

How Inflation Expectations De-Anchor: The Role of Selective Memory Cues

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Introduction: How Do We Form Inflation Expectations?

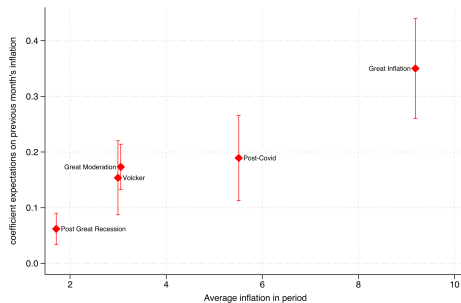
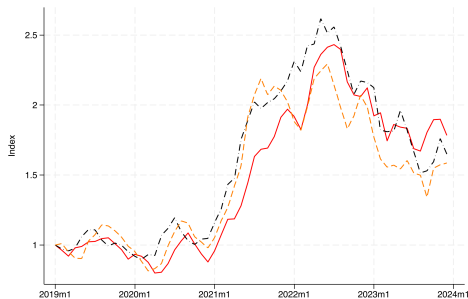
- ▶ Conventional belief: Inflation expectations are sticky
 - ▶ Depend on time-discounted slow-moving measures of life-time inflation experiences (Malmendier and Nagel (2011, 2016, 2021)); Processing costs lead to inattention and rigidity in belief updating (Sims (2003), Woodford (2009), Carroll (2003), Carroll et al. (2020), Bracha and Tang (2022))
- ▶ Often depend on experiences and attributes of respondents:
 - ▶ Socio-demographic characteristics (e.g. d'Acunto et al. (2021), Bruine de Bruin et al. (2010), Armantier et al. (2013), Binder et al. (2024)); mental models (Andre et al. (2022), Zuellig (2022)); social networks (Hajdini et al. (2023))
 - ▶ Role of recent, salient prices and price changes of groceries and gasoline (d'Acunto et al. (2022, 2023, 2024), Cavallo et al. (2017), Coibion and Gorodnichenko (2015), Gelman et al. (2016), Binder (2018))

Introduction: How Do We Form Inflation Expectations?

- ▶ This paper:
 - ▶ No stickiness in data – state-dependence of beliefs, in particular rapid deanchoring in 2021
 - ▶ Present a model of inflation expectations based on memory and *selective* recall as in Bordalo et al. (2023, 2025)
 - ▶ Evidence for new state-dependent inflation expectations formation, micro-founded in cognitive psychology (Baddeley 1997, Kahana 2012) — rigid expectations when inflation is low and stable, but sharp instability during inflation surges
 - ▶ Instability is cohort-specific, depends on experiences
 - ▶ Whether expectations are elicited as density or point forecasts changes average expectations
- ▶ The evidence is inconsistent with either a Bayesian model, or mechanical experience effects based on statistical averaging of past inflation. Points to a psychologically realistic memory model.

Motivation: State-Dependent Element in Inflation Expectations

Across Cohorts and Regimes



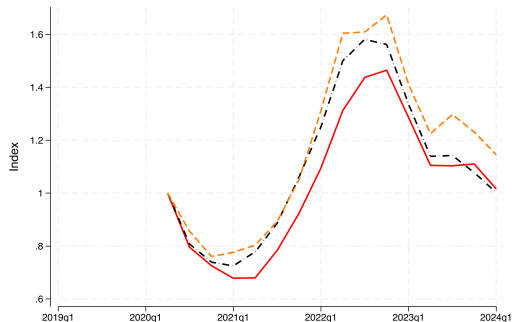
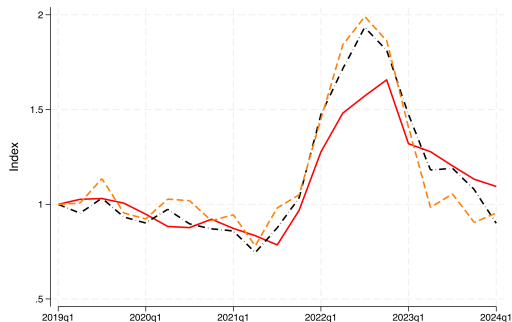
1. Rapid belief updating during recent inflation surge – more rapid for older cohorts

Puzzling because new data has less impact on older cohort's, longer database; also, older cohorts experienced *less* current CPI [► inflation](#)

2. Across five inflation regimes, sharp state dependence

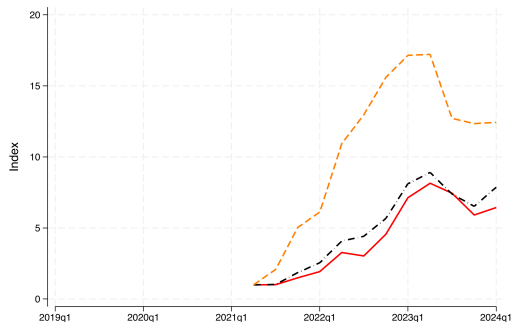
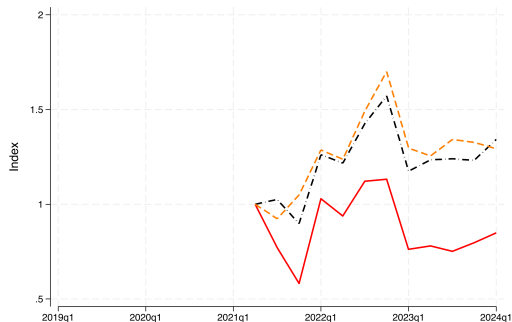
Theory of *selective* recall of high-inflation episodes to explain these and other patterns.

International Evidence: UK and EU



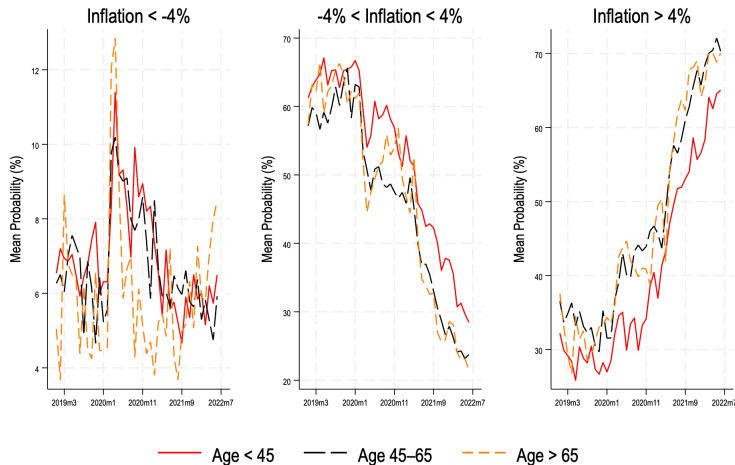
- ▶ Rapid belief updating; and more so by older cohorts than younger cohorts who catch up
- ▶ Patterns hard to reconcile with Bayesian models anchored in average past experiences, or with experience-based regime switching: the young switch despite never having experienced persistent high inflation.

International Evidence: Australia and Japan



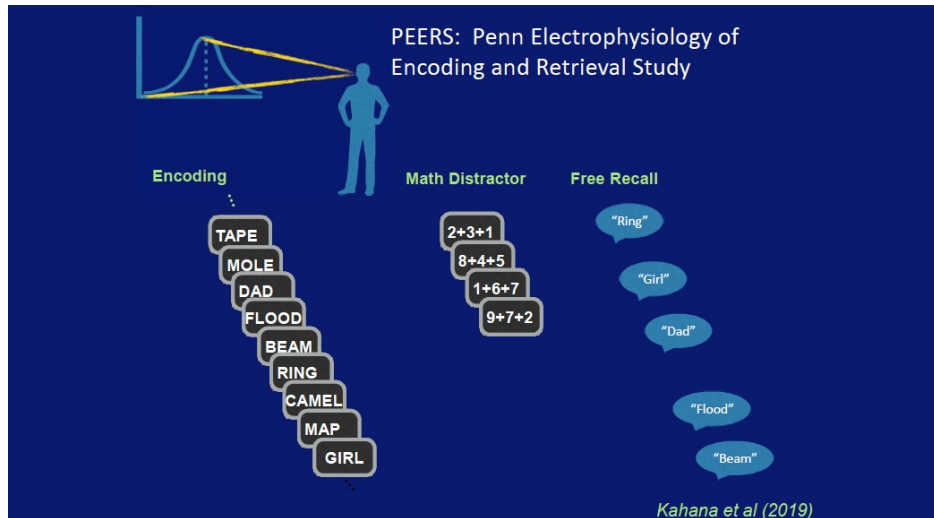
► Similar patterns across economies.

Further Motivation: Age-Dependent Dis-Anchoring



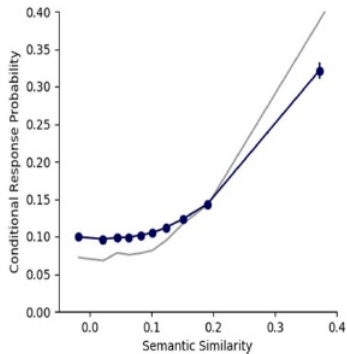
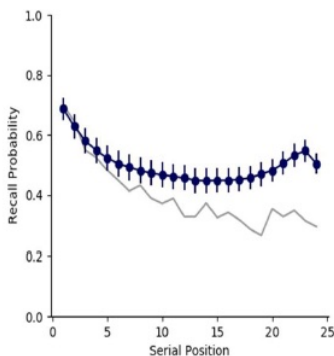
- In elicited forecast densities, the old in the US shifted weight to higher inflation ranges ($> 4\%$) while the young stick more to middle ranges (-4% to 4%).

Basis for Model: Memory Regularities from Cognitive Science



- Experiments: How do we recall what we studied/experienced?
What *determines* probability of recalling "Tape" vs. "Dad" vs. "Girl"?

Basis for Model: Primacy, Recency and Similarity



- ▶ Retrieval of experiences from memory database depends on **similarity** in
 - ▶ **temporal context**, in a U-shaped fashion: **recency** (“Girl”), but also **primacy** (“Tape”)
 - ▶ **semantic context**; similarity between cue and experiences
 - ▶ cued with “parent” more likely to recall “Dad” than “Girl”
 - ▶ cued with 10% inflation: more likely to recall 11% than 3% inflation

Next Steps:

1. How to think about these regularities in an economic model of inflation expectations
2. Evidence from U.S. and international inflation expectations data

Model: Setup

- ▶ Bordalo et al. (2023, 2025): Individuals selectively recall experiences from their memory database given a cue when forming inflation expectations. Similarity of experiences with cue determines recall probabilities.
- ▶ **Database** at time t : quarterly inflation rates experienced at time $t - s$ by an individual since age 16, $\Pi_t = (\pi_{t-s})_{s \leq a-16}$. Robust to earlier start dates.
- ▶ **Cue** at time t : signal prompting recall from Π_t by similarity. Temporal context and inflation estimation task, including event E considered. Three features embedded in cue $\pi_{t,E} = (t, \pi_t, \bar{\pi}_{E,t})$:
 - ▶ Temporal context t implies similarity to recent and early experiences (relative to a .)
 - ▶ Task implies numerical similarity to current inflation π_t the decision-maker sees, and event E she thinks about, described by average experienced inflation in E , $\bar{\pi}_{E,t}$.
 - ▶ Point expectation $E = \mathfrak{R}$; forecast density $E_1, \dots, E_k$ with $\bigcup E = \mathfrak{R}$.

Model: Setup

- ▶ **Similarity**: exponentially decays in discrepancy of features from experience π_{t-s} :

$$d(\pi_{t-s}; \pi_{t,E}) = \beta(s/a) + \sigma q_1(\pi_{t-s} - \pi_t)^2 + \sigma q_2(\pi_{t-s} - \bar{\pi}_{t,E})^2$$

- ▶ Primacy and recency effects captured by inverse U-shaped divergence:
 $\beta(x) = -\beta_1 x^2 + \beta_2 x$ with $\beta_1, \beta_2 \geq 0$ and $x = s/a$ denoting relative experience age.
- ▶ Numerical similarity: π_{t-s} harder to recall if different from current inflation, π_t , and average experienced value in E , $\bar{\pi}_{t,E}$. $\sigma > 0$ captures the strength of similarity, $q_i > 0$ the relative weight of each dimension.
 - ▶ 11% inflation is easier to recall than 3% if current inflation is 10%.
 - ▶ For $E = [2\%, 3\%]$, $\pi_{t-s} = 2.5\%$ is more similar than 10%.

- ▶ **Subjective recall probability**:

$$r(\pi_{t-s} \mid \pi_{t,E}) \propto e^{-d(\pi_{t-s}; \pi_{t,E})}.$$

- ▶ More similar experiences are more likely to be recalled, and more frequently experienced inflation rates.

Model: Survey Beliefs and Expectations

- ▶ Belief about inflation range R , e.g. $R = [2\%, 4\%]$ (explicitly or implicitly depending on E):

$$Pr(R|\pi_{t,E}) = \sum_{\pi_{t-s} \in R \cap \Pi_t} r(\pi_{t-s}|\pi_{t,E})$$

- ▶ Point expectations:

$$E[\pi_{t+1}|\pi_{t,\mathfrak{R}}] = \sum_{\pi_{t-s} \in \Pi_t} r(\pi_{t-s}|\pi_{t,\mathfrak{R}})\pi_{t-s}$$

and density-based mean

$$E[\pi_{t+1}|\pi_{t,E_1}, \dots, \pi_{t,E_k}] = \sum_{j=1, \dots, k} Pr(E_j|\pi_{t,E_j})\pi_{E_j}$$

- ▶ Belief formation differs from rational models with consistent beliefs:
 - ▶ Recall and hence beliefs are *state-dependent* via cues
 - ▶ Cues and hence beliefs are also *forecasting-task-dependent* – important implications for consistency across belief elicitations. Eliciting ranges explicitly cues otherwise neglected deflation states, and implies lower density-based mean. $\Rightarrow$ next results

Next: Testable Propositions

Two typical elicitations in surveys:

- ▶ Point expectation $E = \mathfrak{R}$
- ▶ Forecast density $E_1, \dots, E_k$ with $\bigcup E = \mathfrak{R}$

Two sets of predictions:

1. In both elicitations, beliefs explicitly depend on temporal and numerical cues, interacted with frequency of experiences in the database
2. Systematic inconsistency between the two elicitations. Density-based elicitation *explicitly* prompts recall of rarely experienced events and affects probability weights & expectations.

Prediction 2. highlights the new implication of selective recall:

- ▶ rejects any rational model (including Bayesian models) in which agents hold a consistent belief system.

Elicited Point Expectations

- Linearized around zero temporal and numerical similarity around $\beta_1 = \beta_2 = \sigma = 0$:

$$\begin{aligned} \mathbb{E}(\pi_{t+1} | \pi_t, \mathfrak{R}) &\approx \bar{\pi}_{t-1} \\ &+ \beta_1 \cdot \text{cov}_t \left(\frac{s^2}{a^2}, \pi_{t-s} \right) - \beta_2 \cdot \text{cov}_t \left(\frac{s}{a}, \pi_{t-s} \right) \\ &- \sigma \cdot q_1 \cdot \text{cov}_t \left[\pi_{t-s}, (\pi_{t-s} - \pi_t)^2 \right] - \sigma \cdot q_2 \cdot \text{cov}_t \left[\pi_{t-s}, (\pi_{t-s} - \bar{\pi}_{t-1})^2 \right] \end{aligned}$$

Interpretation:

- ▶ Higher inflation during lifetime, $\bar{\pi}_{t-1}$: higher inflation expectations in the future.
- ▶ Covariances capture interference: expectations rise when high-inflation experiences become easier to recall – relative to other experiences. Easier recall if
 - ▶ high inflation experiences are very early or close to present intuition
 - ▶ high inflation experiences are numerically similar to π_t , and $\bar{\pi}_{t-1}$
- ▶ Novel state-dependent element in formation of inflation expectations: Sharp belief changes possible due to numerical similarity with cue, despite slow-moving database.

Data

- ▶ Data from Michigan Survey of Consumers (MSC), and the New York Fed's Survey of Consumer Expectations (SCE).
- ▶ Monthly data, 1978-2022 (MSC), 2013-2022 (SCE), rotating panels.
- ▶ Point estimates from MSC and SCE, forecast densities from SCE.
- ▶ Current and experienced realized inflation from the Shiller database (Shiller, 2005)
- ▶ Starting at age 16, measure experiences at a quarterly frequency, using annualized quarterly CPI growth rate.
- ▶ Current-inflation cue: annualized quarterly inflation rate realized three months preceeding forecast.
- ▶ Complementary data: CPI inflation forecasts from the Survey of Professional Forecasters (SPF).

Elicited Point Expectations: Results

Michigan Survey of Consumers (MSC)

	(1)	(2)	(3)	(4)	(5)
Average experience: $\bar{\pi}_{t-1}$	0.280*** (0.027)	0.324*** (0.062)	0.554*** (0.069)	0.562*** (0.064)	0.319*** (0.058)
Primacy: $\text{Cov}(s^2, \pi_{t-s})/a^2$		-0.056 (0.526)	2.255*** (0.589)	1.947*** (0.518)	1.814*** (0.527)
Recency: $\text{Cov}(s, \pi_{t-s})/a$		-0.020 (0.699)	-3.095*** (0.775)	-2.617*** (0.696)	-1.769*** (0.644)
Dissimilarity to average: $\text{Cov}((\pi_{t-s} - \bar{\pi}_{i,t-1})^2, \pi_{t-s})$			-0.003*** (0.001)	-0.002** (0.001)	-0.002* (0.001)
Dissimilarity to current: $\text{Cov}((\pi_{t-s} - \pi_t)^2, \pi_{t-s})$			-0.002*** (0.001)	-0.004*** (0.000)	-0.006*** (0.001)
SPF inflation forecast				-0.041 (0.102)	0.234*** (0.062)
Constant	3.019*** (0.122)	2.849*** (0.248)	2.145*** (0.256)	2.111*** (0.360)	2.321*** (0.104)
Observations	229,495	229,495	229,495	217,818	217,818
R^2	0.091	0.091	0.093	0.060	0.044

- ▶ Strong evidence for all three memory effects: primacy, recency, and numerical similarity.
- ▶ Quantitatively, selective recall has an economic impact comparable to average experience, beyond the timing of experience.
- ▶ Allowing for memory effects in regressions of observed on predicted expectations across month $\times$ five-year cohort cells raises R^2 from 0.04 (average experience alone) to 0.30.

Elicited Point Expectations: Results

Survey of Consumer Expectations (SCE)

	(1)	(2)	(3)	(4)	(5)
Average experience: $\bar{\pi}_{t-1}$	0.212*** (0.074)	0.464* (0.242)	1.046*** (0.392)	0.931** (0.395)	2.175*** (0.374)
Primacy: $\text{Cov}(s^2, \pi_{t-s})/a^2$		5.292** (2.555)	7.218** (2.853)	6.371** (2.835)	19.083*** (2.790)
Recency: $\text{Cov}(s, \pi_{t-s})/a$		-6.543* (3.564)	-9.608** (4.061)	-8.351** (4.040)	-26.657*** (3.942)
Dissimilarity to average: $\text{Cov}((\pi_{t-s} - \bar{\pi}_{i,t-1})^2, \pi_{t-s})$			-0.010 (0.007)	-0.009 (0.007)	-0.001 (0.007)
Dissimilarity to current: $\text{Cov}((\pi_{t-s} - \pi_t)^2, \pi_{t-s})$			-0.002*** (0.001)	-0.002*** (0.001)	-0.008*** (0.001)
SPF inflation forecast				0.646* (0.354)	0.937*** (0.306)
Constant	5.699*** (0.216)	5.263*** (0.452)	3.810*** (0.884)	2.639** (1.061)	-0.163 (0.959)
Observations	139,583	139,583	139,583	139,583	139,583
R^2	0.114	0.115	0.115	0.115	0.104
Demographic controls	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	No

► Again, strong evidence in SCE data for the three memory effects.

Elicited Point Expectations: Medium Horizons

Survey of Consumer Expectations (SCE), 24–36 months

	(1)	(2)	(3)	(4)	(5)
Average experience: $\bar{\pi}_{t-1}$	0.148* (0.082)	0.259 (0.253)	0.945** (0.359)	0.940** (0.377)	1.707*** (0.352)
Primacy: $\text{Cov}(s^2, \pi_{t-s})/a^2$		0.406 (0.334)	0.585* (0.347)	0.581 (0.362)	1.397*** (0.333)
Recency: $\text{Cov}(s, \pi_{t-s})/a$		-1.443 (1.368)	-2.375 (1.431)	-2.355 (1.501)	-5.926*** (1.389)
Dissimilarity to average: $\text{Cov}((\pi_{t-s} - \bar{\pi}_{i,t-1})^2, \pi_{t-s})$			-0.018*** (0.007)	-0.018*** (0.007)	-0.017** (0.006)
Dissimilarity to current: $\text{Cov}((\pi_{t-s} - \pi_t)^2, \pi_{t-s})$			-0.000 (0.001)	-0.000 (0.001)	-0.002** (0.001)
SPF inflation forecast				0.023 (0.265)	-0.433 (0.323)
Constant	5.518*** (0.246)	5.386*** (0.450)	3.586*** (0.803)	3.549*** (0.823)	3.118*** (0.892)
Observations	139,700	139,700	139,700	139,700	139,700
R^2	0.079	0.079	0.079	0.079	0.074
Demographic fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	No

- Now, similarity to average inflation matters more than similarity to current inflation.
- Long-term expectations are shaped by long-term experiences, indicating that different cohorts have different medium-run *inflation anchors*.

Testing the Memory Model: Probability Forecasts and Elicitation

Next, validate the model using density forecasts:

- ▶ Use range probabilities to test the role of cues
- ▶ Use the point forecast-density forecast gap to validate model mechanism

Elicited Density Forecasts: How do We Form Beliefs about Ranges?

- ▶ The odds of E_j versus a base E_b , linearized around zero temporal and numerical similarity around $\beta_1 = \beta_2 = \sigma = 0$, given n_k , the frequency of E_k for $k \in (b, j)$, and range midpoints π_k are:

$$\frac{\Pr(E_j|\pi_t, E_j)}{\Pr(E_b|\pi_t, E_b)} \approx \frac{n_j}{n_b} + \beta_1 \cdot \frac{n_j}{n_b} \cdot \frac{(\bar{s}_j^2 - \bar{s}_b^2)}{a^2} - \beta_2 \cdot \frac{n_j}{n_b} \cdot \frac{(\bar{s}_j - \bar{s}_b)}{a} - \sigma \cdot q \cdot \frac{n_j}{n_b} \cdot \left[(\pi_j - \pi_t)^2 - (\pi_b - \pi_t)^2 \right]$$

- ▶ Prediction: Odds increase in *relative* frequency, temporal context ($\beta_1 > 0, \beta_2 > 0$ defining inverse U-shaped distance) and similarity ($\sigma > 0, q > 0$).
- ▶ Additional, amplifying interaction with relative database frequency n_j/n_b .
 - ▶ If inflation increases from 2% to 10%, the assessed probability of the 8%-12% range should go up for everybody, but especially so for people having lived more 8%-12% experiences.
- ▶ Highlights key mechanism of selective recall: cued elicitation of E_j itself helps think about this *specific* event, stimulating retrieval especially of episodes otherwise overlooked.

Elicited Density Forecasts: Results

	Odds ratio				
	(1)	(2)	(3)	(4)	(5)
Frequency ratio: $F = n_j/n_b$	0.0162*** (0.000682)	0.0230*** (0.00131)	0.0242*** (0.00131)	0.0230*** (0.00131)	0.0242*** (0.00132)
Primacy: $F \times$ relative recency squared	0.104*** (0.00464)	0.0251*** (0.00728)	0.0350*** (0.00755)	0.0251*** (0.00728)	0.0350*** (0.00755)
Recency: $F \times$ relative recency	-0.106*** (0.00412)	-0.0731*** (0.00629)	-0.0866*** (0.00687)	-0.0731*** (0.00629)	-0.0866*** (0.00687)
Similarity: $F \times$ relative dissimilarity	-2.26e-05*** (2.38e-06)	-8.20e-06** (3.43e-06)	-1.06e-05*** (3.87e-06)	-8.23e-06** (3.42e-06)	-1.06e-05*** (3.87e-06)
SPF inflation forecast				0.000858 (0.00615)	0.00814 (0.00521)
Constant	0.0453*** (0.00251)	0.171*** (0.00293)	0.173*** (0.00280)	0.171*** (0.00305)	0.173*** (0.00272)
Observations	491,072	567,767	570,799	567,775	570,822
R^2	0.255	0.295	0.307	0.295	0.307
Demographic $\times$ range fixed effects	No	Yes	Yes	Yes	Yes
Year $\times$ range fixed effects	No	No	Yes	No	Yes

- Evidence for same three memory effects: basic, relative experience effect increases odds (row 1); U-shaped relative temporal context with both primacy and recency (row 2 and 3); relative numerical dissimilarity decreases odds (row 4)
- Interaction of cue with relative database frequency

Elicited Density Forecasts: Inconsistency between Point Forecasts and Forecast Densities

- Think of an elicited point forecast as a “weighted” density-based average:

$$\mathbb{E}(\pi_{t+1}|\pi_{t,\mathcal{R}}) = \sum_j w_{jt} \cdot \underbrace{\Pr(E_j|\pi_{E_j,t}) \cdot \pi_j}_{\text{range } j \text{ expected value}} \quad (1)$$

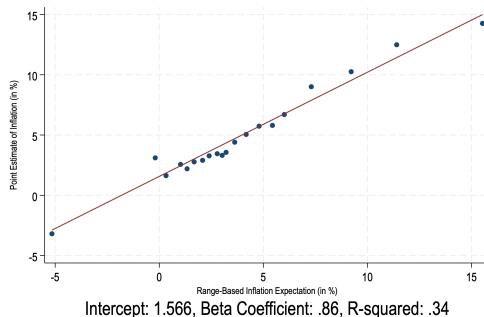
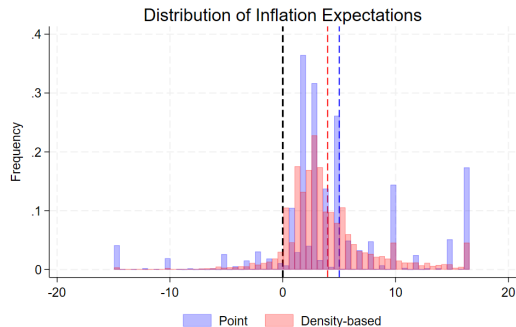
Under any rational model, $w_{jt} = 1$. Not with selective memory: $w_{jt} < 1$ if range π_j is “forgotten” when forming point expectation but overweighted when cued in density elicitation.

- Point forecasts are above density ones if experiences are more similar to higher π_j :

$$\underbrace{\mathbb{E}(\pi_{t+1}|\pi_{t,\mathcal{R}})}_{\text{point expectation}} \approx \underbrace{\mathbb{E}(\pi_{t+1}|DF)}_{\text{density-based expectation}} + \sigma \cdot q \cdot \mathbb{E}[\pi_j \cdot (\bar{d} - d_j) | DF].$$

Selective memory ($\sigma > 0$): systematic discrepancy across people and based on changing inflation. Disjunction fallacy (Fischhoff et al. 1978) - how events are described.

Elicited Point Forecasts > Density Based Forecasts



- ▶ Point forecasts exceed density-based forecasts.
- ▶ State-dependence: Point expectations exhibit stunted sensitivity to density-based one. Closing of gap with higher forecasts.
- ▶ Density-based forecasts more sensitive to time-varying inflation due to selective recall: low-inflation ranges more overweighted for low inflation, weight shifts to high-inflation ranges for high inflation. Point expectations more anchored to slow-moving average experience. Gap term shrinks for more unfamiliar high inflation.

Deflation Experience and the Forecast Gap

Point forecast minus density-based mean (SCE)

	(1)	(2)	(3)	(4)
Deflation experiences (share)		10.312*** (1.948)		6.671*** (1.826)
Numeracy score	-0.502*** (0.030)	-0.544*** (0.031)	-0.316*** (0.026)	-0.351*** (0.028)
Age	0.007*** (0.002)	0.034*** (0.006)	0.003 (0.002)	0.021*** (0.006)
Constant	3.180*** (0.195)	0.824* (0.467)	2.437*** (0.170)	0.944** (0.447)
Demographic controls	No	No	Yes	Yes
Observations	138,959	138,959	137,551	137,551
R^2	0.024	0.026	0.038	0.039

Deflation share covers lifetime experiences since age 16. Numeracy counts correct answers to the survey's numeracy questions. Two-way clustered standard errors (forecast date and cohort) in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

- ▶ A one-standard-deviation higher deflation share is associated with a 0.3 pp wider gap, about 30% of the average gap.
- ▶ Consistent with selective recall: density questions cue deflation memories neglected in point forecasts.

Similarity and the Point–Density Gap

One-year-ahead point forecasts (SCE)

	(1)	(2)	(3)	(4)
Density-based mean	1.094*** (0.024)	1.078*** (0.029)	0.981*** (0.024)	0.919*** (0.024)
High-inflation similarity	1.49e-03*** (1.72e-04)	1.46e-03*** (3.08e-04)	1.28e-03*** (1.31e-04)	3.533e-04 (2.33e-04)
Similarity ²		1.17e-07*** (4.06e-08)		-9.88e-08*** (3.69e-08)
Similarity ³		-7.647e-13 (1.79e-11)		7.16e-11*** (1.43e-11)
Constant	0.873*** (0.102)	0.858*** (0.111)	1.258*** (0.090)	1.455*** (0.086)
Observations	140,053	140,053	136,794	136,794
Year fixed effects	No	No	Yes	Yes
Individual fixed effects	No	No	Yes	Yes
R^2	0.3458	0.3470	0.6074	0.6085
Adjusted R^2	0.3458	0.3470	0.5556	0.5568

Similarity measures how closely high-inflation ranges match personal experiences.

Survey-weighted regressions. Standard errors clustered at the cohort-year level, in parentheses.

- ▶ Similarity controls bring the density-forecast coefficient *closer to one* (from 0.86).
- ▶ Familiar high-inflation ranges are associated with a larger gap (cols. 1 and 3). The gap narrows when probability shifts toward unfamiliar high inflation.

Summary of Results

- ▶ Well-known regularities in selective recall – primacy, recency and similarity – explain household expectation formation about inflation.
- ▶ Strong state $\times$ cohort dependence: changing inflation cues different experiences across cohorts, producing different responses to the same shock.
- ▶ Beliefs are not invariant to forecasting task: point forecasts and density-implied means exhibit systematic, state- and experience-dependent discrepancies, consistent with selective recall.

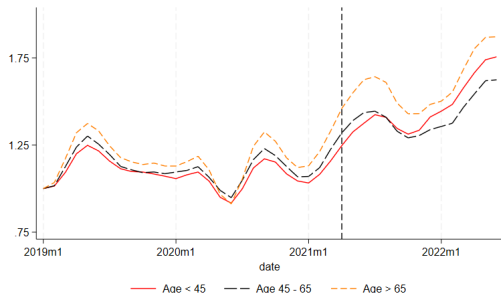
Next:

Quantify the role of selective recall in state-dependent de-anchoring, especially among the elderly, and subsequent re-anchoring.

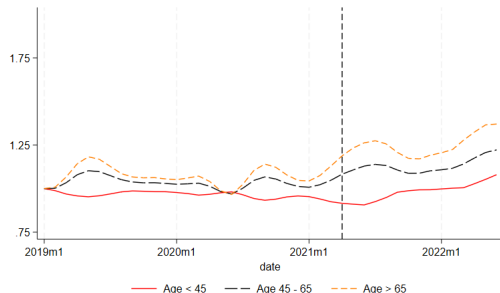
Two validation exercises: now-casting, and external validation.

De-Anchoring of Inflation Expectations: Importance of Similarity

Model Comparison



(1) Selective Memory Model



(2) Malmendier and Nagel (2016) Model

- ▶ State-dependent cues play quantitatively important role for de-anchoring, especially for stronger initial deanchoring among older households.
- ▶ Experience-based learning can capture level differences in expectations across cohorts (see Malmendier and Nagel (2016)), but no meaningful experience-based instability.
- ▶ Combination of slowly evolving databases (Malmendier and Nagel (2016)) with time-varying cues and selective retrieval produces level differences *and* instability in beliefs.

Re-Anchoring of Inflation Expectations: Out-of-Sample Evaluation



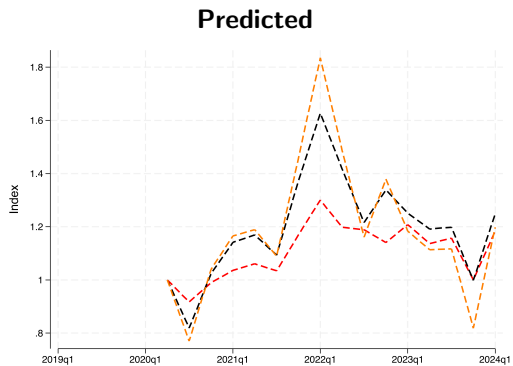
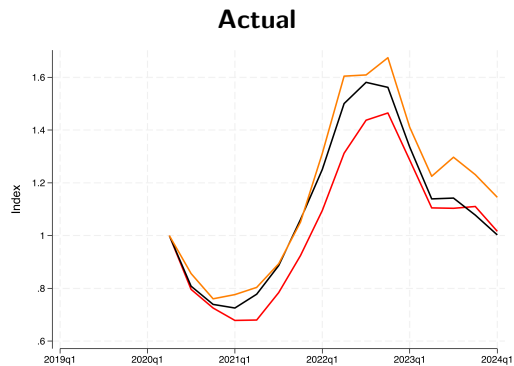
- ▶ Selective memory model: Similarity key to produce re-anchoring of expectations for inflation decline; experience-based learning model too rigid to generate re-anchoring.
- ▶ A tool for monetary policy? Generate real-time inflation expectations when otherwise not available, given current inflation rate and history, and age distribution of consumers.

International External Validation

- ▶ To assess external validity of selective recall mechanism, ideally estimate main specifications on international inflation expectations micro data.
 - ▶ Problem: Very short times series (ECB CES: January 2020), further reduction in variation due to limited age information (e.g. brackets)
- ▶ Instead, demanding external validation exercise:
Assume US coefficients are universal – can we predict other countries' expectations dynamics during the inflation surge, in particular rapid rise for the older cohorts?

Yes, robust evidence across countries for state-dependent expectations and experience-based de-anchoring.

International External Validation: EU (Euro Area)



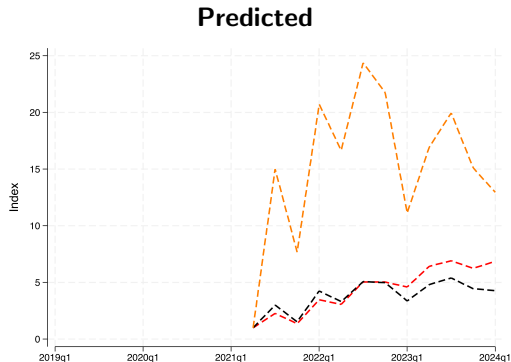
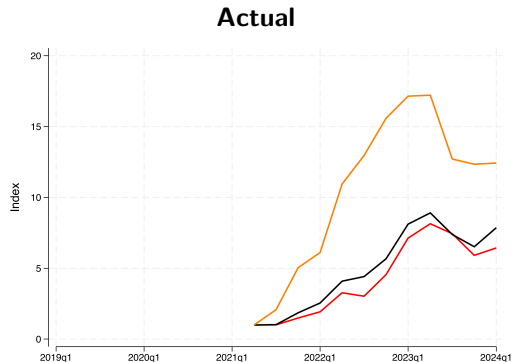
Ages 18–49

Ages 50–70

Ages 71+

ECB Consumer Expectations Survey. Index: 2020Q2 = 1.

International External Validation: Japan



Under 45

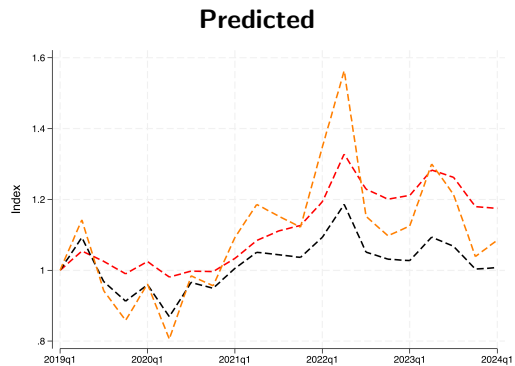
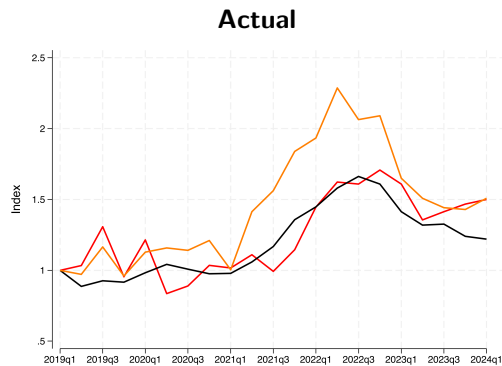
Ages 45-64

Ages 65+

Morning Consult ICIE. Index: 2021Q2 = 1.

Sharpened experience-based test: older cohorts with exposure to high inflation de-anchor first, younger cohorts respond only as they experience high inflation, consistent with memory.

International External Validation: Canada



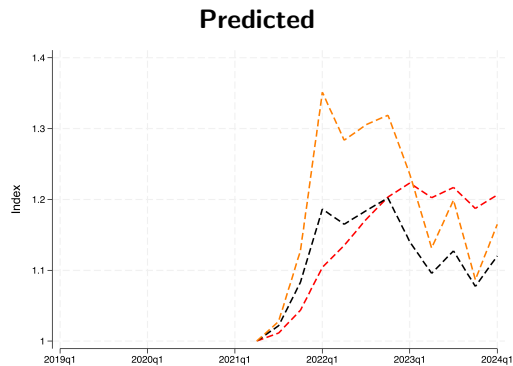
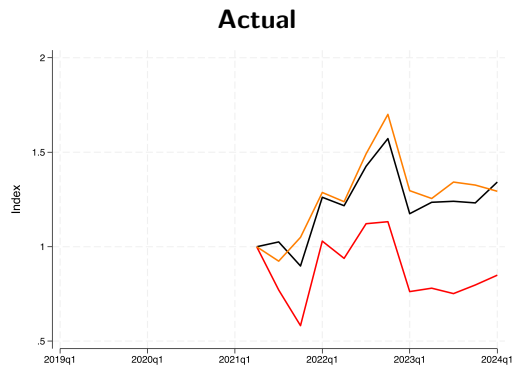
Under 45

Ages 45-64

Ages 65+

Canadian Survey of Consumer Expectations. Index: 2019Q1 = 1.

International External Validation: Australia



Under 45

Ages 45-64

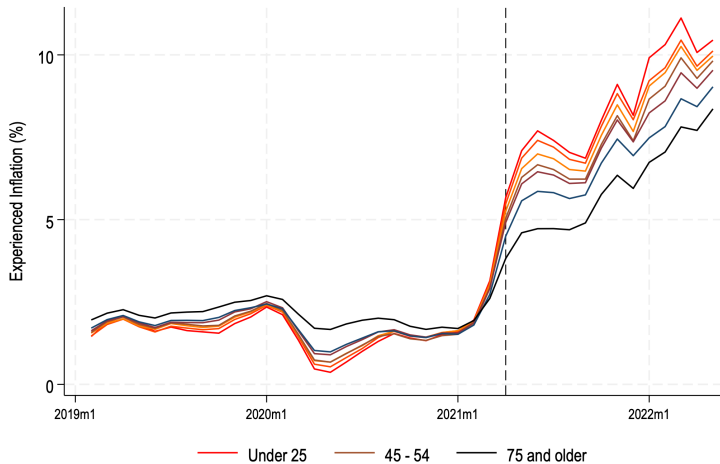
Ages 65+

Morning Consult ICIE. Index: 2021Q2 = 1.

Conclusion

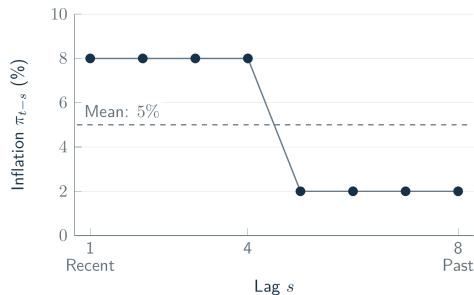
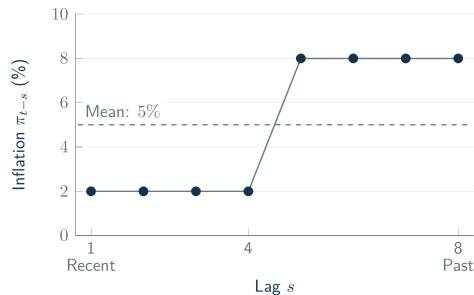
- ▶ Experiences matter for expectations formation. Highlight new mechanism in inflation expectations context: laws of memory and selective recall.
- ▶ Expectations are non-rational but not mechanically adaptive. Interaction of experiences and cues. Important for thinking about rigidity.
- ▶ Policy relevance:
 - ▶ Policy communication conveys information – but also acts as memory cue, and future relevant experience. Cue may lead to recall of episodes of instability, and destabilize beliefs.
 - ▶ A theory of optimal communication about inflation is needed. Optimal policy under rationality may be suboptimal in memory and recall models.

Extra Slides



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Extra Slides



$$\text{Primacy: } \beta_1 \cdot \text{cov}_t \left(\frac{s^2}{a^2}, \pi_{t-s} \right) > 0$$

$$\text{Recency: } \beta_2 \cdot \text{cov}_t \left(\frac{s}{a}, \pi_{t-s} \right) < 0$$

- ▶ Positive correlation reflects primacy: older inflation experiences are higher
- ▶ Negative correlation reflects recency: more recent inflation experiences are higher

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Both database patterns imply higher current inflation expectations.