

INFLATION EXPECTATIONS

SYMPOSIUM ON “INFLATION: RISKS, IMPLICATIONS AND POLICIES”
NY FED AMEC SYMPOSIUM

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Inflation expectations

① Determinants:

- What determines and anchors LT inflation expectations?
- How to measure the risk that inflation expectations become unanchored?

② Monetary Policy Response:

- Which MP strategy and communication tools help (or hinder) adequate anchoring?

APPROACHES TO EXPECTATION FORMATION

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 - Frictions: [access to information](#), model uncertainty
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 - Frictions: information processing [function of prior exposure](#)
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EXAMPLE FROM THE FORMATION OF INFLATION EXPECTATIONS

What explains the overweighting of food and gas prices?

- 1 **Traditional:** Different beliefs due to differences in information
- 2 **Behavioral:** Biases / limited cognition
- 3 **Experience effects:** Humans change their views of future inflation, as well as savings/spending decisions, after personally being affected
 - Even if fully informed about inflation data

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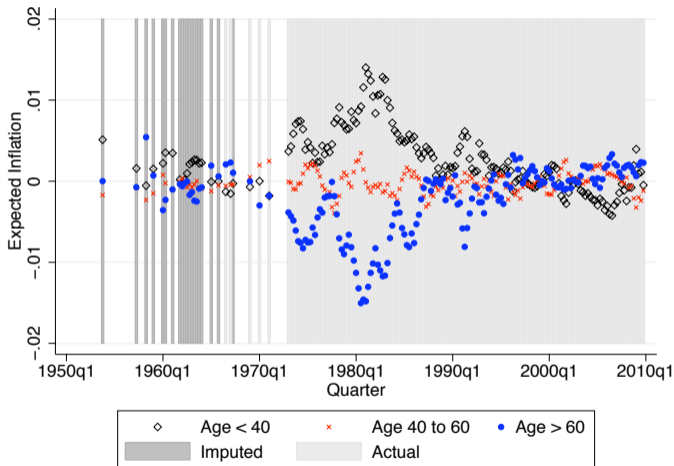
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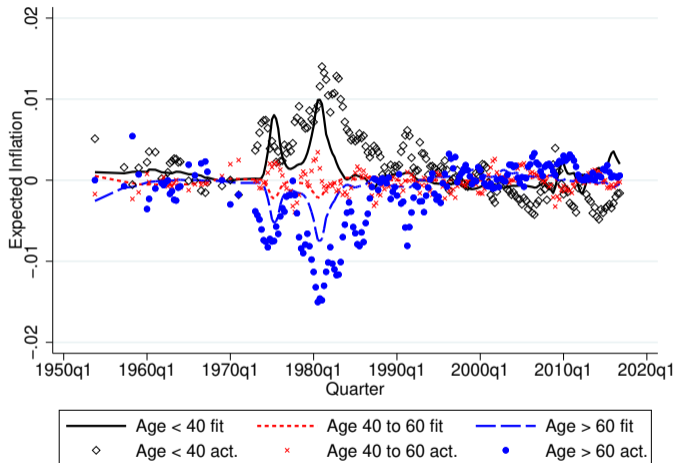
STEP 1: INFLATION EXPECTATIONS REFLECT THE LIVED REALITY OF HOUSEHOLDS (EXPERIENCE EFFECTS)

Disagreement
about
future inflation
(MSC)



Four-quarter MAs of one-year $E[\pi]$ shown as deviations from the cross-sectional mean.

FITTED EXPECTATIONS: LIFETIME INFLATION EXPERIENCES



Fitted and actual relative to full-sample c.s. mean (4-quarter MA)

FINDINGS: INFLATION EXPERIENCES \implies INFLATION BELIEFS

MALMENDIER AND NAGEL (2016), USING MSC DATA SINCE 1953

- 1 When forming inflation expectations, individuals put a higher weight on realizations experienced over their life-times than on other available historical data.
 - Similar to adaptive learning: people learn following simple “rules of thumb” (e.g., Bray 1982; Marcet and Sargent 1989)
 - Different from adaptive learning: people learn (more) from data realized during their lifetimes. (adaptive learning: all historical data)
- 2 Implicit weighting of past experiences very similar to weighting pattern in other applications, e. g., stock market!
 - Roughly linearly declining weights.
- 3 Significant impact on individual financial decisions, namely, long-term nominal-rate borrowing and lending (tenure, ARM/FRM, refi, bonds).

INFLATION EXPERIENCES OF FIRMS

KUMAR, AFROUZI, COIBION AND GORODNICHENKO (2015)

Survey of NZ managers: **“How do you typically form your inflation expectations?”**

Top 4 answers:

- Media
- Meetings and discussions (with co-workers and families)
- Shopping experience
- Prices of competitors and suppliers

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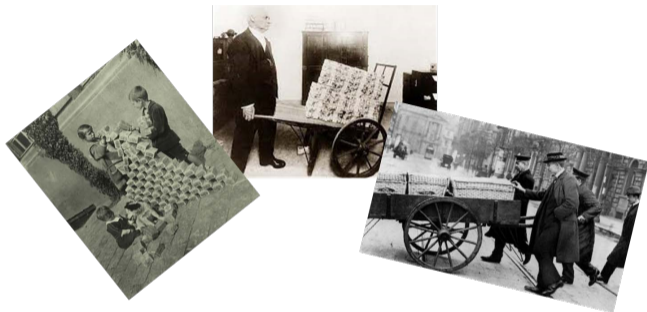
Survey of NZ managers: **“How do you typically form your inflation expectations?”**

Top 4 answers:

- Media
- Meetings and discussions (with **co-workers and families**) ← **Information Resonance**
- Shopping experience
- Prices of competitors and suppliers

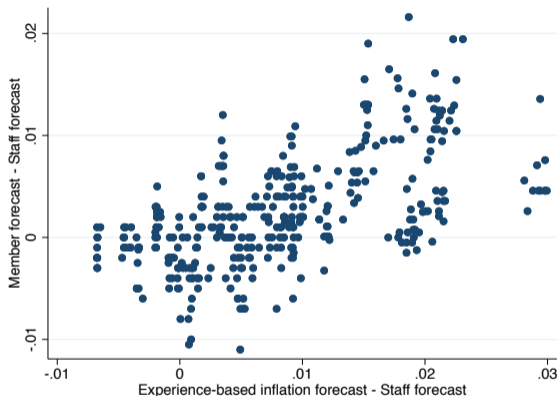
INFLATION EXPERIENCES OF EXPERTS

MALMENDIER, NAGEL, AND YAN (2020)



- Henry (Heinrich) Wallich: Fed governor 1974-1986
 - Born in Germany in 1914 into a family of bankers.
 - Lived through Germany's hyperinflation in 1923.
 - Emigrated to the US in the 1930s.
- Wallich dissented 27 times (!) during his tenure on the Fed Board, the highest number of dissents in Federal Reserve history, decades later.

FOMC MEMBERS' INFLATION EXPERIENCES AND FORECASTS



Member forecast: from semi-annual Monetary Policy Report to Congress, 1992 - 2004.

Staff forecast: Greenbook forecast.

Experience-based forecast: AR(1) model forecast estimated based on weighted life-time inflation data for each FOMC member.

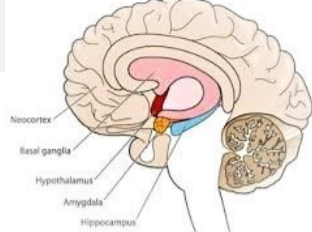
STEP 2: NEURO, NOT (ONLY) KNOWLEDGE



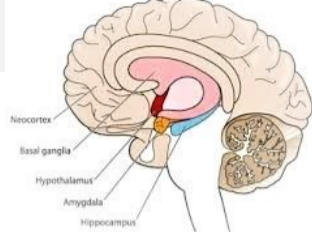
Why?

- Every time we have a new experience, our brain forms a connection between two neurons (synapse).
 - Synapses tell our body how to react to the world around us. They govern the way we experience life.
- The brain can reorganize pathways, create new connections, and even create new neurons (neuroplasticity) in response to learning, experience, and memory foundation

SYNAPTIC TAGGING



- How and how often we make an experience matters.
 - Repeated stimulation of hippocampal neurons can induce a prolonged increase in synaptic strength (**long-term potentiation (LTP)**), Cf. Frey and Morris (*Nature* 1997, *Trends in Neuroscience* 1998))
 - **Emotional Tagging: Emotional events attain privileged status in memory**, Dolan *Science* (2002), LaBar and Cabeza *Nature* (2006).
 - Prior or subsequent “learned knowledge” has very limited power to undo the effects.
- Cf. literature on **trauma**: Synaptic changes caused by **traumatic stress** (Mahan and Ressler *Trends in Neuroscience* 1998, Zhang et al, *Front Psychol* 2020).



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 - **Trauma with a big T**: German Hyperinflation, Great Depression, Pandemics
 - **trauma with a small t**: Daily Exposure, daily worry about food, prices, unemployment
 - Other repeated (non-traumatic) exposure, including positive experiences

EXAMPLE: GENDERED EXPERIENCES

D'ACUNTO, MALMENDIER, WEBER (PNAS, 2020)

Within-Household Inflation Expectations



- Women have (more) positively biased inflation expectations, even within households.
- Unconditional difference driven by differences in grocery shopping.

IMPLICATIONS FOR MONETARY POLICY

- ① **FREQUENCY**: explains roles of food/gas prices, personal shopping \implies **MP**: limitations of focus on core inflation
- ② **DURATION**: inflationary experience extra-powerful if it remains high for a long time; the effect will last for a long time \implies **MP**: to be accounted for in policy choices
- ③ **EMOTIONS**: “panic” = strong anchoring in memory \implies **MP**: acknowledge consumer reality, reassure, utilize “information resonance”
- ④ **COMMUNICATION**:
 - “Expectations show whether central bank is doing its job” but not in the sense of “being credible,” but in the sense of “fighting the inflation reality”
 - **MP** tools such as **forward guidance** less powerful than our standard macro models would imply.