FOMC News and Segmented Markets

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Abstract

A growing body of evidence suggests that FOMC announcements can affect private sector beliefs about near-term macroeconomic conditions. We measure index option trader beliefs about the short-horizon implications of central bank policy using the return of short-term dividend strips around each FOMC announcement (we term this short-term dividend strip return, "SDR"). We find that *SDR* predicts both future firm-level earnings and firm-level earnings announcement returns - a one-standard deviation increase in *SDR* predicts a 3-day earnings announcement return about 55 bps higher. Furthermore, using analyst earnings forecasts, we provide direct evidence of belief underreaction to FOMC announcements. We develop a stylized framework of segmented markets in which options traders allocate relatively more attention to aggregate signals while equity traders allocate more attenttion to firm-specific news and show how this can generate our empirical results.

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1 Introduction

Information advantages stem from either private information or a better interpretation of public signals. The quality of an investor's information advantage should improve in their expertise, access to relevant data, and effort. Consistent with this idea, there is evidence of information advantages among professional investors (Berk and van Binsbergen [2015]), company insiders (Ke et al. [2003], Seyhun [1986], Piotroski and Roulstone [2005], Kelly [2018]), and sophisticated households (Grinblatt et al. [2012]). Given their expertise and their large work force, central banks should have an informational advantage as it relates to the state of the macroeconomy. Indeed, recent macroeconomic literature provides evidence for such an advantage (Romer and Romer [2000], Nakamura and Steinsson [2018], Cieslak and Schrimpf [2019], Jarocinski and Karadi [2020]). In seminal work, Romer and Romer [2000] suggest that agents' beliefs about the macroeconomy may also be affected by FOMC announcements. Specifically, unexpectedly hawkish (dovish) behavior by the Fed suggests the Fed is expecting improvement (worsening) in macroeconomic conditions. Existing research (Golez and Matthies [2022]) argues that this information should be captured by the return of short-term dividend strips in the narrow window around each FOMC announcement. Since a short-term dividend strip provides claims to aggregate dividends only over the near-term, this return, which we refer to as the SDR (short-term dividend strip return) throughout the remainder of the paper, measures changes in investor beliefs about near-term cash flows and discount rates. As such, the SDR should be positive (negative) when the Fed conveys positive (negative) information about near-term macroeconomic conditions.

In this paper, we document that SDR is positively associated with multiple measures of firm-level earnings growth.[1] This suggests that FOMC announcements contain information about future firm-level earnings. In the absence of any frictions, this information should be immediately reflected in the earnings forecasts of sell-side analysts and in the prices of

[1] These results extend findings in Golez and Matthies [2022] who find that a similar measure predicts short-term economic growth.

individual equities. However, there are significant processing costs tied to understanding this information. This suggests that we may see individual equity market participants underreact to FOMC earnings signals.

We directly examine beliefs by studying sell-side analyst forecasts. We first test whether *SDR* predicts quarterly earnings surprises. We consider two subsamples: FOMC announcements without new information and those with new information. We proxy for the release of new information to investors by the target rate surprise (measured following convention as the difference between the announced target rate and the target rate implied by federal funds futures contracts). We thus distinguish between FOMC meeting days which potentially contain new information about near-term economic conditions, meetings with non-zero monetary policy shocks, and those which do not. Consistent with our conjecture, we can not reject the null of no relationship between *SDR* and future earnings surprises when there is no monetary policy shock and we find a strong relationship between *SDR* and future earnings surprises when there is a non-zero monetary policy shock. Specifically,we find that a one-standard deviation increase in *SDR* is associated with an increased *Surprise* of about 2.6 cents (t=3.47) when there is a non-zero monetary policy shock. To augment these results, we implement tests of forecast underreaction using Coibion and Gorodnichenko [2015] style regressions. Coibion and Gorodnichenko [2015] argue that when forecasters overreact to new information, there will be a negative relationship between forecast revisions and forecast errors. Conversely, when forecasters underreact to new information, there will be a positive relationship.

We implement this test by first calculating forecast revisions for next quarter earnings around each FOMC announcement. We regress earnings forecast errors on these revisions and document a strong pattern of underreaction in our sample. We also show that this underreaction is greater when the information content of the FOMC announcement is higher. When we analyze the subset of revisions that are associated with an FOMC announcement with no monetary policy shock, we estimate the Coibion and Gorodnichenko [2015] coefficient to be 0.038 and we can not reject the null of rational updating. In contrast, when we consider non-zero monetary policy shocks we estimate the Coibion and Gorodnichenko [2015] coefficient to be 0.108 (t=2.86). We also show that, within the set of forecast revisions associated with non-zero monetary policy shocks, the degree of underreaction increases with the absolute value of SDR. Finally, we argue that these results should get stronger with firm beta because firms with higher betas presumably have more exposure to overall macroeconomic conditions. We find evidence consistent with this conjecture. These results highlight belief underreaction to the earnings news in FOMC announcements.

We next test for patterns of underreaction in individual equity prices. Our hypothesis is that if equity investors underreact to such information embedded in FOMC announcements, the SDR should predict firm-level announcement returns. Intuitively, if option traders have inferred valuable information about near-term economic conditions from the FOMC announcement, these views will be reflected in the SDR. If equity investors have not incorporated this information into equity prices, then they will be surprised by future firm earnings announcements as these earnings depend heavily on economic conditions.

First, we consider earnings announcements following FOMC meetings in which the monetary policy surprise is zero. In this sample, we cannot reject the null that SDR has no predictive power for future earnings announcement returns. In contrast, when we consider the sample associated with non-zero monetary policy shocks, we find strong predictive power for future earnings announcement returns. A one-standard deviation increase in SDR is associated with an earnings announcement return about 55 bps higher (t=2.54). Consistent with our results related to beliefs, we find stronger predictive power for firms with higher betas. These results suggest investor underreaction to the information embedded in FOMC announcements.

These results suggest that investors in individual equities underreact to the information about near-term macroeconomic conditions embedded in FOMC announcements. In the last part of the paper, we propose a theoretical explanation for our findings. We argue that our findings could arise from segmented markets in which option traders understand the macroeconomic information content of FOMC announcements, which they incorporate into index option prices, while equity investors do not comprehend these information signals. This suggests that there are segmented markets - index option markets capture the information embedded in FOMC announcements while individual equity markets do not. This heterogeneity could stem from the theoretical framework of Van Nieuwerburgh and Veldkamp [2009]. Van Nieuwerburgh and Veldkamp [2009] argue that the home bias results from rational inattention - while it is possible to gain information about foreign markets, it is in investors' best interest to acquire information in their specialized area. We extend this logic to aggregate macroeconomic (macro) versus firm-specific (micro) information. While all investors can acquire macro and micro information, some investors will specialize in the type of information they acquire. Some investors know more about macro information than micro information, and they will seek more macro information to extend their advantage trading macro assets. These investors will react to Fed information signals when trading macro assets. Thus, we can infer Fed information effects by analyzing the price reactions of macro assets during FOMC announcements. In contrast, we assume that micro investors do not comprehend information signals from the Fed.

We present a simple framework to highlight how these differences in effort allocated to the news can lead the return on the macro asset to predict the return on the micro asset. The intution is as follows: macro news matters, but is less relevant, for the micro asset compared to the macro asset. Given the additional risk associated with trading the micro asset, risk-averse macro investors will trade the macro asset more aggressively than the micro asset. Therefore, the micro asset will not move to its full-information equilibrium value. This suggests that, as the return on the macro asset increases, the expected return on the micro asset should increase. Our hypothesis suggests that individual equity analysts and individual equity traders will underreact to the information embedded in FOMC announcements and this will manifest in return predictability. This may be a bit surprising given the considerable attention paid to FOMC announcements (Fisher, Martineau, and Sheng [2022]). We conjecture that individual equity participants pay attention to FOMC announcements, but do not devote a lot of effort to process the more complicated signals. This difficulty stems from two sources: (1) The Fed does not explicitly disclose their short-term macroeconomic forecasts during FOMC announcements, (2) It is also not immediately obvious how to extract information about the Fed's macroeconomic beliefs from the reactions of informed investors. We hypothesize that, instead of capturing information about short-term cash flows, individual equity market participants focus on the implications of interest rate shocks for financing and interest rate expenses (e.g. Armstrong, Glaeser, and Kepler [2019]). Consistent with this, we study sell-side analysts' target prices and provide evidence that they react to monetary policy shocks.

Our results contribute to a growing literature on the processing capacity of financial market participants. Consistent with limited processing capacitly, Hirshleifer et al. [2009] show that the market reaction to earnings announcements is weaker when more firms announce. Cohen and Lou [2012] provide evidence that processing complexity affects returns by uncovering a lead-lag relationship between the returns of pseudo-conglomerates (an index of stand-alone firms constructed to have the same compostion as conglomerates) and the returns of conglomerates. In terms of analysts, Abarbarnell and Bernard [1992] document underreaction to recent earnings. Hann et al. [2012] show this extends to macroeconomic information - there is underreaction in aggregate earnings forecasts to the information embedded in economists' forecast revisions of macroeconomic indicators. Hugon et al. [2016], however, show that macroeconomic underreaction is mitigated when there is an in-house economist. The information processing literature is growing and is summarized in a recent review paper, Blankespoor et al. [2020]. We contribute to this literature by highlighting the difficulty individual equity market participants have processing information signals from the Fed, an extremely important financial market institution.

Our results also contribute to the discussion on Fed transparency (Hansen et al. [2018])

and how the Fed discloses information. Hirshleifer and Teoh [2003] highlight the importance of inattention for security prices and recommend regulators consider the effects of limited attention when considering financial reporting policy. In our manuscript, we've provided evidence that individual equity market participants underreact to the information in FOMC announcements. Building off of Hirshleifer and Teoh [2003], our findings have implications for how the Fed should convey information. To the extent that the Fed wants a more efficient allocation of capital, they may want to increase the transparency of their disclosures.

Finally, our results relate to a literature on the relationship between aggregate earnings and the Fed's monetary policy. Kothari et al. [2006] and Cready and Gurun [2010] document a negative contemporaneous relationship between aggregate stock market returns and aggregate earnings. They attribute this relationship to the implications of aggregate earnings for future monetary policy. Gallo et al. [2016] utilizes Fed funds rate data to examine this relationship more closely. They find that aggregate earnings predict monetary policy surprises. This suggests that the market underreacts to the information embedded in aggregate earnings about monetary policy. Our work is complementary in that we are documenting underreaction to the information embedded in monetary policy about future earnings.

2 Data

In this section, we discuss the construction of the high-frequency monetary policy shock and the returns on the short-term dividend strip around each FOMC announcement. We also describe our construction of earnings announcement returns, sell-side analyst forecast revisions, and earnings surprises.

2.1 Monetary Policy Shock

We construct the monetary policy shock as in Golez and Matthies [2022]. We obtain FOMC meeting dates and the timestamp when the meeting decision was made public from January

2004 to December 2019.[2] This is the period over which we have high-frequency option pricing data used to construct the implied dividend strip prices. We use tick-by-tick data on the 30 Day Federal Funds Futures contract from the CME group to measure changes in expectations of the current month Federal Funds rate around each FOMC announcement. We follow the high-frequency approach used in Gürkaynak et al. [2004] and Nakamura and Steinsson [2018], by measuring unexpected changes in interest rates around the 30-minute window surrounding scheduled Federal Reserve announcements, which provides stronger identification than monetary policy shocks constructed using daily futures data.[3]

A federal funds futures contract pays off $100 - \bar{r}$ where $\bar{r}$ is the average effective federal funds rate over the month. For an FOMC announcement occurring on date t, we define f_{t-} as the implied rate from the current month federal funds futures contract immediately before the FOMC announcement time and f_{t+} as the implied rate from this contract immediately following the announcement. Specifically, f_{t-} is based on the price of the last trade which occurred at least 10 minutes before the FOMC announcement and f_{t+} is based on the price of the first trade that occurred at least 20 minutes after the FOMC announcement. We construct the FOMC shock variable, $\Delta\iota_t^s$ as:

$$\Delta\iota_t^s = E_{t+}r - E_{t-}r = \frac{m}{m-d}\left(f_{t+} - f_{t-}\right) \tag{1}$$

where d is the day in the month of the FOMC announcement, m is the number of days in the month, and r is the average federal funds rate for the remainder of the month.[4] We consider

[2] The dates and times of FOMC meetings until June 2013 are provided in the Appendix of Lucca and Moench [2015] and in Bernile et al. [2016]. We extend the data to December 2019 by obtaining FOMC meeting dates from the Federal Reserve website. We obtain the time of each announcement following a similar procedure as in Fleming and Piazzesi [2005]. Specifically, we record the timestamp of the earliest Dow Jones newswires on the day of each announcement with "Federal Reserve", or "Fed", or "Federal Open Market Committee", or "FOMC" in the headline. We verify that this procedure generates the same times as in Bernile et al. [2016] in the latter portion of their sample and then populate the meetings from June 2013 to December 2019.

[3] We measure the surprise to the current federal funds rate similar to Kuttner [2001], Gürkaynak et al. [2004], Bernanke and Kuttner [2005].

[4] We scale the price change by $\frac{m}{m-d}$ to account for the fact that the contract's settlement is based on the average federal funds rate over the entire month. We use the current month futures except when the FOMC meeting occurs in the last 7 days in the month, in which case we use the change in price of the next month's

monetary policy shocks from January 2004 to December 2019 - this covers 128 scheduled FOMC meetings.[5] We present summary statistics in Table 1 - the average shock in our sample is negative.

2.2 Short-term Dividend Strip Prices

We estimate short-term dividend strip prices similarly to Golez and Matthies [2022]. The primary distinction is that we calculate the price of dividends 30 minutes later in the post-period to allow for more information content (e.g. from press releases/because it takes time to determine information effects). Our starting point is the put-call parity relationship spanning prices of European put and call options on the S&P 500 index. The put-call parity dictates that for any given moment s:

$$c_s^h(X) - p_s^h(X) = \left(S_s - P_s^h\right) - Xe^{-rf_s^h \times h}$$

where h is the time-to-expiration (horizon) of the options, c is the price of a European call option, p is the price of a European put option, S is the value of the underlying index, P is the price of dividends on the underlying index during the life of the options, X is the strike price and rf^h is the annualized required risk-free rate of return over the corresponding period of options maturity.

Assuming an exogenous risk-free rate, we can invert the put-call parity relationship and estimate the price of short-term dividends P directly from the observed options prices [Van Binsbergen et al., 2012]. However, results may be sensitive to the use of the interest rate [Song, 2016] and even small measurement error in interest rates can have an important impact on estimated dividend prices [Boguth et al., 2022]. This is particularly important in our setting as FOMC announcements have a direct effect on interest rates. Golez and Jack-

contract. Increases (decreases) in Δi_t^s correspond to increases (decreases) in expected Federal Funds rates.

[5] We do not include unscheduled FOMC announcements since many of them fall outside of the stock and derivatives trading hours.

werth [2022] advocate an interest rate invariant approach by first using a regression-based approach to estimate risk-free rates implied by option prices (similar to Van Binsbergen et al. [2022]), and then using these implied interest rates in the put-call parity relation to estimate dividend prices (see also Ulrich et al. [2022]). This procedure ensures that dividend prices are internally consistent with the estimated risk-free rates. Golez and Matthies [2022] build on this approach to simultaneously estimate dividend prices and risk-free rates from the put-call parity restriction using ordinary least squares. We follow this approach.

Specifically, we obtain minute-by-minute data for S&P 500 options (henceforth SPX options) from 2004 to 2019 from the Chicago Board of Options Exchange (CBOE). The data includes quotes on all the SPX options along with implied volatilities. We only keep standard monthly options that expire on the third Friday each month and have more than 90 days until the expiration. We use the bid-ask midpoint and we eliminate all options with bid or ask prices lower than 3 dollars. We also eliminate options with moneyness levels below 0.5 or above 1.5. We estimate prices of dividend strips and risk-free rates from these option prices immediately before each FOMC announcement and immediately after. For each FOMC announcement day, we define two 30 minute periods: the pre-announcement window and the post-announcement window. The pre-announcement window runs from 40 minutes before to 10 minutes before the FOMC announcement time. The post-announcement window runs from 50 minutes after to 80 minutes after the announcement time. For each estimation window, we run the following regression based on all put-call pairs within that interval:

$$S_s - c_s^h(X) + p_s^h(X) = \alpha + \beta X + \epsilon \tag{2}$$

where c is the price of a European call option, p is the price of a European put option with the same strike price X and maturity h, and S is the value of the underlying index. All prices are measured at the same minute s. Identification comes from variation in the strike price X across put-call pairs with the same time-to-expiration h. The implied price of dividends over horizon h is $P_s^h = \hat{\alpha}$. The implied risk-free rate is $rf^h = -\frac{1}{h} log\left(\hat{\beta}\right)$. We estimate the implied dividend prices and risk-free rates for 180 day to 540 day maturities in the 30 minute windows around each FOMC announcement.[6] We estimate the dividend strip prices at 180 days, a standard horizon, by linearly interpolating between the option-implied prices for horizons slightly above and below each standardized maturity.[7]

We denote by P_{t-}^{180} the price of the S&P 500 dividend strip with maturity 180 days estimated in the 30 minute window before the FOMC announcement on date t. P_{t+}^{180} denotes the price of the S&P 500 dividend strip with maturity h estimated in the 30 minute window after the FOMC announcement on date t. We use this prices to define our main independent variable, the *Short-term Dividend Strip Return* as:

$$ShortTermDividendStripReturn(SDR) = log\left(P_{t+}^{180}\right) - log\left(P_{t-}^{180}\right) \tag{3}$$

We also calculate the change in the risk-free rate $\triangle rf = rf_{t+}^{180} - rf_{t-}^{180}$ (*Interest Rate Change*) and the log difference in the S&P 500 Index $S\&P500IndexReturn = log\left(P_{t+}^{Mkt}\right) - log\left(P_{t-}^{Mkt}\right)$, (*Stock Return*) where P_{t-}^{Mkt} and P_{t+}^{Mkt} are the average values of the S&P 500 index over the same 30-minute intervals used for calculating dividend price before and after the FOMC announcement time on date t.

We present summary statistics in Table 1.

2.3 Other variables

In this subsection, we describe how we calculate our earnings measures.

To calculate year-over-year changes in earnings, we use firm-level data from Compustat and construct t meahreesures. The first measure is the year-over-year change in quarterly

[6] At the beginning of our sample period (first FOMC meeting is on January 28, 2004), we have at least 500 observations for each maturity for which we estimate dividend strip prices and interest rates. This number increases to close to 2,000 by the end of our sample period (last FOMC announcement is on December 11, 2019).

[7] On FOMC dates where the standardized shorter horizon maturities do not fall between the option-maturities, we linearly extrapolate dividend prices based on the price of the shortest interior maturity and using the fact that dividend price ultimately converges to zero at the options maturity. For the risk-free rate and the implied volatility, we extrapolate by setting the values equal to the interest-rate and the implied volatility of the closest interior maturity.

EPS scaled by the quarterly price from Compustat. To appropriately compare EPS across years, we use the adjustment factor from Compustat (ajexq). Our second measure removes the price scalar. Our third measure relates to the return on assets ($\Delta ROA_{i,t}$). It is measured as income before extraordinary items (ibq) scaled by total assets as of the end of the previous quarter. All three earnings measures are winsorized at the 1-percent level to minimize the impact of outliers. We tie it to the most recent FOMC announcement (relative to the fiscal quarter end date - datadate). We consider two measures of earnings surprises. The first measure calculates the difference between actual EPS and the median EPS forecast multiplied by 100. This details the surprise in number of cents. Our second measure of analyst earnings surprises equals the actual EPS minus the mean forecasted EPS scaled by the price (from IBES). Positive values indicate a positive surprise. We winsorize both measures at the 1-percent level to mitigate the influence of outliers. Again, we tie the earnings surprise to the most recent FOMC announcement based on the period ending date. To determine earnings announcement returns, we need to first identify earnings announcement dates. We follow DellaVigna and Pollet [2009] and use the earlier of the I/B/E/S and Compustat dates. We define the earnings announcement return as the three-day return surrounding the earnings announcement.

Some of our analyses require estimates of firm beta. We collect information on beta from the WRDS Beta Suite. Beta is calculated using the market model and estimated over the past 252 trading days using regular returns. We consider the monthly value to equal the last daily value in the previous month. To determine analyst expected returns, we use target prices from IBES unadjusted detail. We restrict the sample to target price forecasts with a one-year horizon. We determine the one-year realized return by using the future 252-day return. We present summary statistics in Table 1.

3 Evidence of Underreaction

Our hypothesis builds on the assumption that FOMC announcements contain information about the state of the economy. We first provide evidence that FOMC announcements contain information about next quarter's earnings by showing that the *Short-term Dividend Strip Return (SDR)* predicts year-over-year quarterly earnings. We next provide additional evidence of belief underreaction by showing that *SDR* predicts analyst earnings surprises. Using Coibion and Gorodnichenko [2015] style regressions, we provide additional evidence that analysts underreact to the information about the state of the economy in FOMC announcements. Finally, we provide evidence of market underreaction by showing that *SDR* predicts returns around earnings announcements.

3.1 Year-over-Year Earnings

We first provide evidence for our primary assumption - that FOMC announcements contain information about future earnings. We consider a regression of the following form for firm i at time t:

$$\frac{EPS_{i,t}-EPS_{i,t-1}}{Price_{i,t}} = \beta_0 + \beta_1 * SDR_t + Shock_{i,t} + \epsilon_{i,t}.$$

The left-hand side variable describes the year-over-year growth in earnings-per-share scaled by price. Our variable of interest is *SDR*, which equals the log change in the price of short-term dividend strips on the S&P 500 as implied by options markets during the FOMC announcement. Our prediction is that $\beta_1 > 0$. If FOMC announcements contain information about the state of the economy, and the option market reacts to this information, then the option-implied return on short-term dividends during the FOMC announcement window, *SDR,* should predict year-over-year earnings growth. We present the results in Table 2. We cluster standard errors by FOMC announcement date, since *SDR* only varies across FOMC announcement dates. We separate our analysis to subsamples without and with a monetary policy shock. If monetary policy is as expected, then there will likely not be any information effects from the Fed and we do not expect *SDR* to have predictive power. This is what we find. When considering the sample without any monetary policy shock, we cannot reject the null of no *SDR* predictability. In subsequent columns of Table 2, we present the results from a subsample that only includes non-zero monetary policy shocks. In the second column, we find that a one standard deviation increase in *SDR* is associated with a 0.55 percentage point increase (t=2.52) in scaled earnings growth. Of course, *SDR* captures not only information effects, but also changes in the discount rate. For example, if the risk-free rate increases by more than expected then we would expect to pay less for future dividends ignoring any information effects. We control for this using the change in interest rates during the FOMC announcement window. After adding this control, we find statstically significant and economically strong predictability, thought it is economically weaker. In the final two columns, we consider alternative measures of earnings growth - the unscaled growth in EPS and the change in earnings scaled by total assets. Again, we find that *SDR* has strong and statistically significant predictive power for these alternative measures. These results suggest that FOMC announcements contain information about future earnings.

3.2 Analyst Forecasts

In this subsection, we examine beliefs more closely and test whether analysts *underreact* to the information embedded in FOMC announcements about the economy. First, we look at how well *SDR* predicts earnings surprises relative to the analyst consensus. If analysts do not react fully to the information embedded in FOMC announcements, then we should see that *SDR* positively predicts earnings surprises. We measure the earnings surprise as actual EPS minus the median EPS forecast multiplied by 100. We then use Coibion and Gorodnichenko [2015] style regressions to see whether the degree of underreaction changes with the information content of FOMC announcements.

3.2.1 Earnings Surprises

We estimate the following regression for firm i at time t:

$$EarningsSurprise_{i,t} = \beta_0 + \beta_1 * SDR_t + \epsilon_{i,t}. \tag{4}$$

We first consider a left-hand side variable *Surprise*, equal to actual EPS minus the median EPS forecast multiplied by 100. We do not use a scaled version as our primary left-hand-side variable due to concerns raised in Cheong and Thomas [2012]. Our variable of interest is *SDR* and our prediction is that $\beta_1 > 0$. If analysts underreact to the information embedded in FOMC announcements, then our measure of such information should positively predict earnings surprises. That is, better (worse) news about the economy should predict positive (negative) earnings surprises. We present the results in Table 4. When there is no monetary policy shock, we can not reject the null of no *SDR* predictability. When estimating the regression on the sample of non-zero monetary policy shocks, our measure is a positive and statistically significant predictor of *Surprise* - we estimate $\beta_1 = 62.014$ (t=3.47). This suggests that a one-standard deviation increase in *SDR* is associated with an increased *Surprise* of about 2.6 cents. *SDR* is also likely affected by interest rate changes - an unexpected decrease in interest rates should increase the value an agent is willing to pay for future dividends today. However, these effects should be minor since we are considering short-term cash flows. Still, to account for these effects, we add a control for the change in interest rates. This control has little predictive power and the predictive power of *SDR* is similar. In the fourth column, we find similar results when we add a control for last period's earnings surprise - due to the autocorrelation in earnings - and a control for the stock return during the FOMC announcement - to control for additional discount rate effects. We find similar results - this suggests that analysts underreact to the information embedded in FOMC announcements about the macroeconomy.

We expect to find larger earnings surprises for firms with high betas since their exposure to macroeconomic news should be larger. To test this, we estimate beta using the market model over the past 252 trading days. We sort firms into beta deciles based on their beta estimates from the previous month. We then estimate a regression of the following form for firm i at time t:

$$EarningsSurprise_{i,t} = \beta_0 + \beta_1 * SDR_t + \beta_2 BetaDec_{i,t} + \beta_3 BetaDec * SDR_{i,t} + \gamma Controls + \epsilon_{i,t}. \tag{5}$$

We expect to estimate $\beta_3 > 0$. That is, we expect *SDR* to have a stronger relationship with earnings surprises when beta is higher because aggregate cash flow news is likely more important for high beta stocks. This is precisely what we find. We present the results in Table 4. We estimate $\beta_3 = 9.856$ (t=2.66). In the final two columns, we consider an alternative measure of the earnings surprise - the actual EPS minus the mean EPS forecast scaled by price (from IBES). Our findings, again, suggest that sell-side analysts underreact to the information in FOMC announcements.

3.2.2 Coibion-Gorodnichenko (2015) Style Regressions

We next measure the degree of analyst underreaction using Coibion and Gorodnichenko [2015] style regressions. These regressions look at the relationship between forecast errors and forecast revisions. If there is a positive relationship between the two, this suggests underreaction - the forecast revision was not large enough. If there is a negative relationship between the two, this suggests overreaction - the forecast revision was too great. Full-information rational expectations suggests that there should be no relationship between revisions and forecast errors.

Specifically, we consider a regression of the following form for analyst a in firm i at time t:

$$FE_{a,i,t} = \alpha * Revision_{a,i,t} + \epsilon_{a,i,t}. \tag{6}$$

FE, or the forecast error, is equal to the actual EPS minus the revised EPS forecast for firm i at time t. *Revision* equals the revised forecast minus the forecast prior to that. We only consider revisions that occur within 40 days of their most recent forecast. Additionally, we only consider revisions where the most recent forecast is before the FOMC announcement and the revised forecast is after the FOMC announcement. We test whether the degree of analyst reaction changes when there is more earnings information in FOMC announcements. Our hypothesis is that analysts do not pay enough attention to the information embedded in FOMC announcements and this leads to a greater degree of underreaction when there are strong signals.

We present the results in Table 4. In the full-sample, we reject full-information rational expectations. We find evidence of underreaction. This is consistent with the work of Bouchaud et al. [2020], which finds evidence of underreaction in short-term forecasts and explains this behavior with models of sticky expectations. Interestingly, we can not reject the null hypothesis of full-information rational expectations when we restrict to the subsample of forecast revisions that surround FOMC announcements with zero monetary policy shocks. This suggests that a key source of underreaction may be information in FOMC announcements. In the third column, as expected, we find stronger results when we restrict the sample to forecast revisions associated with FOMC announcements with non-zero monetary policy shocks. In the final column, we examine how the degree of underreaction changes as *SDR* increases. Specifically, we estimate a model of the following form for analyst a, firm i and time t:

$$FE_{a,i,t} = \alpha * Revision_{a,i,t} + \beta_1 AbsSDR_t + \beta_2 AbsSDR * Revision_{a,i,t} + \epsilon_{a,i,t}. \tag{7}$$

AbsSDR is the absolute value of *SDR.* We predict that $\beta_2 > 0$. This would suggest greater underreaction as the magnitude of the implied dividend return increases. This is what we find - we estimate $\beta_2 = 1.987$ (t=2.22). This evidence is consistent with the idea that analysts do not fully digest the information about the economy in FOMC announcements and, naturally, this underreaction grows more severe when there is more information embedded in the FOMC signal.

3.3 Earnings Announcement Returns

We have provided evidence that FOMC announcements contain information about future earnings. We next examine whether the individual equities market underreacts to this information by testing whether *SDR* predicts earnings announcement returns. Unlike earlier sections, which related to short-term earnings, earnings announcement returns caputre both short-term news about earnings *and* long-term news: Many firms offer guidance during their earnings announcements about future plans and expectations, which relate to underlying discount rates. Therefore, it is especially important to control for interest rate changes that occur during the same FOMC announcement window. Controlling for this interest rate change should help isolate the cash flow news signal in *SDR.* Therefore, we consider a regression of the following form for firm i during time-period t:

$$EAReturn_{i,t} = \beta_0 + \beta_1 * SDR_t + \beta_2 * \Delta InterestRates_t + \epsilon_{i,t}. \tag{8}$$

EA Return is the three-day return surrounding the earnings announcement. Our variable of interest is *SDR.* Our prediction is that $\beta_1 > 0$. We cluster standard errors by FOMC announcement dates since that is the level of variation in *SDR.* If the individual-equity market underreacts to the information embedded in FOMC announcements, then our measure of such information should positively predict earnings announcement returns. That is, better (worse) news about the economy should predict positive (negative) earnings announcement returns. We present the results in Table 5. When we estimate the regression on the sample without monetary policy shocks (column 1), we cannot reject the null hypothesis that there is no relationship between *SDR* and the future earnings announcement return. In all other columns, we restrict the sample to instances where the most recent monetary policy shock was non-zero. Controlling for changes in the interest-rate, a one-standard deviation increase in *SDR* is associated with an earnings announcement return about 55 bps higher (t=2.54). In the third column, we add a control for the firm's previous earnings announcement return to account for the well-known autocorrelation in earnings. Our estimate is similar. In the fourth column, we add a control for the stock market return during the FOMC announcement window as an additional discount rate control - we find similar results. In the final column, we test how this predictability varies with the firm's level of market exposure. We proxy for this exposure with the firm's beta, estimated using the market model over the past 252 trading days. We find evidence that *SDR* has stronger predictability for firms with high beta. For example, firms with a top decile beta are expected to have an earnings announcement return 48 bps higher (t=3.49) than firms in the bottom decile when *SDR* at one-standard deviation above its mean. These results suggest that individual-equity investors underreact to the information embedded in FOMC announcements about future earnings.

4 Robustness/Extension

Our results suggest that Fed Announcements contain information about firm earnings, and financial market participants underreact to this information. In this section, we run robustness checks to provide more evidence that we're picking up information from FOMC announcements rather than other economic fundamentals that are correlated with *SDR*. Then, we examine whether markets underreact to stale information that motivates the Fed's actions/signals and, finally, we comment on what analysts react to in FOMC announcements.

4.1 Alternative windows

In our earlier analyses, we constructed a measure of information about the macroeconomy released during FOMC announcements by calculating a short-window return of an option-implied price of short-term dividends. For this subsection, we calculate the return over different horizons. If our results stem only from the information embedded in FOMC announcements, we should not find results using dividend strip returns during other windows. We present the results from considering windows one-week before and one-week after in Table 6. We find that these alternative measures do not predict earnings surprises or earnings announcement returns in a statistically significant way. This placebo test offers additional evidence that we are capturing information about the state of the macroeconomy from the FOMC announcement.

4.2 Macroeconomic news releases

Bauer and Swanson [2023] argue that macroeconomic growth forecast revisions around FOMC announcements, which Nakamura and Steinsson [2018] interpret as evidence of Fed information effects, can be explained by macroeconomic news released prior to the FOMC meeting, such as non-farm payrolls, and uncertainty about the central bank policy rule. In this framework, central bank announcements cause investors to learn about the policy rule and not about economic conditions. Our results suggest that FOMC announcements contain information about future earnings. However, it is possible that this information could also be captured from the change in non-farm payrolls (*Payroll Change*) - there is a correlation of 0.36 between *SDR* and *Payroll Change.* We present the results in Table 8. Controlling for non-farm payrolls, we find that the predictability of *SDR* for future earnings growth is dampened and no longer statistically significant. This is consistent with the idea that part of the information conveyed in FOMC announcements that is useful for predicting earnings growth is also captured by non-farm payrolls. However, when we add the control to our regressions for earnings surprise and earnings announcement returns, we find that *SDR* still has strong, statistically significant predictability while *Payroll Change* does not. Therefore, sell-side analysts and individual-equity investors underreact to the information embedded in FOMC announcement above and beyond that captured by non-farm payroll numbers.

4.3 Attention to FOMC Announcements

One potential concern with our analysis relates to the fact that FOMC announcements attract a lot of attention (Fisher, Martineau, and Sheng [2022]). Significant attention is not typically associated with underreaction. We, however, argue that attention to information signals is a necessary, but not sufficient condition for the information signal to be understood and incorporated into prices. When it is more difficult to understand a signal, it is less likely to be understood and incorporated into prices (e.g. Cohen and Lou [2012]). FOMC signals about cash flows news (the focus of this paper) are difficult to decipher, but some news about discount rate changes are very salient: unexpected interest rate increases (decreases) imply that the discount rate has increased (decreased). Therefore, we expect to see greater reactivity to monetary policy shocks. To test this, we study analysts' price targets. Individual equity is a long duration asset and thus affected by discount rate shocks. Since unexpected changes in the fed funds target rate are salient, we expect to see greater overreaction, or smaller underreaction, as the monetary policy shock gets larger. To test this, we again consider Coibion and Gorodnichenko [2015] style regressions. We calculate the change in expected returns based on the change in target prices scaled by the price. We determine the actual forecast error based on the difference between the future one-year realized return and the revised expected return. We present the results in Table 7. In the full-sample, we find evidence of underreaction - we estimate a coefficient of 0.228 (t=2.55). This is even stronger when there is no monetary policy shock - in this sample, we estimate a Coibion and Gorodnichenko [2015] coefficient equal to 0.335 (t=5.87). In contrast, when there is a monetary policy shock, we estimate a coefficient of 0.190 (t=1.81). Additionally, within the sample of non-zero monetary policy shocks, we find that greater shocks are associated with greater reactions. To test this, we estimate a model of the following form for analyst a, firm i and time t:

$$FE_{a,i,t} = \alpha * Revision_{a,i,t} + \beta_1 AbsShock_t + \beta_2 AbsShock * Revision_{a,i,t} + \epsilon_{a,i,t}. \quad (9)$$

If analysts react more strongly to greater monetary policy shocks, then we should find that $\beta_2 < 0$. We estimate this coefficient to be -3.328 (t=-1.93). This suggests that sell-side analysts *do* react to information from FOMC announcements, but information related to discount rates rather than cash flows.

5 Model

In this section, we offer a stylized framework to propose an explanation of our results. Our results suggest that individual equity market participants underreact to information signals in FOMC announcements about future earnings. We conjecture that this is because the processing costs are high. Additionally, we conjecture that index option traders *do* understand these signals. We label these index option traders macro investors and individual equity market participants micro investors. We assume that macro investors only acquire macro information and micro investors only acquire information about the micro asset. While we will not model the mechanism behind this assumption, it could be because these investors have stronger priors about the asset and want to increase their advantage (Van Nieuwerburgh and Veldkamp [2009]) or, relatedly, the costs to acquire such information vary with agent type (e.g. those who studied macroeconomics will presumably have an easier time digesting macroeconomic signals). We assume that both types of investors have CARA utility and that there are three assets - a macro asset, a micro asset, and a risk-free asset.[8] We assume

[8]For the context of our paper, the macro asset can be loosely thought of as short-term dividend claim on the S&P 500 index and the micro asset can be thought of as an individual equity that has valuation uncertainty resolved during earnings announcements.

that macro investors learn a signal s_{macro} that relates to the value of both assets. We alter the s_{macro} value to show how the expected return on the micro asset changes with the return (from pre- to post- signal) on the macro asset in Figure 1. We find that the expected return on the micro asset increases with the return on the macro asset over the signal revelation period. This result captures the intuition behind our main prediction that the return on the macro asset during FOMC announcements will predict future earnings announcement returns. This framework can generate our results, but it is important to note that there are other explanations for our findings. It is possible that index option traders are simply more sophisticated and thus face lower processing costs in terms of understanding FOMC signals. It is also possible that both groups underreact. We have shown that index option traders react, but without a full understanding of discount rates it is difficult to ascertain whether there is also underreaction in that market.

6 Conclusion

We provide evidence that individual equity market participants underreact to the information embedded in FOMC announcements about the macroeconomy. We measure the information embedded in these announcements by using changes in the prices of short-term dividends as implied by option prices (*SDR*). Using sell-side analyst data, we provide direct evidence of belief underreaction. *SDR* predicts earnings surprises and Coibion and Gorodnichenko [2015] style regressions suggest greater underreaction when there is more information about the state of the macroeconomy in FOMC announcements. We also provide evidence that the equity market underreacts to this information by documenting that *SDR* predicts earnings announcement returns. Our results contribute to the processing literature by providing evidence that individual equity market participants have difficulty capturing important information signals from the Fed. Our results are consistent with a model of information specialization - we encourage future research to explore how the specialization of market participants affects the pricing of different types of information in that market relative to others.

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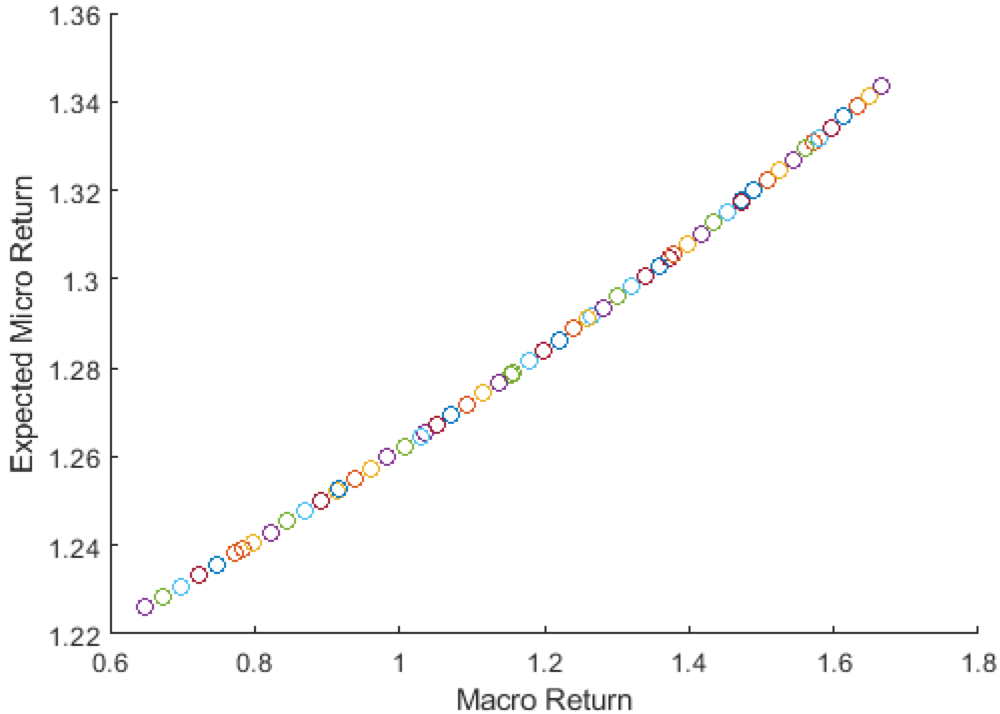
Figure 1: Macro Return Predictability for Micro Return



This graph shows how the expected return on the micro asset changes with the return on the macro asset based on our simple model in Section 2. We alter the value of the macro signal received to create different points on the graph using Matlab. We choose $\gamma = 2, \sigma_{macro} = 0.02, \sigma_{micro} = .1, M_{macro} = M_{micro} = 1, \sigma_{\eta,macro} = .1, \sigma_{\eta,micro} = .5, V_{macro} = V_{micro} = 1, b = 0.1, s_{micro} = 0.$

7 Appendix - Solving the Stylized Model

We assume that both types of investors have the following utility function:

$$U(W) = -e^{-(2\gamma)W}. \tag{10}$$

W represents the individuals wealth and γ is the coefficient of absolute risk aversion. With normally distributed returns, maximizing equation 10 is equivalent to maximizing

$$E[W] - \gamma\sigma_W^2, \tag{11}$$

where σ_W^2 is the variance of the individual's wealth. The investor maximizes this equation by choosing the portfolio fraction to put into each asset. Assume that λ_1^a, λ_2^a,and λ_3^a represent the fraction of the investors' (the type is denoted by the superscript) wealth that they put into the macro asset, micro asset and risk-free asset, respectively. We assume a risk-free asset of infinite supply that has a zero return. The macro investor observes signal s_{macro} and knows that the return of the macro asset follows the following equation:

$$R_{macro}^{macro} = \frac{V_{macro} + s_{macro}}{P_{macro}} + \epsilon_{macro},$$

where V_{macro} is the expected terminal value of the macro asset without any signals, s_{macro} is the value-relevant signal that the macro investor observes, P_{macro} is the price of the macro asset that is determined endogenously in the system, and $\epsilon_{macro} \sim N(0, \sigma_{macro}^2)$ is the error term of the return of the macro asset. The macro investor knows that the return of the micro asset follows the following equation:

$$R_{micro}^{macro} = \frac{V_{micro} + bs_{macro} + \eta_{micro}}{P_{micro}} + \epsilon_{micro},$$

where V_{micro} is the expected terminal value of the micro asset without any signals, $P_{micro}$is the price of the micro asset that is determined endogenously in the system, b is a small constant that captures the idea that the macro signal matters but is far less important for the micro assets final value, $\eta_{micro} \sim N(0, \sigma^2_{\eta,micro})$ is the distribution of the signal that the micro investor observes, and $\epsilon_{micro} \sim N(0, \sigma^2_{micro})$ is the error term of the return of the micro asset. We assume the macro investor has initial wealth W_0^{Macro}. These assumptions and equation 11 suggest that the macro investor solves the following maximization problem:

$$\max_{\lambda_1^{macro}, \lambda_2^{macro}, \lambda_3^{macro}} W_0^{Macro}(\lambda_1^{macro} E[R^{macro}_{macro}] + \lambda_2^{macro} E[R^{macro}_{micro}] + \lambda_3^{macro})$$

$$-\gamma(W_0^{macro})^2 \left((\lambda_1^{macro})^2 \sigma^2_{macro} + (\lambda_2^{macro})^2 \sigma^2_{micro} + (\lambda_2^{macro})^2 \frac{\sigma^2_{\eta,micro}}{P^2_{micro}} \right),$$

such that

$$\lambda_1^{macro} + \lambda_2^{macro} + \lambda_3^{macro} = 1.$$

We also solve for the micro investor's asset. We assume he knows that there is the following distribution for the macro asset

$$R^{micro}_{macro} = \frac{V_{macro} + \eta_{macro}}{P_{macro}} + \epsilon_{macro},$$

where $\eta_{macro} \sim N(0, \sigma^2_{\eta,macro})$ is the distribution of the signal that the macro investor observes about the macro asset. The micro investor knows the return of the micro asset follows the following equation:

$$R^{micro}_{micro} = \frac{V_{micro} + b\eta_{macro} + s_{micro}}{P_{micro}} + \epsilon_{micro},$$

where s_{micro} is the signal the micro investor learns about the asset. We assume the micro investor has initial wealth W_0^{Micro}. These assumptions and equation 11 suggest that the micro investor solves the following maximization problem:

$$\max_{\lambda_1^{micro},\lambda_2^{micro},\lambda_3^{micro}} W_0^{Micro}(\lambda_1^{micro}E[R_{macro}^{micro}] + \lambda_2^{micro}E[R_{micro}^{micro}] + \lambda_3^{micro})$$

$$-\gamma(W_0^{micro})^2\left((\lambda_1^{micro})^2(\sigma_{macro}^2 + \frac{\sigma_{\eta,macro}^2}{P_{micro}^2}) + (\lambda_2^{micro})^2(\sigma_{micro}^2 + \frac{b^2\sigma_{\eta,macro}^2}{P_{micro}^2})\right),$$

such that

$$\lambda_1^{micro} + \lambda_2^{micro} + \lambda_3^{micro} = 1.$$

Solving both maximization problems, yields the following solutions:

$$\lambda_1^{macro} = \frac{V_{macro} + s_{macro} - P_{macro}}{2W_0^{macro}P_{macro}\gamma\sigma_{macro}^2},$$

$$\lambda_2^{macro} = \frac{V_{micro} + bs_{macro} - P_{micro}}{2W_0^{macro}P_{micro}\gamma(\sigma_{micro}^2 + \frac{\sigma_{\eta,micro}^2}{P_{micro}^2})},$$

$$\lambda_1^{micro} = \frac{V_{macro} - P_{macro}}{2W_0^{micro}P_{macro}\gamma(\sigma_{macro}^2 + \frac{\sigma_{\eta,macro}^2}{P_{macro}^2})},$$

$$\lambda_2^{micro} = \frac{V_{micro} + s_{micro} - P_{micro}}{2W_0^{micro}P_{micro}\gamma(\sigma_{micro}^2 + \frac{b^2\sigma_{\eta,macro}^2}{P_{micro}^2})}.$$

To determine equilibrium prices, we set supply equal to demand. We assume M_{macro}, M_{micro} to be the initial supply of the macro asset and the micro asset, respectively. After setting supply equal to demand, we arrive at the following equation for the price of the macro asset

$$2\gamma\sigma_{macro}^2 M_{macro}P_{macro}^4 + 2P_{macro}^3 + (2\gamma M_{macro}\sigma_{\eta,macro}^2 - 2V_{macro} - s_{macro})P_{macro}^2$$

$$+\frac{\sigma_{\eta,macro}^2}{\sigma_{macro}^2}P_{macro} - \frac{(V_{macro} + s_{macro})\sigma_{\eta,macro}^2}{\sigma_{macro}^2} = 0, \tag{12}$$

and the following equation for the price of the micro asset:

$$2\gamma\sigma^4_{micro}M_{micro}P^4_{micro} + 2\sigma^2_{micro}P^3_{micro}$$

$$+\sigma^2_{micro}(2\gamma M_{micro}(b^2\sigma^2_{\eta,macro} + \sigma^2_{\eta,micro}) - 2V_{micro} - bs_{macro} - s_{micro})P^2_{micro}$$

$$+(b^2\sigma^2_{\eta,macro} + \sigma^2_{\eta,micro})P_{micro}$$

$$+b^2\sigma^2_{\eta,macro}(2\gamma M_{micro}\sigma^2_{\eta,micro} - V_{micro} - bs_{macro}) - \sigma^2_{n,micro}(V_{micro} + s_{micro}) = 0. \tag{13}$$

To calculate the return of the macro asset, we divide the positive real solution to equation 12 by the price before the macro signal is known. We determine the expected return on the micro asset by taking the expected return given all information and dividing it by the solution to equation 13.

Table 1: Summary statistics

This table presents the mean, the median, the standard deviation, and the number of observations for variables we consider in our analysis. We separate our summary statistics into two categories - for all FOMC announcements and for FOMC announcements with a non-zero monetary policy shock. *SDR* is the option-implied return on short-term dividends during the hour of the FOMC announcement. *Stock Return* is the return on the S&P 500 during the FOMC announcement window. *Interest Rate Change* is the change in risk-free rate measured over the same window. *Shock* is the monetary policy surprise. Its calculation is described in our data section. *Year-over-year Scaled Earnings Change* is the year-over-year growth in earnings-per-share scaled by price winsorized at the 1-percent level. *Earnings Surprise* is measured as the actual minus the median earnings-per-share forecast times one-hundred. We tie all measures to an FOMC announcement based on the most recent FOMC announcement - we exclude observations from the same day as an FOMC announcement. We winsorize all earnings change and earnings surprise measures at the one-percent level to mitigate the effects of outliers.

	Mean	Median	Standard Deviation	N
All FOMC Announcements				
Short-term Dividend Strip Return (SDR)	0.000	0.003	0.039	128
Stock Market Return	0.001	0.001	0.007	128
Interest Rate Change	0.000	0.000	0.001	128
Monetary Policy Shock	-0.003	0.000	0.030	128
Year-over-year Scaled Earnings Change	0.003	0.001	0.125	300,470
Earnings Surprise	-1.658	1	233.710	246,916
Earnings Announcement Return	0.000	0.000	0.101	323,970
FOMC Announcements with Non-zero Monetary Policy Shocks				
Short-term Dividend Strip Return (SDR)	-0.004	0.002	0.042	84
Stock Market Return	0.001	0.001	0.007	84
Interest Rate Change	0.000	0.000	0.001	84
Monetary Policy Shock	-0.005	-0.005	0.037	84
Year-over-year Scaled Earnings Change	0.001	0.001	0.134	191,309
Earnings Surprise	-2.211	1	234.784	157,069
Earnings Announcement Return	0.000	0.000	0.105	207,972

Table 2: Year-over-year Earnings Changes

This table presents evidence that information from Fed announcements predicts earnings changes. Our primary measure considers the year-over-year change in earnings-per-share (specifically epspxq) scaled by the quarterly price from Compustat. We tie the measure to the most recent FOMC announcement. This year-over-year earnings measure is winsorized at the 1-percent level to minimize the impact of outliers. *SDR* is the dividend strip return, as implied by option prices, during the hour of the most recent FOMC announcement. *Interest Rate Change* is measured over the same window. We describe how we construct these measures in more detail in Section 2. The first column consides a sample where there was no monetary policy shock during the most recent FOMC announcement. All other columns restrict the sample to observations where the most recent monetary policy shock was non-zero. The fourth column changes the left-hand-side variable such that the year-over-year change in earnings-per-share is unscaled. The last column changes the left-hand-side variable such that it is year-over-year change in return on assets, which equals quarterly earnings before extraordinary items (ibq) divided by lagged total assets. Again, we winsorize at the one-percent level. We cluster standard errors by the FOMC announcement date and put t-statistics in parentheses. * indicates significance at the 10% level, ** indicates significance at the 5% level, and *** indicates significance at the 1% level.

	Zero Shock	Non-zero Shocks			
	(1)	(2)	(3)	(4)	(5)
Short-term Dividend Strip Return (SDR)	-0.008	0.131**	0.086***	1.215***	0.024**
	(-0.48)	(2.52)	(3.02)	(3.06)	(2.31)
Interest Rate Change			3.568	47.756	0.944
			(0.87)	(0.98)	(0.65)
N	109,161	191,309	191,309	191,309	185,999

Table 3: Earnings Surprises

This table presents evidence that information from Fed announcements predicts analyst earnings surprises. Our primary measure of the analyst earnings surprise is the actual minus the median earnings-per-share forecast times one-hundred. In the final two columns, we consider an earnings surprise measure where we scale by price. We winsorize at the 1-percent level to minimize the impact of outliers. *SDR* is the dividend strip return, as implied by option prices, during the most recent FOMC announcement. *Shock* is our measure of the most recent monetary policy shock. *Stock Return* and *Interest Rate Change* are constructed over the same window. We describe the construction of FOMC announcement period measures in more detail in Section 2. *Lagged Earnings Surprise* is the firm's previous earnings surprise. We estimate beta using the market model over the past 252 trading days and sort firms into beta deciles based on their beta estimates from the previous month. We exclude observations where the fiscal quarter ends on the same day as an FOMC announcement. The first column restricts the sample to observations where the most recent monetary policy shock was zero, while all other columns consider a sample where the most recent monetary policy shock was non-zero. We cluster standard errors by the date of the most recent FOMC announcement and put t-statistics in parentheses. * indicates significance at the 10% level, ** indicates significance at the 5% level, and *** indicates significance at the 1% level.

	Zero Shocks	Non-zero Shocks					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Short-term Dividend Strip Return (SDR)	-5.601	62.014***	63.588***	63.183***	-31.218	0.030***	0.006
	(-1.11)	(3.47)	(5.16)	(4.80)	(-0.96)	(3.64)	(0.52)
Interest Rate Change			-128.454	-277.211	-477.667	0.191	0.199
			(-0.09)	(-0.21)	(-0.46)	(0.21)	(0.22)
Lagged Earnings Surprise				0.161**	0.170	0.281***	0.289***
				(2.32)	(1.49)	(13.82)	(13.70)
Stock Return				33.932	-38.277	0.001	0.002
				(0.33)	(-0.44)	(0.03)	(0.05)
Beta Decile					0.011		0.000
					(0.06)		(-0.71)
*Beta Decile*SDR*					9.856***		0.004***
					(2.66)		(3.21)
N	89,124	149,101	149,101	146,753	140,251	145,660	140,172

Table 4: Coibion and Gorodnichenko Style Regressions - Earnings

This table shows the results of regressions of forecast errors on forecast revisions. We only consider revisions that occur within 40 days of their most recent forecast. Additionally, we only consider revisions where the most recent forecast is before the FOMC announcement and the revised forecast is after the FOMC announcement. The left-hand side variable is the forecast error measured as actual EPS minus the revised forecast. *Revision* is the EPS forecast minus the most recent forecast made by the same analyst for the same firm-quarter. *Absolute SDR* is the absolute value of the dividend strip return, as implied by option prices, during the most recent FOMC announcement. We winsorize both the revision and the forecast-error at the one-percent level. The first column considers the full-sample.The second column restricts the sample to those whose most recent FOMC announcement had no monetary policy shock. All other columns restrict the sample to those whose most recent FOMC announcement had a non-zero monetary policy shock. We cluster standard errors by the date of the most recent FOMC announcement. * indicates significance at the 10% level, ** indicates significance at the 5% level, and *** indicates significance at the 1% level.

	(1)	(2)	(3)	(4)
Revision	0.089***	0.038	0.108***	0.044
	(3.08)	(1.43)	(2.86)	(1.26)
Absolute SDR				-0.585***
				(-3.39)
*Absolute SDR*Revision*				1.987**
				(2.22)
N	370,822	119,667	251,155	251,155

Table 5: Earnings Announcement Returns and Fed Information

This table presents evidence that information from Fed announcements predicts earnings announcement returns. Here, we measure the earnings announcement return as the three-day return surrounding the earnings announcement. We only include earnings announcements that are at least two days after the most recent FOMC announcement. *SDR* is the dividend strip return, as implied by option prices, during the most recent FOMC announcement. *Shock* is our measure of the most recent monetary policy shock. *Stock Return* and *Interest Rate Change* are constructed over the same window. We describe the construction of FOMC announcement period measures in more detail in Section 2. *Lagged Earnings Announcement Return* is the firm's previous earnings announcement return. We estimate beta using the market model over the past 252 trading days and sort firms into beta deciles based on their beta estimates from the previous month. The first column considers the sample with no monetary policy shock. All other columns restrict the sample to observations where the most recent monetary policy shock was non-zero. We cluster standard errors by the most recent FOMC date and put t-statistics in parentheses. * indicates significance at the 10% level, ** indicates significance at the 5% level, and *** indicates significance at the 1% level.

	Earnings Announcement Return				
	Zero Shock	Non-zero Shocks			
	(1)	(2)	(3)	(4)	(5)
Short-term Dividend Strip Return (SDR)	-0.071	0.132***	0.133***	0.131***	0.046
	(-0.45)	(3.47)	(3.49)	(3.48)	(1.35)
Interest Rate Change	7.700	-4.225**	-4.284**	-4.489**	-0.136
	(0.89)	(-2.50)	(-2.53)	(-2.63)	(-0.08)
Lagged Earnings Announcement Return			0.017***	0.017***	0.018***
			(3.79)	(3.78)	(3.95)
Stock Return				-0.084	-0.094
				(-0.40)	(-0.45)
Beta Decile					0.000
					(-0.98)
*Beta Decile*SDR*					0.014***
					(3.49)
*Beta Decile*Interest Rate Change*					-0.738***
					(-3.49)
N	104,108	180,461	176,842	176,842	174,747

Table 6: Placebo Tests

This table details the results from measuring *SDR* over different windows. Specifically, we consider the return exactly one-week before (*SDR Before*) and one-week after (*SDR After*) our FOMC annoucnement window. *Interest Rate Change Before* and *Interest Rate Change After* are also calculated one-week before and one-week after, respectively. To measure earnings growth, we consider the year-over-year change in earnings-per-share (specifically epspxq). We scale by the quarterly price from Compustat. We measure the analyst earnings surprise as the actual minus the median earnings-per-share forecast times one-hundred. We winsorize at the 1-percent level to minimize the impact of outliers. We measure the earnings announcement return as the three-day return surrounding the earnings announcement. We only include earnings announcements that are at least two days after the most recent FOMC announcement. We restrict the sample to non-zero monetary policy shocks. We cluster standard errors by the most recent FOMC date and put t-statistics in parentheses. * indicates significance at the 10% level, ** indicates significance at the 5% level, and *** indicates significance at the 1% level.

	Earnings Growth	Earnings Growth	Surprise	Surprise	EA Return	EA Return
SDR Before	0.080		0.021		-0.048	
	(1.16)		(1.13)		(-1.33)	
SDR After		-0.161		0.004		-0.021
		(-1.53)		(0.36)		(-1.01)
Interest Rate Change Before					1.820	
					(1.04)	
Interest Rate Change After						1.406
						(1.20)
N	191,309	191,309	149,101	149,101	180,461	180,461

Table 7: Coibion and Gorodnichenko Style Regressions - Target Prices

This table shows the results of regressions of forecast errors on forecast revisions. We only consider revisions that occur within 40 days of their most recent forecast. Additionally, we only consider revisions where the most recent forecast is before the FOMC announcement and the revised forecast is after the FOMC announcement. *Revision* is the current target price minus the most recent target price scaled by the current price. We adjust for splits and winsorize both the revision and the forecast-error at the one-percent level. The first column considers the full-sample. The second column restricts the sample to those whose most recent FOMC announcement had no monetary policy shock. All other columns restrict the sample to those whose most recent FOMC announcement had a non-zero monetary policy shock. We cluster standard errors by the date of the most recent FOMC announcement. * indicates significance at the 10% level, ** indicates significance at the 5% level, and *** indicates significance at the 1% level.

	(1)	(2)	(3)	(4)
Revision	0.228**	0.335***	0.190*	0.242**
	(2.55)	(5.87)	(1.81)	(2.23)
Absolute Shock				-2.051
				(-1.49)
*Absolute Shock*Revision*				-3.328*
				(-1.93)
N	136,727	41,514	95,213	95,213

Table 8: A Reaction to Stale Information?

This table considers whether our documented underreaction stems from the FOMC conveying previously released non-farm payrolls information. Surprise is the he actual minus the median earnings-per-share forecast times one-hundred. We measure the earnings announcement return as the three-day return surrounding the earnings announcement. We only include earnings announcements that are at least two days after the most recent FOMC announcement. *SDR* is the dividend strip return, as implied by option prices, during the hour of the most recent FOMC announcement. *Stock Return* is a measure of the S&P 500 return during the same window. *Shock* is our measure of the most recent monetary policy shock - we describe how we measure this in Section 2 - we only consider a sample of non-zero monetary policy shocks. *Payroll Change* is the most recent change in non-farm payrolls in hundreds of billions. We cluster standard errors by the most recent FOMC date and put t-statistics in parentheses. * indicates significance at the 10% level, ** indicates significance at the 5% level, and *** indicates significance at the 1% level.

	Earnings Growth	Surprise	EA Return
	(1)	(2)	(3)
Short-term Dividend Strip Return (SDR)	0.053	47.504***	0.144***
	(0.77)	(2.80)	(3.26)
Interest Rate Change			-4.457**
			(2.41)
Payroll Change	0.003	0.524	0.000
	(1.35)	(0.92)	(-0.30)
N	191,309	149,101	180,461