

New Evidence on Inflation Expectations Anchoring and the Risk of Deflation

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Disclaimer

The views expressed here are ours alone and do not necessarily reflect the official views of the Federal Reserve Bank of New York, the Federal Open Market Committee, or the Federal Reserve System.



Introduction

- Long-run inflation expectations (IE) anchored at the central bank's goal are viewed as a measure of successful monetary policy.
- Concerns about potential IE un-anchoring after spell of unusually high inflation
- In environment with monetary tightening, consumers weigh risks of inflation and recession



What we do

- We re-assess the extent to which IE are anchored using a “strategic survey” approach as in our JME (forthcoming) paper

Main advantages:

- Causal interpretation
 - Maps directly into the current policy debate
-
- Implemented strategic survey in May 2022, after previously fielding it in July 2019, April 2021 and August 2021



What we find

- Overall, we find that long-run IE continue to be essentially as well anchored as in the Spring-summer of 2021 and summer of 2019.
- Results in May 2022 show asymmetry has shifted since 2021: Long-run IE have become more susceptible to drift *downward* than upward.



What we find (continued)

- At same time, we see an *increase in polarization* with a sharp *rise in the share of consumers expecting deflation* at the medium- and longer-term horizons. Similarly, we see an increase in the average probability of deflation.
- We consider several hypotheses that could explain this rise
- We find that respondents who expect deflation in three years' time also expect some mean reversion in specific price changes at that horizon, but do not otherwise have a more pessimistic economic outlook for the next three years.



Survey of Consumer Expectations (SCE)

- Produced by the Federal Reserve Bank of New York since June 2013
- Key features:
 - Monthly
 - Internet-based
 - ~1,300 household heads
 - Nationally representative
 - Rotating panel (12 months)
 - Focuses on expectations
- The SCE has been used extensively for policy and research



Survey of Consumer Expectations (SCE)

- The SCE consists of a “core survey” and “special surveys.”
- We focus here on the core survey and four special surveys conducted in:
 - July 2019 (with 1,000 respondents)
 - April 2021 (with 1,024 respondents)
 - August 2021 (with 2,209 respondents)
 - May 2022 (with 2,218 respondents)



Survey of Consumer Expectations (SCE)

We elicit short-, medium- and long-run IE point predictions

- Short-run inflation IE = 1-year ahead:

*“What do you expect the rate of [inflation/deflation] to be **over the next 12 months?**”*

- Medium-run IE = 3-year ahead:

*“What do you expect the rate of [inflation/deflation] to be **over the 12-month period between May 2024 and May 2025?**”*

- Long-run IE = 5-year ahead:

*“What do you expect the rate of [inflation/deflation] to be **over the 12-month period between May 2026 and May 2027?**”*



Elicitation of probabilistic beliefs

We also collect density forecasts – elicit probability density distribution over several pre-determined bins

In your view, what would you say is the percent chance that, **over the next 12 months, ...**

the rate of inflation will be 12% or higher

the rate of inflation will be between 8% and 12%

the rate of inflation will be between 4% and 8%

the rate of inflation will be between 2% and 4%

the rate of inflation will be between 0% and 2%

the rate of deflation will be between 0% and 2%

the rate of deflation will be between 2% and 4%

the rate of deflation will be between 4% and 8%

the rate of deflation will be between 8% and 12%

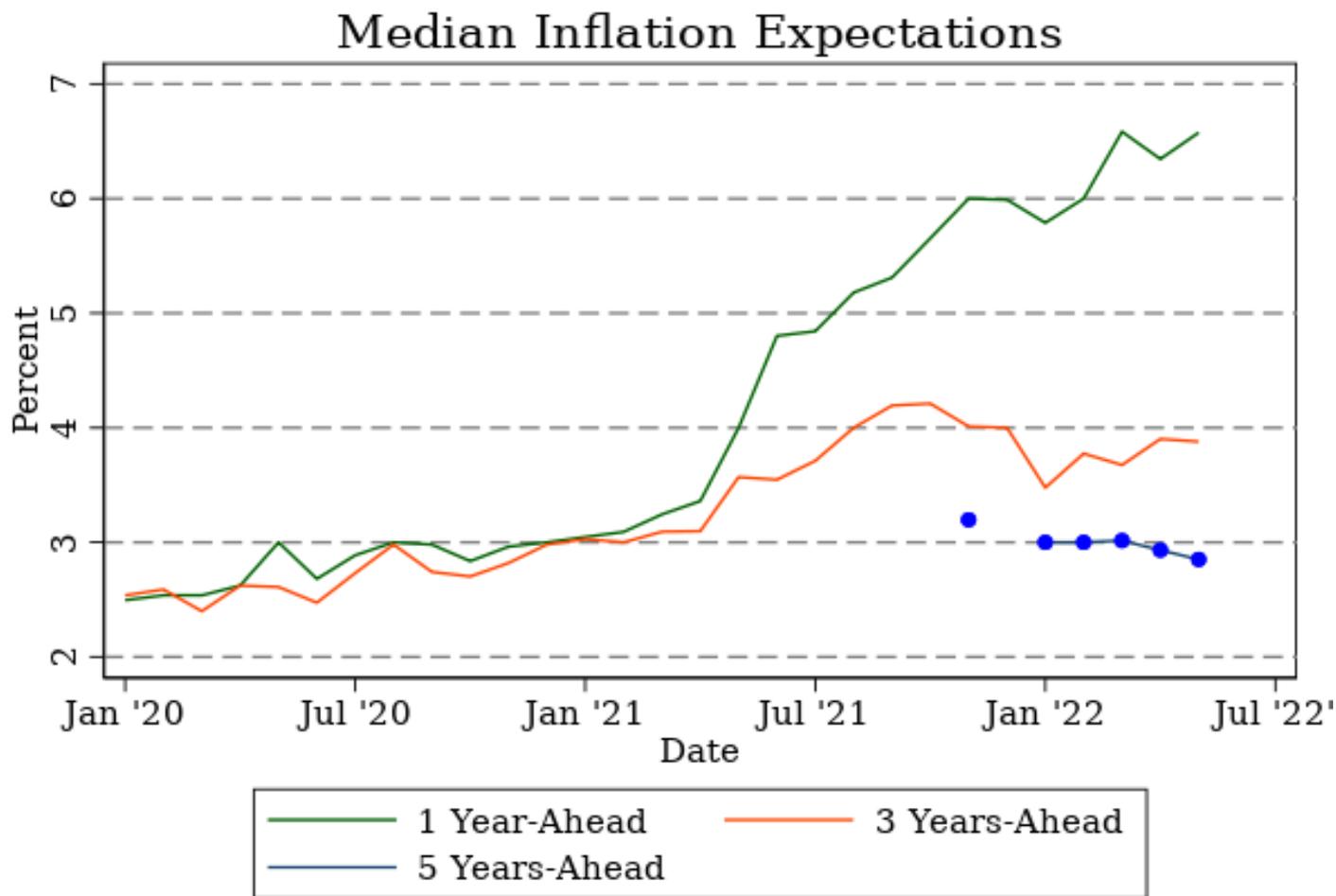
the rate of deflation will be 12% or more

% Total

Collected monthly in SCE Core survey at short- and medium term; more occasionally at long-term.



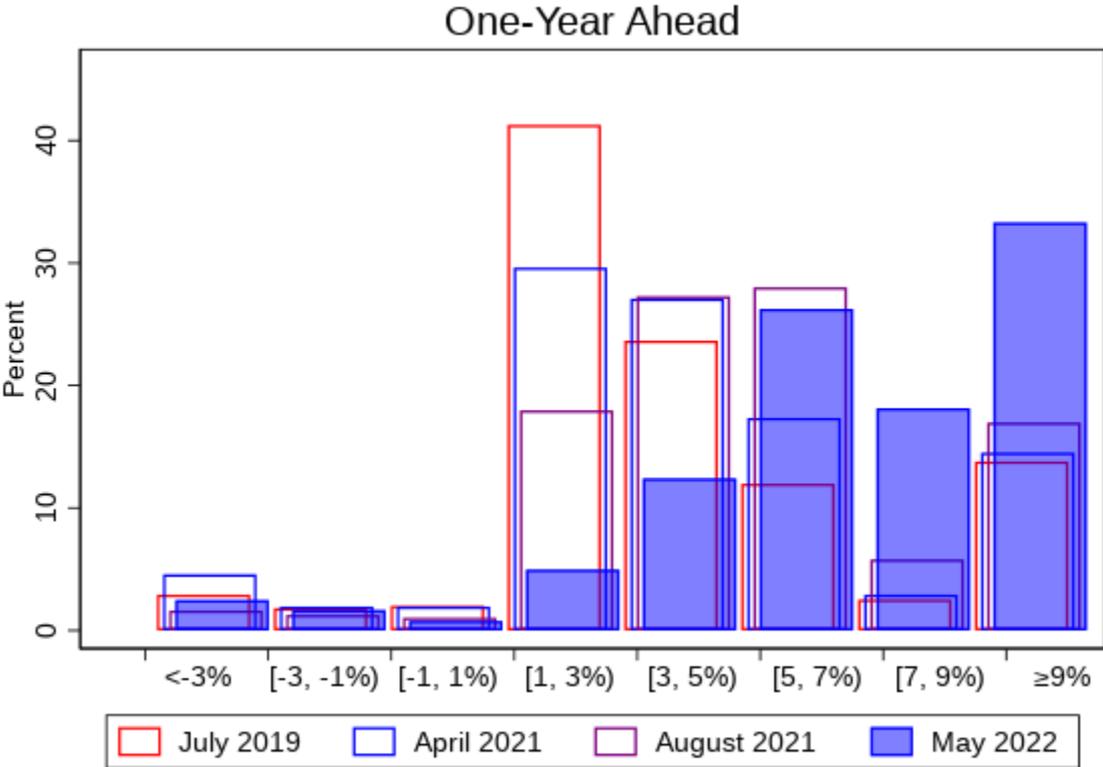
Recent Trends in Inflation Expectations



Source: SCE monthly core survey January 2020-May 2022



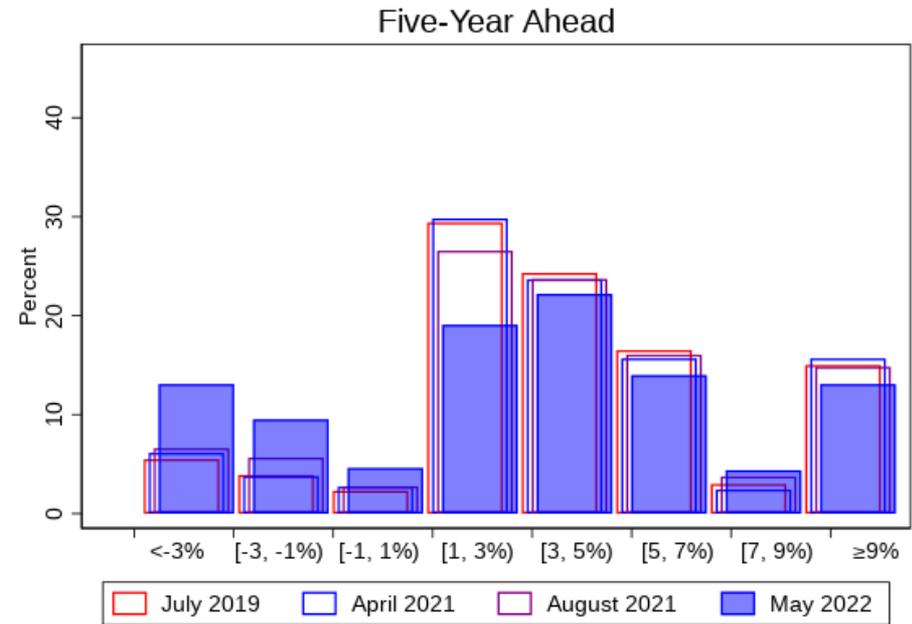
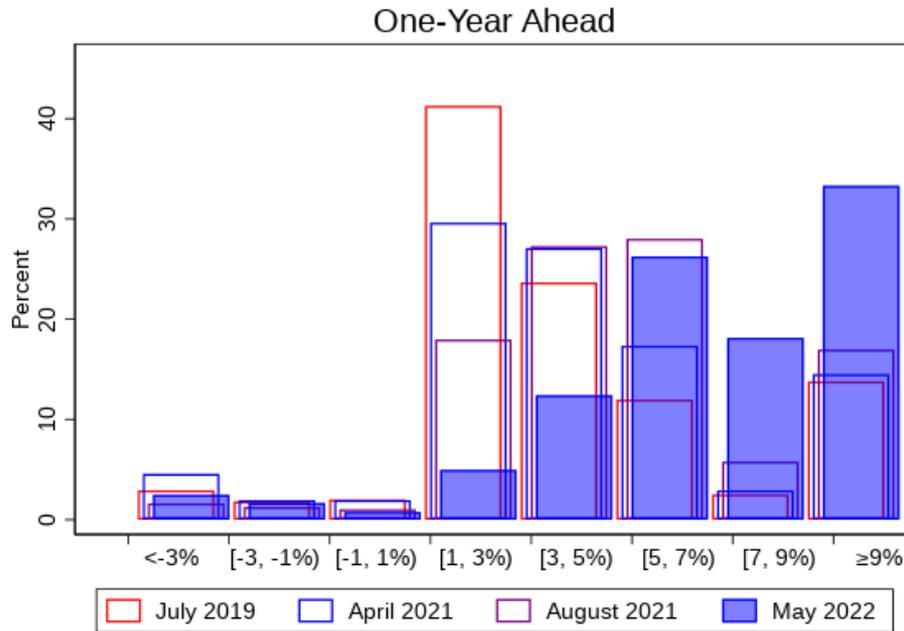
Distributions of Short-Run & Long-Run Inflation Expectations



- The distribution of short-run IE shifted significantly to the right

Source: SCE Special surveys July 2010, April 2021, August 2021, May 2022

Distributions of Short-Run & Long-Run Inflation Expectations



- The distribution of short-run IE shifted significantly to the right
- In contrast, the distribution of long-run IE remained remarkably stable – although see recent rise in share expecting deflation

Source: SCE Special surveys July 2010, April 2021, August 2021, May 2022

The Strategic Surveys

- A strategic survey is an experimental approach that enables causal identification through controlled exogenous variation.
- Two main characteristics:
 - Respondents are asked to participate in various natural thought experiments in difficult-to-observe environments.
 - Survey questions are designed specifically to identify cleanly a phenomenon of interest.
- Research question:
 - Could prolonged spells of unusually high or low inflation risk unanchoring long-term IE?



The Design of the Inflation Shock Experiment

- Three steps:
 - 1) Elicit respondent's *prior* 5-year ahead IE.
 - 2) Treat respondent.
 - 3) Elicit *revisions* in respondent's 5-year ahead IE.
- Design:
 - “2 by 2”: Two treatments variables varied separately & exogenously.
 - “Within subject”: Same respondent is exposed to all 4 treatments, so treatment effect can be evaluated at individual level.

Treatments in the Inflation Shock Experiment

- *“What if in **each of the past three years** inflation had been **lower** than it actually was **by 1 percent** each year.”*
- *“**Under this scenario**, would the rate of inflation you expect for the 12-month period between **May 2026 and May 2027** be different than the [X] percent you just reported?”*

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- *“**Under this scenario**, would the rate of inflation you expect for the 12-month period between **May 2026 and May 2027** be different than the [X] percent you just reported?”*

| 2 by 2 Design | | |
|-------------------|--------------|---------------|
| Sign of shock | 1% lower | 1% higher |
| Duration of shock | Past 3 years | Past 10 years |

- Exogenous variation enables causal identification of effect of treatment variables (shock sign and duration) on long-run IE.



Treatment Effects in Inflation Shock Experiment

| | | July 2019 (N=1000) | | April 2021 (N=342) | | August 2021 (N=751) | | May 2022 (N=2218) | |
|-----------------------------------|------------------|----------------------------|--------------|----------------------------|--------------|----------------------------|--------------|----------------------------|--------------|
| | | Sign of inflation shock | | Sign of inflation shock | | Sign of inflation shock | | Sign of inflation shock | |
| | | 1% Lower | 1% Higher | 1% Lower | 1% Higher | 1% Lower | 1% Higher | 1% Lower | 1% Higher |
| Duration of inflation shock | Past 3 years | -0.33 | 0.23 | | | | | | |
| | Past 10 years | -0.44 | 0.35 | | | | | | |

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| | | Sign of inflation shock | | Sign of inflation shock | | Sign of inflation shock | | Sign of inflation shock | |
| | | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% |
| | | Lower | Higher | Lower | Higher | Lower | Higher | Lower | Higher |
| Duration of inflation shock | Past 3 years | | 0.23 | | | | | | |
| | Past 10 years | | 0.35 | | | | | | |

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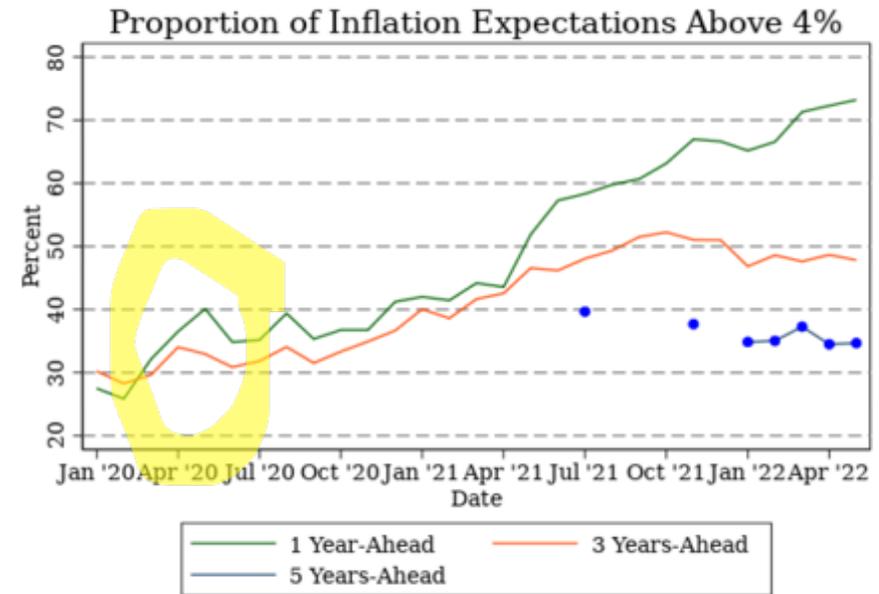
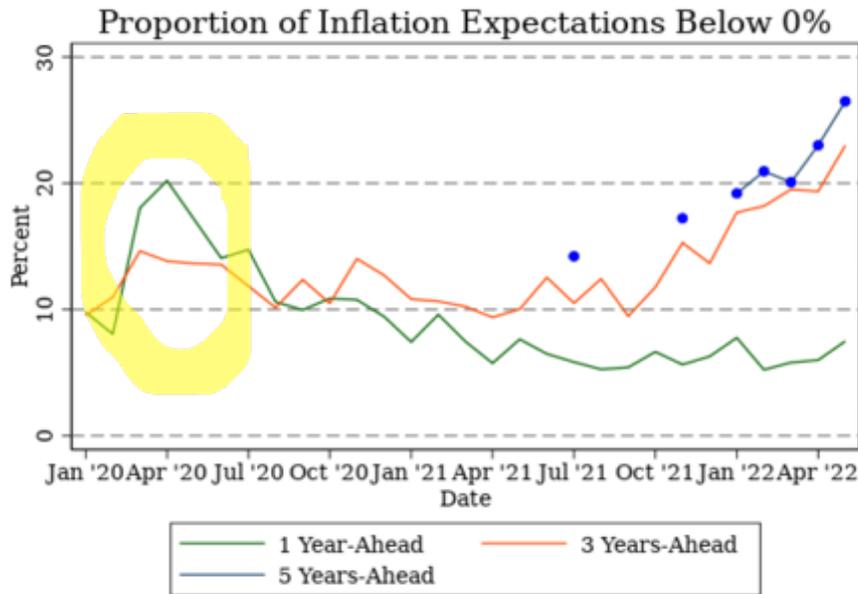
- Direction of average treatment effects is sensible.
- Magnitude of average treatment effects is relatively modest.
- Treatment effects are asymmetric: Larger revisions in the negative than in the positive inflation treatments

Treatment Effects in Inflation Shock Experiment

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| | | 1% Lower | 1% Higher | 1% Lower | 1% Higher | 1% Lower | 1% Higher | 1% Lower | 1% Higher |
| Duration of inflation shock | Past 3 years | -0.33 | 0.23 | -0.21 | 0.27 | -0.21 | 0.33 | -0.31 | 0.18 |
| | Past 10 years | -0.44 | 0.35 | -0.37 | 0.42 | -0.30 | 0.45 | -0.39 | 0.36 |

- Magnitude of average treatment effects remains similar.
- Asymmetry is reversed: In 2021, long-run IE appear more susceptible to upward (rather than downward) revisions.
- Asymmetry reversed again in May 2022 to downside.

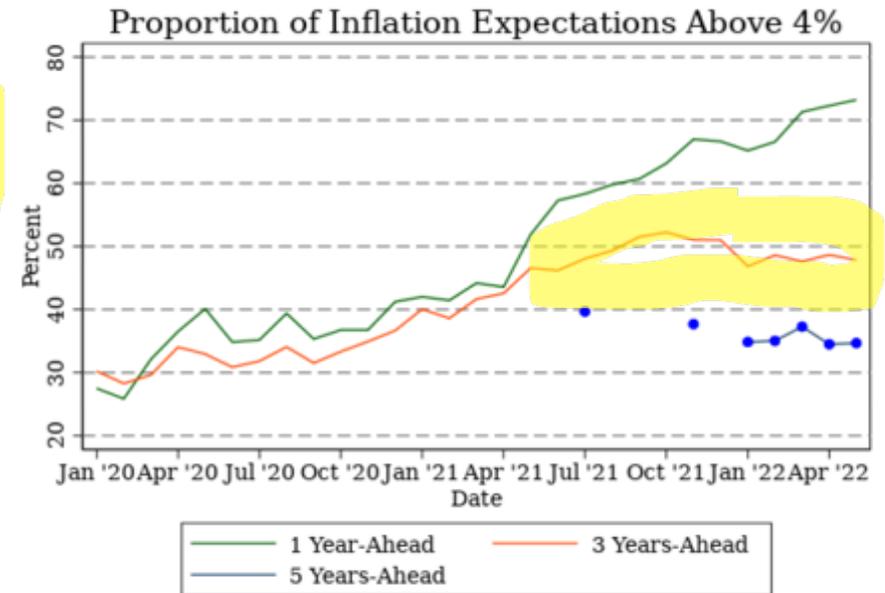
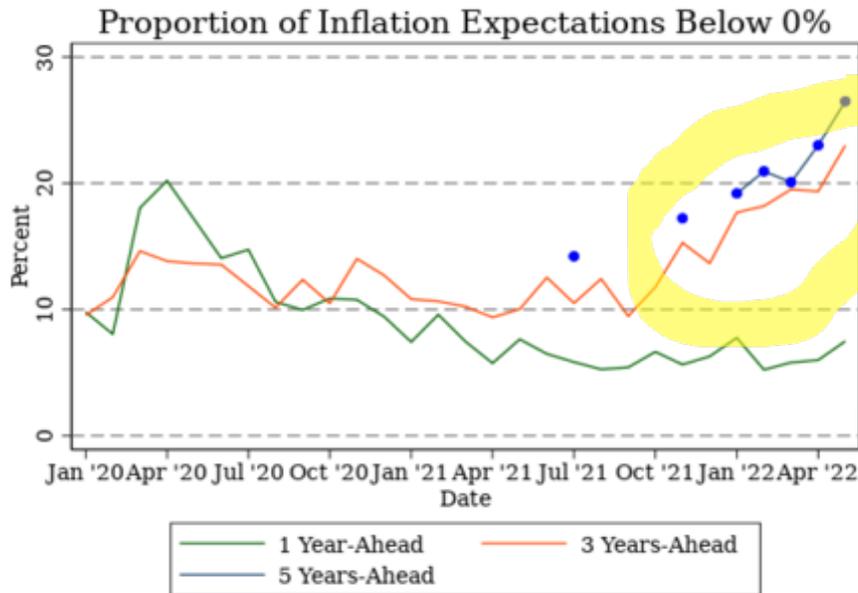
However: Seeing greater polarization in inflation expectations



ST

- Consumers' short-term IE became more divergent at the onset of the pandemic
- Lasted about six months
- Since then see shift to right

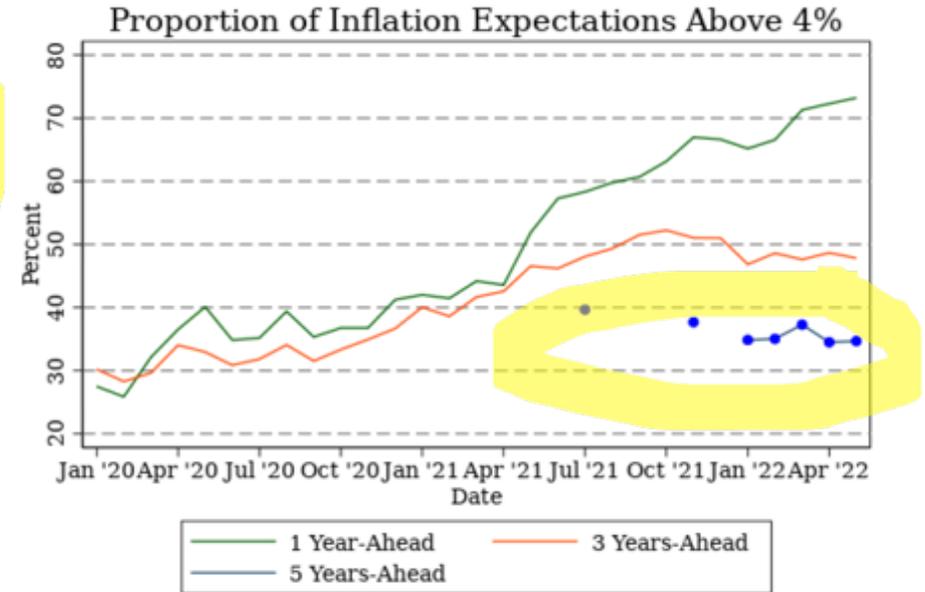
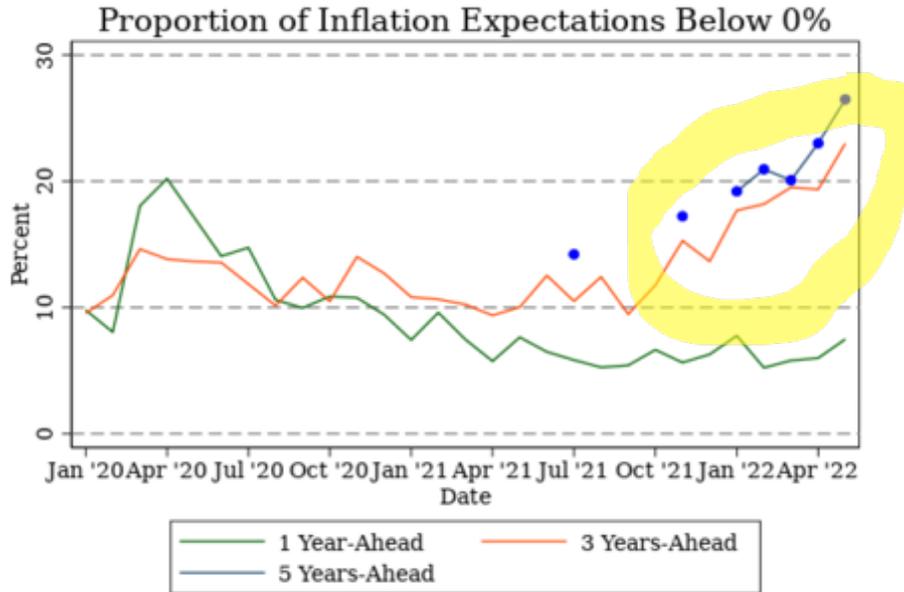
However: Seeing greater polarization in inflation expectations



MT

- At medium-term, initially little change
- Increased divergence especially since Oct 2021
- Share expecting deflation doubled to over 20%

However: Seeing greater polarization in inflation expectations



LT

- At long-term horizon, see recent rise in deflation expectations
- little change in share expecting high inflation

Two Hypotheses to Explain Rise in Deflation Expectations

We see rise in deflation expectations both in terms of (i) the share of consumers expecting deflation as the mean of their density forecast and (ii) the average probability assigned to deflation outcomes

Two hypotheses:

1. consumers perceive large price movements during pandemic as temporary and expect some degree of mean reversion over medium and long term
 - we examine cross-correlations, at the individual respondent level, between overall inflation expectations and expectations regarding price changes for specific spending categories
2. consumers may expect a recession (consistent with Phillips curve relationship between real economic activity and inflation)
 - we analyze the cross-correlations between deflation expectations and their economic outlook



Association of deflation with expectations about specific prices at the three-year horizon

Three-Year Ahead Price Change Expectations by Three-Year Ahead Inflation Expectations

| Category | Negative IE | IE 0-4% | IE > 4% |
|--------------|-------------|---------|---------|
| Gas | -2.54 | 4.16 | 5.69 |
| Food | 2.55 | 4.68 | 8.07 |
| Rent | 6.36 | 5.59 | 9.69 |
| Durables | 4.65 | 5.39 | 9.60 |
| House Prices | -0.39 | 4.22 | 7.47 |

Source: SCE Core, April 2022
 Values are interpolated medians

No association of deflation with other expectations of financial wellbeing at the three-year horizon

Three-Year Ahead Expectations by Three-Year Ahead IE

| Category | Negative IE | IE 0-4% | IE > 4% |
|-----------------------|-------------|---------|---------|
| HH Income Change | 5.71 | 5.94 | 5.59 |
| Typical Wage Increase | 5.55 | 5.54 | 5.51 |
| Prob. Higher Unemp. | 23.62 | 29.88 | 29.94 |

Three-Year Ahead Business Condition Expectations by Three-Year Ahead IE

| Expectation | All | Negative IE | IE 0-4% | IE > 4% |
|-----------------|------|-------------|---------|---------|
| Much Worse | 0.07 | 0.06 | 0.03 | 0.10 |
| Somewhat Worse | 0.25 | 0.17 | 0.24 | 0.30 |
| About the Same | 0.34 | 0.38 | 0.34 | 0.31 |
| Somewhat Better | 0.31 | 0.34 | 0.37 | 0.26 |
| Much Better | 0.03 | 0.04 | 0.03 | 0.04 |
| Obs | 1117 | 188 | 377 | 538 |

Source: SCE Core, April 2022
 Values are interpolated medians

Summing up

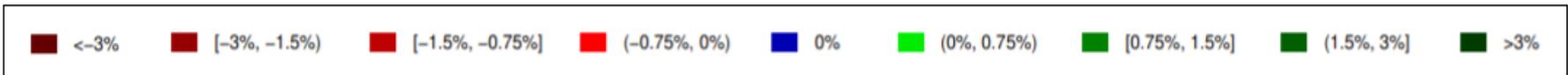
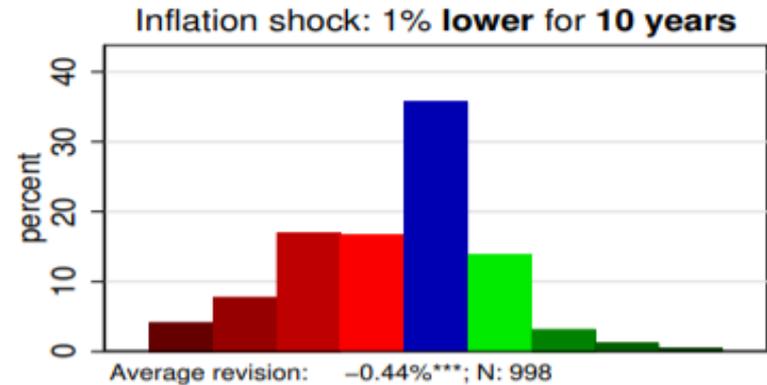
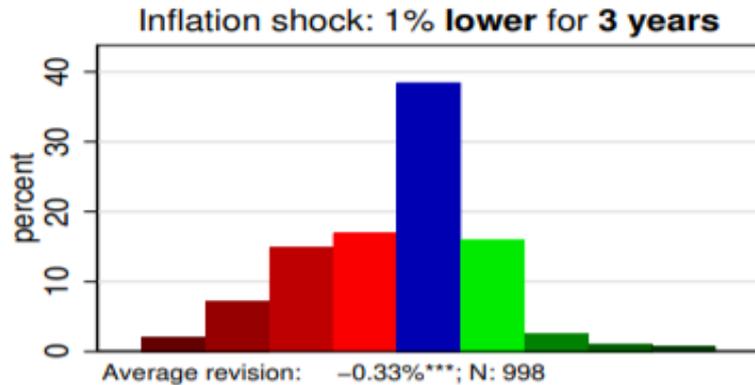
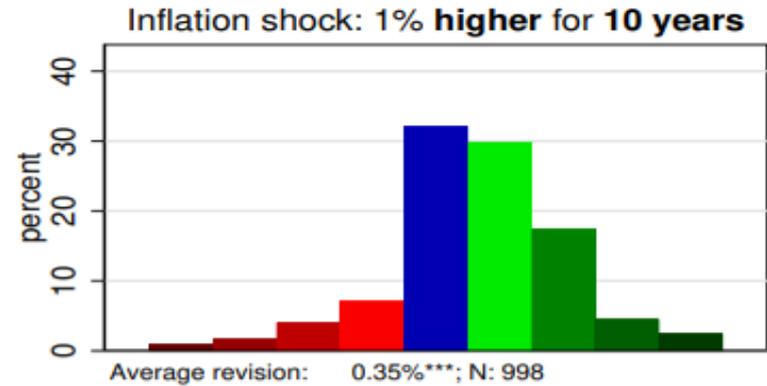
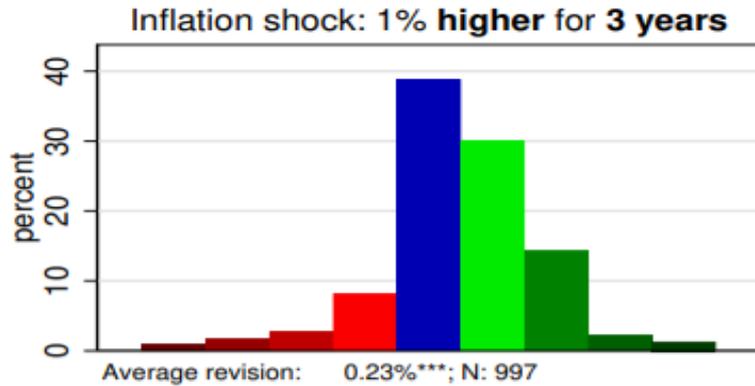
- We find:
 - Long-run IE were essentially as well anchored in May 2022 as in August 2021 and in July 2019, before the Covid-19 pandemic
 - Long-run IE have become somewhat more susceptible to downward drift
- However, we see recent increase in polarization in beliefs: a rising share of consumers expects deflation three and five years from now
- We consider two hypotheses for the rise in deflation expectations
 - Preliminary evidence indicates such respondents expect some mean reversion in specific price changes at that horizon, but do not have a more pessimistic economic outlook



Thank you!

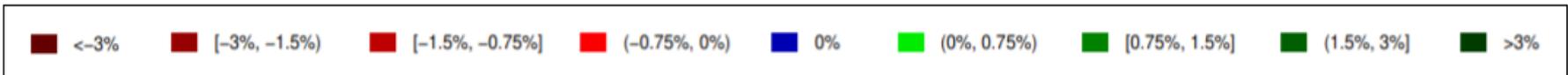
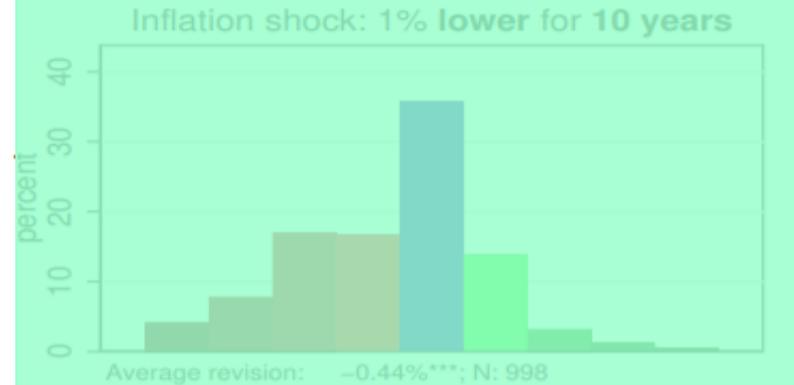
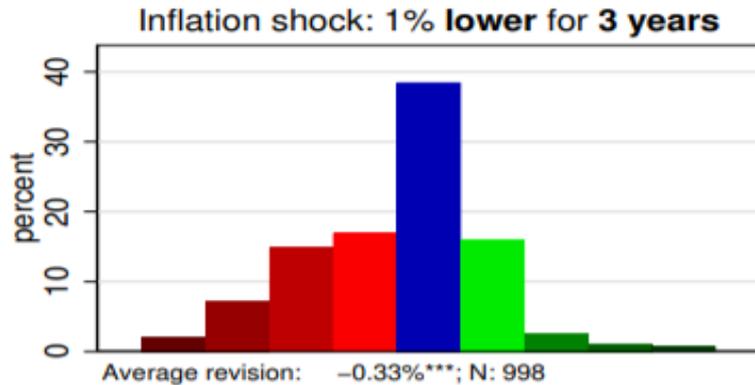
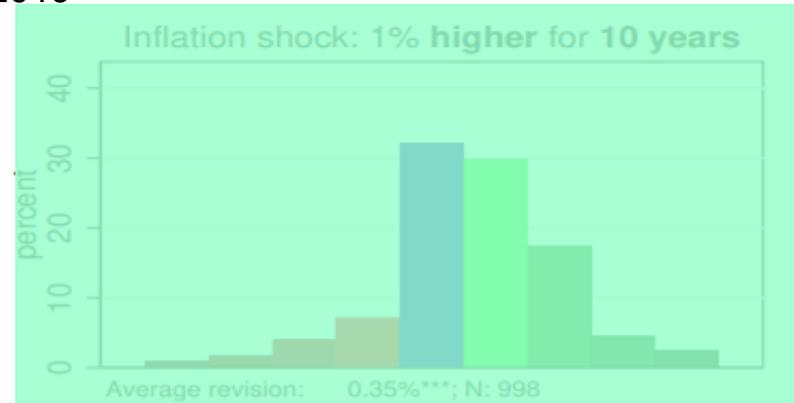
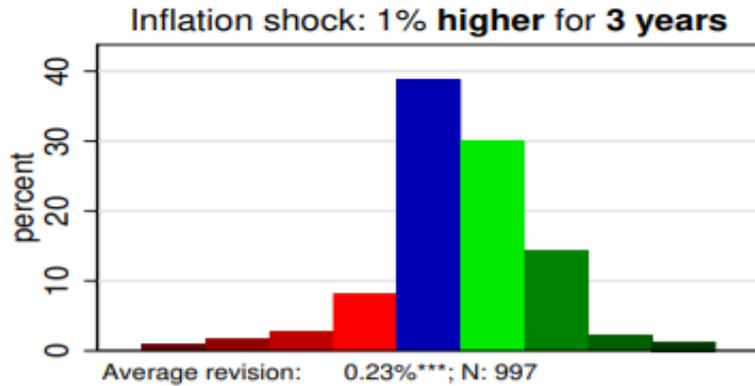
Distribution of Revisions by Treatments

July 2019



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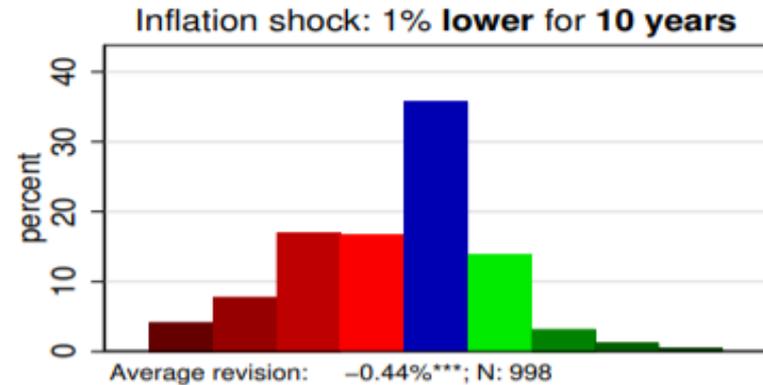
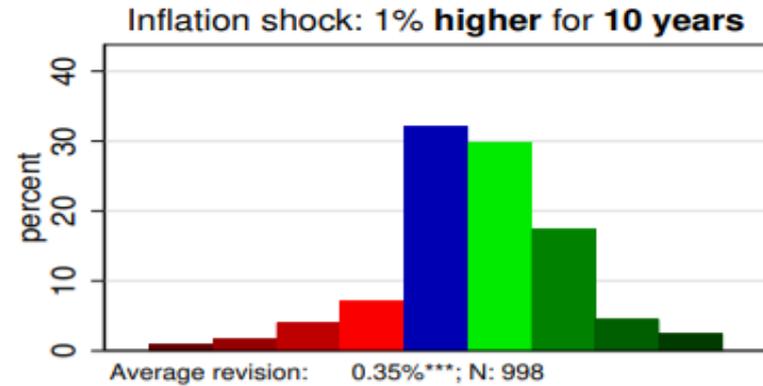
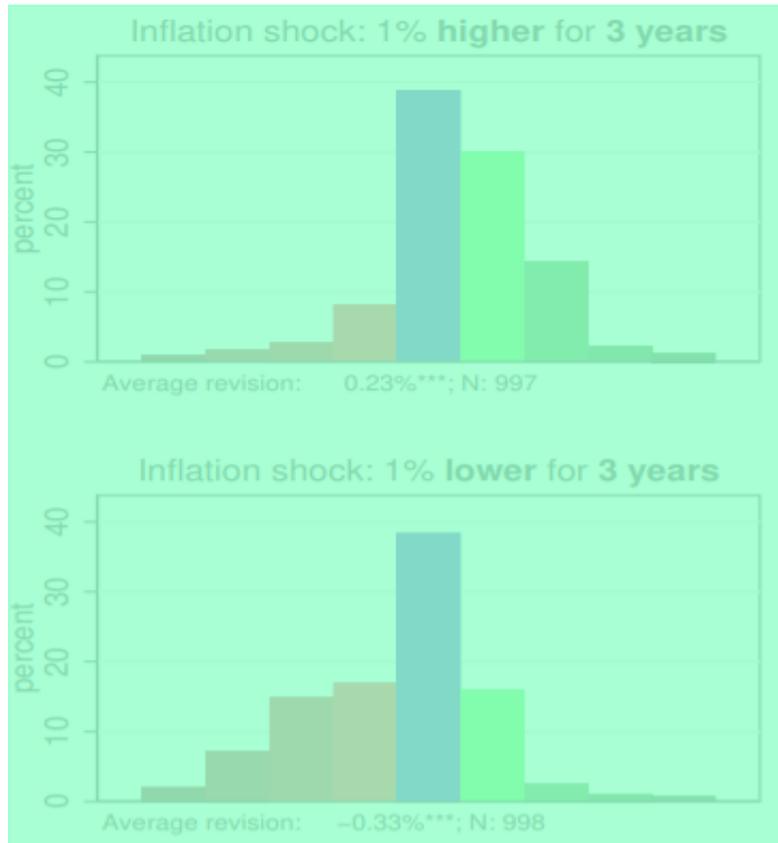
July 2019



Roughly 40% of respondents act as if they had perfectly anchored IE

Distribution of Revisions by Treatments

July 2019



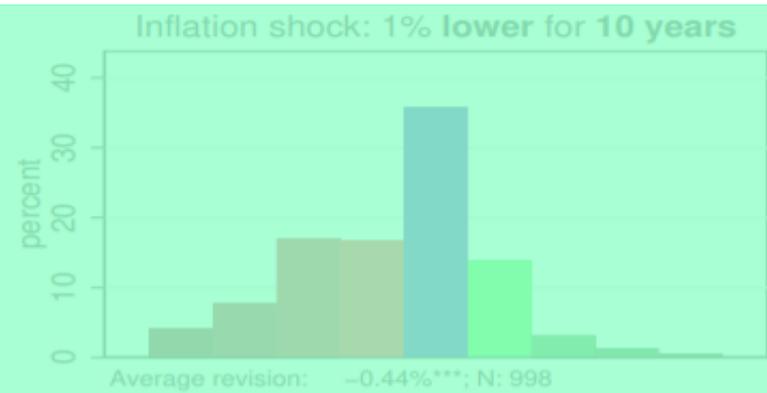
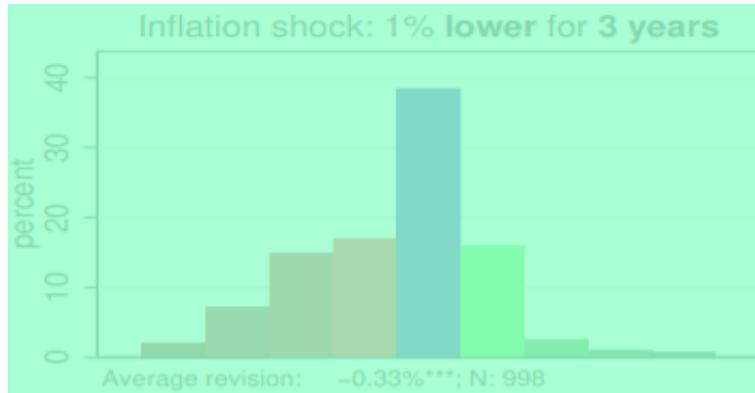
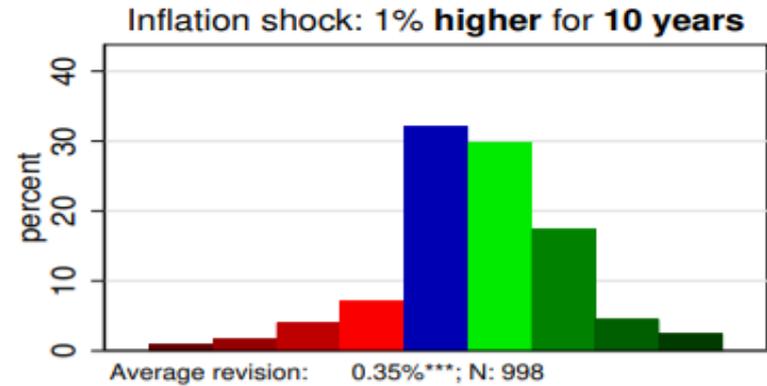
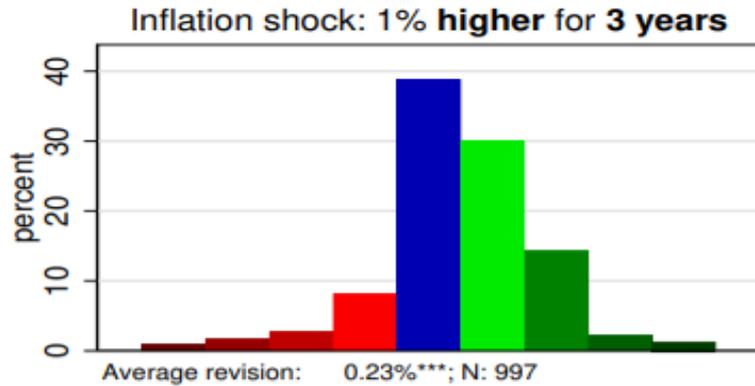
Legend for revision bins:

- <-3%
- [-3%, -1.5%]
- [-1.5%, -0.75%]
- (-0.75%, 0%)
- 0%
- (0%, 0.75%)
- [0.75%, 1.5%]
- (1.5%, 3%)
- >3%

Lower fraction (roughly 35%) act as if they had perfectly anchored IE in long shock treatment.

Distribution of Revisions by Treatments

July 2019

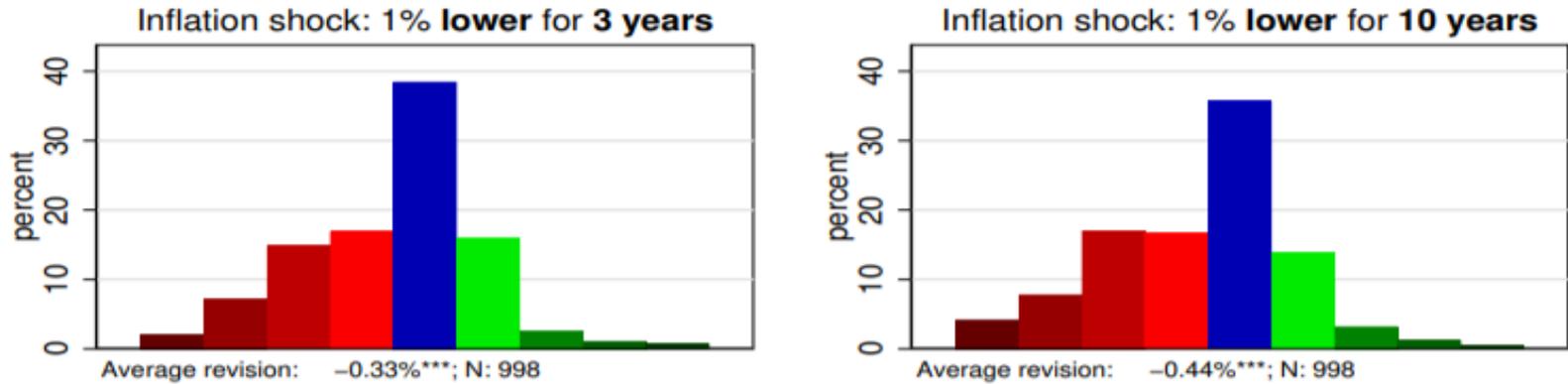
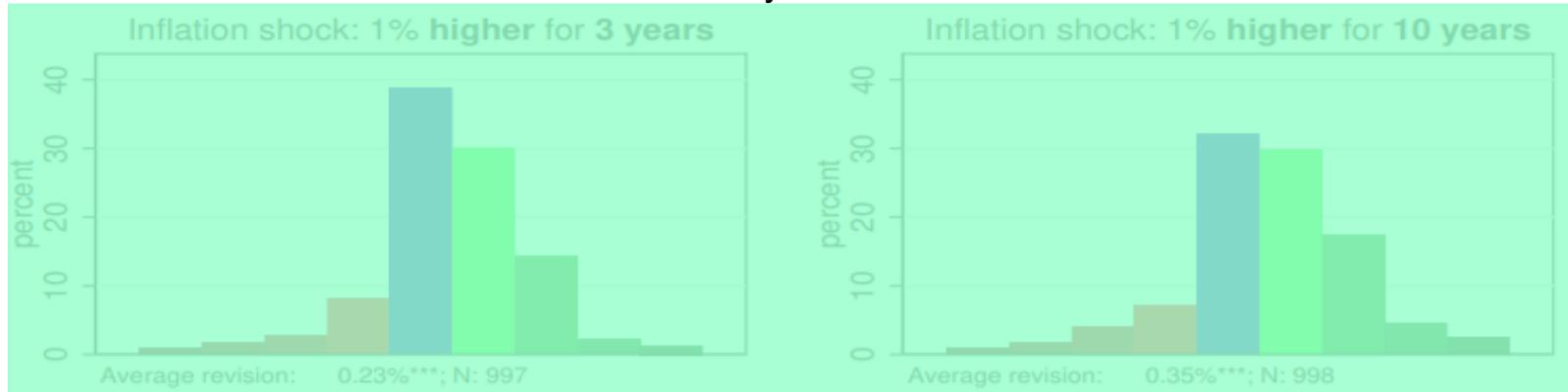


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