Consumer Inflation Expectations: Daily Dynamics

Carola Binder[1], Jeffrey R. Campbell[2], and Jane Ryngaert[3]

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[1]Haverford College, cbinder1@haverford.edu
[2]Notre Dame, Tilburg, and CEPR, jcampb24@nd.edu
[3]Notre Dame, jryngaer@nd.edu

This Paper

- Uses *daily* panel from New York Fed's Survey of Consumer Expectations (SCE)
- Employs a *high frequency* identification strategy to study effects of FOMC meetings, data releases, pandemic and political news on inflation expectations

Lamla and Vinogradov (2019 JME)

- Conduct their own online surveys of inflation expectations (Y_i) shortly before and after 12 FOMC press conferences between December 2015 and June 2018.

$$Y_i = \alpha + \beta A_i + \Gamma Z_i + \epsilon_i$$

- A_i denotes respondent took the survey after the event. Z_i includes demographic controls and event-window fixed effects.
- Interpret β as *causal* effect of event on inflation expectations.
- Respondents in the few days before are a *control group* for respondents in the few days after due to small window of time.

Survey of Consumer Expectations

- Began in June 2013 after years of development at FRBNY.
- Online, nationally representative sample of approximately 1300 household heads *per month*.
- Respondents can participate for up to 12 months in a row.
- The Demand Institute, operated by The Conference Board and Nielsen, operates the survey on behalf of the FRBNY.
- Demographics, perceptions, and expectations, including inflation expectations at 12-month and 24-36-month horizons.

SCE as a Daily Survey

- Exact date that respondent took the survey is recorded.
- On average, 45 respondents take the survey per day, and 76% of days have at least 25 respondents.
- Respondent demographics are stable across days of the week

Details

Point and Density Forecasts

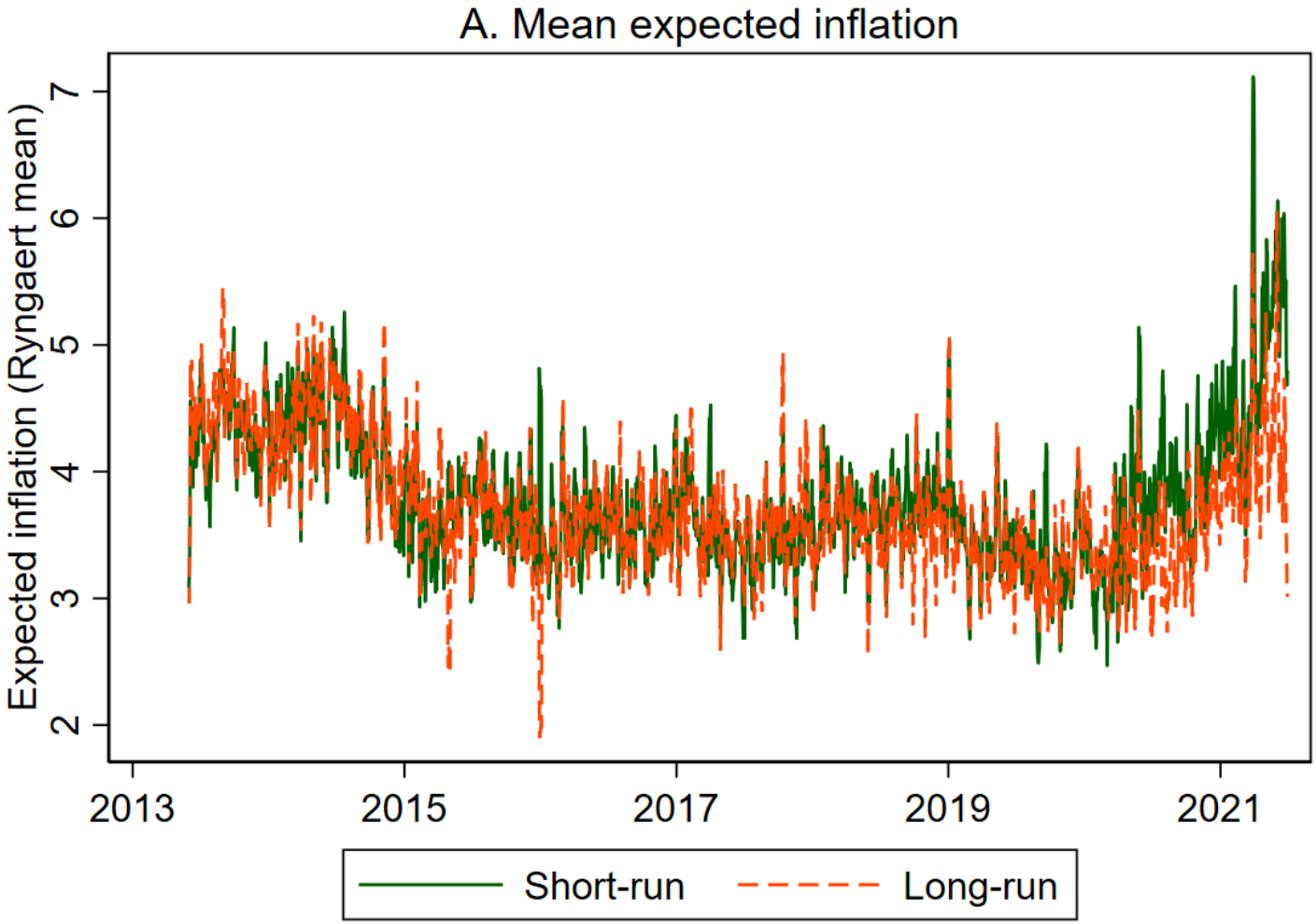
Point forecast: "What do you expect the rate of [inflation/deflation] to be over the next 12 months? Please give your best guess."

Density forecast: "Now we would like you to think about the different things that may happen to inflation over the next 12 months. We realize that this question may take a little more effort. 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 deflation (opposite of inflation) will be 12% or higher."

Ryngaert Measure

- Majority of consumers (nearly 80%) give point forecasts consistent with the mode of their density forecast (bin with highest probability).
- About 68% of forecasts fall in the same bin as the distribution-implied mean calculated by the SCE.
- Idea: Use the point forecast to pinpoint the *mode* of the distribution underlying the density forecast, then calculate the mean and IQR. Details

Five-Day Moving Average



Event Study Approach

We build upon Lamla and Vinogradov (2019 JME).
Our regression uses the full time sample:

$$Y_{it} = \alpha + \sum_{s=1}^{S} \beta_s A_{it}^s + \Gamma Z_{it} + \epsilon_{it},$$

A_{it}^s indicates that the respondent took the survey one or two days after event s.
Z_{it} includes fixed effects for: respondent, tenure, day of week, state, event window.
Event-window fixed effects: E_{it}^s indicates that the respondent took the survey two days before to two days after event s.
The estimate of β_s measures the average responses of consumer expectations to event s.

Events

- 66 FOMC meetings, including
  - 4 unscheduled
  - 45 with press conference
  - 9 with rate hike and 5 with rate cut
  - 31 expansionary and 27 contractionary relative to market expectations (based on eurodollar futures market contract prices) Details
- 96 Consumer Price Index (CPI) releases
- 87 Nonfarm payroll (NFP) releases
- 13 other key political/Covid news dates Details

$S = 238$ total events. (18 CPI releases on same day as FOMC) 57 of the β_s's are statistically significant at $p < 0.05$.

In a placebo test—selecting 238 event dates at random—only 3 coefficients are significant.

Biggest Negative Shifters

- 7/28/2020 FOMC leaves rates unchanged with press conference : $\beta =$ -2.1*
- 7/5/2013 NFP unexpectedly high : $\beta =$ -2.0***
- 7/30/2019 FOMC cuts rates with press conference : $\beta =$ -1.9***
- 4/10/2020 CPI unexpectedly low : $\beta =$ -1.8***
- 11/16/2020 Moderna efficacy results : $\beta =$ -1.7***
- 6/15/2021 FOMC leaves rates unchanged with press conference : $\beta =$ -1.5***
- 5/3/2019 NFP unexpectedly high : $\beta =$ -1.5***
- 5/8/2020 NFP unexpectedly high : $\beta =$ -1.4***

Biggest Positive Shifters

- 1/16/2015 CPI unexpectedly high : $\beta = 1.8^{***}$
- 3/3/2020 FOMC cuts rates (unscheduled) with press conference : $\beta = 1.8^{***}$
- 12/6/2019 Pelosi announces plan to impeach Trump, NFP unexpectedly high : $\beta = 1.3^{***}$
- 11/6/2020 Biden wins Presidential election, NFP unexpectedly high : $\beta = 1.3^{*}$
- 9/25/2018 FOMC raises rates with press conference : $\beta = 1.1^{**}$
- 11/7/2014 NFP unexpectedly high : $\beta = 1.1^{***}$
- 3/25/2020 Senate passes CARES Act : $\beta = 1.1^{***}$
- 12/10/2020 CPI unexpectedly high : $\beta = 1.0^{***}$

Responses to FOMC meetings

Share of significant effects for:

- All FOMC meetings: 26%
- Expansionary: 26%, contractionary: 23%
- Scheduled: 25%, unscheduled: 50%
- Press conference: 32%, no press conference: 14%
- Rate cut: 80%, rate hike: 44%, no rate change: 18%

Heterogeneity (in progress)

$$Y_{it} = \alpha + \sum_{s=1}^{S} \beta_s A_{it}^s + \sum_{s=1}^{S} \beta_s A_{it}^s * G_{it} + \Gamma Z_{it} + \epsilon_{it},$$

Initial results:

- Biden election raised men's inflation expectations more than women's
- Jan. 6 raised women's inflation expectations more than men's
- CARES Act raised expectations of men, highly numerate, and high-income consumers most
- For low-income consumers, Trump election and Jan. 6 had more negative effect on inflation expectations, Pelosi announcement more positive.

Discussion

- Some results consistent with research showing that consumers associate "good times" with low inflation and "bad times" with high inflation (Binder 2020, Kamdar 2022).
  - Positive NFP shocks sometimes reduce inflation expectations.
  - Moderna vaccine efficacy results reduced inflation expectations.
  - Some of the largest positive effects on inflation expectations came with Pelosi's announced plan to impeach Trump, the Biden election, Senate passage of the CARES Act, the WHO declaration of a global health emergency, and the House vote on the American Rescue Plan.
- We add some nuance to the typical result that households are quite inattentive to central bank communications: certain especially newsworthy central bank announcements do have significant and sizeable effects.

Appendix Slides

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A-2 Case 2 - Consumer uses two intervals.

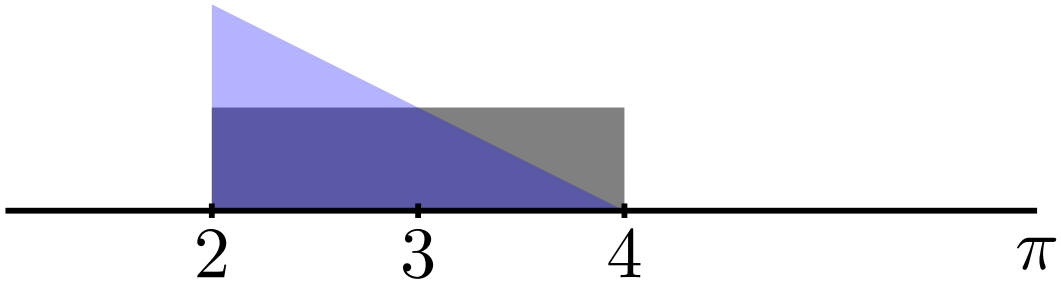
I fit triangular distributions for those respondents filling two adjacent intervals.[10] Again, I allow the distribution to be a scalene triangle with the mode of the distribution coinciding with the respondent's point estimate.[11] When fitting triangular distributions over two intervals, one of the endpoints of the distributions is fitted to either the rightmost point of the higher interval or the leftmost point of the lower interval. The other endpoint is determined from the restricted endpoint, the assumed mode of the distribution, and the probabilities placed in each bin. Denote the mode of the distribution as p and upper and lower bounds of the distribution as l and r, respectively. The height of the distribution is given by $h = \frac{2}{r-l}$. The subjective distribution for an individual is therefore given by:

$$f(x) = \begin{cases} \frac{2}{(r-l)(p-l)}(x-l) & l < x \leq p \\ \frac{2}{(r-l)(r-p)}(r-x) & p < x \leq r \end{cases}$$

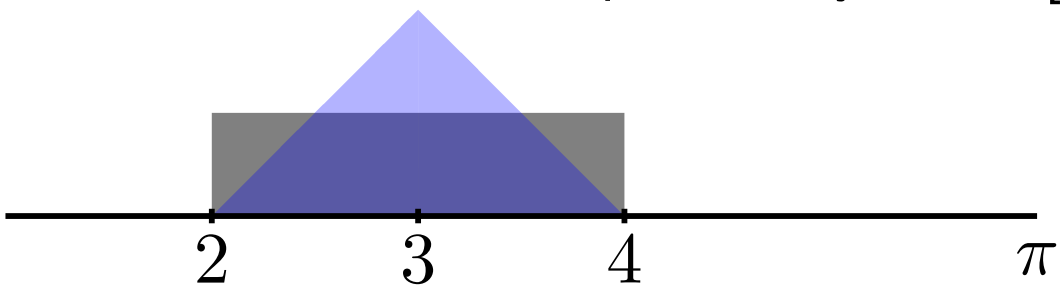
Back

Ryngaert (blue) versus FRBNY (gray)

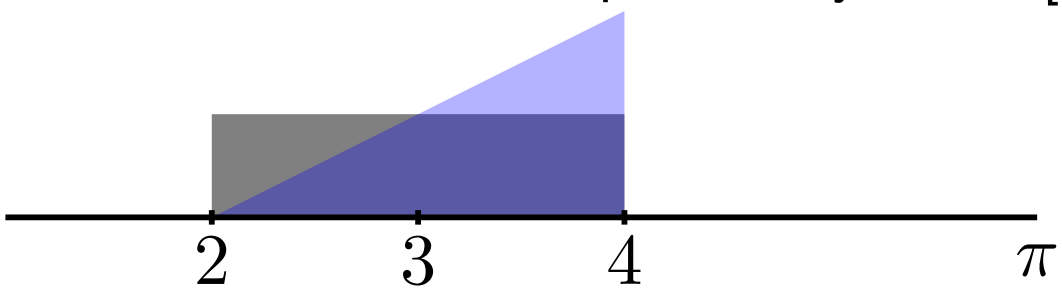
(a) Point forecast of 2% and 100% probability in bin $[2, 4]$



(b) Point forecast of 3% and 100% probability in bin $[2, 4]$



(c) Point forecast of 4% and 100% probability in bin $[2, 4]$



Back

Dealing with Outliers

One approach is to trim, e.g. forecasts below -10% or above 25% (Binder 2017). With daily data this is less desirable:

- At monthly frequency, share of forecasts trimmed per month averages 6.1%, with standard deviation 1.8%.
- At daily frequency, share trimmed per day averages 6.1%, with standard deviation 4.8%.
- Share of trimmed forecasts systematically related to the state of the economy.
- WHO declared Covid-19 a global pandemic on March 11, 2020. In March 2020 before the announcement, an average of 5.3% of forecasts are trimmed per day; after, an average of 15.9% of forecasts are trimmed per day.

Dealing with Outliers

- Instead of trimming with time-invariant cut-offs, we winsorize the top and bottom 5% of forecasts and IQRs *by day*.
- For days with ≤ 20 responses, we winsorize top and bottom 10%.

Back

Political or Covid News Dates

- 9/30/2013 Government shutdown
- 11/9/2016 Trump wins Presidential election
- 12/6/2019 Pelosi announces plan to impeach Trump
- 1/21/2020 CDC confirms first US Covid case
- 1/31/2020 WHO issues global health emergency
- 3/11/2020 WHO declares pandemic
- 3/25/2020 Senate passes CARES Act
- 7/14/2020 Early Moderna data point to efficacy
- 11/6/2020 Biden wins Presidential election
- 11/16/2020 Moderna efficacy results
- 1/6/2021 Capitol riots
- 1/13/2021 House impeaches Trump again
- 3/10/2021 House votes on American Rescue Plan

Back

Expansionary versus contractionary FOMC meetings

- To classify the tone of meetings, we use data from the eurodollars futures market (interbank rate on deposits of U.S. dollars in non-U.S. banks) and the federal funds futures market.
- For each FOMC meeting, a shock is defined as the change in the expected interest rate over the next 4 quarters implied by the contract price.
- Negative corresponds to a decrease in the expected interest rate or an expansionary shock.
- Example: the largest positive (contractionary) federal funds shock was on July 31, 2019 (0.065). The Fed announced a 25 basis points rate cut as markets already expected, but "For financial markets the fly in the ointment was Chair Powell's observation that the move was a 'mid-cycle adjustment in policy' rather than the first in new cycle of rate cuts." (Source: Investors' Corner.)

Back