# Tell Me Something I Don't Already Know: Learning in Low- and High-Inflation Settings*

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We do not speak for the European Central Bank, the Bank of Italy, the Central Bank of Uruguay, or the Atlanta Fed.

Federal Reserve Bank *of* Atlanta

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# *A Feature and a Bug*

***"Price stability is the state in which expected changes in the general price level do not effectively alter business or household decisions."***

*-Alan Greenspan, July 1996 FOMC Meeting*

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- But, growing evidence suggests that agents are systematically less than fully informed. This can matter:
  - Transmission of monetary policy (e.g., Lucas 1972)
  - Slope of the Phillips curve (Pfauti 2023)
  - Power of forward guidance (Kiley 2021)
  - Policy communication (Candia et al. 2021)

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  as a result of which ***the degree and nature of inattention should be endogenous to economic conditions.***

# Existing Evidence of Endogenous Inattention

- Households less likely to say "I don't know" about recent inflation when inflation is high.
  Bracha and Tang (2019) for U.S. and Euro-area

- Households' perceived inflation is closer to actual inflation when inflation is high. (new)
  Weber, Candia, Ropele, Lluberas, Frache, Meyer, Kumar, Gorodnichenko, Coibion, etc (2023)

- Households search for information about inflation more when inflation is high.
  Korenok, Munro and Chen (2023)

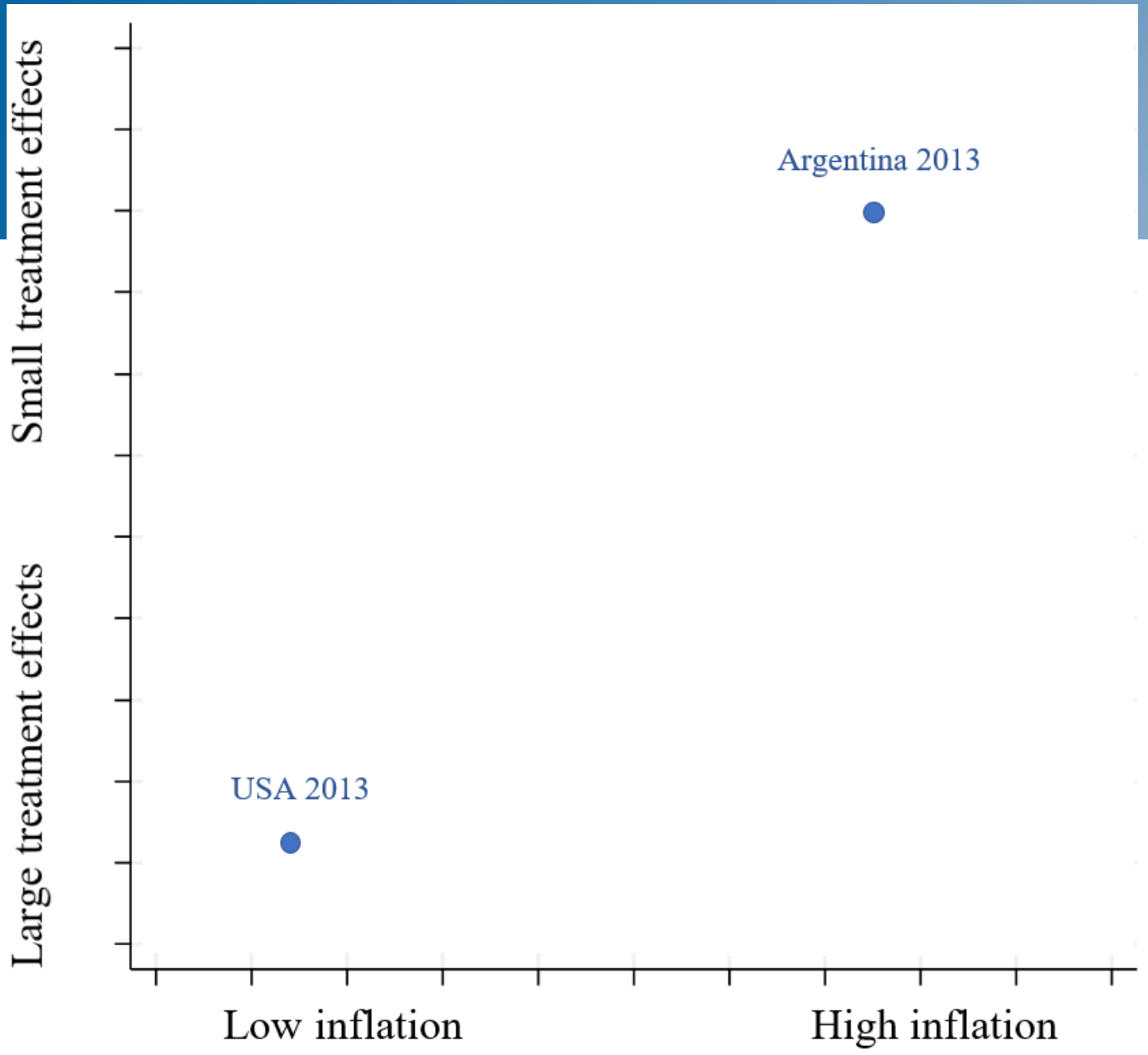
- Households revise their expectations more in response to surprises when inflation is high.
  Pfauti (2023)

- Households report that they are more attentive to inflation when inflation is high. (new)
  Weber, Candia, Ropele, Lluberas, Frache, Meyer, Kumar, Gorodnichenko, Coibion, etc (2023)

- Estimates of information rigidity are lower when volatility is high.
  Coibion and Gorodnichenko (2015), Goldstein (2022).

- Households respond less to information treatments when inflation is high.
  - Cavallo, Cruces and Perez-Truglia (2017) show using *RCTs* that households in Argentina respond less to information treatments about inflation than do U.S. households.

# Cavallo, Cruces, and Perez-Truglia (2017 )



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- Pool comparable RCTs across agents:
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- Pool comparable information treatments:
  - Information about recent inflation
  - Information about inflation targets
  - Information about inflation forecasts

# Some Background

Simple Bayesian updating predicts:

$$posterior_i = (1 - G) \times prior_i + G \times signal$$

where $G$ will be large when signal is credible and informative and small otherwise. When $G$ is small, posteriors will be close to priors.

**RCT Implementation:**

- Measure prior beliefs of all agents
- Randomly assign agents to "control" and "treatment" groups such that only those in the treatment group are provided with signal.
- Measure posterior beliefs of all agents.

- Estimate treatment effect:

$$posterior_i = \alpha + \beta \times prior_i + \delta \times T_i + \gamma \times (T_i \times prior_i) + error_i$$

  - *Control group:* $T_i = 0,\ posterior_i = prior_i\ \ so\ \hat{\beta} = 1$
  - *Treatment group:* $T_i = 1,\ posterior_i = (\alpha + \delta) + (\beta + \gamma) \times prior_i$, so $\hat{\gamma}$ tells us how much less weight treated firms place on their prior (equivalent to $-G$) relative to control.

# The Surveys

**Nielsen Homescan Panel (US households)**

- 80,000 households, representative
- Quarterly since 2018q2
- Survey sizes are 15,000 – 20,000 respondents.
- Inflation treatments in 2018q2, 2019q1, 2021q2-q4, 2022q3-q4, 2023q2-forward
  - *Inflation over the past year; inflation target of FOMC; Inflation forecast of FOMC*
- *Priors* measured using distributional question for 12-month ahead inflation expectations
- *Posteriors* measured using point forecast for 12-month ahead inflation immediately after the info treatments.

**Consumer Expenditure Survey (CES) (Euro-Area households)**

- 20,000 households per month, across 11 countries (originally just 6)
- Monthly, since 2020
- Inflation treatments in 2021q4, 2022q2-q3, 2023q1
  - *Inflation over the past year; inflation target of ECB; Inflation forecast of ECB*
- *Priors* measured using distributional question for 12-month ahead inflation expectations
- *Posteriors* measured using point forecast for 12-month ahead inflation immediately after the info treatments.

# The Surveys

**Survey of Inflation and Growth Expectations (Bank of Italy, firms)**

- 1000 firms, representative
- Quarterly since 2006!
- Inflation treatments start in 2021q3. Reshuffling of firms occurred in 2012q4, 2017q2, 2019q4
  - *Inflation over the past year*
- *Priors* measured using inflation forecast from previous wave
- *Posteriors* measured using point forecast of inflation expectations after treatment.

**Occasional surveys of firms in New Zealand**

- 2000 firms per wave
- No set periodicity
- Inflation treatments in 2014q4, 2016q2, 2018q1, 2019q3
  - *Inflation over the past year; inflation target range of RBNZ; Professional forecasts of inflation*
- *Priors* measured using distributional question for 12-month ahead inflation expectations
- *Posteriors* measured using point forecast for 12-month ahead inflation immediately after the info treatments.

# The Surveys

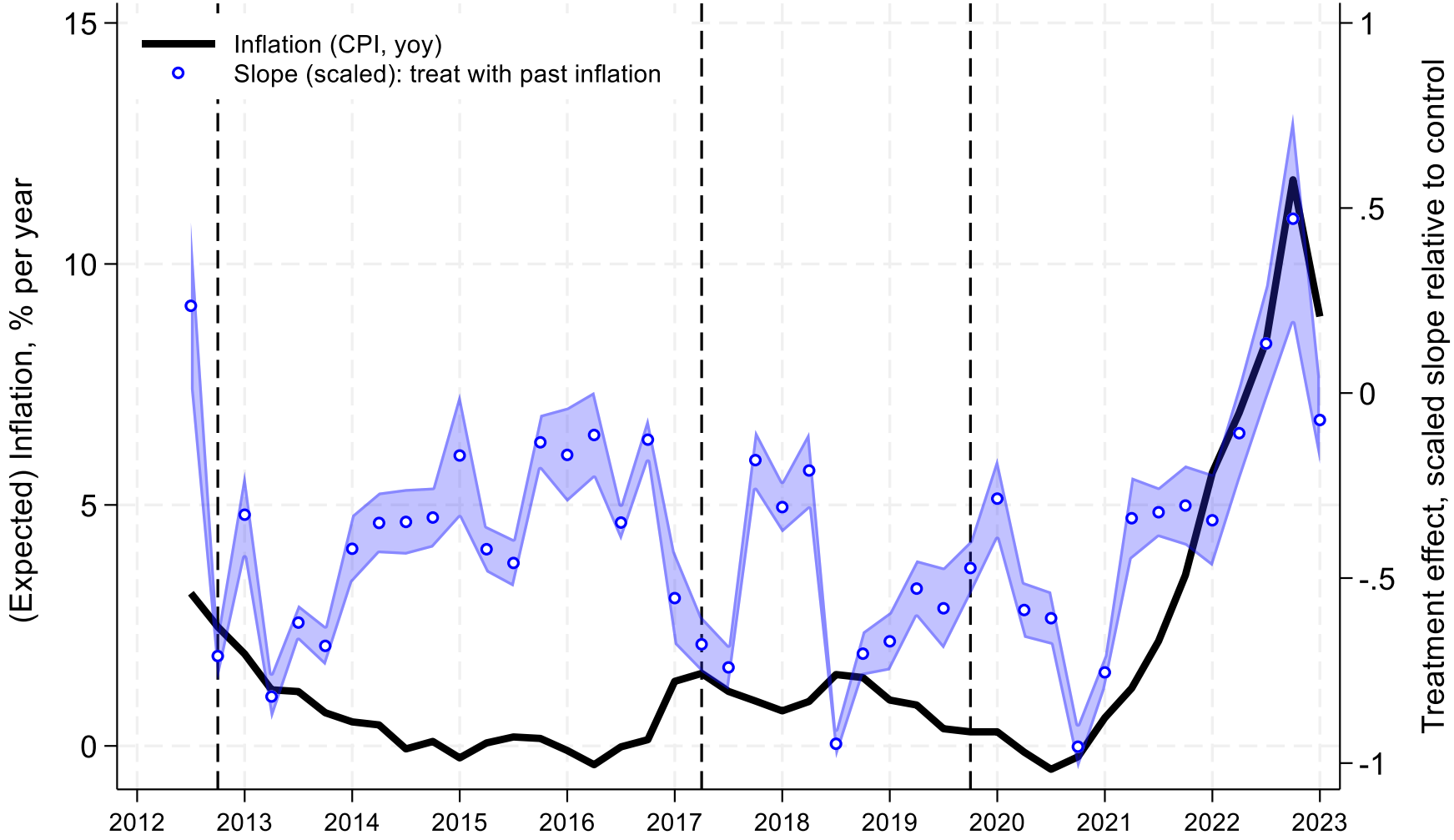
**National Institute of Statistics (INE) of Uruguay (on behalf of Central Bank of Uruguay, firms)**

- 500 firms, representative across industries
- Quarterly
- Uruguay experiencing roughly 8% inflation since early 2000s
- Inflation treatments in 2018q1-q2, 2019q2 and 2023q1
  - *Inflation over the past year; Central bank's inflation target range*
- *Priors* measured using year-ahead inflation expectations
- *Posteriors* measured using inflation expectations from next wave

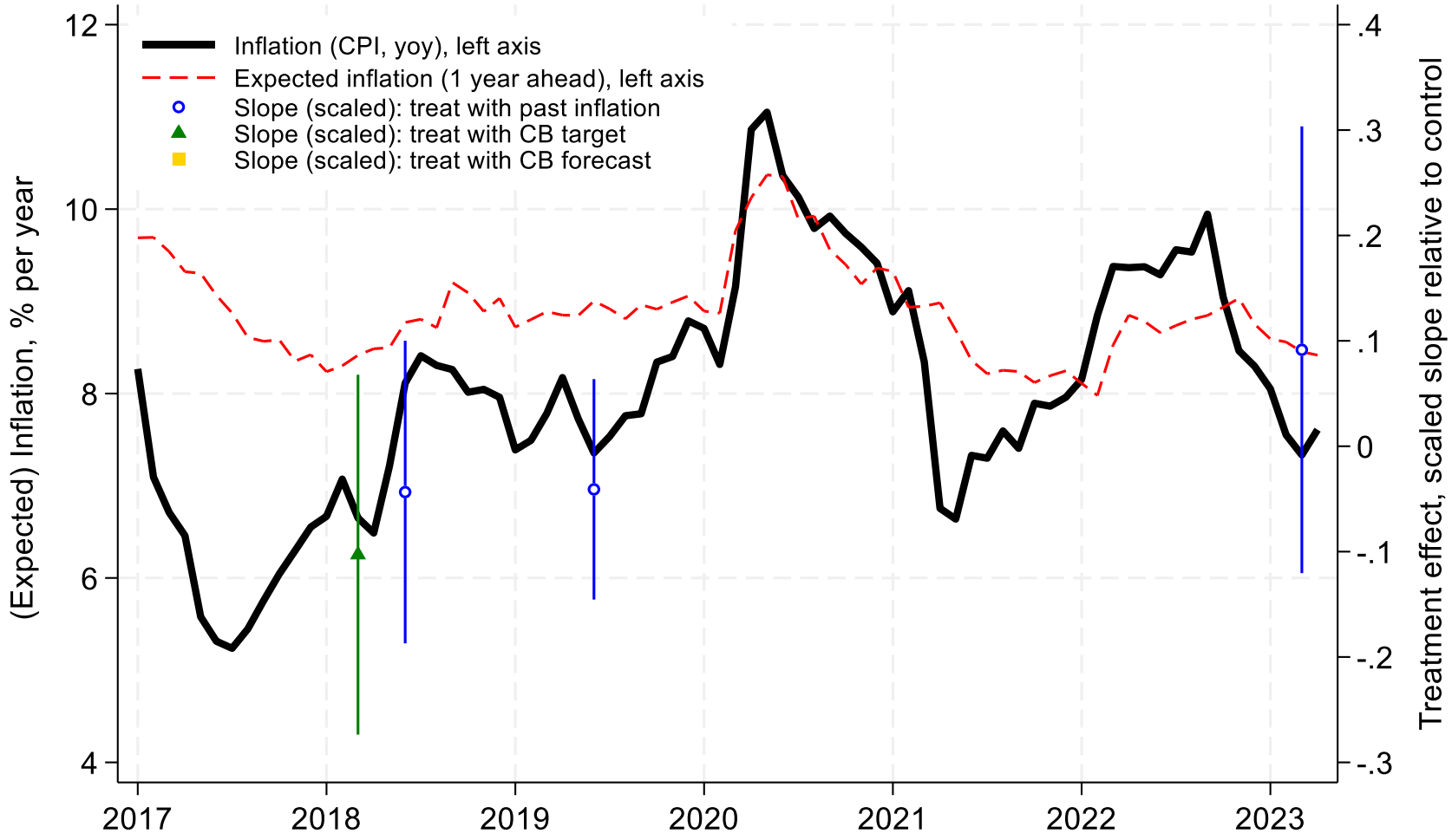
**Business Inflation Expectations (BIE) (U.S. firms)**

- 300 firms, representative across industries
- Monthly, since 2011
- Inflation treatments in 2019q1 and 2023q1
  - *Inflation over the past year*
- *Priors* are measured using perceived inflation over previous year
- *Posteriors* measured using point forecast for 12-month ahead inflation immediately after the info treatments.

# Italy: As inflation went up in 2021, treatment effects got smaller



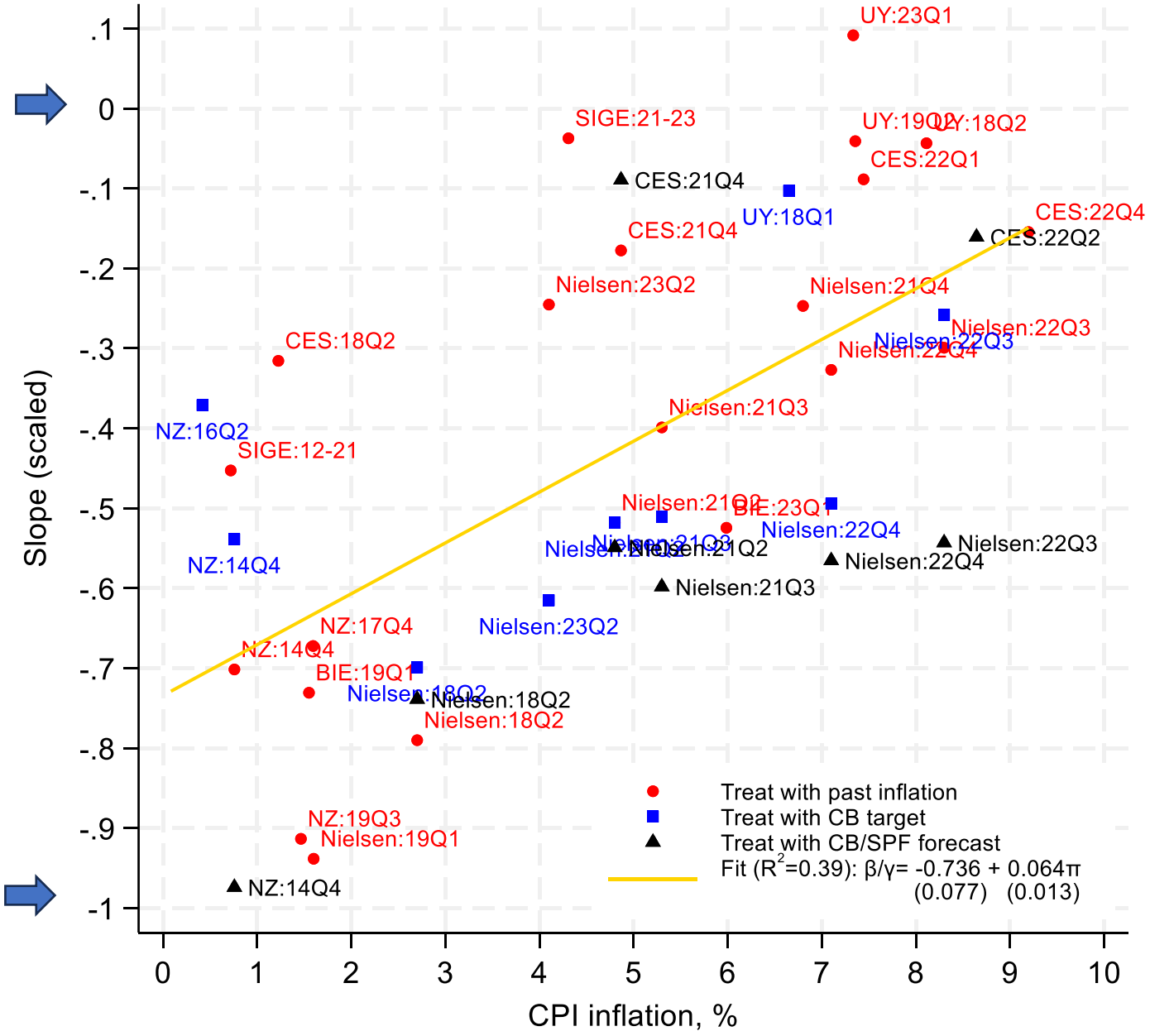
# Uruguay: With roughly constant, high inflation, treatment effects remained zero.



# Treatments, E(inflation) and macro environment

Attentive agents ("FIRE")

Inattentive agents




Nielsen: HHs, USA

CES: HHs, euro area

BIE: firms, USA

NZ: firms, New Zealand

SIGE: firms, Italy

UY: firms, Uruguay

# Possible Mechanisms at Work

- **Uncertainty:** If agents become more confident in their beliefs, then they will place less weight on new information. So, if higher inflation leads agents to collect more information and become more confident in their forecasts, treatment effects could fall.

- **Trust:** If agents become more distrustful of inflation statistics or the central bank when inflation is high, then they would tend to respond less to information about these, and treatment effects could fall.

- **Persistence:** If agents perceive inflation as more persistent when inflation is high, then information about recent inflation is more informative about future inflation, agents will become more informed ex-ante, leading to smaller treatment effects from recent inflation, but not information about future inflation.

- **Prior knowledge:** If more agents are tracking/receiving information about inflation prior to the treatments, then average treatment effect will fall because more agents have little/no response to the treatment.

# Conclusion

- We extend the evidence of Cavallo, Cruces, and Perez-Truglia (2017) to a much wider range of treatments across countries, across time, and across agents.

- Implications for macroeconomics:
  - ***Inattention is pervasive across countries, time and agents***. This calls for using models that incorporate systematic deviations from full information.

  - ***The degree of inattention can change rapidly with the economic environment***. This is a challenge for models that take the degree of inattention as given.

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- Implications for macroeconomics:

- Implications for policy communication:
  - When inflation is low: the challenge is reaching the public since they are inattentive. Conditional on reaching them, simple messages are very powerful.
  - When inflation is high: reaching the public is easier cause they are attentive, but changing their views is harder.

  - These are two VERY different communication environments.

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- Implications for macroeconomics:

- Implications for policy communication:

- Implications for external validity of RCTs:
  - ***When applied to similar economic environments,*** our evidence suggests similar RCTs will yield consistent results, even across countries or time.

  - ***When applied to different economic environments,*** our evidence suggests similar RCTs may yield very different results, even within the same country over close periods of time.

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- Implications for macroeconomics:
- Implications for policy communication:
- Implications for external validity of RCTs:
- Implications for business survey research (Just Brent's view): Inattention to aggregates in sanguine economic environments (i.e. low, stable inflation) suggest **eliciting *own-firm realizations and expectations* and then aggregating up.** [See Meyer and Sheng (2024), *R&R at European Economic Review;* Altig et al *Journal of Econometrics* (2022); Bunn et al *NBER working paper 30505* (2022); Boneva et al *Economic Journal* (2019); among others

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