Inflation Expectations

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Forward not backward looking, but interlinked

How long are inflation expectations anchored?
- Belief: Anchored = inflation is temporary and returns to target inflation
- Allows central bank to smooth out shocks
  ⇒ Resilience (bounce back)
- Overstretch it and anchor breaks
  ⇒ Resilience breaks (Amplification)

High cost of “re-anchoring”
- Rebuilding trust/reputation
- Volcker recession
Higher order **beliefs coordination**
(convention, common knowledge (David Lewis))

- **Disagreement**
- **Uncertainty** what others’ belief (about others’ beliefs ...)

Source: NYFed
Inflation Anchor: Uncertainty and Disagreement

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- Strengthening the inflation anchor:
  - Focal point on anchor
  - + no other focus point:
    creates confusion/uncertainty about alternative beliefs
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- Trust in/reputation of central bank
  - Policy mistake vs. exogenous/geopolitical shock
  - New unclear monetary policy regime
    ⇒ coordinating to CK beliefs is difficult
What drives citizens’ inflation expectations?

- New Keynesian Perspective:
  - Staggered price adjustment + strategic complementarities
  - Salience of certain prices?
    - Milk, gasoline, chocolate (in Germany)
    - Why do energy prices carry so much weight?
      - Geopolitical situation

- Why are certain prices flexible others not?
1. What sources do you use to form your inflation expectations?
   a. Media
   b. Professional forecasters
   c. Government
   d. Personal shopping experience

2. What is your best guess about the annual inflation rate that the Federal Reserve tries to achieve on average over long periods of time?
   a. 0%
   b. 2%
   c. 3%
   d. 5%

3. What is the price of gas per gallon today in the US?
   a. $2.53
   b. $3.53
   c. $4.23
   d. $4.53
INFLATION EXPECTATIONS

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INFLATION AND INFLATION EXPECTATIONS

Sources: U.S. Bureau of Labor Statistics; University of Michigan
myf.red/g/Ljpc
WHY SO MUCH TALK ABOUT INFLATION EXPECTATIONS?

Inflation expectations play a central role in almost all key economic decisions

- Prices and wages (Phillips curve): \( \pi_t = E_t \pi_{t+1} + \gamma \cdot gap_t \)
- Consumption decisions (Euler eqtn): \( c_t = E_t c_{t+1} - \sigma [i_t - E_t \pi_{t+1}] \)
- Investment decisions (Tobin’s \( Q \)): \( Q_t = MPK / [i_t - E_t \pi_{t+1} + \delta] \)
- Asset prices: \( P_{t}^{stock} = E_t D_{t+1} / (i_t - E_t \pi_{t+1}) + E_t P_{t+1}^{stock} \)
- Central bank decisions (Taylor rule): \( i_t = \phi_\pi E_t \pi_{t+h} + \phi_x E_t x_{t+h} \)
• Alan Greenspan (1994): “I am not saying what [inflation expectations] is a function of. We know it’s a very difficult issue, but that is the key variable. It’s important, but just because we can’t make a judgment as to what these driving forces are in an econometric sense doesn’t mean that it’s not real.”
INFLATION EXPECTATIONS: STATE OF KNOWLEDGE

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• Ben Bernanke (2007): “How should we measure inflation expectations, and how should we use that information for forecasting and controlling inflation? I certainly do not have complete answers to those questions, but I believe that they are of great practical importance. … Information on the price expectations of businesses--who are, after all, the price setters in the first instance--… is particularly scarce.”
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• Janet Yellen (2016): “Perhaps most importantly, we need to know more about the manner in which inflation expectations are formed and how monetary policy influences them.”
HOW DO AGENTS FORM THEIR EXPECTATIONS?

- Frameworks:
  - Non-rational expectations (adaptive)
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- Frameworks:
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HOW DO AGENTS FORM THEIR EXPECTATIONS?

Frameworks:

- Full-information rational expectations (FIRE)
- Sticky-information
- Noisy information
- Bounded rationality
- Learning
- Non-rational expectations (adaptive)

Rational Expectations models subject to frictions/costs.
Rationality but no knowledge of the economy structure.
MEASURING INFLATION EXPECTATIONS

- Are rational expectations consistent with micro-level evidence provided by survey data?
  - Pervasive deviations from FIRE in survey data
  - FIRE may be a good proxy in the long run
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  - Pervasive deviations from FIRE in survey data
  - FIRE may be a good proxy in the long run
- Vast literature but some macroeconomists are skeptical…

Prescott (1977): “Like utility, expectations are not observed, and surveys cannot be used to test the rational expectations hypothesis. One can only test if some theory, whether it incorporates rational expectations or, for the matter, irrational expectations, is or is not consistent with observations”
Whose expectations should we use?
HOUSEHOLDS (AND FIRMS) ARE DIFFERENT
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- Behavioral response to policy changes may be different from predictions of full-information rational expectations (FIRE) models
Professionals: Demand shock & a Phillips curve
HOUSEHOLDS AND ECONOMIC ACTIVITY

Households: Supply shock & stagflationary view
PROFESSIONAL FORECASTERS AND ECONOMIC ACTIVITY

USA

Germany

Italy

Spain

France

Netherlands

New Zealand
HOUSEHOLDS AND ECONOMIC ACTIVITY

USA | Germany | Italy | Spain

France | Belgium | Netherlands

Expected inflation vs. Expected output growth for different countries.
INFLATION EXPECTATIONS AND ECONOMIC ACTIVITY

Willingness to spend declines as inflation increases

Source: Cleveland Fed
HOUSEHOLDS (AND FIRMS) ARE DIFFERENT

- Interpretation of shocks is different
  - The public believes in stagflation
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WHAT DRIVES INFLATION EXPECTATIONS

Households can confuse relative prices with inflation
MSC tracks gas prices but SPF does not.
COVID CRISIS

MSC tracks gas prices but SPF does not... repeat of 2011-2012?

EPOP is at 58.5% (roughly the level at the trough of the Great Recession)
COVID CRISIS

MSC tracks gas prices but SPF does not

EPOP is low, inflation expectations are anchored
HOUSEHOLDS (AND FIRMS) ARE DIFFERENT

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  - Price of gasoline is a strong predictor of HH inflation expectations
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Little knowledge about the inflation target in the U.S. (sign of success?).
People’s perceptions about the inflation target

Little knowledge about the inflation target in the U.S. (sign of success?). Policy announcements (forward guidance, quantitative easing, average inflation targeting, etc.) are unlikely to move households’ inflation expectations.
Breaking through the Veil of Inattention

On August 27th, 2020, Chairman Powell announced Average Inflation Targeting at Jackson Hole annual conference:

“If inflation runs below 2% following economic downturns but never moves above 2% even when the economy is strong, then over time inflation will average less than 2%. Households and businesses will come to expect this result, which means that inflation expectations would tend to move below our inflation goal and bring realized inflation down. Therefore, following periods when inflation has been running below 2%, appropriate monetary policy will likely aim to achieve inflation moderately above 2% for some time.”
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Coibion et al. (2020):
- Did households hear about the announcement?
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- If we explain to households what AIT means clearly and concisely, do their expectations change relative to IT?
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  - The public believes in stagflation
- High sensitivity to salient prices
  - Price of gasoline is a strong predictor of HH inflation expectations
- Low attention to monetary and fiscal policy
  - Most households and managers don’t know the inflation targets
- Behavioral response to policy changes may be different from predictions of full-information rational expectations (FIRE) models
Thought experiment: $ConsumerSpending_h = b \times \pi_h^e + \text{controls} + \text{error}$
THE SCIENCE OF INFLATION EXPECTATIONS

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Main issue: endogeneity of expectations
The Science of Inflation Expectations

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Solution: run a randomized control trial
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- Track participants’ choices (consumption)
- Compare control group to treatment group $\Rightarrow$ causal effect
**THE SCIENCE OF INFLATION EXPECTATIONS**

Examples of treatments:

- Inform about the inflation target
- Inform about inflation forecast
- Inform about future policy rates (forward guidance)
- Inform about fiscal policy
- …
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None of these should work in full-information rational expectations (FIRE) because treatments provide publicly available information.
WILL HIGHER INFLATION EXPECTATIONS GENERATE A CONSUMPTION BOOM?

Treatment: Forward guidance

\[ \text{ConsumerSpending}_h = b \times \pi^e_h + \text{controls} + \text{error} \]
Will higher inflation expectations generate a consumption boom?

Treatment: Forward guidance

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<th>Log(Spending on food)</th>
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Raising inflation expectations stimulates spending on nondurables
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Raising inflation expectations stimulates spending on nondurables … and lowers spending on durables … and can backfire
Firms’ inflation expectations are between households’ and professional forecasters’.
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  - Few measures of real-time beliefs of firms and other price setters
  - How to rule out many alternative deviations from FIRE
    - Impose discipline on non-FIRE models
    - Derive testable implications and test them
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- Prepare sustained information campaigns