, Gorodnichenko, Weber (JPE 2022)
 - ▶ Purely relying on media not effective
- Policy message matters
D'Acunto, Hoang, Paloviita, Weber (WP 2021)
 - ▶ Policy targets move expectations more than instruments
- Policy messenger matters
D'Acunto, Fuster, Weber (WP 2023)
 - ▶ Comm by underrepresented member reaches minorities more

Time Varying Attention to Inflation



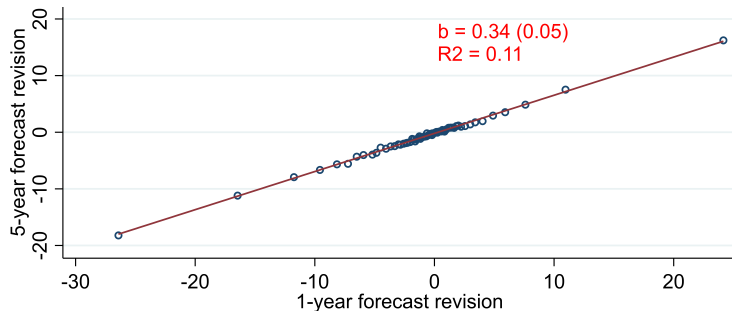
Source: Weber et al (ECMA forthcoming):

“Tell me Something I don’t Already Know: Learning in Low- and High-Inflation Settings”

- HHs perceptions closer to actual inflation when inflation high
- Implications for policy communication
 - ▶ When inflation is low: the challenge is reaching public
 - ▶ Conditional on reaching them, simple messages are very powerful
 - ▶ When inflation is high: reaching the public is much easier
 - ▶ But changing their views is harder
 - ▶ These are two very different communication environments

Term Structure and Joint Expectations Formation

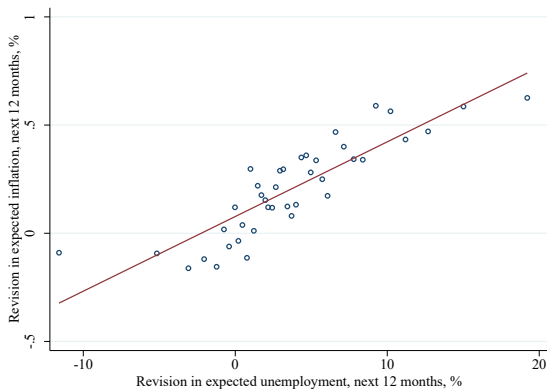
Δ in long- and short-term Inflation Expectations Comove



Source: Weber, D'Acunto, Gorodnichenko, Coibion, JEP (2022):
"The Subjective Inflation Expectations of Households and Firms"

- Central banks aim for stable long-term inflation expectations
- Short-term expectations might temporarily move due to shocks
- Households with high trust should have well anchored long-term expectations
- When households revise short-term expectations, so they so for long-term as well

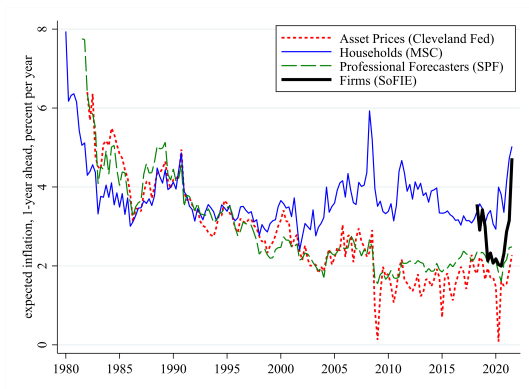
Joint Formation of Expectations



Source: Weber, D'Acunto, Gorodnichenko, Coibion, JEP (2022):
"The Subjective Inflation Expectations of Households and Firms"

- Supply-side view: strong correlation between expected π and UR
- Also true for revisions at individual level!

Firms and Households Form Expectations Alike



Source: Weber, D'Acunto, Gorodnichenko, Coibion, JEP (2022):
"The Subjective Inflation Expectations of Households and Firms"

- Limited evidence for firms suggest general biases of HH also prevalent for firms

Recent Reviews of This Literature

- “The Subjective Inflation Expectations of Households and Firms: Measurement, Determinants, and Implications”
Weber, D’Acunto, Gorodnichenko, Coibion
Journal of Economic Perspectives (2022)
- “What Do the Data Tell Us About Inflation Expectations?”
D’Acunto, Malmendier, Weber
Handbook of Subjective Expectations (2023)
- “The Expected, Perceived, and Realized Inflation of U.S. Households before and during the COVID19 Pandemic”
Weber, Gorodnichenko, Coibion
IMF Economic Review (2023)
- “Subjective Inflation Expectations: Models meet Reality”
D’Acunto and Weber
Annual Review of Economics (2024)
- “Household Inflation Expectations: An Overview of Recent Insights for Monetary Policy”
D’Acunto, Charalambakis, Georgarakos, Kenny, Meyer, and Weber
ECB Discussion Paper (2024)

Take Aways I

- Households focus on specific goods to form expectations
- Spike in inflation in narrow categories → in spike in expectations
- Larger weight on positive price changes
 - ▶ Risk $\mathbb{E} \pi$ stays elevated even even after π comes down
- Messaging by Central Bank important
 - ▶ Message, medium, and sender matter

Take Aways II

- Limited knowledge of inflation target
- Focus on groceries rather than anchored expectations
- Upward bias in inflation expectations in levels
- Comovement between perceptions and expectations
- Comovement between short- and long-term inflation expectations
- Comovement between unemployment and inflation expectations

Sign of success or challenge for central banks?

- **NB:** Inattention of households not innocuous when inflation spikes