Discussion of "Learning from Inflation Experiences" by Ulike Malmendier and Stefan Nagel

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Summary

- What explains age-dependent inflation forecasts in the Michigan survey?
- Age differences are due to *learning from experience*
  - adaptive learning with
    1. gain that depends on age,
    2. data sample since birth
- Consistent with "Depression Babies", Malmendier & Nagel (2010): stock return forecasts in the UBS/Gallup survey depend on “stock returns experienced over the lifetime” computed with weighing scheme which is approximately equal to weighing scheme in adaptive learning with age-dependent gain
Discussion

- Review the raw facts
- Alternative explanation: differences in consumption bundles
- Learning specification and fit
- Reasons why these age-differences matter for macro
Raw facts on age-dependent Inflation Forecasts

- Michigan survey asks households about age & inflation expectations
- Vissing-Jorgensen (NBER Macroannual 2003):
  - check whether inflation forecasts are age-dependent
  - regressions of expected inflation rates on year dummies and on age interacted with year dummies,
  - find significant age-coefficient for all years 1980-1987
(a) Expected Inflation, Next 12 Months
Alternative explanation – differences in consumption bundles

Hypothesis: inflation experience depends on consumed bundle

  Michigan survey asks about past inflation rate on items bought
  In early 1980s: young households report lower past rate than old households in early 1980s.
  Goes the wrong way.

- This paper checks with experimental CPI index data for the elderly
  Cannot explain age-dependence in expectations
Learning from Experience

- recursively estimate AR(1) dynamics, with more weight on recent data

\[ \pi_t = \alpha + \phi \pi_{t-1} + \eta_t \]

- benchmark: constant gain learning
  - geometrically decaying weights for past observations
  - captures time varying parameters \( \alpha, \phi \) and \( \text{var}(\eta_t) \)
  - often used to describe structural change
  - e.g., 1980s changes in inflation persistence (and comovement with consumption), Piazzesi & Schneider 2006 NBER MA

- Here: learning from experience
  - adaptive learning with
    (i) age-dependent gain and (ii) data sample since birth
  - gain = const/age (why?)
    young have higher gains/faster decay
    young use shorter sample
Estimation strategy

- survey forecasts $\pi_t^e (\text{age})$
- adaptive learning algorithm generates forecast
  $$\tau_t (\text{age, past data, gain parameter } \theta)$$
- how to fit the gain parameter $\theta$?
- parsimonious approach (not in paper): minimize sum of squared
  $$\pi_t^e (\text{age}) - \tau_t (\text{age, data, } \theta)$$
- paper adds time dummies: minimize sum of squared
  $$\pi_t^e (\text{age}) - \beta \tau_t (\text{age, data, } \theta) - \delta_t$$
  choses $\beta$, $\theta$ and $\delta_t$ (less parsimonious, why?)
- $\delta_t$ is flexible, common component of inflation forecasts
- success: matching age-specific deviations from $\delta_t$, not levels of inflation forecasts
With learning from experience, expect to see

- during inflation episodes:
  experience of the young is now dominated by high inflation
  → young expect more inflation
(a) 1-year expectations
With learning from experience, expect to see

- during inflation episodes:
  experience of the young is now dominated by high inflation
  → young expect more inflation
  data: yes!

- after inflation episodes:
  young overweight recent observations more
  young revise expectations down faster
(a) 1-year expectations

![Graph showing 1-year expectations over time with different age groups indicated by lines and markers.](image)

- Red line: Age < 40 fit
- Blue dashed line: Age > 60 fit
- Red triangles: Age < 40 actual
- Blue circles: Age > 60 actual
With learning from experience, expect to see

- during inflation episodes:
  experience of the young is now dominated by high inflation
  $\implies$ young expect more inflation
  data: yes!

- after inflation episodes:
  young downweigh past observations more
  young revise expectations down faster
  data: not really
Why do age-dep. inflation expectations matter for macro?

- Piazzesi & Schneider 2011 "Inflation and the Price of Real Assets"
  OLG model, households can save in three assets: houses, stocks & nominal bonds
- Households save/borrow at the same nominal rate
  have different inflation expectations \(\rightarrow\) different perceived real rates
- Early 1980s:
  Young households expect more inflation
  perceive lower real rates,
  \(\rightarrow\) borrow & buy houses
  Old households are happy to lend
- Generally higher expected inflation: stocks less attractive
- Explains higher borrowing/lending, house price boom together with drop in stock prices (negative comovement in house & stock prices)