A Appendix: High-frequency Forecast Source Data Documentation

This appendix provides additional detail on the forecasts and the associated archived documents that we used to create our high-frequency forecast dataset.

The six types of archived documents that we used to create the high-frequency forecast dataset were:

1. Briefing texts. When the staff conducts a forecast update briefing for the Board of Governors, a staff member first delivers a set of prepared remarks. The Board of Governors follow this delivery with questions. Some of the texts contain forecasts.

2. Briefing tables and charts. For each forecast update briefing, the staff creates a set of tables and charts to accompany the prepared remarks. Some of these tables and charts contain the staff forecasts.

3. Eve-of-GDP-release database snapshots. The staff sometimes saves a snapshot of its forecasts for real GDP growth and core PCE inflation on the eve-of-release of the official Bureau of Economic Analysis (BEA) estimate for GDP. These snapshots are called "killsheets" or "comparison sheets."

4. Irregular database backups. We use archived automatic backups of databases that contain the staff's GDP and inflation forecasts, called "RUTH backups" or "weekly RUTHs." These database backups were irregular as they: (1) occurred at different frequencies over time, (2) were not necessarily at times that the staff vetted its forecasts, and (3) were not necessarily at times that the staff updated the Board of Governors.

5. Forecast update memos. In recent years the staff has delivered an approximately weekly written forecast update memo that summarized its thinking. These memos sometimes contained the numerical values of the staff's GDP and inflation forecasts. The staff

also delivers memos to the Board of Governors around extreme events or when asked for an update by a Board member.

6. Greenbooks.

In general, both Greenbook and between-Greenbook forecasts are formed using a combination of econometric models and subjective judgment by the staff. That said, the exact procedure and how the staff combine model-based with subjective judgment forecasts, both for the Greenbook and for between-Greenbook forecasts, is confidential so we cannot speak to it, or how the procedure may have changed over time.

Both the Greenbook and between-Greenbook forecasts are conditional. That said, we do not observe the conditioning assumptions for the between-Greenbook forecasts or when they would have updated between Greenbooks.

The conditional nature of the high-frequency forecasts could be a complicating factor for an analysis[22] as the forecast errors of conditional forecasts contain two components]—the unconditional forecast error and the forecast error of the conditioning variable. That said, for short-horizon forecasts the difference between the forecasted conditioning variable and the actual conditioning variable is small. In the extreme cases, for backcasts there is no difference and for current-quarter forecasts the conditioning variable is set for part of the quarter—so for these cases forecast errors of the conditioning variable are very unlikely to be the source our results.[23]

The forecasts from the archived documents differ in their precision level, depending on the document type. Briefing tables and charts usually report GDP and inflation at the nearest ⅒ percentage point. The eve-of-GDP-release database snapshots usually have the same precision as Greenbooks: GDP at the nearest ⅒ percentage point and inflation at the nearest 1/100 percentage point. Irregular database backups have forecasts to several decimals, but we rounded these to match the Greenbook's precision.

[22]See, for example, Clark and McCracken (2017) or Berge, Chang and Sinha (2019).

[23]Furthermore, if this explanation were correct then the staff's forecast errors for the conditioning variable would be the ones exhibiting time-varying inefficiency between FOMC meetings.

The precision of forecasts from briefing texts and forecast update memos varies considerably, but often GDP forecasts from briefing texts and forecast update memos are reported at the nearest ¼ percentage point and inflation forecasts are reported at either the nearest ⅒ or ¼ percentage point. These forecasts tend to be paired with a qualifier adjective. For example, consider the briefing text from October 10, 2006 (emphasis ours): "To sum up, the average rate of GDP growth in the second half of the year looks to be about the same as in the September Greenbook, with the third quarter rate—at 1¼ percent—a little slower than we had in the Greenbook, and the fourth quarter pace—at ***just over 2 percent***—a little faster."

In cases where there was a qualifier adjective that indicated "more than", we applied it to the numerical value in the text and adjusted the forecast in our dataset upward to the nearest ⅒ percentage point. For example, "just over 2 percent" is 2.1 percent in our dataset. We recorded adjectives that mean "less than" analogously, by adjusting downward to the nearest ⅒ point. When we observed adjectives synonymous with "about," we did not adjust the forecast.

Occasionally, briefing texts and forecast update memos contain range forecasts. For example, in the prepared remarks from September 24, 2001 (emphasis ours): "For the fourth quarter, we are likely to project a decline in real GDP of ***between one-half and one percent.***" In these cases, we recorded the midpoint of the range as the forecast. We then rounded to match the Greenbook's precision.

The materials the staff use to brief the Board of Governors—briefing tables and charts that accompany the briefing text—may or may not contain the numerical values of the staff forecasts.[24] But when both the tables or charts and the briefing text report the same forecast, they may also do so at different precision levels. When both the briefing tables and charts and the briefing text contain the same forecast but report at different precision levels, we used the more precise value from the tables and charts.

[24]Briefing tables and charts tend to contain values of new data releases, such as the unemployment rate from the last employment report.

The eve-of-GDP-release database snapshots have a "previous value" of the staff's forecast indicated, but the previous value can either be the last Greenbook forecast or the staff's updated (non-Greenbook) forecast as of the eve-of-GDP-release. There are no metadata that allow us to differentiate between these two possibilities. Furthermore, eve-of-GDP-release database snapshots typically, but not always, report forecasts at the Greenbook's precision level.

To use eve-of-GDP-release database snapshots we assumed that if the values from the eve-of-GDP-release database snapshot—rounded to the Greenbook's precision—matched the forecasted values from the last Greenbook, then the eve-of-GDP-release database snapshot reported the Greenbook forecasts. Otherwise we assumed the eve-of-GDP-release database snapshot reflected the staff's eve-of-GDP-release forecast.

Irregular database backups occur at automatic, time-varying intervals. Because the backups occur at points where the staff may not have vetted the forecasts, sometimes the irregular database backup saves what, in our estimation, is a nonsensical value of the staff's forecast. We removed these nonsensical values. Though we did not have a hard rule for doing so, typically if the implied revision to the staff's forecast from an irregular database backup was on the order of tens of percentage points for GDP or percentage points for inflation, then we removed those values.

Though the unit of time for our high-frequency dataset is daily, the archived documents that we used to create the dataset are mixed-frequency. Typically we only have one staff forecast for a day. But on occasion we observed more than one staff forecast on a given day. In instances where we have more than one forecast on a given day, we adopted the following priority system, from highest to lowest: (1) Greenbooks, (2) forecast update memos, (3) briefing tables/charts/text, (4) eve-of-GDP-release database snapshots, and (5) automatic database backups. The first three types of sources (Greenbooks, memos, and briefing materials) are all communications to the Board of Governors and the last two (database snapshots and database backups) are not.

We determined this priority system based on our prior information, garnered as staff members, about how the Board staff forecasts. Greenbooks are the official staff forecast and undergo the most thorough vetting, so we gave them the highest priority. Forecast update memos, briefing tables, charts, and text also contain vetted forecasts because they are direct communications to the Board of Governors, but the staff usually disclaims that the forecasts are still in flux and the reported forecasts could change—only the Greenbooks are the official staff forecast. Eve-of-GDP-release database snapshots also undergo some vetting in preparation for the BEA's release, though our suspicion was that the forecasts are less vetted than memos or briefing tables/charts/text because the eve-of-GDP-release database snapshots are not official communications to the Board of Governors.

While we thought that communicated forecasts would be superior to non-communicated forecasts, again based on our priors, there is evidence that the source of the forecast is not predictive of its quality. For example, the RMSEs for current-quarter forecasts between communicated and non-communicated are similar over our sample and are both similar to the Greenbooks. For GDP, the Greenbook RMSE is 1.66, communicated forecast RMSE is 1.71, and non-communicated forecast RMSE is 1.58. For inflation, the Greenbook RMSE is 0.49, communicated forecast RMSE is also 0.49, and non-communicated forecast RMSE is 0.50.

B Appendix: Estimation Details for Preanalysis Regressions

The estimation details in this section differs from the final version of our registered preanalysis plan only in terms of exposition—the models, estimators, data transformations, and so on are identical.[25]

We estimated the models from 2001-2011. Although Greenbooks extend back to 1967, our high-frequency forecast dataset has between-Greenbook observations only since 2001, and 2011 was the latest Greenbook that complied with the FOMC information security situation as of June 1, 2017, which is approximately when we registered our preanalysis plan and finished collecting our data.[26]

Forecast horizons, h, were from one-quarter backcasts through two-quarter ahead forecasts for GDP, and one-quarter backcasts through one-quarter ahead forecasts for inflation. We chose these forecast horizons because they were the ones available in our high-frequency dataset with reasonable sample sizes, though the one-quarter ahead inflation regressions still have a somewhat small sample.

Because, from our experience as staff forecasters, we believe the staff's forecast process is tied to FOMC meetings, in our high-frequency forecast dataset we indexed forecast horizons based on the next regularly scheduled FOMC meeting. Usually this timing convention aligns with a standard calendar quarter timing. However, in certain instances around the times that calendar quarters changed, $\Delta\hat{y}_{i,t+h|\tau}$ was a forecast of $y_{i,t}$ made h calendar quarters ahead minus a forecast of $y_{i,t}$ made $h+1$ calendar quarters ahead. For example, if we observed a current-quarter forecast of GDP in April (which would be a forecast of Q2) that was before an April FOMC meeting, and the last observed forecast of Q2 was in March after a March FOMC meeting, then $\Delta\hat{y}_{i,t+h|\tau}$ for the current-quarter GDP specification ($h=0$) was

[25] We registered our initial preanalysis plan on March 13, 2017 with the Open Science Framework, and revised it three times on: April 19, 2017, May 5, 2017, and May 26, 2017. Our plan can be found at http://dx.doi.org/10.17605/OSF.IO/DE3PE.

[26] Greenbooks are publicly released with an approximately six-year lag.

the current-calendar-quarter forecast of GDP in April minus the one-calendar-quarter-ahead forecast of GDP in March. This timing convention also implied that, because we needed at least two forecasts to compute $\Delta\hat{y}_{i,t+h|\tau}$, for our high-frequency regressions we dropped Greenbook forecasts of $y_{i,t+h}$ where we did not observe at least one between-Greenbook forecast of $y_{i,t+h}$.

For the regressions using only Greenbooks, we estimated an unweighted equation (1). For regressions using our high-frequency dataset, we weighted equation (1) by the number of calendar days between forecasts.[27]

We inter-temporally aggregated forecast observations so that the minimum absolute value of the unweighted $\Delta\hat{y}_{i,t+h|\tau}$ was one basis point. This procedure dropped forecasts that were equivalent to the previously observed forecasts, and it also dropped other forecasts where the forecasts did not materially revise. This aggregation was to avoid potential downward bias in β, as the staff updates its forecasts in batch mode but our dataset may have recorded forecasts at a higher frequency than the frequency that the staff updated.[28]

For actual values of GDP and inflation, $y_{i,t}$, we used the BEA's third-release estimates.[29] As there was a separate regression of equation (1) for each macroeconomic variable-horizon-dataset combination, there were fourteen regressions of equation (1).[30]

Table 7 shows our results from estimating equation (1) using real GDP growth fore-

[27]We chose this weighting scheme for regressions that used our high-frequency dataset because our high-frequency dataset is a mixed-frequency dataset that has a different number of forecasts between FOMC meetings. The mixed-frequency nature of the data is due to both the staff's changing forecast revision methods and changing recording standards. We wished to give forecast revisions made in response to when the staff had accumulated relatively more information a higher weight and we proxied information accumulation with the number of calendar days between forecasts. For Greenbook regressions, since Greenbooks are about evenly spaced throughout a year, we thought that there was no need to weight.

[28]This potential downward bias in β is analogous to computing abnormal returns from high-frequency stock price data and running into "thin-trading" problems, where shares are not traded frequently enough to cause changes in prices commensurate with shifts in demand or supply and, as such, causes bias towards zero in the estimated β of a regression of a portfolio return on a market return. For a further description of "thin-trading" see Sercu, Vandebroek and Vinaimont (2008).

[29]While the vintage of data used for actual values can affect inferences about the underlying forecasts (Koenig, Dolmas and Piger, 2003) it was not obvious to us at the time we composed our preanalysis plan (and is still not obvious to us) that one vintage of real-time data would be superior to others. See Croushore (2011) for a review of the real-time data literature.

[30]Two datasets (Greenbook-only and high-frequency) with four horizons for GDP (eight regressions) plus the two datasets with three horizons for inflation (six regressions).

casts.[31]. Each column is a separate regression by forecast horizon, increasing in the horizon from left to right. The top panel shows results from our high-frequency dataset and the bottom panel shows results from using Greenbooks only.

Broadly speaking, the high-frequency regressions show similar results to the Greenbook-only regressions. The tests for coefficient equality between high-frequency and Greenbook regressions do not show statistically significant differences, as shown in the last two rows of Table 7. Therefore, on average, it appears that the high-frequency forecasts perform similarly to Greenbooks.[32]

There is some evidence of GDP forecast inefficiency. On average, the staff's current-quarter GDP forecasts *underrevised*. The coefficient of 0.52 in the current-quarter GDP regression using our high-frequency dataset indicates that the optimal revision would have been for the staff to revise their current-quarter GDP forecasts by 52 percent *more* than the staff actually did ($p = 0.08$).[33] For example, if the staff received better-than-expected news that led it to increase its current-quarter GDP forecast, then our result suggests that the staff should have increased its current-quarter GDP forecast by an additional 52 percent.

Table 8 shows equation (1) results using core PCE inflation forecasts. For backcasts and current-quarter forecasts, the tests for coefficient equality between the high-frequency and Greenbook regressions do not show statistically significant differences. That said, the one-quarter ahead regressions do show differences—at this horizon the high-frequency regressions tend to *overrevise*, whereas no such pattern exists for the Greenbooks. But because our sample of one-quarter-ahead inflation forecasts is small, we do not want to push these inflation results too hard, and we believe our inflation results, on net, show weaker evidence of inefficiency than our GDP results.

We also checked all of our results by re-running prespecified regressions without the largest 1 percent of residuals in magnitude, rounded down, which did not materially affect

[31] We used code from Jann (2005*a*,*b*) for the regression tables

[32] The RMSEs for the high-frequency forecasts and Greenbooks are also similar. See appendix A.

[33] p-values in this section and subsequent sections refer to two-sided hypothesis tests where the null is that the referenced coefficient(s) equal zero.

the results. Regressions without outliers are in appendix C, Tables 9 and 10.

Table 7: Real GDP Efficiency Regressions Suggest Some Forecast Inefficiencies

Forecast Horizon	-1	0	1	2
	High-frequency			
Revision	-0.10	0.52	-0.32	-0.12
	(0.11)	(0.30)	(0.35)	(0.25)
Constant	0.04	0.17	-0.37	-0.71
	(0.04)	(0.09)	(0.14)	(0.14)
N	616	579	495	381
adj. R^2	0.00	0.01	0.00	-0.00
	Greenbook Only			
Revision	0.03	0.39	-0.29	-0.33
	(0.07)	(0.19)	(0.33)	(0.40)
Constant	0.04	0.35	-0.22	-0.72
	(0.07)	(0.18)	(0.26)	(0.24)
N	86	87	87	87
adj. R^2	-0.01	0.04	-0.00	-0.00
p-values:				
H_0 : High-Frequency Revision = Greenbook Revision	0.35	0.73	0.96	0.67
H_0 : High-Frequency Constant = Greenbook Constant	0.97	0.35	0.61	0.96

Description: Table shows estimated coefficients from the regression $y_{i,t+h} - \hat{y}_{i,t+h|\tau} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + e_{i,t+h|\tau}$ for Federal Reserve Board staff projections of annualized quarterly real GDP growth by forecast horizon. The top panel uses our high-frequency forecast dataset and the bottom panel uses Greenbooks only. For Greenbook regressions, OLS standard errors in parentheses. We weight the high-frequency regressions by number of days between forecast revisions in $\Delta\hat{y}_{i,t+h|\tau}$, with Huber-White (White, 1980) standard errors in parentheses. Hypothesis tests are two sided. Statistical significance asterisks omitted.

Interpretation: The regressions from both our high-frequency forecast dataset and the Greenbooks suggest, on average, some forecast inefficiencies. The current-quarter staff GDP forecasts tend to underrevise, and there is also some evidence of bias.

Table 8: Inflation Efficiency Regressions Suggest Limited Inflation Forecast Inefficiencies

Forecast Horizon	-1	0	1
	High-frequency		
Revision	-0.45	0.23	-1.82
	(0.21)	(0.25)	(0.82)
Constant	-0.02	-0.00	0.26
	(0.03)	(0.04)	(0.10)
N	166	206	48
adj. R^2	0.08	0.00	0.12
	Greenbook Only		
Revision	-0.14	-0.18	0.13
	(0.11)	(0.14)	(0.38)
Constant	0.01	-0.05	-0.05
	(0.03)	(0.05)	(0.06)
N	84	87	87
adj. R^2	0.01	0.01	-0.01
p-values:			
H_0 : High-Frequency Revision = Greenbook Revision	0.18	0.14	0.03
H_0 : High-Frequency Constant = Greenbook Constant	0.46	0.51	0.01

Description: Table shows estimated coefficients from the regression $y_{i,t+h} - \hat{y}_{i,t+h|\tau} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + e_{i,t+h|\tau}$ for Federal Reserve Board staff projections of annualized quarterly core PCE inflation by forecast horizon. The top panel uses our high-frequency forecast dataset and the bottom panel uses Greenbooks only. For Greenbook regressions, OLS standard errors in parentheses. We weight the high-frequency regressions by number of days between forecast revisions in $\Delta\hat{y}_{i,t+h|\tau}$, with Huber-White (White, 1980) standard errors in parentheses. Hypothesis tests are two sided. Statistical significance asterisks omitted.

Interpretation: The high-frequency regressions indicate some tendency, on average, for one-quarter backcasts of inflation to overrevise, but otherwise we find little evidence of inefficient inflation forecasts. The one-quarter-ahead regressions have a small sample size, so we do not want to overemphasize their results.

C Appendix: Outlier Check from Preanalysis Plan and Bloomberg Data Tables

All outlier checks are models estimated without the 1 percent of observations with the largest residuals in absolute value from using the baseline sample.

Table 9: Removing Outliers Still Suggest Some GDP Forecast Inefficiencies

Forecast Horizon	-1	0	1	2
Revision	-0.11	0.44	-0.18	-0.14
	(0.11)	(0.29)	(0.33)	(0.23)
Constant	0.02	0.23	-0.27	-0.60
	(0.04)	(0.08)	(0.13)	(0.13)
N	610	574	491	378
adj. R^2	0.00	0.01	-0.00	-0.00

Description: Table shows estimated coefficients from the regression $y_{i,t+h} - \hat{y}_{i,t+h|\tau} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + e_{i,t+h|\tau}$ for Federal Reserve Board staff projections of annualized quarterly real GDP growth by forecast horizon, removing 1 percent of outliers. We weight by number of days between forecast revisions in $\Delta\hat{y}_{i,t+h|\tau}$, with Huber-White (White, 1980) standard errors in parentheses. Hypothesis tests are two sided. Statistical significance asterisks omitted.

Interpretation: The regressions without outliers still suggest, on average, some forecast inefficiencies. The current-quarter GDP forecasts tend to underrevise, and there is also some evidence of bias.

Table 10: Removing Outliers Still Suggest Limited Inflation Forecast Inefficiencies

Forecast Horizon	-1	0	1
Revision	-0.45	0.23	-1.82
	(0.21)	(0.25)	(0.82)
Constant	-0.01	0.00	0.26
	(0.03)	(0.04)	(0.10)
N	165	204	48
adj. R^2	0.10	0.00	0.12

Description: Table shows estimated coefficients from the regression $y_{i,t+h} - \hat{y}_{i,t+h|\tau} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + e_{i,t+h|\tau}$ for Federal Reserve Board staff projections of annualized quarterly core PCE inflation by forecast horizon, removing 1 percent of outliers. We weight by number of days between forecast revisions in $\Delta\hat{y}_{i,t+h|\tau}$, with Huber-White (White, 1980) standard errors in parentheses. Hypothesis tests are two sided. Statistical significance asterisks omitted.

Interpretation: The regressions without outliers still suggest, on average, one-quarter backcasts tend to overrevise but otherwise there is limited evidence of inefficiencies. The one-quarter-ahead regressions have a small sample size, so we do not want to overemphasize their results.

Table 11: Time-Varying Real GDP Efficiency Regressions without Outliers Also Suggest Some Forecast Inefficiencies

Forecast Horizon	-1	0	1	2
$I(\tau)$	-0.02	0.15	0.57	0.56
	(0.08)	(0.15)	(0.34)	(0.25)
Revision	-0.16	0.53	-0.10	-0.55
	(0.13)	(0.37)	(0.43)	(0.31)
$I(\tau)\times$Revision	0.17	-0.71	-0.16	0.82
	(0.26)	(0.48)	(0.65)	(0.45)
Constant	0.03	0.18	-0.48	-0.87
	(0.05)	(0.11)	(0.14)	(0.19)
N	610	574	491	378
adj. R^2	0.00	0.01	0.01	0.01
p-values:				
H_0 : Constant + $I(\tau) = 0$	0.88	0.00	0.76	0.05
H_0 : Revision + $I(\tau)\times$Revision = 0	0.99	0.56	0.59	0.40

Description: Table shows estimated coefficients from the regression $y_{i,t+h} - \hat{y}_{i,t+h|\tau} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + \gamma_{i,h}I(\tau) + \lambda_{i,h}I(\tau)\Delta\hat{y}_{i,t+h|\tau} + e_{i,t+h|\tau}$ for Federal Reserve Board staff projections of annualized quarterly real GDP growth by forecast horizon, where $I(\tau)$ is an indicator for a forecast made within 14 calendar days from the start of a regularly-scheduled FOMC meeting, removing 1 percent of outliers. We weight these regressions by number of days between forecast revisions in $\Delta\hat{y}_{i,t+h|\tau}$, with Huber-White (White, 1980) standard errors in parentheses. Hypothesis tests are two sided. Statistical significance asterisks omitted.

Interpretation: Excluding outliers, there is still some evidence that Federal Reserve Board staff GDP forecasts made at least 14 days from the start of a regularly scheduled FOMC meeting underrevise and two-quarter-ahead forecasts overrevise, though the standard errors are somewhat large. There is some stronger evidence of bias.

Table 12: Time-Varying Inflation Efficiency Regressions Without Outliers Also Indicate Limited Forecast Inefficiencies

Forecast Horizon	-1	0	1
$I(\tau)$	-0.00	-0.01	-0.07
	(0.05)	(0.08)	(0.18)
Revision	-0.24	0.07	2.32
	(0.39)	(0.26)	(1.55)
$I(\tau)\times$Revision	-0.24	0.41	-4.82
	(0.45)	(0.54)	(1.62)
Constant	-0.01	0.01	0.32
	(0.04)	(0.05)	(0.15)
N	165	204	48
adj. R^2	0.09	0.00	0.25
p-values:			
H_0 : Constant + $I(\tau) = 0$	0.67	0.98	0.02
H_0 : Revision + $I(\tau)\times$Revision = 0	0.04	0.31	0.00

Description: Table shows estimated coefficients from the regression $y_{i,t+h} - \hat{y}_{i,t+h|\tau} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + \gamma_{i,h}I(\tau) + \lambda_{i,h}I(\tau)\Delta\hat{y}_{i,t+h|\tau} + e_{i,t+h|\tau}$ for Federal Reserve Board staff projections of annualized quarterly core PCE inflation by forecast horizon, where $I(\tau)$ is an indicator for a forecast made within 14 days from the start of a regularly-scheduled FOMC meeting, removing 1 percent of outliers. We weight these regressions by number of days between forecast revisions in $\Delta\hat{y}_{i,t+h|\tau}$, with Huber-White (White, 1980) standard errors in parentheses. Hypothesis tests are two sided. Statistical significance asterisks omitted.

Interpretation: Excluding outliers, there is still some evidence that Federal Reserve Board staff inflation backcasts made within 14 days from the start of a regularly scheduled FOMC meeting overrevised. Otherwise, there is not much evidence of inefficient inflation forecasts. The sample size of one-quarter ahead inflation regressions is small, so we do not place too much weight on these results.

Table 13: Excluding Outliers Better-than-Expected Macroeconomic News Still Predicts Staff GDP Forecast Errors

Forecast Horizon	-1	0	1	2
$I(\tau)$	-0.01	0.23	0.47	0.27
	(0.08)	(0.15)	(0.33)	(0.26)
Revision	-0.16	0.53	-0.36	-0.75
	(0.13)	(0.37)	(0.41)	(0.30)
$I(\tau)\times$Revision	0.13	-0.52	-0.49	1.09
	(0.26)	(0.52)	(0.65)	(0.45)
$news_\tau$	-0.02	-0.03	-0.06	-0.06
	(0.01)	(0.01)	(0.03)	(0.03)
$I(\tau) \times news_\tau$	0.01	-0.03	-0.02	0.07
	(0.01)	(0.02)	(0.05)	(0.04)
Constant	0.04	0.16	-0.40	-0.70
	(0.05)	(0.10)	(0.12)	(0.18)
N	610	574	491	378
adj. R^2	0.02	0.04	0.07	0.03
p-values:				
H_0 : Constant + $I(\tau) = 0$	0.64	0.00	0.82	0.03
H_0 : Revision + $I(\tau)\times$Revision = 0	0.89	0.97	0.09	0.31
$H_0 : news_\tau + I(\tau) \times news_\tau = 0$	0.13	0.00	0.04	0.64

Description: Table shows estimated coefficients from the regression $y_{i,t+h} - \hat{y}_{i,t+h|\tau} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + \gamma_{i,h}I(\tau) + \lambda_{i,h}I(\tau)\Delta\hat{y}_{t+h|\tau} + \eta_{i,h}news_\tau + \theta_{i,h}I(\tau)news_\tau + e_{i,t+h|\tau}$ for Federal Reserve Board staff projections of annualized quarterly real GDP growth by forecast horizon, where $I(\tau)$ is an indicator for a forecast made within 14 days from the start of a regularly-scheduled FOMC meeting, and $news_\tau$ is our measure of the market's reaction to macroeconomic news using data from Bloomberg Finance LP (2017). We weight these regressions by number of days between forecast revisions in $\Delta\hat{y}_{i,t+h|\tau}$, with Huber-White (White, 1980) standard errors in parentheses. Hypothesis tests are two sided. Statistical significance asterisks omitted.

Interpretation: Excluding outliers, we still find evidence that the market's reaction to macroeconomic news predicts Federal Reserve Board staff real GDP forecast errors, suggesting that the staff does not use information in asset price changes efficiently to inform its GDP forecasts. When economic news is better than expected, the staff forecasts of GDP have smaller forecast errors.

Table 14: Excluding Outliers Better-than-Expected Macroeconomic News Still Does Not Predict Staff Inflation Forecast Errors

Forecast Horizon	-1	0	1
$I(\tau)$	0.05	-0.00	-0.19
	(0.06)	(0.08)	(0.17)
Revision	-0.17	0.09	1.43
	(0.40)	(0.25)	(1.51)
$I(\tau)\times$Revision	-0.34	0.34	-3.90
	(0.47)	(0.54)	(1.62)
$news_\tau$	-0.00	-0.00	-0.04
	(0.01)	(0.01)	(0.01)
$I(\tau)\times news_\tau$	-0.01	-0.01	0.03
	(0.01)	(0.01)	(0.01)
Constant	-0.05	0.02	0.50
	(0.05)	(0.05)	(0.13)
N	165	204	48
adj. R^2	0.09	0.01	0.40
p-values:			
H_0 : Constant + $I(\tau) = 0$	0.95	0.80	0.01
H_0 : Revision + $I(\tau)\times$Revision = 0	0.03	0.38	0.00
H_0 : $news_\tau + I(\tau)\times news_\tau = 0$	0.27	0.20	0.00

Description: Table shows estimated coefficients from the regression $y_{i,t+h} - \hat{y}_{i,t+h|\tau} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + \gamma_{i,h}I(\tau) + \lambda_{i,h}I(\tau)\Delta\hat{y}_{t+h|\tau} + \eta_{i,h}news_\tau + \theta_{i,h}I(\tau)news_\tau + e_{i,t+h|\tau}$ for Federal Reserve Board staff projections of annualized quarterly core PCE inflation by forecast horizon, where $I(\tau)$ is an indicator for a forecast made within 14 days from the start of a regularly-scheduled FOMC meeting, and $news_\tau$ is our measure of the market's reaction to macroeconomic news using data from Bloomberg Finance LP (2017). We weight these regressions by number of days between forecast revisions in $\Delta\hat{y}_{i,t+h|\tau}$, with Huber-White (White, 1980) standard errors in parentheses. Hypothesis tests are two sided. Statistical significance asterisks omitted.

Interpretation Excluding outliers, we still do not find evidence that the market's reaction to macroeconomic news predicts Federal Reserve Board staff inflation forecast errors.

Table 15: Bloomberg Series in News Index, $news_\tau$ (Table 1 of 2)

Bloomberg Mnemonic	Data Description
ADP_CHNG_INDEX	ADP National Employment Report, SA, Private Nonfarm Level Change
ADV_GDP_CQOQ_INDEX	US GDP First Release, Chained, QoQ, SAAR
ADV_GDP_PIQQ_INDEX	US GDP Price Index First Release, QoQ, SAAR
AHE_MOM%_INDEX	US Average Hourly Earnings All Employees, Total Private Monthly Percentage Change
CHPMINDX_INDEX	MNI Chicago Business Barometer SA
CICRTOT_INDEX	Federal Reserve G19 Consumer Credit Total Net Change SA
CNSTTMOM_INDEX	Census Bureau US Construction Spending MoM SA
CONCCONF_INDEX	Conference Board Consumer Confidence SA
CONSSENT_INDEX	University of Michigan, Survey of Consumer Confidence Sentiment (Final)
COSTNFR%_INDEX	US Unit Labor Costs Nonfarm Business Sector QoQ % SAAR
CPI_CHNG_INDEX	US CPI Urban Consumers MoM SA
CPI_XYOY_INDEX	US CPI Urban Consumers Less Food & Energy YoY NSA
CPI_YOY_INDEX	US CPI Urban Consumers YoY NSA
CPTICHNG_INDEX	US Capacity Utilization % of Total Capacity SA
CPUPXCHG_INDEX	US CPI Urban Consumers Less Food & Energy MoM SA
DGNOCHNG_INDEX	US Durable Goods New Orders Industries MoM SA
ECI_SA%_INDEX	Bureau of Labor Statistics, Employment Cost Civilian Workers QoQ SA
EMPRGBCI_INDEX	Empire State Manufacturing Survey, General Business Conditions SA
ETSLMOM_INDEX	US Existing Homes Sales MoM SA
FDDSSD_INDEX	US Treasury Federal Budget Debt Summary, Deficit Or Surplus NSA
FDTR_INDEX	Federal Funds Target Rate Upper Bound, p.p.
FRNTTOTL_INDEX	US Foreign Net Transactions
GDPCPCEC_INDEX	US GDP Personal Consumption Core Price Index, QoQ % SAAR
GDPCTOT%_INDEX	GDP US Personal Consumption Chained, % Change from Previous Period SAAR
GDP_CQOQ_INDEX	US GDP Third Release, Chained, QoQ, SAAR
GDP_PIQQ_INDEX	US GDP Price Index Third Release, QoQ, SAAR
HPIMMOM%_INDEX	FHFA US House Price Index Purchase Only MoM% SA
IMP1CHNG_INDEX	US Import Price Index by End Use All MoM NSA
INJCJC_INDEX	US Initial Jobless Claims SA
INJCSP_INDEX	US Continuing Jobless Claims SA
IP_CHNG_INDEX	Industrial Production, Change from Previous Period, SA
LEI_CHNG_INDEX	Conference Board US Leading Index MoM

Notes: MoM = month over month, QoQ = quarter over quarter, SA = seasonally adjusted, SAAR = seasonally adjusted at an annual rate, YoY = year over year. Source: Bloomberg Finance LP (2017).

Table 16: Bloomberg Series in News Index, $news_\tau$ (Table 2 of 2)

Bloomberg Mnemonic	Data Description
MWINCHNG_INDEX	Merchant Wholesalers Inventories Total Monthly % Change
NAPMNMI_INDEX	ISM Non-Manufacturing NMI Composite
NAPMPMI_INDEX	ISM Manufacturing PMI SA
NFP_PCH_INDEX	US Employees on Nonfarm Payrolls, Total Private MoM Net Change SA
NFP_TCH_INDEX	US Employees on Nonfarm Payrolls, Total MoM Net Change SA
NHSLTOT_INDEX	US New One Family Houses Sold Annual Total SAAR
NHSPSTOT_INDEX	Housing Starts, SAAR
OUTFGAF_INDEX	Philadelphia Fed Business Outlook Survey, Diffusion Index General Conditions
PCE_CMOM_INDEX	US Personal Consumption Expenditures, Core Price Index MoM SA
PCE_CRCH_INDEX	US Personal Consumption Expenditures, Nominal Dollars MoM SA
PCE_CYOY_INDEX	US Personal Consumption Expenditures, Core Price Index YoY SA
PCE_DEFY_INDEX	US Personal Consumption Expenditures, Chain Type Price Index YoY SA
PITLCHNG_INDEX	US Personal Income MoM SA
PPI_CHNG_INDEX	US PPI Finished Goods SA MoM %
PRE_CONSSENT_INDEX	University of Michigan, Survey of Consumer Confidence Sentiment (Preliminary)
PRODNFR%_INDEX	US Output Per Hour Nonfarm Business Sector QoQ SA
PXFECHNG_INDEX	US PPI Finished Goods Less Foods & Energy SA MoM%
RSTAMOM_INDEX	Adjusted Retail & Food Services Sales, SA Total Monthly % Change
RSTAXMOM_INDEX	Adjusted Retail Sales Less Autos SA Monthly % Change
SAARDTOT_INDEX	US Auto Sales Domestic Vehicles Annualized SA
SBOITOTL_INDEX	NFIB Small Business Optimism Index
SEC_GDP_CQOQ_INDEX	US GDP Second Release, Chained, QoQ, SAAR
SEC_GDP_PIQQ_INDEX	US GDP Price Index Second Release, QoQ, SAAR
SPCS20Y%_INDEX	S&P/Case-Shiller Composite-20 City Home Price Index YoY
TMNOCHNG_INDEX	US Manufacturers New Orders Total MoM SA
USCABAL_INDEX	US Nominal Account Balance In Billions of USD
USMMMNCH_INDEX	US Employees on Nonfarm Payrolls, Manufacturing Industry Monthly Net Change SA
USPHTMOM_INDEX	US Pending Home Sales Index MoM SA
USTBTOT_INDEX	US Trade Balance Of Payments SA
USURTOT_INDEX	U-3 US Unemployment Rate SA

Notes: MoM = month over month, QoQ = quarter over quarter, SA = seasonally adjusted, SAAR = seasonally adjusted at an annual rate, YoY = year over year. Source: Bloomberg Finance LP (2017).

D Appendix: Alternative Standard Errors

Tables 17 and 18 show the results for our reestimated main specification for real GDP and inflation, respectively, with clustered standard errors in parentheses and Newey-West errors in brackets.

Overall, clustered or Newey-West errors give similar inferences as the Huber-White errors. For real GDP, the clustered standard errors are more precise than Huber-White errors for β for $h = 1, 2$, suggesting slightly stronger evidence for overreaction for forecasts made more than two weeks from a FOMC, and are less precise for the bias terms. The Newey-West errors are very similar to the Huber-White errors in almost every instance. For inflation, both the clustered and the Newey-West errors are similar to the Huber-White errors.

Reestimating our other specifications from equations (1) and (4) showed a similar pattern for the size of the clustered and Newey-West errors relative to the Huber-White errors; we omit these tables for brevity.

Table 17: Clustering or Newey and West (1987) Standard Errors Do Little to Change Inferences from Preanalysis Plan- Real GDP

Forecast Horizon	-1	0	1	2
$I(\tau)$	-0.05	0.18	0.45	0.39
	(0.06)	(0.12)	(0.35)	(0.19)
	[0.10]	[0.19]	[0.39]	[0.29]
Revision	-0.15	0.63	-0.22	-0.55
	(0.11)	(0.37)	(0.39)	(0.18)
	[0.13]	[0.39]	[0.38]	[0.26]
$I(\tau)\times$Revision	0.16	-0.30	-0.13	0.84
	(0.23)	(0.56)	(0.55)	(0.46)
	[0.25]	[0.64]	[0.60]	[0.46]
Constant	0.06	0.10	-0.51	-0.87
	(0.09)	(0.24)	(0.34)	(0.40)
	[0.07]	[0.14]	[0.18]	[0.21]
N	616	579	495	381
adj. R^2	-0.00	0.01	0.01	0.00
p-values:				
H_0 : Constant + $I(\tau) = 0$	0.92	0.23	0.90	0.17
H_0 : Revision + $I(\tau)\times$Revision = 0	0.98	0.57	0.47	0.44

Description: Table shows estimated coefficients from the regression $y_{i,t+h} - \hat{y}_{i,t+h|\tau} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + \gamma_{i,h}I(\tau) + \lambda_{i,h}I(\tau)\Delta\hat{y}_{i,t+h|\tau} + e_{i,t+h|\tau}$ for Federal Reserve Board staff projections of annualized quarterly real GDP growth by forecast horizon, where $I(\tau)$ is an indicator for a forecast made within 14 calendar days from the start of a regularly-scheduled FOMC meeting. We weight these regressions by number of days between forecast revisions in $\Delta\hat{y}_{i,t+h|\tau}$, with clustered standard errors by FOMC meeting in parentheses and Newey and West (1987) standard errors in brackets. Hypothesis tests are two sided and based on the clustered standard errors. Statistical significance asterisks omitted. These tests were not in our preanalysis plan.

Interpretation: While our preanalysis plan results use White (1980) standard errors, clustering or Newey and West (1987) standard errors, which attempt to correct for serial correlation of model residuals, do little to change the inference. The clustered standard errors suggest slightly stronger evidence for overreaction for forecasts made more than two weeks from a FOMC meeting and are less precise for the bias terms, but the overall inference is the same. The Newey and West (1987) errors are very similar to the White (1980) errors.

Table 18: Clustering or Newey and West (1987) Standard Errors Do Little to Change Inferences from Preanalysis Plan- Inflation

Forecast Horizon	-1	0	1
$I(\tau)$	0.03	-0.01	-0.07
	(0.06)	(0.08)	(0.20)
	[0.06]	[0.08]	[0.19]
Revision	-0.18	0.09	2.32
	(0.41)	(0.24)	(1.83)
	[0.40]	[0.26]	[1.47]
$I(\tau)\times$Revision	-0.31	0.38	-4.82
	(0.45)	(0.51)	(1.95)
	[0.45]	[0.53]	[1.54]
Constant	-0.05	0.00	0.32
	(0.06)	(0.10)	(0.24)
	[0.05]	[0.06]	[0.16]
N	166	206	48
adj. R^2	0.08	0.00	0.25
p-values:			
H_0 : Constant + $I(\tau) = 0$	0.74	0.89	0.15
H_0 : Revision + $I(\tau)\times$Revision = 0	0.00	0.34	0.00

Description: Table shows estimated coefficients from the regression $y_{i,t+h} - \hat{y}_{i,t+h|\tau} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + \gamma_{i,h}I(\tau) + \lambda_{i,h}I(\tau)\Delta\hat{y}_{i,t+h|\tau} + e_{i,t+h|\tau}$ for Federal Reserve Board staff projections of annualized quarterly core PCE inflation by forecast horizon, where $I(\tau)$ is an indicator for a forecast made within 14 calendar days from the start of a regularly-scheduled FOMC meeting. We weight these regressions by number of days between forecast revisions in $\Delta\hat{y}_{i,t+h|\tau}$, with clustered standard errors by FOMC meeting in parentheses and Newey and West (1987) standard errors in brackets. Hypothesis tests are two sided and based on the clustered standard errors. Statistical significance asterisks omitted. These tests were not in our preanalysis plan.

Interpretation: While our preanalysis plan results use White (1980) standard errors, clustering or Newey and West (1987) standard errors, which attempt to correct for serial correlation of model residuals, are very similar to the White (1980) errors for our inflation specifications.

E Appendix: Fixed Event Regressions

Table 19: Time-Varying Real GDP Efficiency Regressions - Fixed Event

	Unweighted	Weighted	Unweighted	Weighted
Lagged Revision	-0.33	-0.18	-0.45	-0.34
	(0.03)	(0.09)	(0.03)	(0.05)
$I(\tau)$			-0.03	-0.13
			(0.01)	(0.04)
$I(\tau)\times$Lagged Revision			0.24	0.26
			(0.06)	(0.16)
Constant	-0.01	-0.03	0.00	0.01
	(0.01)	(0.02)	(0.01)	(0.01)
N	3493	3493	3493	3493
adj. R^2	0.11	0.02	0.13	0.05
p-values:				
H_0 : Constant + $I(\tau) = 0$			0.00	0.00
H_0 : Lagged Revision + $I(\tau)\times$Lagged Revision = 0			0.00	0.57

Description: Table shows estimated coefficients from the regression $\Delta y_{i,t|\tau} = \alpha_i + \beta_i \Delta\hat{y}_{i,t|\tau-l} + \gamma_i I(\tau) + \lambda_i I(\tau)\Delta\hat{y}_{i,t|\tau-l} + e_{i,t|\tau}$ for Federal Reserve Board staff projections of annualized quarterly real GDP growth by forecast horizon, where $I(\tau)$ is an indicator for a forecast made within 14 calendar days from the start of a regularly-scheduled FOMC meeting using all forecast observations in the high-frequency dataset. Columns with weights use number of days between forecast revisions in $\Delta\hat{y}_{i,t|\tau}$, with Huber-White (White, 1980) standard errors in parentheses. Hypothesis tests are two sided. Statistical significance asterisks omitted.

Table 20: Time-Varying Inflation Efficiency Regressions - Fixed Event

	Unweighted	Weighted	Unweighted	Weighted
Lagged Revision	-0.10	-0.00	-0.05	0.00
	(0.07)	(0.06)	(0.07)	(0.06)
$I(\tau)$			-0.01	-0.02
			(0.01)	(0.02)
$I(\tau)\times$Lagged Revision			-0.09	-0.00
			(0.14)	(0.10)
Constant	-0.00	-0.01	0.00	0.01
	(0.01)	(0.01)	(0.01)	(0.01)
N	977	977	977	977
adj. R^2	0.01	-0.00	0.01	-0.00
p-values:				
H_0 : Constant + $I(\tau) = 0$			0.53	0.37
H_0 : Lagged Revision + $I(\tau)\times$Lagged Revision = 0			0.29	0.98

Description: Table shows estimated coefficients from the regression $\Delta y_{i,t|\tau} = \alpha_i + \beta_i \Delta \hat{y}_{i,t|\tau-l} + \gamma_i I(\tau) + \lambda_i I(\tau)\Delta \hat{y}_{i,t|\tau-l} + e_{i,t|\tau}$ for Federal Reserve Board staff projections of annualized quarterly core PCE inflation by forecast horizon, where $I(\tau)$ is an indicator for a forecast made within 14 calendar days from the start of a regularly-scheduled FOMC meeting using all forecast observations in the high-frequency dataset. Columns with weights use number of days between forecast revisions in $\Delta \hat{y}_{i,t|\tau}$, with Huber-White (White, 1980) standard errors in parentheses. Hypothesis tests are two sided. Statistical significance asterisks omitted.

F Appendix: Quad-Quad Loss Function

Table 21: Time-Varying Real GDP Efficiency Regressions - Asymmetric Loss $\alpha = 0.20$

Forecast Horizon	-1	0	1	2
$I(\tau)$	0.05	0.24	0.17	0.33
	(0.07)	(0.14)	(0.25)	(0.23)
Revision	-0.08	0.54	-0.18	-0.62
	(0.13)	(0.32)	(0.45)	(0.22)
$I(\tau)\times$Revision	0.12	0.32	-0.25	0.67
	(0.24)	(0.74)	(0.58)	(0.35)
Constant	-0.33	-0.66	-1.21	-1.46
	(0.05)	(0.10)	(0.13)	(0.16)
N	616	579	495	381
adj. R^2				
p-values:				
H_0 : Constant + $I(\tau) = 0$	0.00	0.00	0.00	0.00
H_0 : Revision + $I(\tau)\times$Revision = 0	0.84	0.19	0.26	0.87

Description: Table shows estimated coefficients from the regression $y_{i,t+h} - \hat{y}_{i,t+h|\tau} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + \gamma_{i,h}I(\tau) + \lambda_{i,h}I(\tau)\Delta\hat{y}_{i,t+h|\tau} + e_{i,t+h|\tau}$ for Federal Reserve Board staff projections of annualized quarterly real GDP growth by forecast horizon, where $I(\tau)$ is an indicator for a forecast made within 14 calendar days from the start of a regularly-scheduled FOMC meeting. The loss function is Quad-Quad with $\alpha = 0.20$. We weight these regressions by number of days between forecast revisions in $\Delta\hat{y}_{i,t+h|\tau}$, with Huber-White (White, 1980) standard errors in parentheses. Hypothesis tests are two sided. Statistical significance asterisks omitted.

Table 22: Time-Varying Inflation Efficiency Regressions - Asymmetric Loss $\alpha = 0.2$

Forecast Horizon	-1	0	1
$I(\tau)$	0.04	0.00	-0.06
	(0.06)	(0.07)	(0.16)
Revision	-0.07	0.11	3.52
	(0.34)	(0.16)	(1.35)
$I(\tau)\times$Revision	-0.56	0.24	-5.48
	(0.37)	(0.47)	(1.41)
Constant	-0.18	-0.23	0.02
	(0.05)	(0.04)	(0.11)
N	166	206	48
adj. R^2			
p-values:			
H_0 : Constant + $I(\tau) = 0$	0.00	0.00	0.71
H_0 : Revision + $I(\tau)\times$Revision = 0	0.00	0.43	0.00

Description: Table shows estimated coefficients from the regression $y_{i,t+h} - \hat{y}_{i,t+h|\tau} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + \gamma_{i,h}I(\tau) + \lambda_{i,h}I(\tau)\Delta\hat{y}_{i,t+h|\tau} + e_{i,t+h|\tau}$ for Federal Reserve Board staff projections of annualized quarterly core PCE inflation by forecast horizon, where $I(\tau)$ is an indicator for a forecast made within 14 days from the start from a regularly-scheduled FOMC meeting. The loss function is Quad-Quad with $\alpha = 0.20$. We weight these regressions by number of days between forecast revisions in $\Delta\hat{y}_{i,t+h|\tau}$, with Huber-White (White, 1980) standard errors in parentheses. Hypothesis tests are two sided. Statistical significance asterisks omitted.

Table 23: Time-Varying Real GDP Efficiency - Asymmetric Loss $\alpha = 0.35$

Forecast Horizon	-1	0	1	2
$I(\tau)$	-0.00	0.22	0.32	0.38
	(0.08)	(0.15)	(0.31)	(0.24)
Revision	-0.13	0.61	-0.20	-0.59
	(0.14)	(0.36)	(0.45)	(0.25)
$I(\tau)\times$Revision	0.13	-0.04	-0.22	0.78
	(0.26)	(0.68)	(0.64)	(0.41)
Constant	-0.13	-0.28	-0.90	-1.21
	(0.05)	(0.11)	(0.14)	(0.17)
N	616	579	495	381
adj. R^2				
p-values:				
H_0 : Constant + $I(\tau) = 0$	0.02	0.61	0.04	0.00
H_0 : Revision + $I(\tau)\times$Revision = 0	1.00	0.33	0.36	0.55

Description: Table shows estimated coefficients from the regression $y_{i,t+h} - \hat{y}_{i,t+h|\tau} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + \gamma_{i,h}I(\tau) + \lambda_{i,h}I(\tau)\Delta\hat{y}_{i,t+h|\tau} + e_{i,t+h|\tau}$ for Federal Reserve Board staff projections of annualized quarterly real GDP growth by forecast horizon, where $I(\tau)$ is an indicator for a forecast made within 14 calendar days from the start of a regularly-scheduled FOMC meeting. The loss function is Quad-Quad with $\alpha = 0.35$. We weight these regressions by number of days between forecast revisions in $\Delta\hat{y}_{i,t+h|\tau}$, with Huber-White (White, 1980) standard errors in parentheses. Hypothesis tests are two sided. Statistical significance asterisks omitted.

Table 24: Time-Varying Inflation Efficiency Regressions - Asymmetric Loss $\alpha = 0.35$

Forecast Horizon	-1	0	1
$I(\tau)$	0.04	-0.00	-0.05
	(0.06)	(0.08)	(0.18)
Revision	-0.16	0.11	3.02
	(0.37)	(0.21)	(1.50)
$I(\tau)\times$Revision	-0.42	0.32	-5.36
	(0.42)	(0.51)	(1.56)
Constant	-0.11	-0.11	0.18
	(0.05)	(0.05)	(0.14)
N	166	206	48
adj. R^2			
p-values:			
H_0 : Constant + $I(\tau) = 0$	0.03	0.04	0.27
H_0 : Revision + $I(\tau)\times$Revision $= 0$	0.00	0.35	0.00

Description: Table shows estimated coefficients from the regression $y_{i,t+h} - \hat{y}_{i,t+h|\tau} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + \gamma_{i,h}I(\tau) + \lambda_{i,h}I(\tau)\Delta\hat{y}_{i,t+h|\tau} + e_{i,t+h|\tau}$ for Federal Reserve Board staff projections of annualized quarterly core PCE inflation by forecast horizon, where $I(\tau)$ is an indicator for a forecast made within 14 days from the start from a regularly-scheduled FOMC meeting. The loss function is Quad-Quad with $\alpha = 0.35$. We weight these regressions by number of days between forecast revisions in $\Delta\hat{y}_{i,t+h|\tau}$, with Huber-White (White, 1980) standard errors in parentheses. Hypothesis tests are two sided. Statistical significance asterisks omitted.

Table 25: Time-Varying Real GDP Efficiency Regressions - Asymmetric Loss $\alpha = 0.65$

Forecast Horizon	-1	0	1	2
$I(\tau)$	-0.10	0.12	0.55	0.35
	(0.08)	(0.16)	(0.39)	(0.29)
Revision	-0.14	0.63	-0.21	-0.50
	(0.12)	(0.38)	(0.44)	(0.38)
$I(\tau)\times$Revision	0.18	-0.50	-0.01	0.82
	(0.25)	(0.53)	(0.67)	(0.53)
Constant	0.25	0.48	-0.04	-0.39
	(0.06)	(0.12)	(0.15)	(0.21)
N	616	579	495	381
adj. R^2				
p-values:				
H_0 : Constant + $I(\tau) = 0$	0.01	0.00	0.16	0.84
H_0 : Revision + $I(\tau)\times$Revision = 0	0.86	0.72	0.67	0.37

Description: Table shows estimated coefficients from the regression $y_{i,t+h} - \hat{y}_{i,t+h|\tau} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + \gamma_{i,h}I(\tau) + \lambda_{i,h}I(\tau)\Delta\hat{y}_{i,t+h|\tau} + e_{i,t+h|\tau}$ for Federal Reserve Board staff projections of annualized quarterly real GDP growth by forecast horizon, where $I(\tau)$ is an indicator for a forecast made within 14 calendar days from the start of a regularly-scheduled FOMC meeting. The loss function is Quad-Quad with $\alpha = 0.65$. We weight these regressions by number of days between forecast revisions in $\Delta\hat{y}_{i,t+h|\tau}$, with Huber-White (White, 1980) standard errors in parentheses. Hypothesis tests are two sided. Statistical significance asterisks omitted.

Table 26: Time-Varying Inflation Efficiency Regressions - Asymmetric Loss $\alpha = 0.65$

Forecast Horizon	-1	0	1
$I(\tau)$	0.02	-0.03	-0.11
	(0.06)	(0.08)	(0.16)
Revision	-0.14	0.04	1.56
	(0.42)	(0.29)	(1.35)
$I(\tau)\times$Revision	-0.23	0.42	-4.01
	(0.48)	(0.54)	(1.47)
Constant	0.02	0.13	0.46
	(0.05)	(0.05)	(0.13)
N	166	206	48
adj. R^2			
p-values:			
H_0 : Constant + $I(\tau) = 0$	0.17	0.08	0.00
H_0 : Revision + $I(\tau)\times$Revision = 0	0.11	0.31	0.00

Description: Table shows estimated coefficients from the regression $y_{i,t+h} - \hat{y}_{i,t+h|\tau} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + \gamma_{i,h}I(\tau) + \lambda_{i,h}I(\tau)\Delta\hat{y}_{i,t+h|\tau} + e_{i,t+h|\tau}$ for Federal Reserve Board staff projections of annualized quarterly core PCE inflation by forecast horizon, where $I(\tau)$ is an indicator for a forecast made within 14 days from the start from a regularly-scheduled FOMC meeting. The loss function is Quad-Quad with $\alpha = 0.65$. We weight these regressions by number of days between forecast revisions in $\Delta\hat{y}_{i,t+h|\tau}$, with Huber-White (White, 1980) standard errors in parentheses. Hypothesis tests are two sided. Statistical significance asterisks omitted.

Table 27: Time-Varying Real GDP Efficiency Regressions - Asymmetric Loss $\alpha = 0.8$

Forecast Horizon	-1	0	1	2
$I(\tau)$	-0.14	0.02	0.58	0.17
	(0.08)	(0.16)	(0.39)	(0.32)
Revision	-0.11	0.60	-0.18	-0.45
	(0.11)	(0.37)	(0.39)	(0.45)
$I(\tau)\times$Revision	0.21	-0.63	0.13	0.69
	(0.24)	(0.46)	(0.65)	(0.59)
Constant	0.44	0.86	0.54	0.33
	(0.05)	(0.11)	(0.14)	(0.24)
N	616	579	495	381
adj. R^2				
p-values:				
H_0 : Constant + $I(\tau) = 0$	0.00	0.00	0.00	0.02
H_0 : Revision + $I(\tau)\times$Revision = 0	0.65	0.90	0.92	0.54

Description: Table shows estimated coefficients from the regression $y_{i,t+h} - \hat{y}_{i,t+h|\tau} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + \gamma_{i,h}I(\tau) + \lambda_{i,h}I(\tau)\Delta\hat{y}_{i,t+h|\tau} + e_{i,t+h|\tau}$ for Federal Reserve Board staff projections of annualized quarterly real GDP growth by forecast horizon, where $I(\tau)$ is an indicator for a forecast made within 14 calendar days from the start of a regularly-scheduled FOMC meeting. The loss function is Quad-Quad with $\alpha = 0.80$. We weight these regressions by number of days between forecast revisions in $\Delta\hat{y}_{i,t+h|\tau}$, with Huber-White (White, 1980) standard errors in parentheses. Hypothesis tests are two sided. Statistical significance asterisks omitted.

Table 28: Time-Varying Inflation Efficiency Regressions - Asymmetric Loss $\alpha = 0.8$

Forecast Horizon	-1	0	1
$I(\tau)$	0.01	-0.05	-0.15
	(0.05)	(0.07)	(0.14)
Revision	-0.05	-0.04	0.79
	(0.40)	(0.27)	(1.12)
$I(\tau)\times$Revision	-0.17	0.43	-2.94
	(0.44)	(0.50)	(1.33)
Constant	0.09	0.26	0.58
	(0.04)	(0.05)	(0.10)
N	166	206	48
adj. R^2			
p-values:			
H_0 : Constant + $I(\tau) = 0$	0.00	0.00	0.00
H_0 : Revision + $I(\tau)\times$Revision = 0	0.25	0.36	0.00

Description: Table shows estimated coefficients from the regression $y_{i,t+h} - \hat{y}_{i,t+h|\tau} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + \gamma_{i,h}I(\tau) + \lambda_{i,h}I(\tau)\Delta\hat{y}_{i,t+h|\tau} + e_{i,t+h|\tau}$ for Federal Reserve Board staff projections of annualized quarterly core PCE inflation by forecast horizon, where $I(\tau)$ is an indicator for a forecast made within 14 days from the start from a regularly-scheduled FOMC meeting. The loss function is Quad-Quad with $\alpha = 0.80$. We weight these regressions by number of days between forecast revisions in $\Delta\hat{y}_{i,t+h|\tau}$, with Huber-White (White, 1980) standard errors in parentheses. Hypothesis tests are two sided. Statistical significance asterisks omitted.