

# A New Approach to Assess Inflation Expectations Anchoring Using Strategic Surveys



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# Disclaimer

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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

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- Long-run inflation expectations (IE) anchored at the central bank's goal are viewed as a measure of successful monetary policy.
- Concerns about IE un-anchoring emerge regularly after spells of unusually low or unusually high inflation.
- How to measure the risk of IE un-anchoring?
- There is no clear definition of anchored IE in the literature, and thus no unique measure.

# What we do

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- We propose a new approach to assess IE anchoring using “strategic surveys”.
- Main advantages:
  - Causal interpretation.
  - Maps directly into the current policy debate.
- Implement approach during two periods of concerns:
  - Summer of 2019: Did consistent inflation undershooting over most of the past decade un-moor long-run IE on the downside?
  - Spring-summer of 2021: Does the recent surge in inflation risk un-anchoring the public’s long-run IE on the upside?

## What we find

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- The risk of un-anchoring was reasonably low in both periods.
- Long-run IE were essentially as well anchored in August 2021 as in July 2019, before the Covid-19 pandemic.
- A reversal in the risk of IE un-anchoring: Long-run IE appeared more susceptible to drift downward in 2019 and upward in 2021.

# Strategic Surveys (Ameriks et al., 2011)

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- 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.
- Ameriks et al., (2011, 2018, 2020, 2021); Fuster and Zafar (2021).
- Similar approach: “Vignettes” Fuster et al. (2020), Andre et al. (2021).

# Survey of Consumer Expectations (SCE)

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- The SCE consists of a “core survey” and “special surveys.”
- We focus here on three special surveys conducted in
  - July 2019 (with 1,000 respondents)
  - April 2021 (with 1,024 respondents)
  - August 2021 (with 2,209 respondents)
- Note that
  - 674 respondents completed both July 2019 and August 2021 surveys.
  - 279 respondents completed both April and August 2021 surveys.

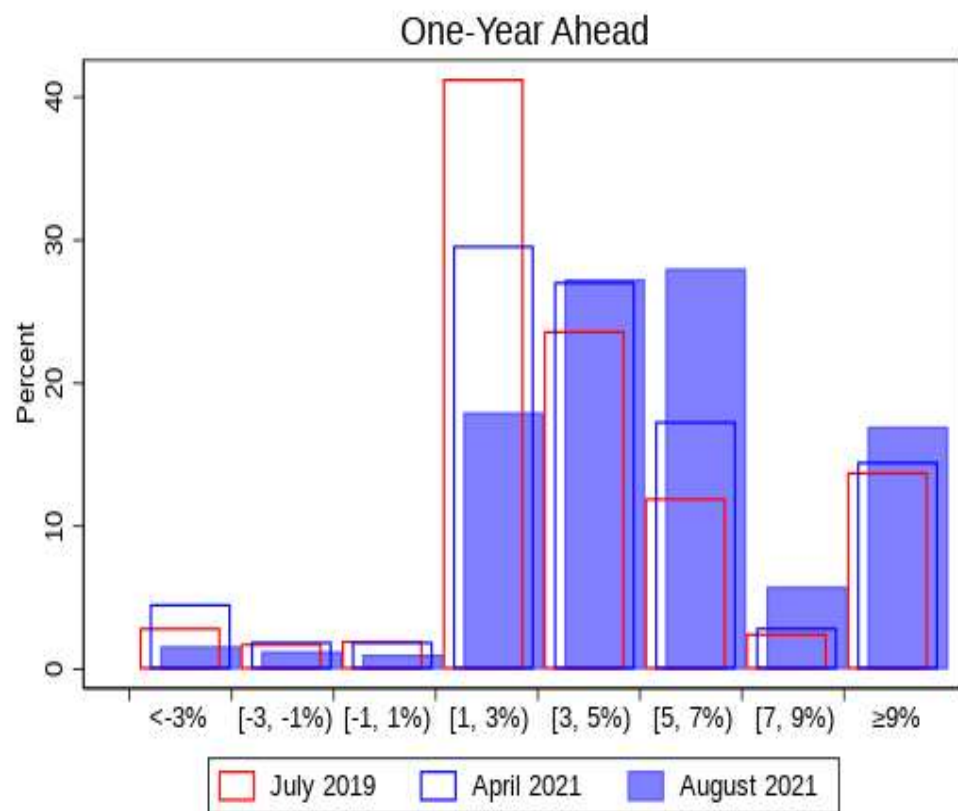
# Eliciting Inflation Expectations

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- In each survey we elicit short- 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?**”*
- Long-run IE = 5-year ahead:  
*“What do you expect the rate of [inflation/deflation] to be **over the 12-month period between August 2025 and August 2026?**”*

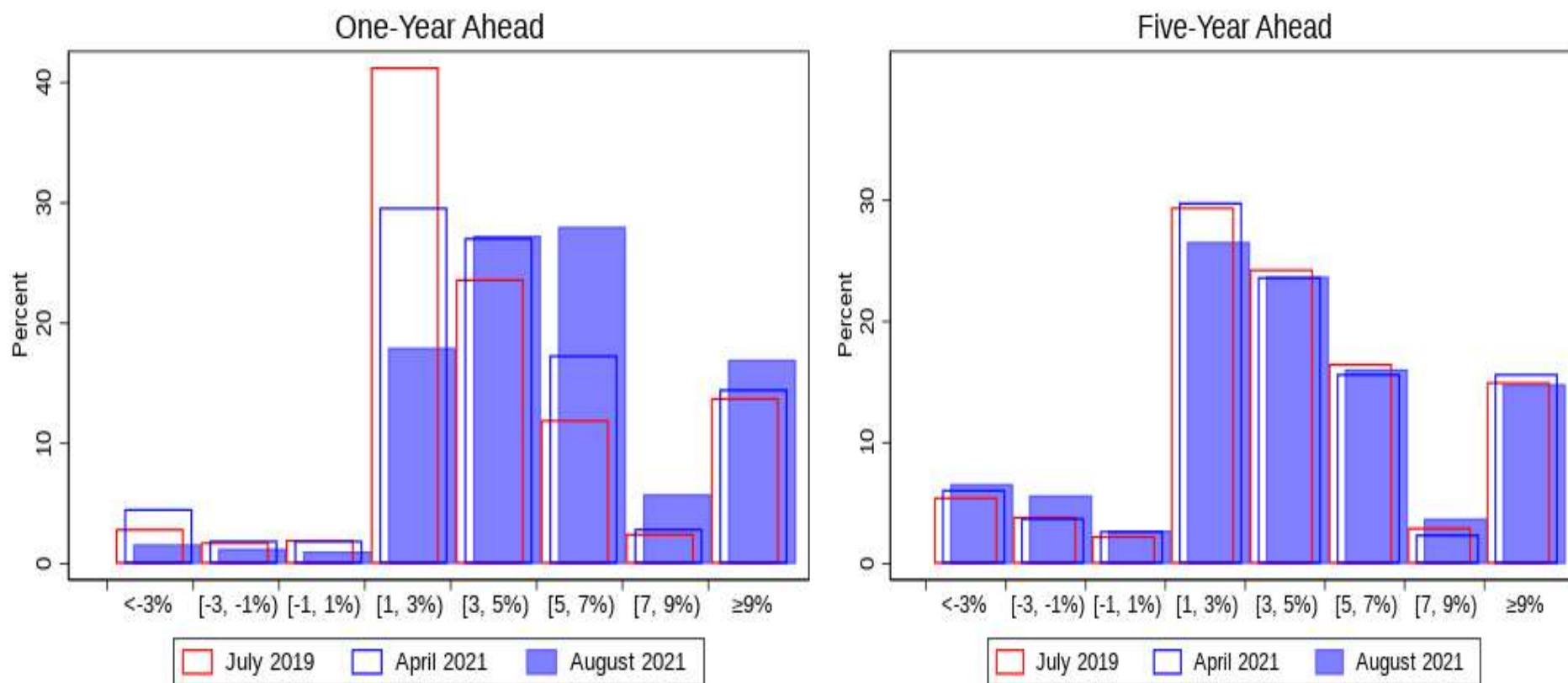


# Distributions of Short-Run & Long-Run Inflation Expectations



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# 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

# The Strategic Surveys

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- Research question:
  - Could prolonged spells of unusually high or low inflation risk unanchoring long-term IE?
- Three experimental designs.
  - The **backward-looking inflation shock** experiment (sensitivity of long-run IE to persistent past inflation shocks).
  - The **forward-looking inflation surprise** experiment (sensitivity of long-run IE to near- and medium-term inflation surprises)
  - The **forward-looking joint inflation & unemployment surprise** experiment (sensitivity of long-run IE to joint surprises in inflation *and* unemployment)

# The Design of the Inflation Shock Experiment

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- 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

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- *“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 **August 2025 and August 2026** be different than the [X] percent you just reported?”*

# The Design of Inflation Shock Experiment

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- *“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 **August 2025 and August 2026** 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)	
		Sign of inflation shock					
		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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- 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

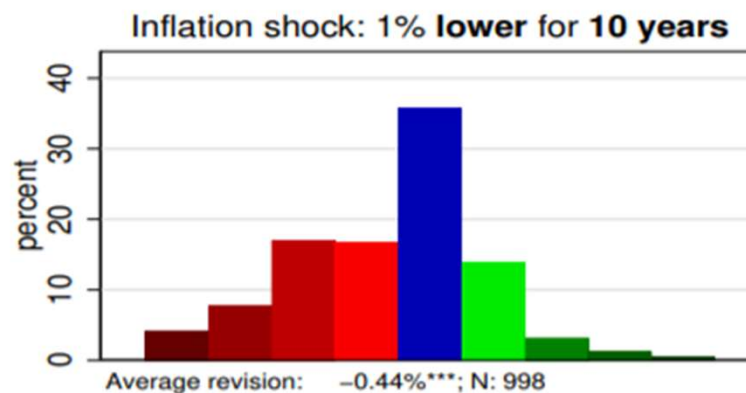
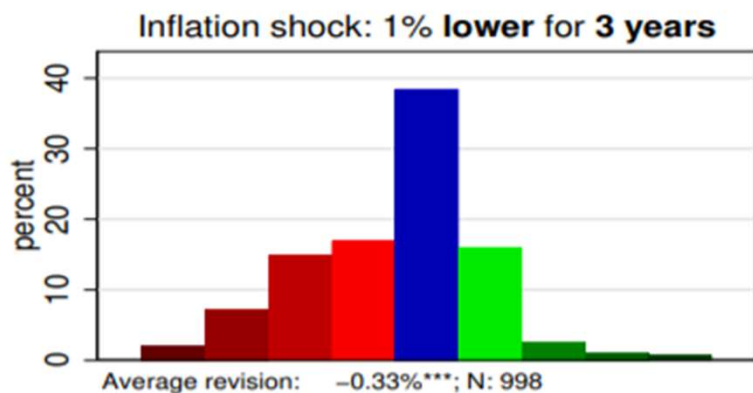
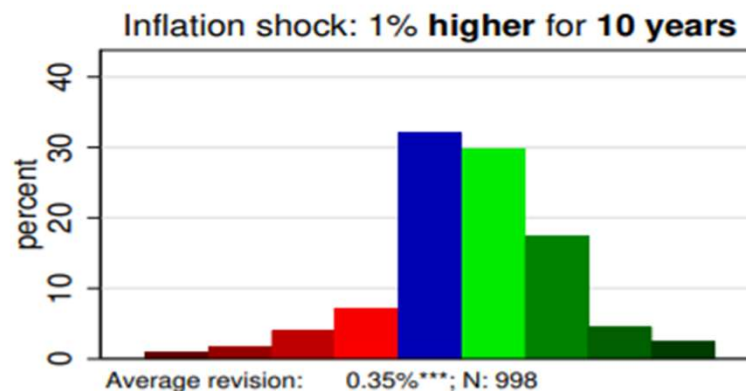
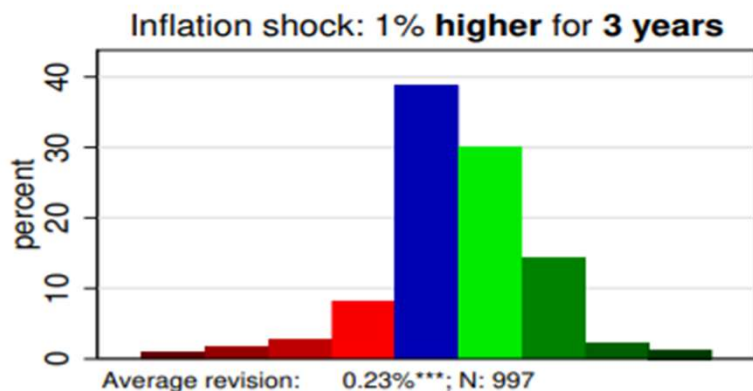
# Treatment Effects in Inflation Shock Experiment

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		Sign of inflation shock		Sign of inflation shock		Sign of inflation shock	
		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
	Past 10 years	-0.44	0.35	-0.37	0.42	-0.30	0.45

- Magnitude of average treatment effects remains similar.
- Asymmetry is reversed: In 2021, long-run IE appear more susceptible to upward (rather than downward) revisions.
- Average revisions remain stable between April and August 2021.

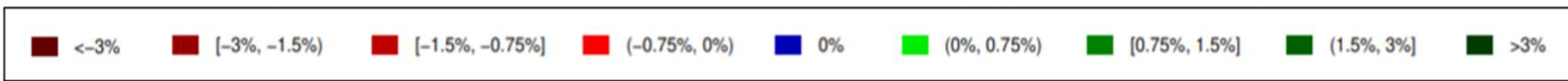
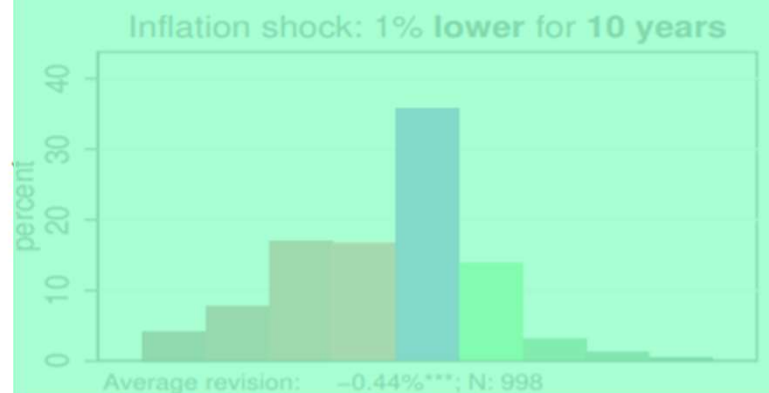
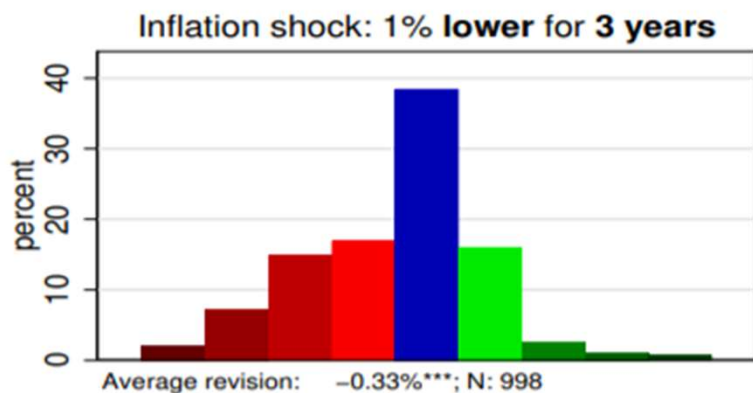
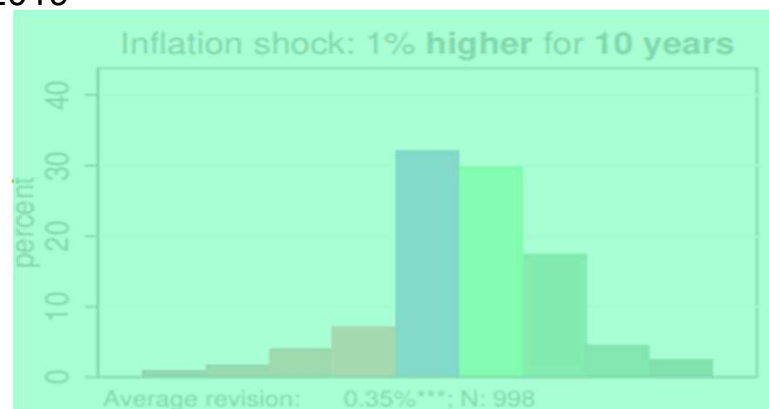
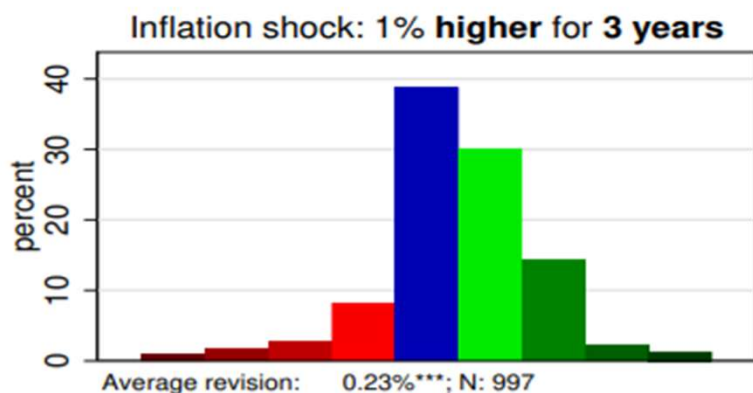
# Distribution of Revisions by Treatments

July 2019



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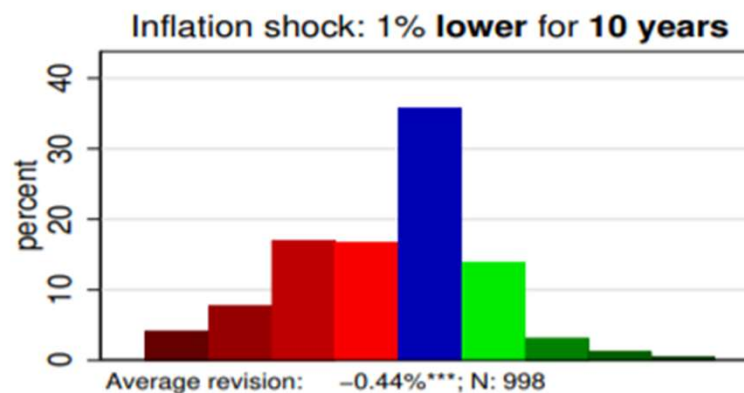
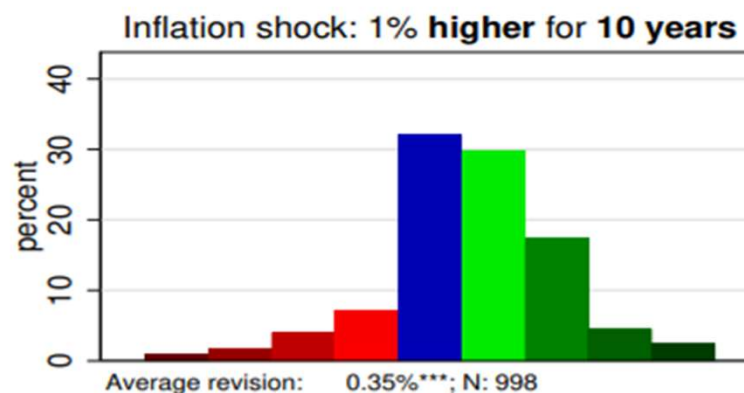
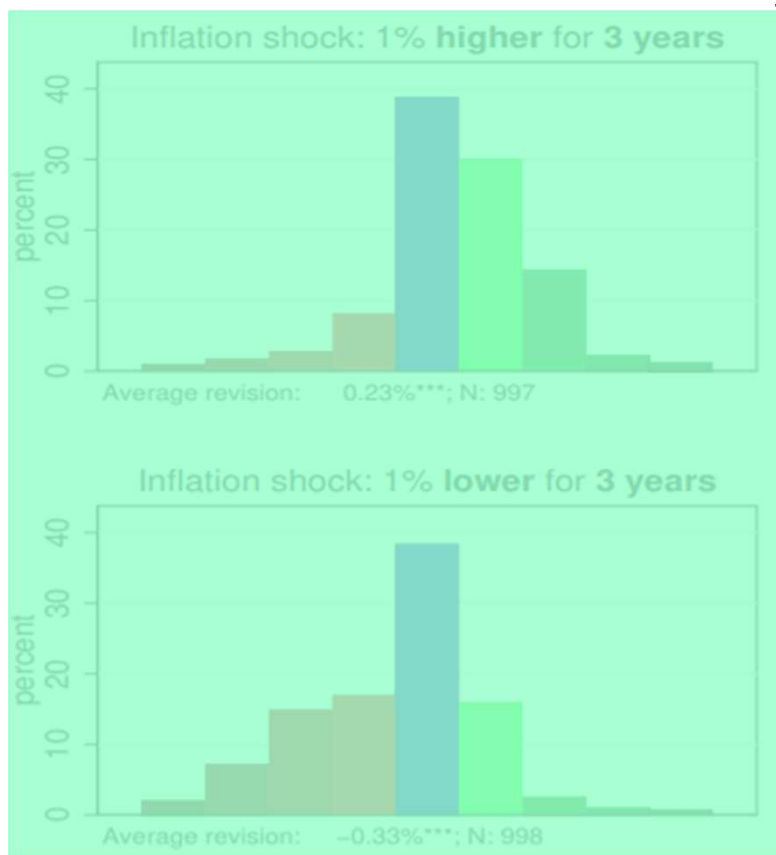
July 2019



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

# Distribution of Revisions by Treatments

July 2019

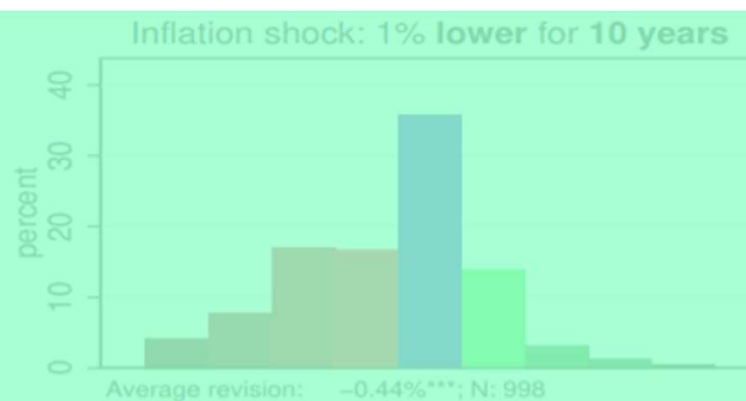
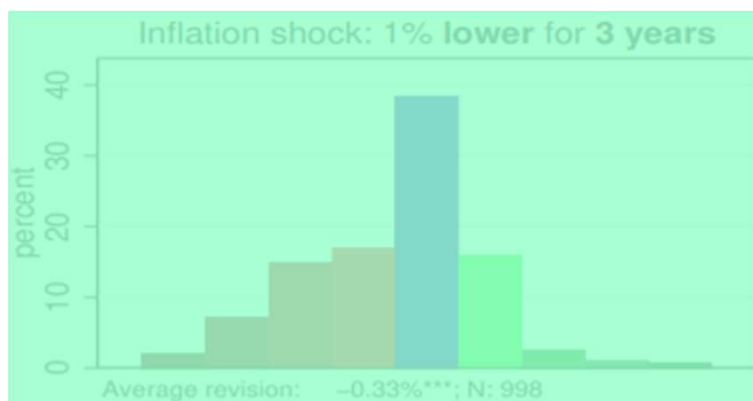
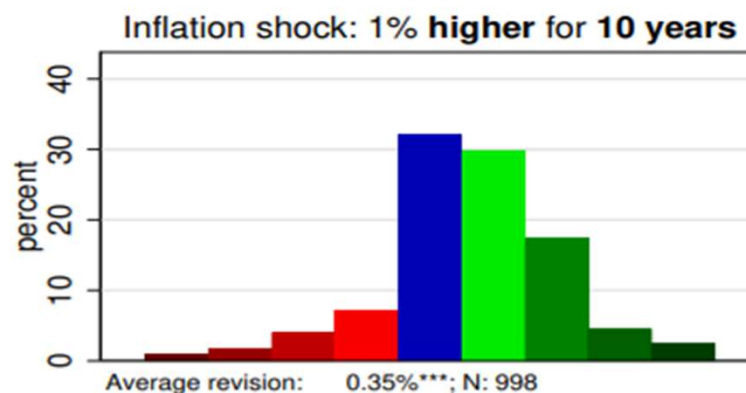
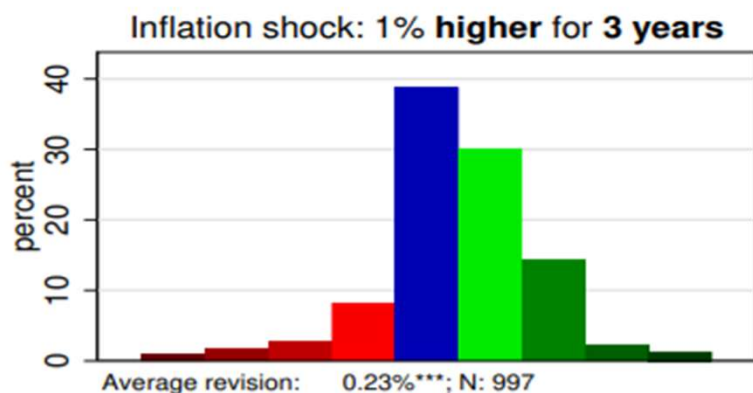


Lower fraction (roughly 35%) act as if they had perfectly anchored IE in long shock treatment.



# Distribution of Revisions by Treatments

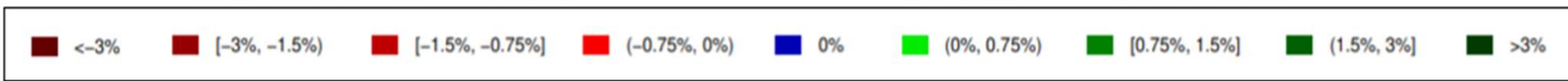
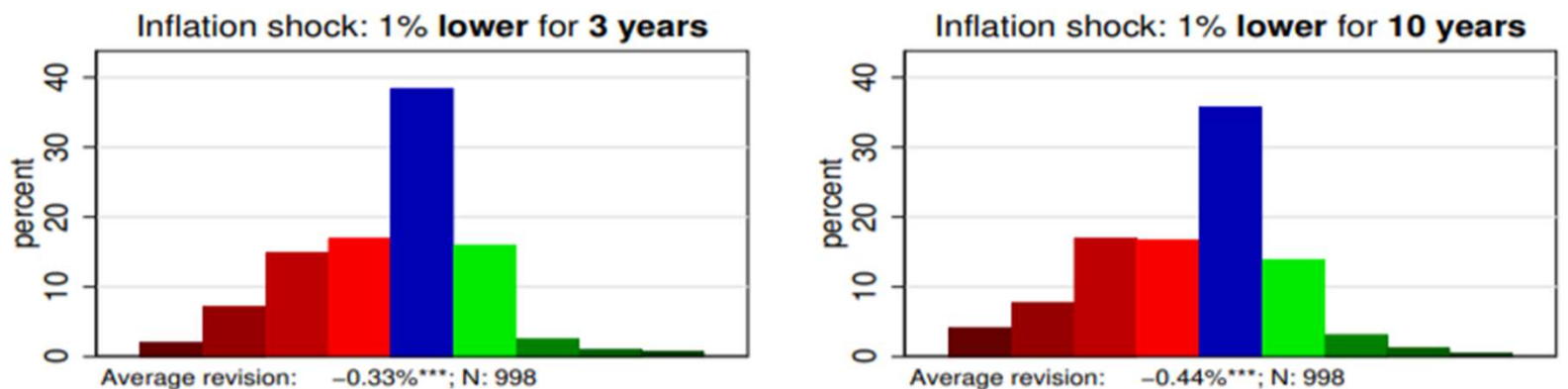
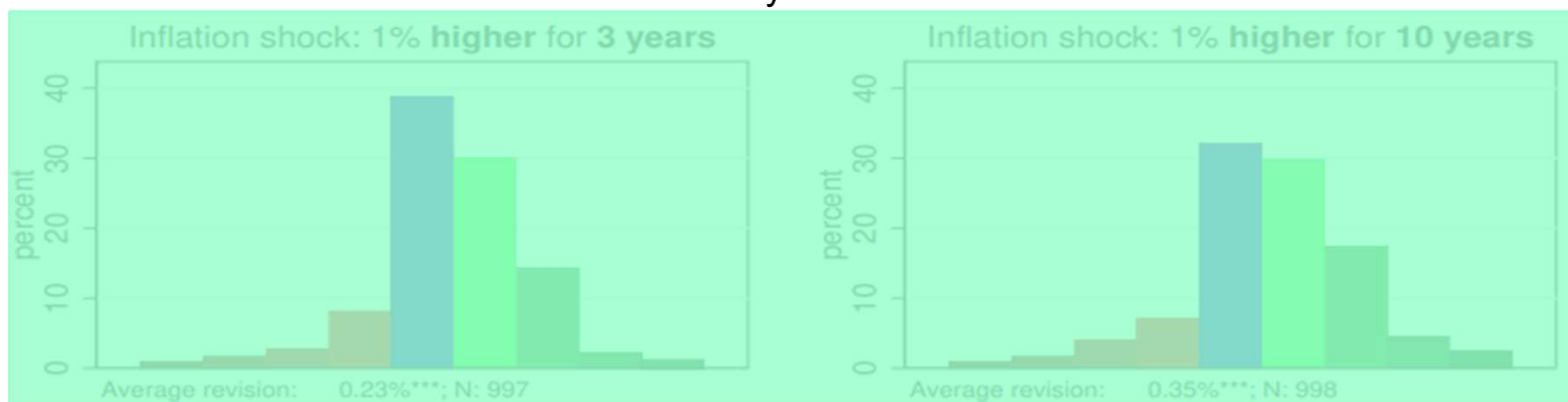
July 2019



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

# Distribution of Revisions by Treatments

July 2019



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

# Summing up

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- We propose a new approach to gauge the risk of IE un-anchoring using strategic surveys.
  - Causal interpretation.
  - Maps directly into the current policy debate.
- Implement three strategic surveys during two periods of concerns: Summer of 2019 and spring-summer of 2021.
- We find:
  - The risk of long-run IE un-anchoring was reasonably low in both periods.
  - Long-run IE were essentially as well anchored in August 2021 as in July 2019, before the Covid-19 pandemic.
  - A reversal in the risk of IE un-anchoring: Long-run IE appeared more susceptible to drift downward in 2019 and upward in 2021.

# Appendix

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# Existing Measures of Anchoring using Surveys

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- Two broad categories: “level” and “shock” anchoring
- Level anchoring examples:
  - Are long-run IE tightly distributed around target?
  - Do respondents express uncertainty about long-run IE?
- Shock anchoring examples:
  - Do respondents revise their long-run IE?
  - Do short- and long-run IE co-move?
  - Do long-run IE respond to short-run inflation forecast errors?
- Applications: E.g. Kumar et al. (2015), Draeger and Lamla (2019), Bems et al. (2019), Chen (2019), Moessner and Takáts (2021), Galati et al. (2021), Reiss (2021), Candia et al. (2021)

# Survey of Consumer Expectations (SCE)

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- 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

# Median Short-Run & Long-Run Inflation Expectations

	July 2019 (N=999)		April 2021 (N=1024)		August 2021 (N=2209)	
	Horizon	Median Point Prediction	Horizon	Median Point Prediction	Horizon	Median Point Prediction
1 year ahead	Jul 19-20	2.92%	Apr 21-22	3.24%	Aug 21-22	4.84%
5 year ahead						

- Median short-run IE increased significantly over the past 2 years

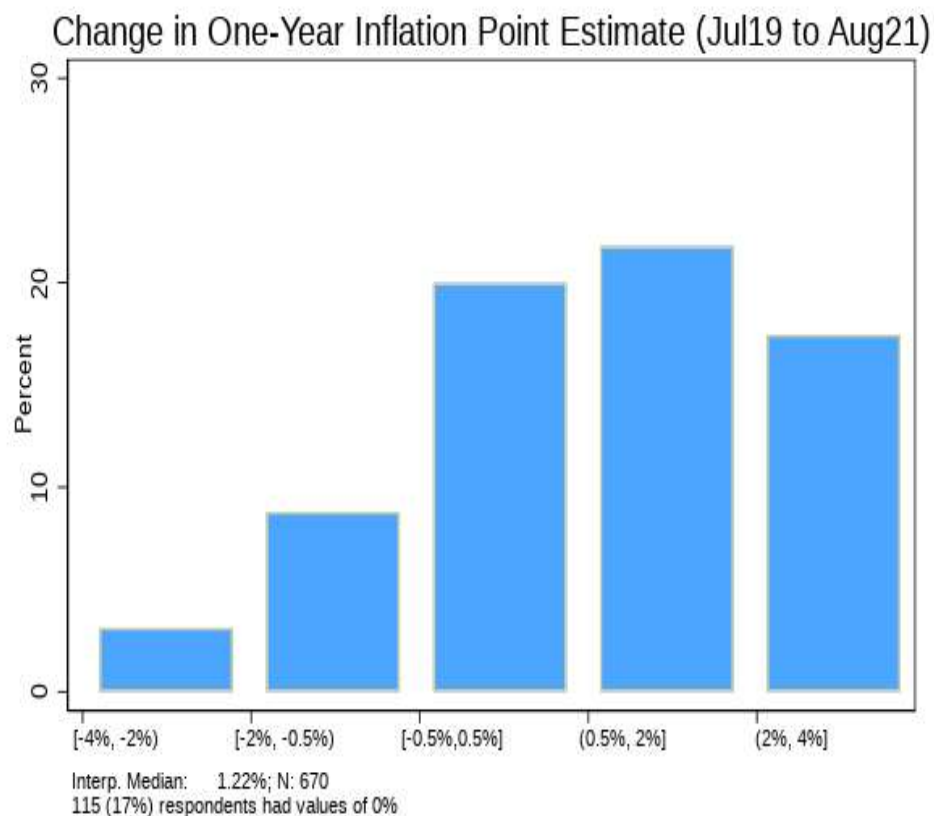
# Median Short-Run & Long-Run Inflation Expectations

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1 year ahead	Jul 19-20	2.92%	Apr 21-22	3.24%	Aug 21-22	4.84%
5 year ahead	Jul 23-24	3.00%	Apr 25-26	3.00%	Aug 25-26	3.16%

- Median short-run IE increased significantly over the past 2 years
- In contrast, modest increase in median long-run IE

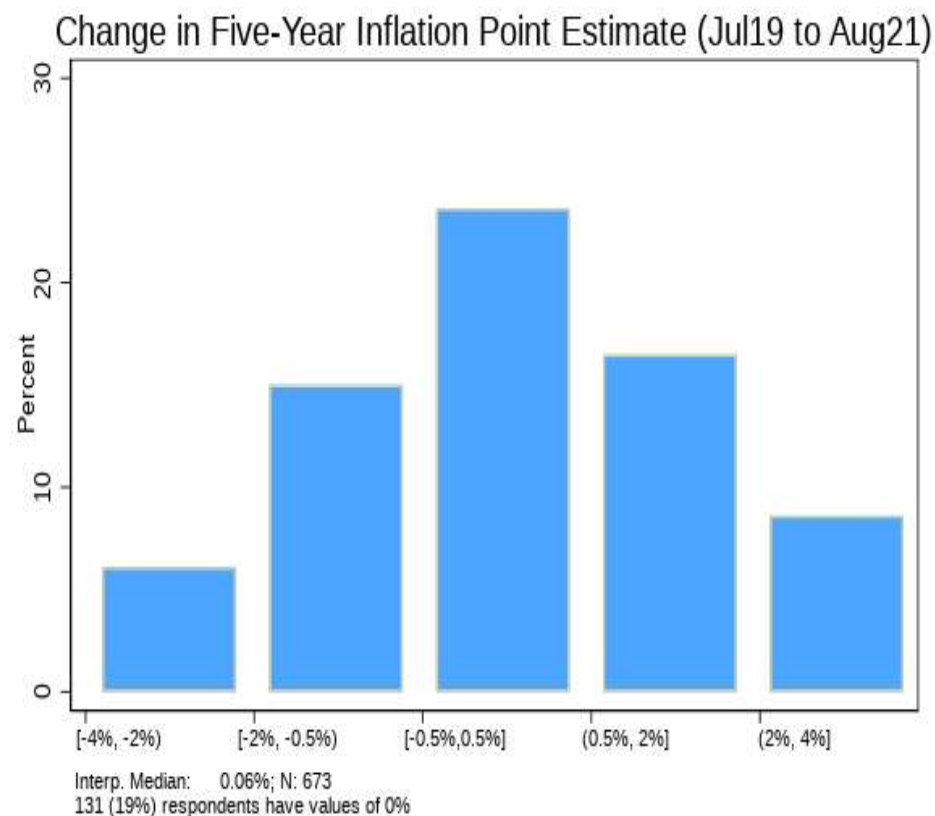
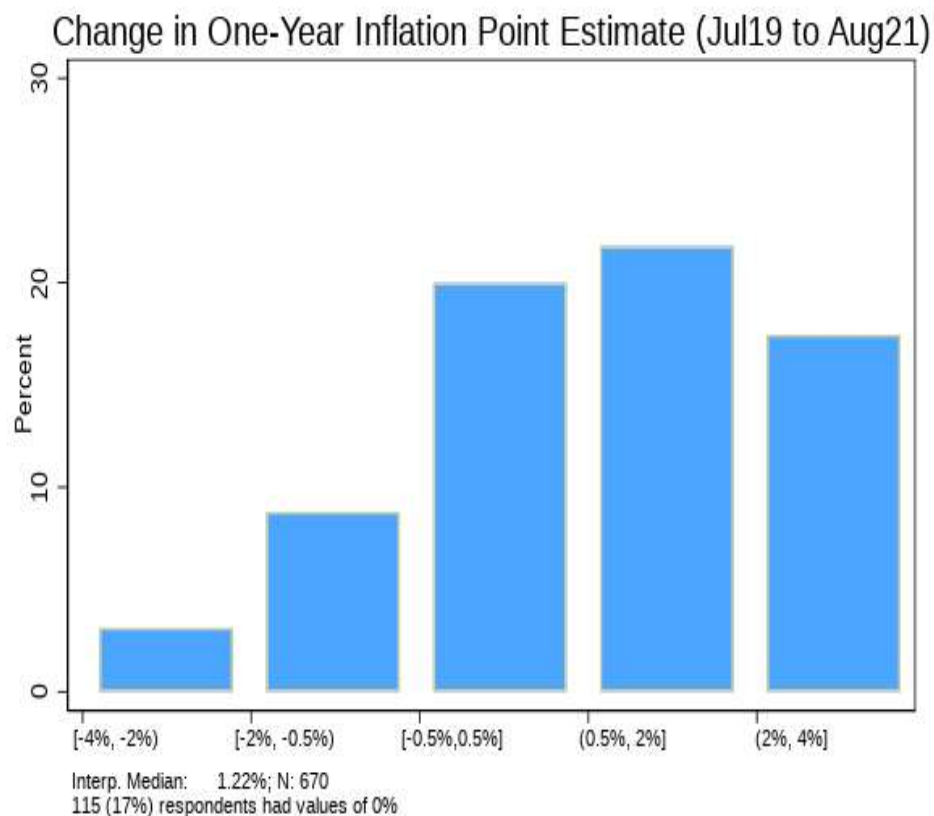


# Distribution of Change in Point Predictions



- The distribution of changes in 1-year ahead IE is skewed to the right

# Distribution of Change in Point Predictions



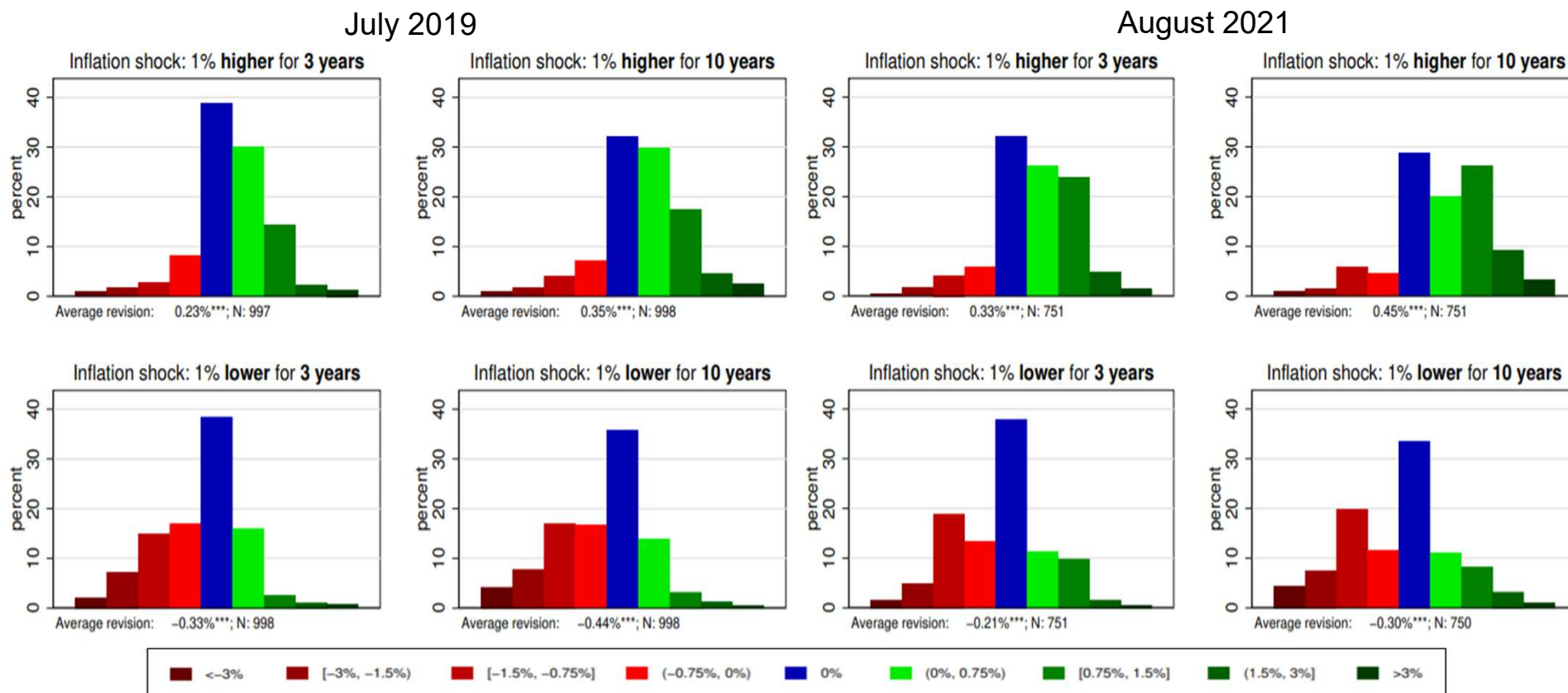
- The distribution of changes in 1-year ahead IE is skewed to the right
- In contrast, the distribution of changes in 5-year ahead IE is remarkably symmetric

## Summing up (so far)

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- We find prima facie evidence that in August 2021 consumers' median five-year ahead IE were as well anchored as they were two years prior.
- To get a better sense of the risk of un-anchoring in 2019 and 2021, we now turn to our new experimental approach.
- This enables us to assess the sensitivity of long-run IE to persistent inflation shocks or surprises.

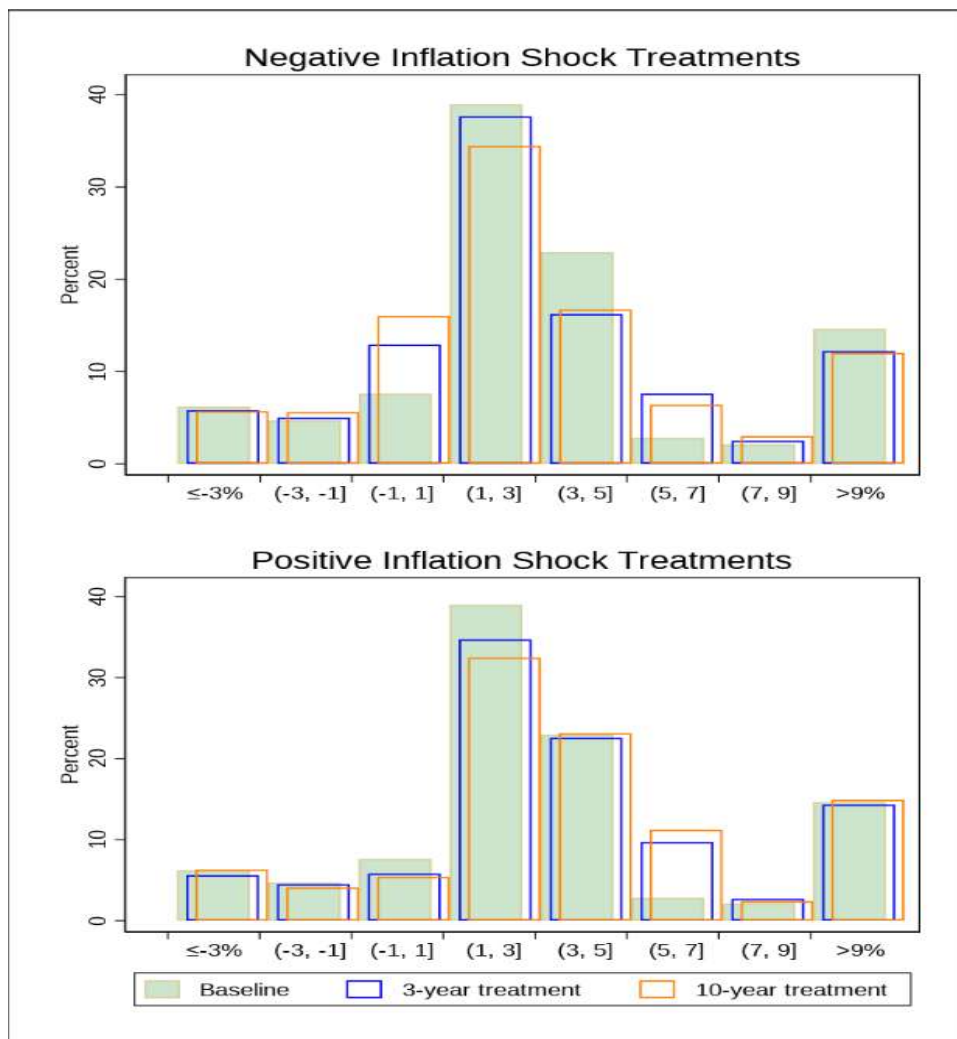
# Distribution of Revisions by Treatments



- The distributions of revisions 2 years apart remained fairly similar

# Distribution of Revisions by Treatments

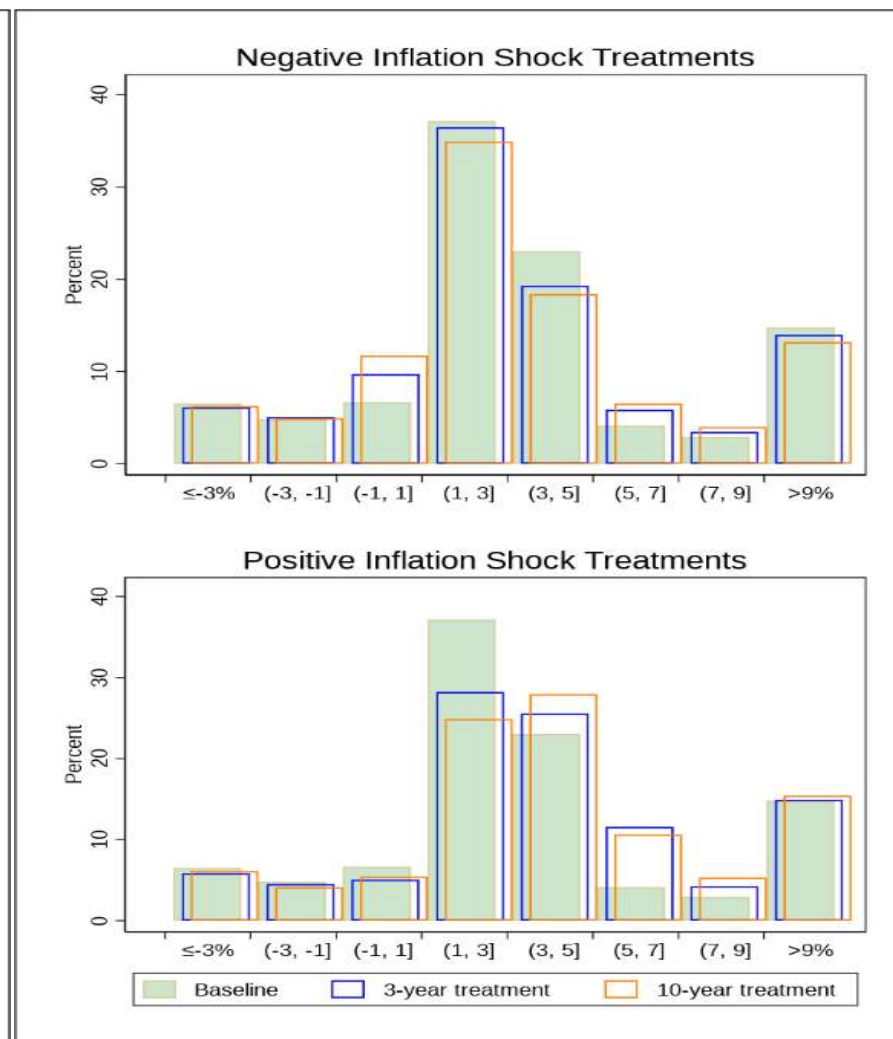
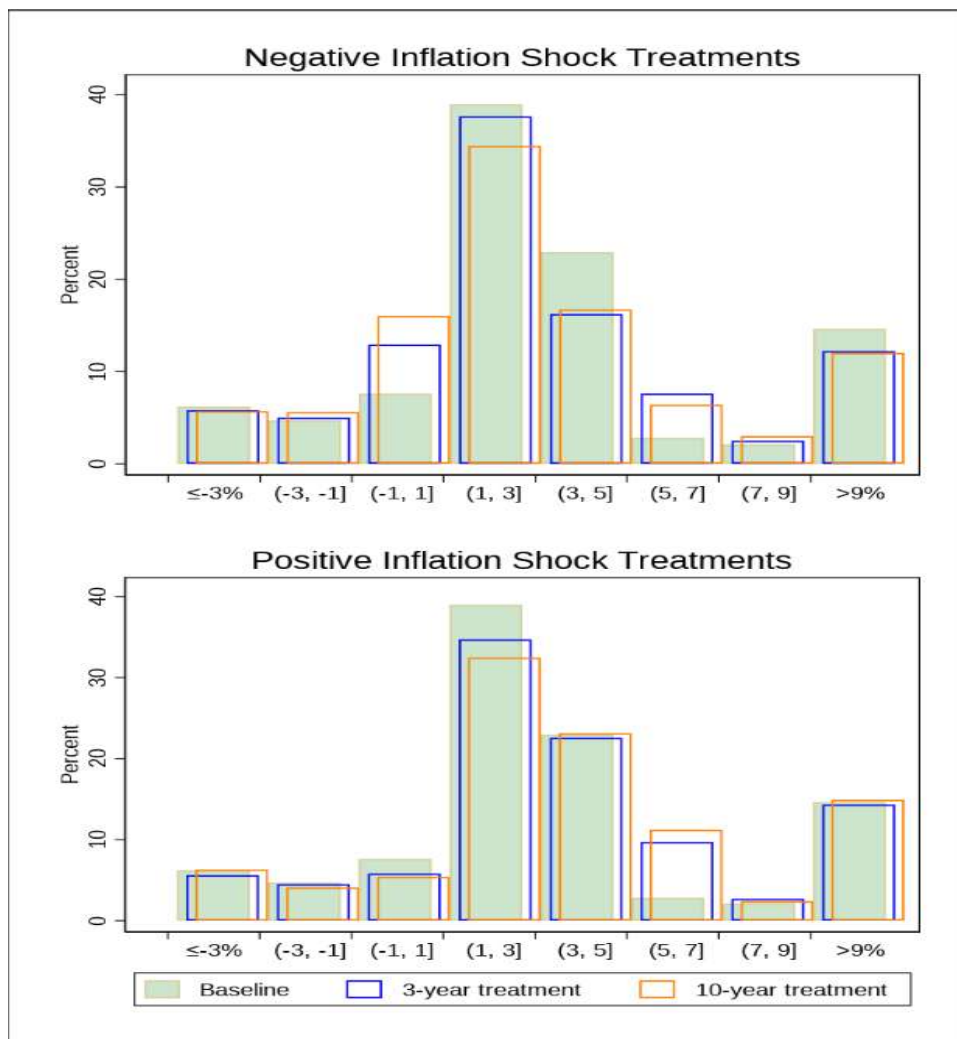
July 2019



# Distribution of Revisions by Treatments

July 2019

August 2021



# Heterogeneity in Revisions (August 2021)

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- Magnitude of the revisions by men and respondents over the age of 60 is
  - Larger in the two positive inflation shock treatments,
  - Smaller in the two negative inflation shock treatments.
- In each of the treatments, the magnitude of revisions by respondents with lower household income (<\$40k) and no college education is smaller.

# The Forward-Looking Experiments

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- **Inflation surprise experiment:** *“What if the rate of inflation **over the next 12 months** turns out to be **1% higher than you [currently expect]**?”*

2 by 2 Design		
Sign of shock	1% lower	1% higher
Duration of shock	Next 12 months	Each of next 3 years



# The Forward-Looking Experiments

- **Inflation surprise experiment:** *“What if the rate of inflation over the next 12 months turns out to be 1% higher than you [currently expect]?”*

2 by 2 Design		
Sign of shock	1% lower	1% higher
Duration of shock	Next 12 months	Each of next 3 years

- **Joint inflation & unemployment surprise experiment:** *“Imagine that the rate of inflation over the next 12 months turns out to be 1% higher than you [currently expect], and the unemployment rate 12 months from now turns out to be 1% lower than you [currently expect].”*

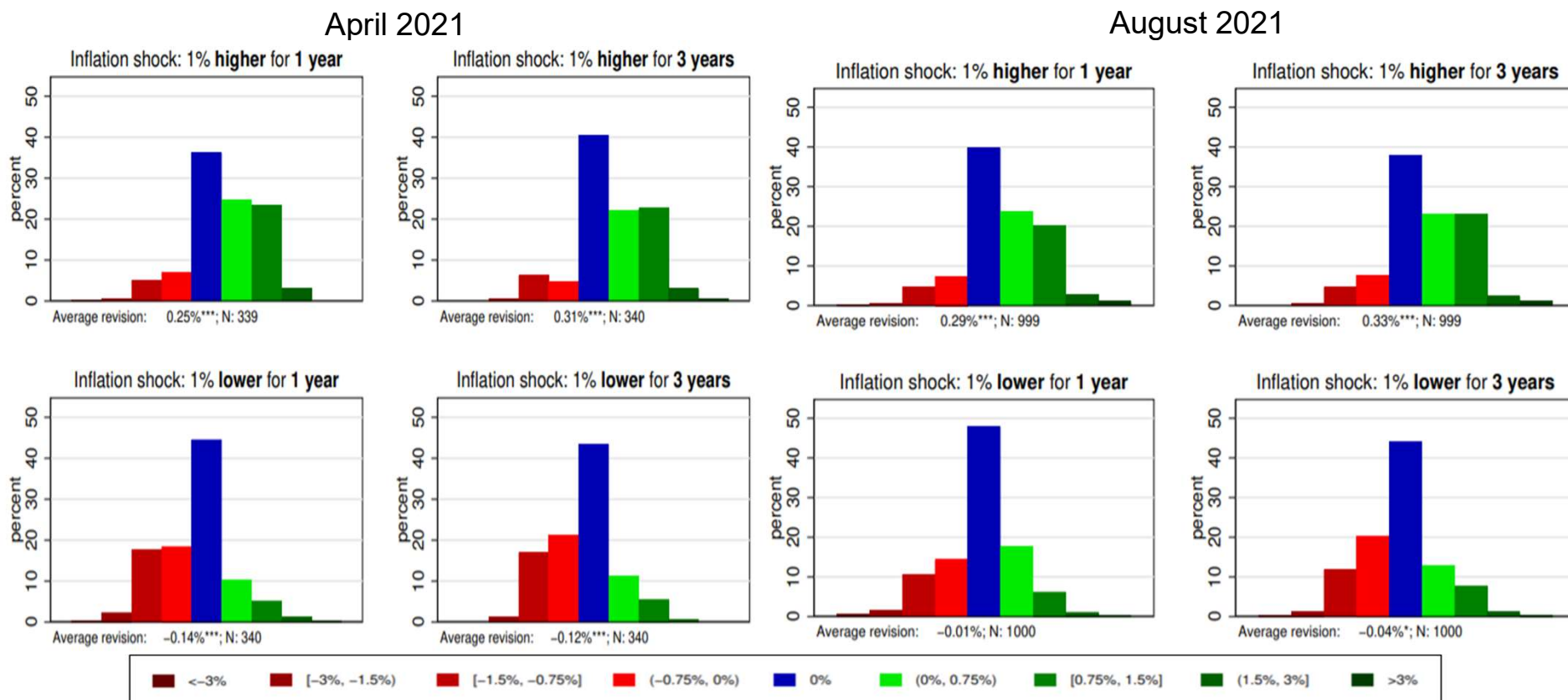
2 by 2 Design		
Inflation	1% lower	1% higher
Unemployment	1% lower	1% higher

# Treatment Effects in Inflation Surprise Experiment

		April 2021 (N=340)		August 2021 (N=1,000)	
		Sign of inflation surprise		Sign of inflation surprise	
		1% Lower	1% Higher	1% Lower	1% Higher
Duration of inflation shock	Next year	-0.14	0.25	-0.01	0.29
	Each of next 3 years	-0.12	0.31	-0.04	0.33

- Results are qualitatively similar as in inflation shock experiment:
  - Direction and magnitude of treatment effects are sensible and similar.
  - Asymmetry toward upward un-anchoring is also present

# Distribution of Revisions by Treatments



- Similar distribution as in previous experiment
- Similar proportion of “perfectly anchored” respondents

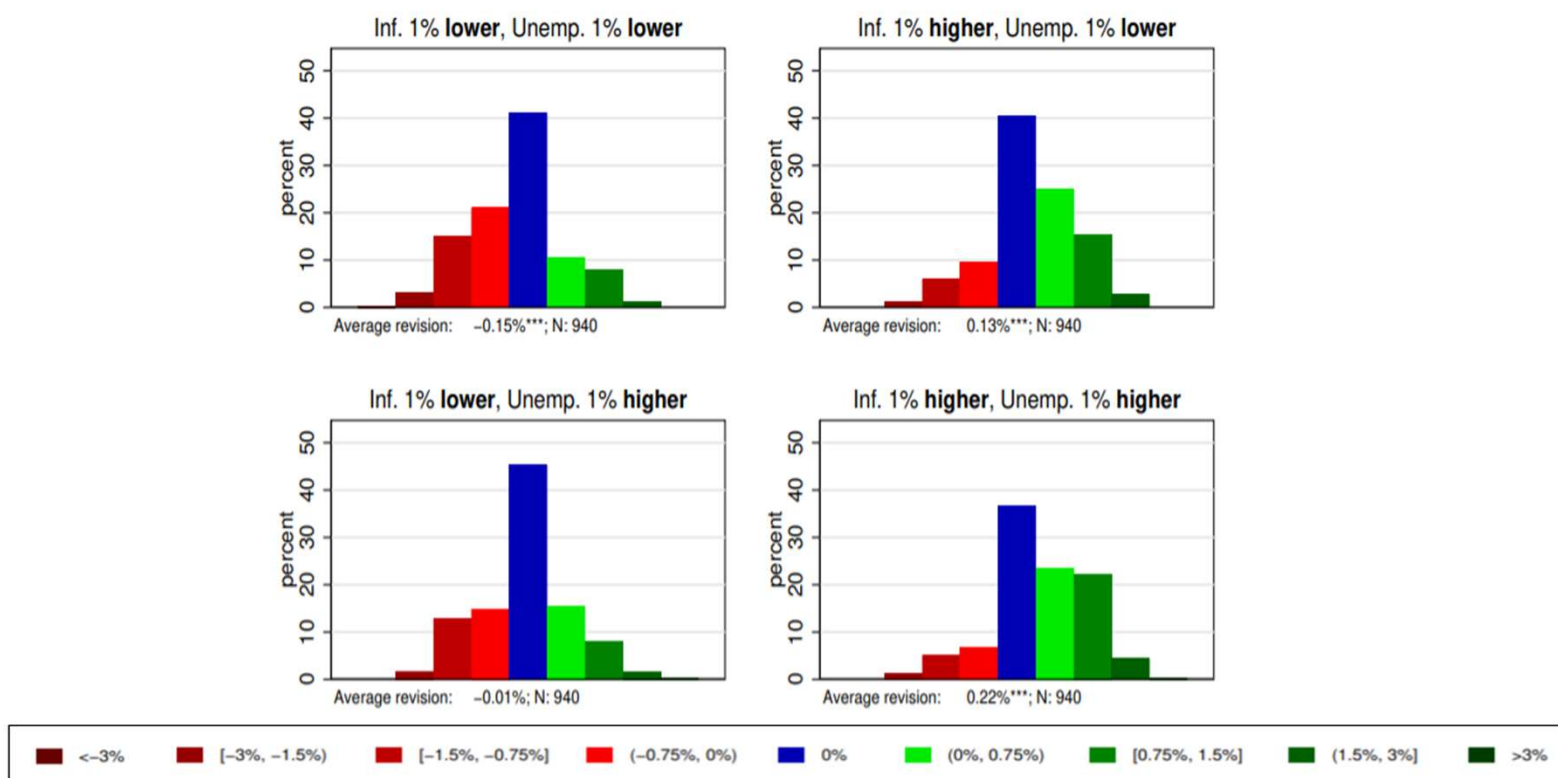
# Treatment Effect in Inflation & Unemployment Surprise Experiment

		August 2021 (N=940)	
		Sign of inflation surprise	
		1% Lower	1% Higher
Sign of unemployment surprise	1% Lower	-0.15%	0.13%
	1% Higher	-0.01%	0.22%

- Results are qualitatively similar as in other two experiments:
  - Direction and magnitude of treatment effects are sensible and similar.
  - Asymmetry toward upward un-anchoring is also present

# Distribution of Revisions by Treatments

August 2021



- Similar distribution as in previous experiment
- Similar proportion of “perfectly anchored” respondents