Monetary Policy and Hedge Funds' Reaching for Beta

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ABSTRACT

We uncover that hedge funds actively adjust their equity market exposure in response to monetary policy changes, decreasing (increasing) market beta following expansionary (contractionary) policy. Hedge funds responding more strongly tend to possess greater skills and deliver better performance. These findings are consistent with the Fed information effect of FOMC announcements. Furthermore, we show that hedge fund beta shifts in response to monetary policy significantly predict both stock market returns and GDP growth. Overall, our results suggest that sophisticated investors use information from FOMC announcements to update their expectations about the aggregate market and economy.

Keywords: Hedge funds, reaching for beta, Fed information effect, monetary policy transmission, FOMC announcements
JEL Classification: G10, G12, E44, E52

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I. Introduction

Monetary policy influences financial markets (Bernanke and Kuttner, 2005) and the real economy (Romer and Romer, 2000; Gertler and Karadi, 2015; Nakamura and Steinsson, 2018). To understand the transmission mechanism from monetary policy to various economic sectors, it is essential to examine how different market participants respond to policy changes. Existing research shows that certain financial institutions, such as insurance companies, adjust their asset portfolios following monetary policy shocks, primarily to maintain target returns (Hanson and Stein, 2015; Ivashina and Becker, 2015). In this paper, we investigate the extent to which hedge funds—a group of sophisticated investors—incorporate information from monetary policy into their investment decisions.

Our paper is the first to address three key questions: whether, how, and why hedge funds respond to monetary policy. We find that hedge funds actively adjust their exposure to the equity market in response to monetary policy changes. Specifically, they increase (decrease) their market beta following Federal Open Markets Committee (FOMC) announcements signaling short-term interest rate hikes (cuts)—a behavior we refer to as "reaching for beta." We show that hedge funds engaging in this behavior achieve superior performance. More importantly, we propose and test an explanation for this behavior: consistent with the "Fed information effect" of monetary policy (Nakamura and Steinsson, 2018), hedge funds combine information from FOMC announcements with their proprietary insights to inform asset-allocation decisions.

Using a comprehensive sample of hedge funds from 1995 to 2021, our analysis yields three sets of main findings. First, we show that hedge funds respond to monetary policy by actively adjusting their equity market exposure. They increase their market exposure following interest rate hikes and decrease it following interest rate cuts. Specifically, the average hedge fund market beta increases from 0.36 to 0.47 after a rate hike decision and decreases to 0.24 after a rate cut decision. This 0.23 difference in market beta between rate hikes and rate cuts is substantial relative to the average hedge fund beta of 0.36. Notably, this beta shift persists for several months. Importantly, the behavior of reaching for beta appears unique to hedge funds, as we do not observe similar patterns among actively managed equity mutual funds or passive ETFs when performing the same analysis to those investor types.

In our main analysis, we estimate hedge fund betas using their returns, which captures beta changes driven by all hedge fund positions in stocks, derivatives and other assets. We also confirm hedge fund beta shifts by examining their equity holdings. Specifically, we show that a hedge fund's beta, calculated from its equity positions, increases (decreases) following short-rate increase (decrease) announcements. In addition, we find that hedge funds tend to purchase high-beta (low-beta) stocks when monetary policy becomes contractionary (expansionary).

It is important to highlight the direction of hedge fund beta shifts in response to interest rate changes. When interest rates decline, hedge funds tend to buy low-beta stocks—a sharp contrast to the well-documented "reaching for yield" behavior observed in bond markets. For example, following an interest rate cut, insurance companies often purchase riskier high-yield bonds to meet their target returns (Ivashina and Becker, 2015). In contrast, hedge funds respond by tilting toward less risky, low-beta stocks in a low-interest-rate environment. To explain hedge funds' reaching for beta, we hypothesize that—unlike reaching for yield, which is driven by a need to achieve target returns—hedge funds seek to capitalize on the Fed information effect by combining information from FOMC announcements with their proprietary data.[1] Results from a battery of tests provide support for this explanation.

Second, we document that hedge funds that respond more strongly to monetary policy changes tend to deliver better performance, including higher risk-adjusted returns (i.e., alpha). Specifically, we sort individual hedge funds into five quintile portfolios based on their past beta shifts following monetary policy changes, using a five-year rolling window. When tracking their subsequent out-of-sample performance, we find that the top quintile portfolio significantly outperforms the bottom quintile portfolio, both economically and statistically. This pattern holds

[1] As one example of hedge funds' proprietary data, Katona et al (2023) identify satellite coverage of retailers as a valuable information source, noting that the high costs of acquiring and processing such data make hedge funds the typical clients. In this paper, we argue that combining macroeconomic outlook predictions from FOMC announcements with proprietary data leads to greater investment value.

for both raw return and alpha. Over the sample period from 2000 to 2021, the top quintile portfolio realizes a cumulative return exceeding 500%, compared to 200% for the bottom quintile portfolio over the same period. After adjusting for risks using the Fung and Hsieh (2001, 2004) factors, the alpha spread between the top and bottom quintiles is 0.27% per month, or 3.24% per year. Moreover, the superior performance of the top quintile persists over time, suggesting that the outperformance is information-driven.

Furthermore, we find that more skillful funds, measured by idiosyncratic volatility (Bali and Weigert, 2024) or past performance, tend to shift their market exposure more strongly following monetary policy decisions. This finding suggests that these funds effectively combine proprietary data with information from FOMC announcements to enhance their investment returns. Additionally, funds with higher management fees or longer redemption notice periods—both characteristics often linked to managerial skill—are also more responsive to monetary policy changes.

Finally, we perform a series of tests to examine the hypothesis that hedge funds' reaching for beta reflects strategic, information-based asset allocation following FOMC announcements. These analyses provide strong support for this hypothesis. We document that the portion of hedge fund beta shifts explained by the previous month's FOMC announcement, rather than the announcement itself, significantly and positively predicts aggregate stock market returns and economic growth in the following quarter. This finding supports the view that hedge funds incorporate information from FOMC announcements, combined with their proprietary insights—which shape how they interpret Fed information—to forecast economic conditions and guide investment decisions. In contrast, the portion of hedge fund beta changes unrelated to monetary policy shows no predictive power for economic outcomes. Next, following Cieslak and Schrimpf (2019), we categorize FOMC announcements into those conveying growth-related information and those focused on interest rates. We find that hedge funds' reaching for beta occurs primarily after FOMC announcements containing growth-related news. To confirm that reaching for beta is driven by FOMC announcements rather than other changes in short-term rates, we separate the sample period into months following FOMC announcements and all other months. We find that hedge funds adjust their beta only in the months following FOMC announcements. Finally, we decompose FOMC announcement surprises into components that can be predicted by publicly available information about economic conditions and those orthogonal to such information (Bauer and Swanson, 2023a and 2023b). We find that hedge funds respond primarily to the unexpected, orthogonal component of FOMC surprises.

In addition, we rule out funding constraints faced by hedge funds and other financial intermediaries as a driver of hedge funds' reaching for beta. Specifically, we show that hedge funds' reaching for beta is not more pronounced when primary dealers or the interbank lending market experience greater constraints. Moreover, more leveraged hedge funds exhibit weaker, rather than stronger, reaching for beta behavior. Lastly, we find that hedge fund's reaching for beta is not sensitive to fund flows.

Our paper contributes to three strands of literature. First, we add to the growing literature linking monetary policy to institutional trading. Regarding the content of FOMC announcements, one stream of research (e.g., Romer and Romer (2000); Nakamura and Steinsson (2018)) provides evidence of the Fed information effect, suggesting that FOMC announcements convey the central bank's unique information about economic conditions. Hence, rate cuts (hikes) are often followed by weaker (stronger) economic growth and equity market performance. In contrast, Bauer and Swanson (2023a) propose an alternative channel, suggesting that the Fed and market participants respond to the same set of public information, with the Fed setting monetary policy accordingly. Our study offers new insights by examining how hedge funds, a group of sophisticated investors, interpret FOMC announcements. Consistent with Nakamura and Steinsson (2018), we provide evidence that hedge funds view monetary policy actions as signals about the future economic outlook.

Our findings differ from the well-documented behaviors of reaching for yield and reaching for duration in a low-interest-rate environment (Hanson and Stein, 2015; Ivashina and Becker, 2015). These channels suggest that certain institutional investors take on greater credit or duration risks to meet target returns when interest rates decline. Differently, we find that hedge funds tend to tilt toward low-beta (high-beta) stocks following interest rate cuts (hikes), which aligns with the Fed information effect that expansionary (contractionary) policy shocks are followed with weak (strong) output growth and stock prices (Nakamura and Steinsson, 2018). Our additional tests support an information-based explanation for hedge funds' reaching for beta, suggesting that hedge funds correctly interpret monetary policy and achieve superior performance through informed asset-allocation decisions. Therefore, our findings highlight the importance of examining different types of market participants, including hedge funds, to better understand the transition mechanism from monetary policy to financial markets and the real economy.

Second, we contribute to the literature on the determinants of hedge fund returns, which typically reflect either risk compensations or managerial skill.[2] In particular, Chen and Liang (2007) document the presence of market timing ability—a dynamic asset-allocation strategy in which hedge funds increase (decrease) beta in up (down) markets.[3] Our findings suggest that one source of this market timing ability is hedge funds' use of Fed information, combined with proprietary insights, to forecast market conditions. Notably, we only observe the reaching for beta behavior among hedge funds, but not equity mutual funds or passive ETFs, consistent with the view that hedge funds employ sophisticated, dynamic strategies in their investment decisions (e.g., Fung and Hsieh, 1997; Patton and Ramadorai, 2013). Furthermore, we establish a direct link between reaching for beta and hedge fund alpha.

Finally, our study contributes to the large literature on predicting market returns (see, e.g., Goyal and Welch (2008) and Rapach and Zhou (2013) for surveys). Numerous studies have examined the forecasting power of variables constructed from firm attributes (e.g., payout ratio and book-to-market ratio) and macroeconomic conditions (e.g., yield spread). Recently, Rapach, Ringgenberg, and Zhou (2016) and Chen, Da, and Huang (2022) find that the activity of short sellers contains predictive power for market returns. Along with these studies, our paper shows

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[2] For example, Bali, Brown, and Caglayan (2014) show that hedge funds with greater exposure to macroeconomic uncertainty risk have higher returns. Avramov, Barras, and Kosowski (2013) show that hedge fund returns can be explained by macroeconomics variables, such as volatility or default respread.

[3] Besides market timing ability, there is also evidence that hedge funds engage in strategic asset allocation with respect to other market conditions, such as aggregate liquidity, industry performance, and investor sentiment (e.g., Cao, Chen, Liang, and Lo, 2013; Bali, Brown, Caglayan, and Celiker, 2021; Chen, Han, and Pan, 2021).

that hedge funds' beta dynamics contains significant signals about future market movement and economic growth.

The rest of the paper proceeds as follows. Section II describes the data. Section III documents hedge funds' reaching for beta, using both the returns and the changes in their equity positions. Section IV examine the relation between reaching for beta and subsequent fund performance. Section V provides an economic explanation for reaching for beta. Finally, Section VI concludes. Auxiliary tests and results are provided in the Internet Appendix.

II. Data

Our sample covers the hedge funds from both the Lipper TASS (TASS) database, and the Hedge Fund Research (HFR) database. We remove duplicated funds covered in both databases. Following Cao, Chen, Liang and Lo (2013) we focus on US dollar denominated hedge funds that have at least 36 monthly observations with the average assets under management (AUM) of at least five million dollars.[4] We focus on hedge funds that belong to one of the following equity-oriented categories: Convertible Arbitrage (CA), Emerging Market (EM), Equity Market Neutral (EMN), Event Driven (ED), Fund of Funds (FOF), Global Macro (GM), Long/Short Equity (LSEH), and Multi Strategy (MS). We also identify a subset of hedge funds' holding information from 13F. Our final sample covers a total of 8761 unique hedge funds over the period between 1995 January to 2021 December. In line with Fung, Hsieh, Naik, and Ramadorai (2008), among others, we start the sample in 1995 to avoid survivorship biases induced by exclusion of dead funds in the data before this period.

[Insert Table I about here.]

[4] We repeat the mains parts of our analysis using TASS or HFR datasets separately, and we get qualitatively similar results. We also test alternative thresholds such as 60 monthly observations or an average AUM of 10 million, and the results remain qualitatively the same.

Table I summarizes the monthly raw returns and excess returns for our sample. Over the sample period, the average monthly raw return for all hedge funds is 0.68% per month, or 8.2% per year.

III. Hedge Funds' Reaching for Beta

A. Hedge Funds Change in Return Beta

We first utilize hedge funds returns to test whether they change their exposure to the equity market in response to monetary policy changes. Using returns provides a more reliable measurement of hedge fund's change in betas compared with looking at their equity holdings, because hedge funds can build exposure to the equity market using many other financial instruments, for instance options and futures. Hedge fund returns should include the exposure of all hedge funds holdings, including equities, options, futures, and other instruments. Besides, using returns allows us to study the hedge funds' reaction to monetary policy at a higher frequency than holdings, because returns are available at monthly frequency while equity holdings are available at quarterly frequency.

We proxy hedge fund's market beta as a linear function of the past monetary policy decisions. This linear functional form is a first-order Taylor expansion of beta with respect to monetary policy changes (e.g., Shanken, 1990)

$$\beta_t \approx \delta_0 + \delta_1 MP_{t-1}, \tag{1}$$

where MP_{t-1} is the change in the monetary policy in previous month. By augmenting Equation (1) into the conditional CAPM model, we employ the following regression specification:

$$R_{i,t} - R_{f,t} = \alpha_i + \delta_0\left(R_{m,t} - R_{f,t}\right) + \delta_1\left(R_{m,t} - R_{f,t}\right) * MP_{t-1} + error_{i,t}, \tag{2}$$

where $R_{i,t} - R_{f,t}$ is hedge fund i's return in excess of the risk-free rate in month t, and $R_{m,t} - R_{f,t}$ is the excess return on the market portfolio. $\delta_1$would be our coefficient of interest as it measures how much hedge fund market exposure changes in response to monetary policy. Our baseline MP_{t-1} , is Federal Funds target rate change at the scheduled FOMC meetings in the previous month, and we use several other market-based measures for monetary policy as robustness checks.

[Insert Table II about here.]

Table II shows the results estimating the regression settings of Equation (2). We include fund fixed effects to account for potential fund heterogeneity and report the t-statistics based on the Driscoll-Kraay (1998) standard errors with 4 lags. Column (1) in Panel A corresponds to the exact setting of Equation (2), in which MP_{t-1} is the change in the target rate in the previous month. The δ_1 coefficient is estimated as positive at 1% statistical significance, which indicates that hedge funds increase (decrease) their exposure to the equity market after interest rate increases (decreases). In other words, hedge funds are reaching for beta in response to contractionary monetary policy. Specifically, the average hedge fund market beta is 0.36 without taking into account the impact of monetary policy. Following an interest rate hike of 25 basis points, hedge fund beta on average rises to 0.45 (= 0.364+0.328*0.25); following a rate cut of 25 basis points, hedge fund beta on average declines to 0.28 (= 0.364-0.328*0.25). In Column (2) of Table II, we separately measure the effect of contractionary and expansionary monetary policy by using separate dummy variables when interest rates go up and down. The variables $1_{\{MP_{t-1}>0\}}$ and $1_{\{MP_{t-1}<0\}}$ are one where the monetary policy in the previous month was respectively contractionary and expansionary and zero otherwise. The coefficients for both variables are statistically significant and with the opposite sign, confirming that hedge funds respond to both expansionary and contractionary monetary policy by respectively decreasing and increasing their exposure to the equity market. On average, hedge fund beta rises to 0.47 (= 0.357+0.118) following interest rate hike decisions, and drops to 0.24 (= 0.357-0.121) following interest rate cut decisions. That is, monetary policy induces over 30% change in hedge fund market beta. To control any other risk factors, we also add the 6 remaining factors from Fung and Hsieh (2001, 2004) in Columns (3) and (4) and get similar results. Finally, Columns (5) and (6) show that our results hold if we exclude the great financial crisis period.

In Panel B of Table II, we estimate Equation (2) using market-based monetary policy surprise measures and we see similar positive reactions to monetary policy tightening. Hedge funds increase their market exposure both in response to the current interest rate hikes measured by the 30-min Kuttner (2001) surprises or the target rate factor (GSS PC1) in Gürkaynak, Sack, and Swanson (2005), as well as in response to the future monetary policy stance tightening measured by the surprise in Nakamura and Steinsson (NS 2018) or the path factor (GSS PC2) in Gürkaynak, Sack, and Swanson (2005).[5]

[Insert Figure 1 about here.]

To study the potential heterogeneity across hedge fund strategies, we also separately estimate δ_1 for the hedge funds in each of the eight equity-oriented strategy categories. Figure 1 shows the estimates as well as the 95% confidence levels. The δ_1 coefficient is significant for all 8 categories, ranging between 0.2 and 0.4. The result suggests reaching for beta is common across all equity-based hedge fund strategies.

[Insert Table III about here.]

To provide more granularity, we also separately estimate Equation (2) for each hedge fund and tabulate the distribution of δ_1 t-statistic. Table III shows the results. Three important results emerge from the table. First, about 28.3% of all funds have statistically significant positive δ_1 at the 5% level. Second, only 3.2% of hedge funds have a negative statistically significant δ_1 at the 5% level, which is very close to a 2.5% expected type 1 error. Third, and finally, the percentage of positive and statistically significant δ_1 coefficients are higher than negative and statistically

[5] Although δ_1 appears smaller for shocks in Panel B, it is mainly because the surprise measures in Panel B are standardized by their standard deviation, whereas the target rate changes in Panel A are simply the rate changes. If we standardize the target rate changes in Panel A as well, we get a similar magnitude of δ_1. More specifically, we get a δ_1 of 0.328*0.18=0.059, where 0.18 is the standard deviation of target rate changes.

significant coefficients across all the eight hedge fund strategies. In sum, the results suggest that majority of hedge funds are reaching for beta in response to contractionary monetary policy. For the fund of funds (FOF) category, which consists of over 25% of the entire hedge funds in our sample, 45.2% of this category has statistically significant positive δ_1 at the 5% level.

[Insert Table IV about here.]

To examine whether the change in exposure in response to monetary policy is unique to hedge funds, we repeat the analysis for other equity investments vehicles. More specifically, we estimate Equation (2) for passive index-tracking ETF for S&P 500 and the Russell 2000 index. We also test whether mutual funds change their equity exposure in response to monetary policy changes by examining the CRSP mutual fund returns. As shown in Table IV, δ_1 is only statistically significant for hedge funds. On average, equity mutual funds or portfolios have a market beta of 1, and they do not change their market exposure following monetary policy decisions. Therefore, reaching for beta is achieved by the active investment that hedge funds do.

[Insert Figure 2 about here.]

To understand the persistence of hedge funds' reaction to monetary policy, we also extend the regression setting of Equation (2) by inclusion of monetary policy changes over several months before and after. More specifically, we estimate equation (3)

$$R_{i,t} - R_{f,t} = \alpha_i + \delta_0\left(R_{m,t} - R_{f,t}\right) + \sum_{k=-4}^{4} \delta_k^*\left(R_{m,t} - R_{f,t}\right) * MP_{t-k} + error_{i,t}, \quad (3)$$

where *k* shows how many months the returns lead the FOMC announcements. Negative *k* means the hedge fund return is before the FOMC month. Figure (2) shows the δ_k^* coefficients as well as their 95% confidence level. It seems that for hedge funds the largest change in the market exposure happens during the month right after FOMC announcement, and the change of such market exposure can be maintained to a good extent for about a quarter. Therefore, hedge funds react to monetary policy by actively changing their market exposure, instead of changing their market exposure in anticipation of future monetary policy changes.

B. Hedge Fund Change in Holdings

As a further corroboration of our analysis using monthly returns, we test whether hedge funds beta changes in response to monetary policy solely using the 13F equity holdings of a group of hedge funds identified in Cao, Chen, Goetzmann and Liang (2018). Although solely looking at equity holdings has the disadvantage of excluding other investment vehicles that hedge funds use and conducting analysis at a lower quarterly frequency, it can shed light on an important part of part of hedge funds' portfolios to understand their change in positions following monetary policy changes. Such analysis would complement previous subsection in which returns were used to incorporate information about all investment vehicles.

[Insert Table V about here.]

We use two distinct settings with the 13F data to document whether hedge funds reach for beta following contractionary monetary policy. First, we follow Jiang, Yao and Yu (2007) and directly employ Equation (1) to test whether hedge funds beta changes using their equity holdings. Panel A of Table V shows the results for this analysis. Column (1) of the table documents that hedge funds beta based on equity holdings changes in response to the monetary policy change in the previous quarter. The smaller coefficient compared to results based on returns in Table II suggests that hedge funds use other investment vehicles in addition to stocks to build exposure on the equity market. We repeat the analysis for equity mutual funds in Column (2) and we do not see an economically or statistically significant response by mutual funds to monetary policy. Finally, in Column (3) we include both hedge funds and mutual funds to test whether their response to monetary policy is different. The difference in response is statistically significant and very similar in size to the total response on hedge funds documented in Column (1).

In the second setting, documented in Panel B of Table V, we study *changes* in holdings of hedge funds to directly examine whether they buy or sell high beta equities in response to previous monetary policy changes. More specifically, we employ the following regression setting at the fund-stock-time level:

$$\Delta HLD_{ist} = \gamma_0\, \beta_{st} + \gamma_1\, MP_t + \gamma_2\, \beta_{st} * MP_t + error_{ist}, \quad (4)$$

where ΔHLD_{ist} is fund i's holding change in stock s at quarter t, divided by fund i's holding changes in absolute value for all stocks in quarter t. We try several different specifications including with fund fixed effects, time fixed effects and fund-time fixed effects. In all settings, γ_2 is significant at 1% level, consistent with hedge funds buying (selling) high-beta stocks following contractionary (expansionary) monetary policy. This provides further corroboration for hedge funds' reaching for beta by directly documenting that they *change* their equity positions in response to monetary policy changes.

IV. Reaching for Beta and Hedge Fund Performance

In the previous section, we document that hedge funds overall change their market exposure following monetary policy decisions. In this section, we study whether hedge funds that do this more strongly can outperform those funds that don't. We also study what kind of hedge funds tend to reach for beta more strongly, following the monetary policy tightening. Doing so allows us to see whether hedge funds' reaching for beta adds economic value to investors, and whether it represents a valuable managerial skill.

A. Hedge Fund Performance

We first look at the performance of the hedge funds that reach for beta more strongly in response to monetary policy tightening. We estimate Equation (2) at the fund level using a 60 - month rolling window, while keeping funds with minimum of 6 months of observations.[6] Then each month we sort on $\delta_{1,t}$, form quintile portfolios, and hold these portfolios for 1 month, 3

[6] We also try alternative lengths for rolling windows and the results remain similar. Figure A.1 in Appendix A shows the result using a 36-month rolling window.

months, 6, months, 9 months, and 12 months. Table VI shows the alphas of these portfolios relative to the Fung and Hsieh (2001, 2004) 7-factor model.

[Insert Table VI about here.]

Table VI shows hedge fund performance depending on how strongly they change their market exposure following monetary policy changes. The top 20% portfolio delivers statistically and economically significant alphas in all holding periods. For the 1-month holding period, the top 20% portfolio's alpha is 0.303% per month, or 3.6% per year, with a t-statistic of 2.98. The top 20% portfolio also generates significantly higher out-of-sample alphas than the bottom portfolios. For instance, the spread in alpha between the top 20% and the bottom 20% portfolios are consistently above 0.25% per month, depending on the holding periods. That is, the top 20% portfolio outperforms the bottom 20% portfolio by more than 3.0% per year subsequently on a risk-adjusted basis.[7]

[Insert Figure 3 about here.]

In Fig. 3, we plot the out-of-sample alphas for the top 20% portfolio versus the bottom 20% portfolio based on sorting on $\delta_{1,t}$ for different holding periods. It shows that the top 20% portfolio has an average alpha of more than six times as large as that of the bottom 20% portfolio in post-ranking periods.

[Insert Figure 4 about here.]

[7] We repeat this analysis using decile portfolios instead of quintile portfolios, and we find an even larger difference between top and bottom portfolio. The alpha spread between the top 10% and bottom 10% portfolios are about 5% annually.

The economic significance of the outperformance of the funds that reach for beta more actively following monetary policy tightening can be seen more directly from Fig. 4. In Fig. 4, we plot the cumulative returns on the top 20% portfolio (solid blue) and the bottom 20% portfolio (dashed red), respectively, for the 1-month holding period. Holding the top 20% portfolio yields a cumulative return of almost 500% from January 2000 to December 2021, and holding the bottom 20% funds generates a cumulative return of only 200% over the same period.

B. Hedge Fund Skills

We examine which hedge fund characteristics are associated with hedge funds' reaching for beta, measured with δ_1. More specifically, we test whether more skillful hedge funds change their market exposure more strongly following monetary policy decisions. To do so, we run the following regression of δ_1 of hedge fund i in month t on several fund skill proxies and characteristics X_i.

$$\delta_{1i,t} = a_t + b_t \, Skill_{i,t} + \gamma_t \, X_{i,t} + error_{i,t} \, , \tag{5}$$

where we use different measures for hedge funds' $Skill_{i,t}$. We start with the hedge fund idiosyncratic volatility *IVOL* as our fund skill proxy. Bali and Weigert (2024) show that fund *IVOL* proxies for the fund managerial skill. We also use the fund's past 3-year alpha relative to the Fung and Hsieh (2001, 2004) 7-factor model, as well as the past 3-year cumulative returns before risk-adjustment as alternative proxies for the fund skill. Following Bali and Weigert (2024), our hedge fund characteristics include incentive fee, minimum investment, lockup period, redemption notice period, high water mark, and fund age. We report our regression results using the Fama-Macbeth (1973) methodology in Table VII.

[Insert Table VII about here.]

The results in Table VII indicate that hedge funds with higher skills engage in reaching for beta more strongly following monetary policy tightening, for all proxies we used for fund skills.

A 1% increase in the fund skill measured by *IVOL* or past alpha increases the reaching for beta coefficient δ_1 by 0.07%, and a 1% increase in the non-risk adjusted past returns increases the coefficient by almost 0.13%. Other fund characteristics that consistently show up at less than 5% significance levels across different skill proxies are the management fees and the redemption notice period, both with positive relationships. We see that funds that charge a higher management fee or require a longer redemption notice period have a higher δ_1. Therefore, better incentivized fund managers and those with more time flexibility of the fund money are more likely to actively change their market exposures following the monetary policy decisions.

V. Economic Explanation

We put forward an economic explanation based on the findings in previous sections, and we provide further corroborating evidence. We also rule out some alternative explanations.

A. Fed Information Effect

In previous section we showed that reaching for beta is profitable on a risk-adjusted basis, and more skillful hedge funds tend to reach for beta more strongly. This suggest that hedge funds – and even more so the more skillful hedge funds – utilize the information in FOMC announcements to make better predictions about the market. The natural question is what information hedge funds are able to infer from the FOMC announcements. More specifically, we examine whether (a) there is information about the economy in FOMC announcements that hedge funds use, that is, the *Fed Information Effect* (Romer and Romer, 2000; Nakamura and Steinsson, 2018, among others), or (b) hedge funds are changing their positions assuming that information solely in response to interest rate changes, without inferring any information about the economy from FOMC announcements, that is, they treat FOMC communications as *Fed Reacts to News* (Bauer and Swanson 2023a).

The results shown so far are consistent with the former, that is, the Fed Information Effect. Specifically, the sign of response to FOMC announcements – an increase in exposure to equity market following interest rate hike – is consistent with hedge funds' inference of better market conditions following contractionary monetary policy. Also, the ability to generate risk-adjusted profit by following this strategy is consistent with the announcements containing information that hedge funds can utilize.

We conduct several additional tests to understand the nature of information more precisely, and we find more corroborating evidence consistent with the Fed Information Effect. First, we uncover that hedge funds' reaching for beta can predict next quarter economic growth and aggregate equity market return. Specifically, we employ a two-step regression setting. In the first step, we use a 60-month rolling-window time-series regression to find (a) the part of hedge funs' change in beta that is explainable by previous month FOMC announcement target rate change, that is, hedge funds' reaching for beta, and (b) the residual, which is not explained by monetary policy. It is worth noting that the hedge fund betas used in the regression are estimated within two-year rolling-windows to avoid any look-ahead bias. Next, we aggregate these monthly estimates for predictions and residual into quarterly values for use in the second step regression. In this step, we test whether the projection and residual changes can predict next quarter's GDP growth and aggregate market return.

[Insert Table VIII about here.]

Table VIII shows the results. Columns (1) and (4), respectively, show that the part of the change in hedge funds' beta that is a response to monetary policy, i.e. reaching for beta, can predict next quarter GDP growth and market return. In contrast, Columns (2) and (5) show that the change in hedge funds' beta that is not a response to monetary policy cannot predict the economy or market return. Columns (3) and (6) include a simple time-series regression of GDP growth and market return on past quarter target rate change, as a reference point of comparison. Comparing them with other columns confirm that the hedge funds' processing of monetary policy information is an important step in deciphering the information in FOMC announcements. In sum, the results in the table corroborate the Fed Information Effect, and that hedge funds' processing of that information is a strong predictor of the economy and market.

Second, to test whether hedge funds' reaction is about interest rate changes in general versus information in the announcements, we use changes in the 1-year Treasury yield as our monetary policy proxy. This allows us to have interest rate changes both in FOMC months and other months, and we test hedge funds' reaction to the interest changes following FOMC months and non-FOMC months separately. We do so by using an indicator variable $1_{\{FOMC\}}$, and $1_{\{noFOMC\}}$ to indicate whether a particular month includes FOMC announcements or not.

[Insert Table IX about here.]

Column (1) of Table IX shows the results for separation of FOMC months and non-FOMC months. Hedge funds only reach for beta after the FOMC months: the δ coefficient for $\left(R_{m,t} - R_{f,t}\right) * MP_{t-1}$ is only positive and statistically significant after the FOMC months while it is marginally significant with opposite sign after the non-FOMC month. The signs and significances are consistent with a reaction to information about the economy after FOMC months, and reaction to interest rate changes, if any, after non-FOMC months. As a robustness check, we exclude GFC period in Column (2), and the main results still holds – hedge funds' reaching for beta is only happening following FOMC announcements months. Hedge funds increase their market beta 0.061 (= 0.244*0.25) with a t-statistic of 3.19 after a 25-basis point increase in the 1-year Treasury during the FOMC months, while such an effect is essentially null following the non-FOMC month (-0.004) with a t-statistic of -0.36. Therefore, it is unlikely that hedge funds are reacting to public information in interest rates that are not related to the FOMC announcement.

Third, we further split the FOMC announcements into ones that mainly contain information about growth and ones that mainly contain monetary information, to test whether hedge funds' reaction to FOMC announcements is in response to the information about growth or discount rate changes. Specifically, in the same spirit of Cieslak and Schrimpf (2019), if the stock return and the bond yield change are positively correlated for a meeting, we consider it a meeting mainly containing growth information; and if they are negatively correlated, we consider it a meeting mainly containing monetary information. We use the indicator variable $1_{\{Monetary\}}$ ($1_{\{Growth\}}$), to test whether hedge funds reach for beta in response to each of these two meeting categories.

Column (3) in Table IX shows the results for this. Hedge funds' reaction to FOMC announcements is only significant for the Growth meetings, while it is close to zero and statistically insignificant for the Monetary meetings. A 25-basis point increase in the 1-year Treasury during those meetings increases hedge funds' market beta by 0.092 (= 0.366*0.25) with a t-statistic of 3.85, which is 6 times the statistically insignificant effect during the pure monetary FOMC month. In Column (4), we repeat the same analysis using changes in the target rates instead of the 1-year Treasury, and we have the same findings. Hedge funds reach for beta after interest rate hikes because they see these decisions as signals of a sound economic fundamental and sustained growth, which will translate into better stock market performances in the subsequent months.

Finally, we split the surprises in the FOMC announcements into the part that is predictable using publicly available macroeconomy information, that is, the projection, and the part that is orthogonal to it, that is, the residual.[8] In results provided in details in the Appendix Table A.I, we find that hedge funds react only to part of monetary policy surprises that is orthogonal to publicly available information, and their reaction to the part that is projection of other public information about economy is insignificant. This further corroborates the Fed Information Effect.

B. Alternative Explanations

We examine alternative explanations for the results provided in previous sections. First, we examine whether other intermediaries are constrained after FOMC announcements and hedge funds' reaching for beta is a liquidity provision by hedge funds at the times that other intermediaries are constrained. Instead of the Fed information Effect, this alternative explanation is based on the potential frictions in the market and the hedge funds' compensation for liquidity provision. To examine this alternative explanation, we estimate the regression model provided in

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[8] We use the publicly available information listed by Bauer and Swanson (2023b). We thank the authors for making the data available online.

Equation (4), in which we interact hedge funds' reaching for beta with proxies that capture intermediary constraints.

$$R_{i,t} - R_{f,t} = \alpha_i + \delta_0(R_{m,t} - R_{f,t}) + \delta_1(R_{m,t} - R_{f,t}) * MP_{t-1} + \lambda_0 * Intermediary + \lambda_1 * (R_{m,t} - R_{f,t}) * Intermediary + \boldsymbol{\lambda_2(R_{m,t} - R_{f,t}) * MP_{t-1} * Intermediary} + error_{i,t}, \quad (6)$$

where the interaction term of interest is indicated with bold format. We use two different proxies for $Intermediary$ constraints. To capture primary dealers' constraints, we use the intermediary risk factor from He, Kelly, and Manela (2017), and to capture the interbank lending market frictions, we use the TED spread.[9] We also test both the concurrent intermediary constraint proxy, that is $Intermediary_t$, as well as past intermediary constraint proxy, that is $Intermediary_{t-1}$, to capture any potential concurrent or future effect of binding intermediary constraints.

[Insert Table X about here.]

Table X shows the results for this analysis. We do not find the interaction of reaching for beta and $Intermediary$ to be significant in any of the settings we tried, that is, the coefficient for $\lambda_2(R_{m,t} - R_{f,t}) * MP_{t-1} * Intermediary$ is not statistically significant in any of the settings. Therefore, hedge funds do not seem to reach for beta any more, or any less, when other intermediaries are more constrained.

The second alternative explanation that we examine is whether hedge funds reach for beta as a substitute for borrowing and building exposure by leverage, when borrowing becomes more expensive, that is, when interest rates increase. Several findings that we provided in earlier sections are inconsistent with this explanation. (i) We document reaching for beta both using holdings and returns. If hedge funds substituted high exposure achieved by borrowing and leverage with high exposure achieved by holding high beta stocks, this would only cause change in holding-based

[9] See Brunnermeier, Nagel, and Pedersen (2008), among others. We also use change in VIX as an alternative proxy, to capture overall market sentiment, and our results remain similar.

measurement of beta, and not in return-based measurement.[10] (ii) If hedge funds were simply substituting cheaper borrowing with buying high-beta stocks, it is unclear why they could make risk-adjusted profit and outperform other hedge funds. In fact, buying higher beta stocks solely in substitution for cheap borrowing should have resulted in poorer performance instead of better performance (Frazzini and Pedersen, 2014).

Additionally, we also directly test whether more levered hedge funds, which are the ones facing higher borrowing expenditures, reach for beta more strongly. To do so, we use a subset of funds with the average and maximum leverage information available in our data, and test whether the more levered ones change their market exposure more actively following interest rate decisions. The results, documented in Table A.II of the Appendix, suggest that more levered hedge funds tend to reach for beta less strongly, instead of more. For an average fund with average leverage information available in our sample, a 25-basis point increase in the target rate induces such funds to increase their market exposure by 0.09 (=0.37*0.25). For funds with an average leverage larger than the median in our sample, a 25-basis point interest rate hike only induces those levered funds to increase market exposure by 0.06 (=(0.37-0.14)*0.25), and the difference is statistically significant at 1% level.

Finally, we test the hypothesis whether hedge funds are changing their positions because of change in their fund flows. Fang (2024) and Kuong, O'Donovan, and Zhang (2024) document that bond mutual fund flows react strongly to monetary policy. It is therefore important to test whether hedge funds may have more flow-induced trading following interest rate decisions. We show in Table A.III in the Appendix that unlike bond mutual funds, hedge fund flows do not react to monetary policy.

[10] To illustrate this point, consider the following numerical example. Suppose a fund currently has $500 investment in a stock with a beta of 0.10, where $400 is borrowed and the net asset value (NAV) is $100. To replace the borrowing and keep the same fund beta, the fund would need to sell all (some) of its 0.1-beta stocks and buy stocks with a beta equal to (above) 0.5. While this would cause change in holdings, the change in beta for the fund would be zero. Because we observe increase in beta using both changes in holdings and changes in returns, it is implausible that the hedge funds are just replacing borrowing with more high-beta funds to keep the same target fund beta.

VI. Conclusion

We provided new insights into the behavior of hedge funds in response to monetary policy announcements and the economic mechanisms underlying their market positioning. By analyzing both returns and equity holdings, we find that hedge funds adjust their exposure to the equity market following monetary policy announcements. This reaching for beta behavior is most pronounced after contractionary monetary policies, signaling that hedge funds interpret these announcements as containing valuable information about future growth.

We show that hedge funds that respond to monetary policy more strongly achieve superior risk-adjusted returns, demonstrating the economic value of the FOMC announcement information for them. We show the link between reaching for beta and skills by documenting that more skilled hedge funds, identified by characteristics such as past performance and idiosyncratic volatility, reach for beta more strongly. The skilled hedge funds with proprietary information can complement their information with the information in FOMC announcements and make better predictions about the market. Importantly, this outperformance is unique to hedge funds and absent among other equity investment vehicles, such as mutual funds or ETFs.

Our results provide strong evidence in support of the Fed Information Effect. We show that hedge funds' reaching for beta—defined as the component of their beta changes explained by monetary policy—predicts next quarter's GDP growth and aggregate market return, while unexplained beta changes do not. Using a two-step regression framework, we isolate the role of monetary policy in driving hedge funds' beta adjustments and demonstrate that these adjustments serve as a critical mechanism for processing FOMC information. Our findings highlight that hedge funds' position updates, driven by information in FOMC announcements, can predict the economy and the market.

Our findings provide a new and novel angle for the Fed Information Effect, by showing how sophisticated investors react to FOMC announcements. This research contributes to the literature on hedge fund performance, monetary policy, and institutional trading.

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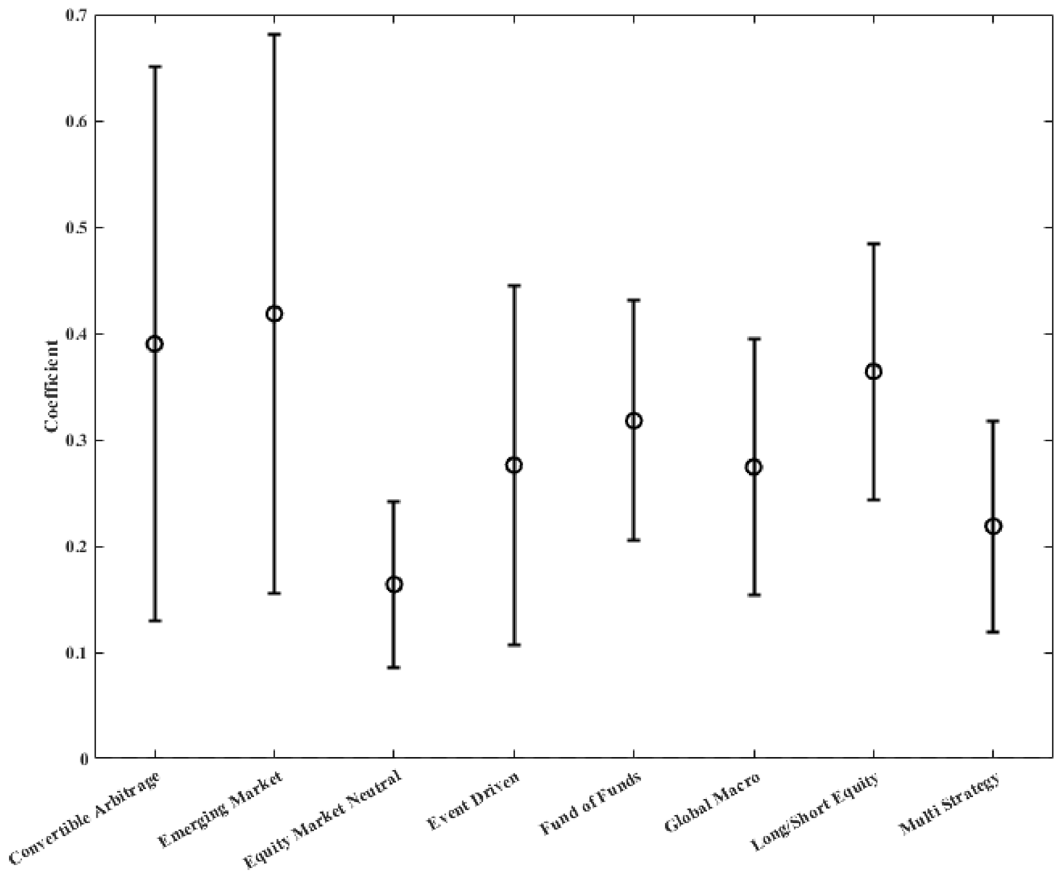

Figure 1. Different Hedge Fund Strategies and Changes in Market Exposure in Response to Monetary Policy

This figure plots the coefficients δ_1 from the following regression:

$$R_{i,t} - R_{f,t} = \alpha_i + \delta_0(R_{m,t} - R_{f,t}) + \delta_1(R_{m,t} - R_{f,t}) * MP_{t-1} + error_{i,t} ,$$

where $R_{i,t} - R_{f,t}$ is fund *i*'s return in excess of the risk-free rate in month *t*, and $R_{m,t} - R_{f,t}$ is the excess return on the market portfolio. MP_{t-1} is the change in the target rate in the previous month. We estimate this regression for each hedge fund strategy category. 95% confidence intervals based on the Driscoll and Kraay (1998) standard errors with 4 lags are plotted in error bars.

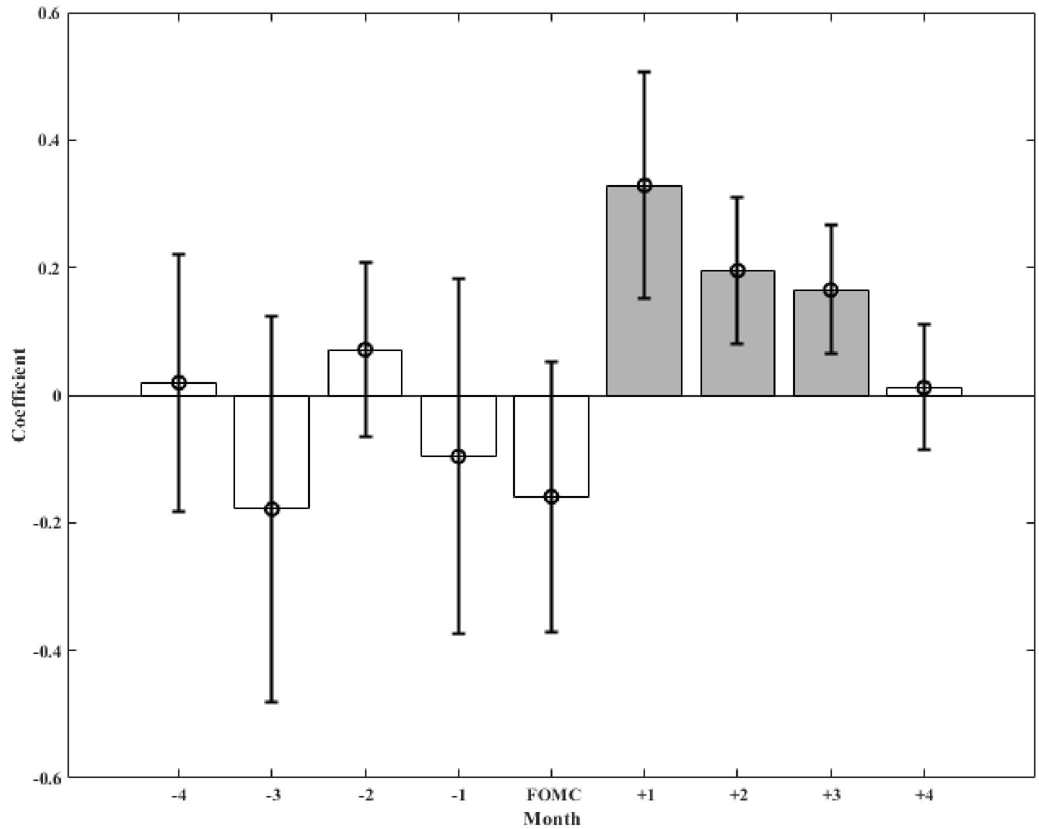

Figure 2. Change in Exposure to Equity Market around FOMC Announcements

This figure plots the coefficients δ_k^* from the following regression in a bar chart:

$$R_{i,t} - R_{f,t} = \alpha_i + \delta_0(R_{m,t} - R_{f,t}) + \sum_{k=-4}^{4} \delta_k^*(R_{m,t} - R_{f,t}) * MP_{t-k} + error_{i,t} ,$$

where k shows how many months the returns lead the FOMC announcements. Negative k means the hedge fund return is before the FOMC month. $R_{i,t} - R_{f,t}$ is fund i's return in excess of the risk-free rate in month *t*, and $R_{m,t} - R_{f,t}$ is the excess return on the market portfolio. MP_{t-k} is the change in the target rate in the month *t-k*. 95% confidence intervals based on the Driscoll and Kraay (1998) standard errors with 4 lags are plotted in error bars.

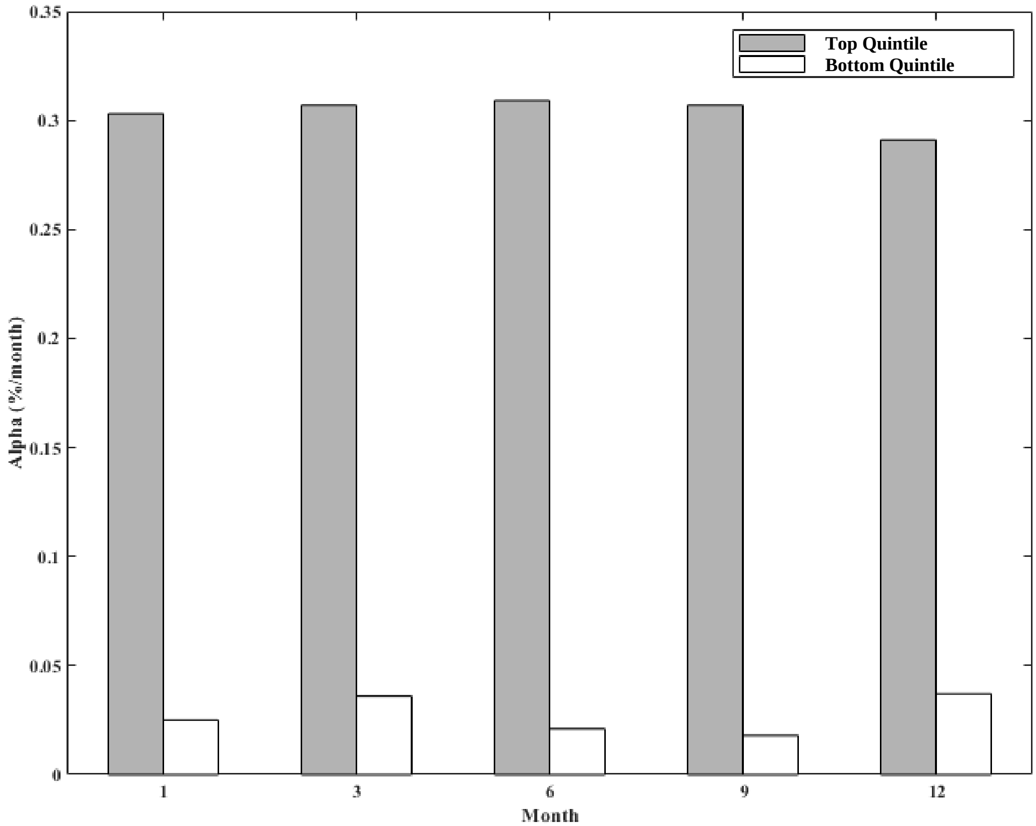

Figure 3. Alphas for Top and Bottom Quintile Portfolios Sorted by Response to Monetary Policy
This figure plots the monthly out-of-sample alphas for the top 20% portfolio verses the bottom 20% portfolio for a holding period of 1, 3, 6, 9, or 12 months. In each month we form the portfolios based on hedge funds' $\delta_1$coefficient estimated from the past 60 months.

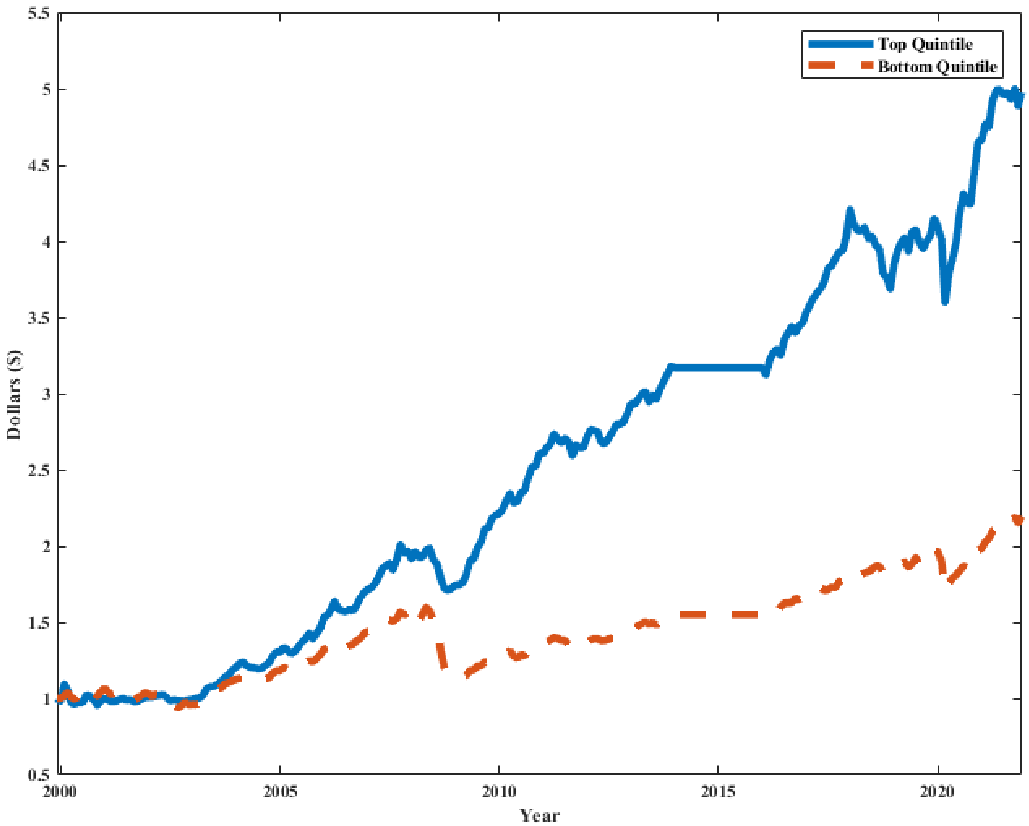

Figure 4. Cumulative Returns for Top and Bottom Quintile Portfolios sorted by Response to Monetary Policy
This figure plots the cumulative returns of the top 20% (solid blue) versus the bottom 20% (dashed red) portfolios for a 1-month holding period. In each month we form portfolios based on hedge funds' $\delta_1$coefficients estimated from the past 60 months. These portfolios are then held for 1 month subsequently.

Table I. Summary Statistics

This table provides the summary statistics for the main variables used in the analysis. The raw return and excess return summary statistics are based on the entire fund * month panel, Minimum Investment, management fee, incentive fee, redemption notice (period), and lockup period are reported at the fund level. Target rate changes are reported at the level of the FOMC meetings. The sample period is from 1995 January to 2021 December.

	No. observations	Mean	SD	1%	Median	99%
Raw Returns (%)	975,871	0.68	4.56	-12.16	0.64	13.80
Excess Returns (%)	975,871	0.51	4.56	-12.36	0.47	13.60
Minimum Investment (100,000)	8,660	13.89	126.35	0.001	5	100
Management Fee (%)	8,677	1.39	0.56	0	1.50	3
Incentive Fee (%)	8,568	15.27	7.49	0	20	25
Redemption Notice (days)	8,655	43.30	31.45	0	33	120
Lockup Period (months)	8,618	3.93	6.95	0	0	30
Scheduled Target Rate Change (%)	215	0	0.18	-0.50	0	0.25

Table II. Hedge Funds Equity Market Exposure and Monetary Policy.
This table shows the results for the regression of Equation (2):

$$R_{i,t} - R_{f,t} = \alpha_i + \delta_0 (R_{m,t} - R_{f,t}) + \delta_1 (R_{m,t} - R_{f,t}) * MP_{t-1} + error_{i,t} ,$$

where $R_{i,t} - R_{f,t}$ is fund i's return in excess of the risk-free rate in month t, and $R_{m,t} - R_{f,t}$ is the excess return on the market portfolio. MP_{t-1} is the change in the monetary policy in the previous month. *t*-statistics based on the Driscoll and Kraay (1998) standard errors with 4 lags are reported in parentheses.

Panel A. Monetary Policy and Change in Market Exposure

	(1)	(2)	(3)	(4)	(5)	(6)
	$R_{i,t} - R_{f,t}$	$R_{i,t} - R_{f,t}$	$R_{i,t} - R_{f,t}$	$R_{i,t} - R_{f,t}$	$R_{i,t} - R_{f,t}$	$R_{i,t} - R_{f,t}$
	Target	Target	Target	Target	Target Excl GFC	Target Excl GFC
$(R_{m,t} - R_{f,t}) * MP_{t-1}$	0.328***		0.269***		0.311***	
	(6.47)		(5.84)		(4.22)	
$(R_{m,t} - R_{f,t}) * 1_{\{MP_{t-1}>0\}}$		0.118**		0.117***		0.102**
		(2.20)		(2.62)		(2.18)
$(R_{m,t} - R_{f,t}) * 1_{\{MP_{t-1}<0\}}$		-0.121***		-0.114***		-0.117***
		(-2.65)		(-3.61)		(-2.96)
$R_{m,t} - R_{f,t}$	0.364***	0.357***	0.287***	0.279***	0.291***	0.288***
	(16.70)	(14.40)	(20.08)	(17.05)	(19.21)	(16.51)
Constant	0.274***	0.281***	0.294***	0.300***	0.339***	0.340***
	(3.43)	(3.44)	(4.74)	(4.82)	(6.01)	(5.99)
Fund FE	Y	Y	Y	Y	Y	Y
7-Factor Controls	N	N	Y	Y	Y	Y
Observations	975,871	975,871	975,871	975,871	865,881	865,881
Number of groups	8,761	8,761	8,761	8,761	8,761	8,761
R^2_{within}	0.122	0.121	0.136	0.136	0.121	0.121

Panel B. Alternative Monetary Policy Measures

	(1)	(2)	(3)	(4)
	$R_{i,t} - R_{f,t}$	$R_{i,t} - R_{f,t}$	$R_{i,t} - R_{f,t}$	$R_{i,t} - R_{f,t}$
	NS	GSS PC1	GSS PC2	30-Min Kuttner
$(R_{m,t} - R_{f,t}) * MP_{t-1}$	0.061***	0.036***	0.049***	0.036***
	(4.43)	(3.20)	(2.87)	(2.63)
$R_{m,t} - R_{f,t}$	0.350***	0.340***	0.359***	0.345***
	(19.56)	(15.82)	(17.09)	(16.31)
Constant	0.287***	0.308***	0.284***	0.302***
	(3.73)	(3.93)	(3.47)	(3.86)
Fund FE	Y	Y	Y	Y
Observations	975,871	975,871	975,871	975,871
Number of groups	8,761	8,761	8,761	8,761
R^2_{within}	0.122	0.120	0.120	0.120

Table III. Individual Hedge Fund Regression Coefficients *t*-statistics

This table shows the results for the regression of Equation (2), estimated separately for individual hedge funds:

$$R_{i,t} - R_{f,t} = \alpha_i + \delta_{i,0}(R_{m,t} - R_{f,t}) + \delta_{i,1}(R_{m,t} - R_{f,t}) * MP_{t-1} + error_{i,t},$$

where $R_{i,t} - R_{f,t}$ is fund *i*'s return in excess of the risk-free rate in month *t*, and $R_{m,t} - R_{f,t}$ is the excess return on the market portfolio. MP_{t-1} is the change in the federal funds rate in the previous month. *T*-statistics are based on the Newey and West (1987) standard errors with 4 lags.

Category	Number of Funds	Percentage					
		$t \leq -1.96$	$-1.96 \leq t \leq -1.645$	$-1.645 \leq t \leq 0$	$0 \leq t \leq 1.645$	$1.645 \leq t \leq 1.96$	$1.96 \leq t$
All	8761	3.2%	1.4%	20.3%	39.7%	7.2%	28.3%
CA	213	0.9%	1.4%	12.2%	42.3%	11.3%	31.9%
ED	808	3.6%	1.0%	21.3%	44.9%	6.9%	22.3%
EM	395	2.8%	1.3%	20.3%	42.5%	7.1%	26.1%
EMN	505	5.0%	3.8%	26.5%	43.0%	5.5%	16.2%
FOF	2431	1.3%	0.4%	11.2%	33.6%	8.4%	45.2%
GM	619	6.3%	2.6%	24.9%	39.9%	5.7%	20.7%
LSEH	3205	3.8%	1.6%	24.9%	41.3%	6.8%	21.6%
MS	585	3.3%	1.4%	24.3%	43.2%	6.3%	21.5%

Table IV. Response of Different Equity-based Investment Vehicles to Monetary Policy

This table compares the results for the regression of Equation (2) for different equity market investment types.

$$R_{i,t} - R_{f,t} = \alpha_i + \delta_0(R_{m,t} - R_{f,t}) + \delta_1(R_{m,t} - R_{f,t}) * MP_{t-1} + error_{i,t} ,$$

where $R_{i,t} - R_{f,t}$ is fund *i*'s return in excess of the risk-free rate in month *t*, and $R_{m,t} - R_{f,t}$ is the excess return on the market portfolio. MP_{t-1} is the change in the federal funds rate in the previous month. In Columns (1) and (4), we estimate Equation (2) with fund fixed effects and t-statistics based on Driscoll and Kraay (1998) standard errors with 4 lags are reported in parentheses. In Columns (2) and (3), we estimate Equation (2) using a single time series regression with t-statistics based on the Newey and West (1987) standard errors with 4 lags.

	(1) Hedge Funds Returns	(2) SP500 Index Returns	(3) Russell 2000 Returns	(4) Mutual Funds Returns
$(R_{m,t} - R_{f,t}) * MP_{t-1}$	0.328***	-0.066	0.054	-0.052
	(6.47)	(-1.30)	(0.25)	(-1.06)
$R_{m,t} - R_{f,t}$	0.364***	0.945***	1.133***	0.926***
	(16.70)	(94.51)	(33.40)	(64.24)
Constant	0.274***	0.027	-0.260*	-0.141***
	(3.43)	(0.73)	(-1.79)	(-3.35)
Fund F.E.	Y	N/A	N/A	Y
Observations	975,871	324	324	2,378,401
Number of groups	8,761	N/A	N/A	18,598
R^2	0.122	0.973	0.790	0.213

Table V. Equity Holding-Based Response

This table shows the results based on the 13F equity holdings. In Panel A, we estimate Equation (1): $\beta_t \approx \delta_0 + \delta_1 MP_{t-1}$, where β_t is the fund beta in quarter *t* based on its equity holdings, and MP_{t-1} is the change in the target rate in the previous quarter. *t*-statistics are based on the Driscoll and Kraay (1998) standard errors with 4 lags. In Panel B, we estimate Equation (4): $\Delta HLD_{ist} = \gamma_0\, \beta_{st} + \gamma_1\, MP_t\, + \gamma_2\, \beta_{st} * MP_t + error_{ist}$, where ΔHLD_{ist} is fund i's holding rebalance in stock s at quarter t, normalized by fund i's total stock holding rebalances in absolute value in quarter t. β_{st} is the beta of stock *s* in quarter *t*. Standard errors are clustered at the fund level and the stock level.

Panel A. Change in Fund-Level Beta based on Equity Holdings.

VARIABLES	(1) Holding-Based Beta Hedge Funds	(2) Holding-Based Beta Equity Mutual Funds	(3) Holding-Based Beta Hedge Funds and Mutual Funds
MP_{t-1}	0.040***	-0.000	-0.000
	(3.27)	(-0.03)	(-0.03)
$MP_{t-1} * 1_{\{Hedge\ Fund\}}$			0.040***
			(3.72)
$1_{\{Hedge\ Fund\}}$			Absorbed in FE
Constant	1.101***	1.002***	1.044***
	(96.24)	(286.72)	(165.08)
Fund FE	Y	Y	Y
Observations	60,325	83,240	143,565
Number of groups	1,405	2,945	4,350
R^2_{within}	0.006	0.000	0.004

Table VI continued.

Panel B. Equity Holding Changes of Hedge Funds

	(1)	(2)	(3)	(4)	(5)
	ΔHLD	ΔHLD	ΔHLD	ΔHLD	ΔHLD
$\beta_{s,t} * MP_t$	0.097***	0.076***	0.097***	0.076***	0.059***
	(4.68)	(4.10)	(4.59)	(4.05)	(4.66)
$\beta_{s,t}$	0.010	0.003	0.021**	0.011	0.015*
	(0.81)	(0.27)	(2.01)	(1.12)	(1.89)
MP_t	0.123***		0.123***		
	(6.46)		(6.52)		
Fund FE	N	N	Y	Y	N
Time FE	N	Y	N	Y	N
Fund*Time FE	N	N	N	N	Y
Constant	0.191***	0.186***	0.178***	0.177***	0.171***
	(7.52)	(7.41)	(13.57)	(13.96)	(16.50)
Observations	2,138,387	2,138,387	2,138,387	2,138,387	2,138,364
R^2_{within}	0.001	0.000	0.001	0.000	0.000

Table VII. Hedge Fund Performance Based on Portfolios Sorted by Monetary Policy Exposure Change

This table presents the out-of-sample alphas for the portfolios consisting of the hedge funds at different levels of market exposure following monetary policy changes (δ_1). In each month, we form five quintile portfolios based on the δ_1 coefficient estimated from the past 60 months, and then hold these portfolios for a different period of 1, 3, 6, 9, and 12 months. We report the out-of-sample alphas (in percent per month) relative to the Fung and Hsieh (2001, 2004) seven factor model. *t*-statistics based on Newey and West (1987) standard errors with four lags are reported in parentheses.

	1 Month	3 Month	6 Month	9 Month	12 Month
Top Quintile Portfolio	0.303***	0.307***	0.309***	0.307***	0.291***
	(2.98)	(2.94)	(3.07)	(3.18)	(3.06)
	0.275***	0.253***	0.250***	0.245***	0.238***
	(4.49)	(4.23)	(4.27)	(4.20)	(3.98)
	0.201***	0.204***	0.197***	0.194***	0.193***
	(3.01)	(3.06)	(2.97)	(2.97)	(2.97)
	0.115*	0.119*	0.132*	0.137**	0.140**
	(1.81)	(1.79)	(1.97)	(1.99)	(2.12)
Bottom Quintile Portfolio	0.025	0.036	0.021	0.018	0.037
	(0.29)	(0.41)	(0.24)	(0.21)	(0.48)
Top-Bottom Difference	0.278**	0.272**	0.288**	0.280**	0.254***
	(2.55)	(2.21)	(2.48)	(2.27)	(2.65)

Table VIII. Hedge Fund Reaching for Beta and Characteristics

This table shows the results for the regression of Equation (5).

$$\delta_{1i,t} = a_t + b_t\ Skill_{i,t} + \gamma_t\ X_{i,t} + error_{i,t}\ ,$$

where $\delta_{1i,t}$ is estimated from Equation (2) at the fund level using the past 36-month hedge fund returns. $Skill_{i,t}$ is proxied by the fund idiosyncratic volatility (Bali and Weigert 2024) in Column (1), by the alpha of the past 36 months relative to the Fung and Hsieh (2001, 2004) seven factor model in Column (2), and by the past 36-month average returns in Column (3). We report estimates based on the Fama and MacBeth (1973) regressions with the Newey and West (1987) standard errors with 4 lags.

VARIABLES	(1) δ_t IVOL as *Skill*	(2) δ_t Alpha as *Skill*	(3) δ_t Return as *Skill*
$Skill$	0.074***	0.069**	0.129***
	(3.75)	(2.37)	(3.72)
Management Fee	0.062***	0.088***	0.074***
	(3.32)	(3.95)	(3.36)
Incentive Fee	-0.004*	-0.003***	-0.002
	(-1.82)	(-2.96)	(-1.47)
Minimum Investment	0.000**	0.000	0.000
	(2.46)	(0.86)	(1.42)
Lockup Period	0.000	-0.000	0.000
	(0.02)	(-0.03)	(0.20)
Redemption Notice	0.002***	0.001**	0.001***
	(3.83)	(2.22)	(2.75)
High Water Mark	-0.050	-0.035	-0.049
	(-1.50)	(-1.14)	(-1.43)
Age	0.006	0.013**	0.012***
	(1.34)	(2.53)	(3.01)
Observations	694,144	694,144	694,144
R^2_{within}	0.012	0.007	0.005

Table IX. Hedge funds' Reaching for Beta as a predictor of economy and aggregate equity market

Panel A (B) shows how hedge funds' reaching for beta – i.e., hedge funds' change of beta in response to monetary policy – can predict next quarter's economic growth (aggregate market return). $\Delta\beta_t \mid MP_{t-1}$ represents the change in hedge funds' monthly beta that is explained by the previous month's FOMC announcement. This is estimated using a 60-month rolling regression ending at month *t*, then aggregated over three months to obtain a quarterly measure. $\Delta\beta_t \perp MP_{t-1}$ is the component of hedge funds' beta change that is *not* explained by the previous month's monetary policy – i.e., the residual from the rolling regression – also aggregated over three months for a quarterly estimate. MP_{t-1} represents the target rate change over the past quarter, without specifying the hedge funds' reactions to it.

	Panel A. Next Quarter GDP Growth			Panel B. Next Quarter S&P500 ETF Return		
	(1) ΔGDP_{t+1}	(2) ΔGDP_{t+1}	(3) ΔGDP_{t+1}	(4) R_{t+1}^{SP500}	(5) R_{t+1}^{SP500}	(6) R_{t+1}^{SP500}
$\Delta\beta_t \mid MP_{t-1}$ (Projection)	0.368***			1.054**		
	(3.35)			(2.30)		
$\Delta\beta_t \perp MP_{t-1}$ (Residual)		-0.188			-0.494	
		(-1.38)			(-1.19)	
MP_{t-1}			0.013*			0.020
			(1.93)			(1.02)
Constant	0.011***	0.011***	0.011***	0.021***	0.021**	0.021**
	(5.48)	(4.73)	(5.96)	(2.73)	(2.31)	(2.62)
Observations	84	84	84	84	84	84
R^2	0.0427	0.0417	0.0499	0.0393	0.0326	0.0133

Table X. FOMC vs non-FOMC months

This table shows the results for an extended version of Equation (2), $R_{i,t} - R_{f,t} = \alpha_i + \delta_0(R_{m,t} - R_{f,t}) + \delta_1(R_{m,t} - R_{f,t}) * MP_{t-1} + error_{i,t}$, where MP_{t-1} is the change in the 1-year Treasury yield in the previous month in Columns (1)-(3), and the target rate change in Column (4). We categorize each month into either an FOMC month or a NoFOMC month in Columns (1) and (2). In Columns (3) and (4), for each FOMC month, we further categorize the meetings into a Growth meeting month, or a pure Monetary meeting month based on Cieslak and Schrimpf (2019). *t*-statistics based on the Driscoll and Kraay (1998) standard errors with 4 lags are reported in parentheses.

	(1) $R_{i,t} - R_{f,t}$ 1 year Treasury Entire Sample	(2) $R_{i,t} - R_{f,t}$ 1 year Treasury Excl GFC	(3) $R_{i,t} - R_{f,t}$ 1 year Treasury Excl GFC	(4) $R_{i,t} - R_{f,t}$ Target Excl GFC
$(R_{m,t} - R_{f,t}) * MP_{t-1} * 1_{\{NoFOMC_{t-1}\}}$	-0.105*	-0.015	-0.015	
	(-1.71)	(-0.36)	(-0.35)	
$(R_{m,t} - R_{f,t}) * MP_{t-1} * 1_{\{FOMC_{t-1}\}}$	0.202**	0.244***		
	(2.48)	(3.19)		
$(R_{m,t} - R_{f,t}) * MP_{t-1} * 1_{\{Growth_{t-1}\}}$			0.366***	0.436***
			(3.85)	(5.37)
$(R_{m,t} - R_{f,t}) * MP_{t-1} * 1_{\{Monetary_{t-1}\}}$			-0.060	0.226
			(-0.25)	(1.30)
$(R_{m,t} - R_{f,t}) * 1_{\{NoFOMC_{t-1}\}}$	0.355***	0.386***	0.386***	0.388***
	(9.94)	(9.49)	(9.48)	(9.79)
$(R_{m,t} - R_{f,t}) * 1_{\{FOMC_{t-1}\}}$	0.370***	0.344***		
	(13.45)	(16.55)		
$(R_{m,t} - R_{f,t}) * 1_{\{Growth_{t-1}\}}$			0.350***	0.338***
			(14.59)	(13.43)
$(R_{m,t} - R_{f,t}) * 1_{\{Monetary_{t-1}\}}$			0.344***	0.344***
			(11.26)	(11.34)
$1_{\{FOMC_{t-1}\}}$	0.278**	0.247*		
	(1.99)	(1.79)		
$1_{\{Growth_{t-1}\}}$			0.182	0.164
			(1.10)	(1.02)
$1_{\{Monetary_{t-1}\}}$			0.260*	0.276*
			(1.82)	(1.90)
Constant	0.096	0.158	0.158	0.158
	(0.86)	(1.33)	(1.33)	(1.33)
Observations	975,871	865,881	865,881	865,881
Number of groups	8,761	8,761	8,761	8,761
R^2_{within}	0.121	0.107	0.108	0.108

Table XI. Intermediary Frictions and Hedge Funds Response

This table presents the results for Equation (6):

$$R_{i,t} - R_{f,t} = \alpha_i + \delta_0(R_{m,t} - R_{f,t}) + \delta_1(R_{m,t} - R_{f,t}) * MP_{t-1} + \lambda_0 * Intermediary + \lambda_1 * (R_{m,t} - R_{f,t}) * Intermediary + \lambda_2(R_{m,t} - R_{f,t}) * MP_{t-1} * Intermediary + error_{i,t},$$

where MP_{t-1} is the change in the target rate in the previous month. The *Intermediary* constraint is proxied by the He, Kelly and Manela (2017) risk factor in Columns (1) and (2), or by the TED spread in Columns (3) and (4). *t*-statistics based on the Driscoll and Kraay (1998) standard errors with 4 lags are reported in parentheses.

	HKM as Intermediary		ΔTED as Intermediary	
	(1)	(2)	(3)	(4)
$R_{m,t} - R_{f,t}$	0.362***	0.351***	0.360***	0.339***
	(17.17)	(10.07)	(17.11)	(20.28)
$(R_{m,t} - R_{f,t}) * MP_{t-1}$	0.380***	0.368***	0.321***	0.296***
	(5.44)	(5.32)	(5.20)	(4.47)
$Intermediary_{t-1}$	4.028***	3.854***	-0.372	-0.697*
	(3.95)	(4.15)	(-0.91)	(-1.74)
$(R_{m,t} - R_{f,t}) * Intermediary_{t-1}$	0.057	0.093	0.013	0.039
	(0.22)	(0.36)	(0.54)	(1.23)
$(R_{m,t} - R_{f,t}) * MP_{t-1} * Intermediary_{t-1}$	0.571	0.633	0.107	0.202
	(0.70)	(0.69)	(1.00)	(1.26)
$Intermediary_t$		0.367		-1.481***
		(0.17)		(-3.20)
$(R_{m,t} - R_{f,t}) * Intermediary_t$		-0.303**		0.048
		(-2.13)		(0.88)
$(R_{m,t} - R_{f,t}) * MP_t * Intermediary_t$		-0.486		0.297
		(-0.91)		(1.14)
Constant	0.270***	0.338***	0.283***	0.314***
	(3.58)	(3.71)	(3.65)	(4.67)
Observations	975,871	975,871	975,871	975,871
Number of groups	8,761	8,761	8,761	8,761
R^2_{within}	0.126	0.127	0.122	0.130

Online Appendix for

Monetary Policy and Hedge Funds' Reaching for Beta

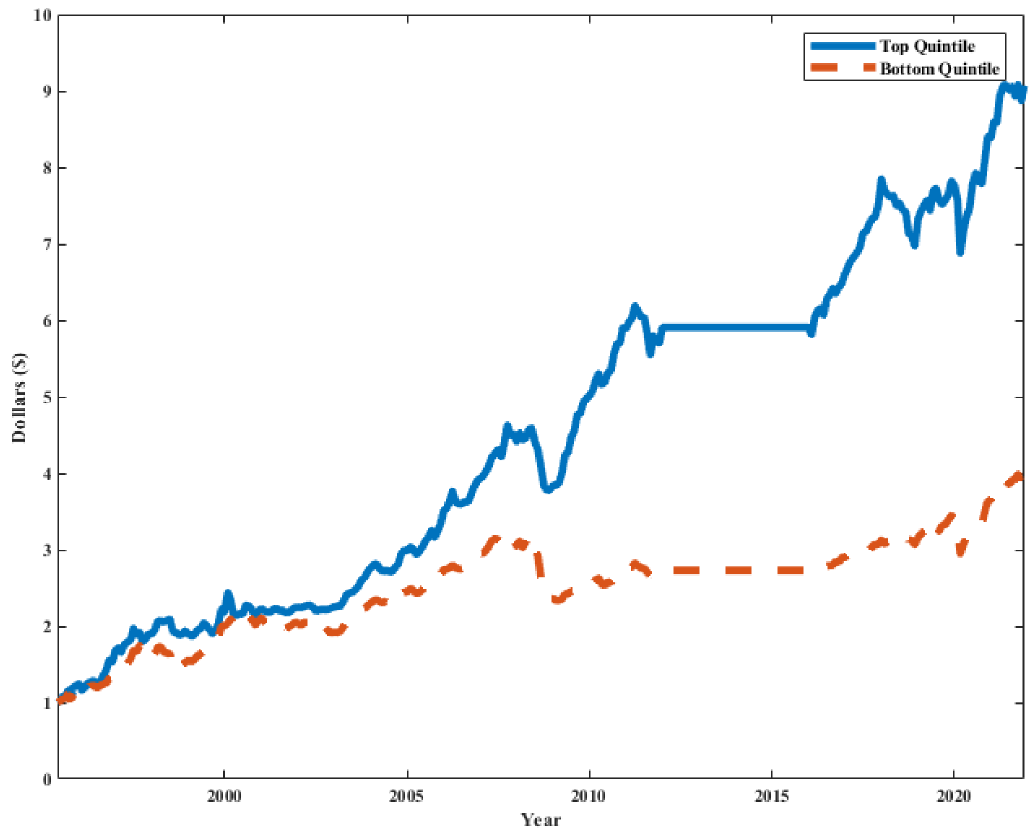

Figure A.1. Cumulative Returns for Top and Bottom Quintile Portfolios Sorted by Response to Monetary Policy

This figure plots the cumulative returns of the top 20% (solid blue) versus the bottom 20% (dashed red) portfolios for a 1-month holding period. In each month we form portfolios based on hedge funds' $\delta_1$coefficients estimated from the past 36 months. These portfolios are then held for 1 months subsequently.

Table A.I. Monetary policy projection and residuals w.r.t other macroeconomy variables

This table shows the results for a regression analogous to the one specified in Equation (2) of the paper, with different specifications for monetary policy changes. More specifically, the monetary policy measure has been split into a projection and a residual with respect to other macroeconomy variables. The projection and residual are defined with the following regression setting:

$$MP_t = c + \boldsymbol{a}\, Macro_t + error_t,$$

where MP_t is the change in target rate, for Columns (1)-(3), and the monetary policy shocks specified in Bauer and Swanson (2023), for Columns (4)-(6). $Macro_t$ indicates the macroeconomy variables specified by Bauer and Swanson (2023). The projection, $MP_{t-1}|Macro$, is defined as $c + \boldsymbol{a}\, MacroVariables_{t-1}$ in regression above, and the residual, $MP_{t-1} \perp Macro$, is defined as $error_{t-1}$ in the regression above. The *t*-statistics based on the Driscoll and Kraay (1998) standard errors with 4 lags are reported in parentheses.

	Target Rate as MP_{t-1}			Bauer and Swanson (2023) Shocks as MP_{t-1}		
	(1)	(2)	(3)	(4)	(5)	(6)
	$R_{i,t} - R_{f,t}$	$R_{i,t} - R_{f,t}$	$R_{i,t} - R_{f,t}$	$R_{i,t} - R_{f,t}$	$R_{i,t} - R_{f,t}$	$R_{i,t} - R_{f,t}$
$(R_{m,t} - R_{f,t}) * MP_{t-1}$	0.317***			1.131***		
	(6.30)			(5.24)		
$(R_{m,t} - R_{f,t}) * MP_{t-1}\|Macro$		0.160			0.933	
		(1.22)			(1.17)	
$(R_{m,t} - R_{f,t}) * MP_{t-1} \perp Macro$			0.396***			0.947***
			(4.58)			(3.53)
$(R_{m,t} - R_{f,t})$	0.354***	0.348***	0.336***	0.336***	0.353***	0.323***
	(15.91)	(16.18)	(16.82)	(19.37)	(17.52)	(15.21)
Constant	0.280***	0.292***	0.313***	0.299***	0.287***	0.322***
	(3.39)	(3.56)	(4.11)	(3.76)	(3.56)	(3.97)
Observations	939,453	939,453	939,453	939,453	939,453	939,453
Number of groups	8,761	8,761	8,761	8,761	8,761	8,761
R^2_{within}	0.117	0.114	0.117	0.117	0.114	0.116

Table A.II. Hedge Fund Leverage

This table shows the results for and extended version of the regression of Equation (2), $R_{i,t} - R_{f,t} = \alpha_i + \delta_0(R_{m,t} - R_{f,t}) + \delta_1(R_{m,t} - R_{f,t}) * MP_{t-1} + error_{i,t}$, where MP_{t-1} is the change in target rate in the previous month. We group each hedge fund depending on whether its average (or maximum) leverage is above the sample (Med)ian or not. The median average leverage is 150% and the median maximum leverage is 200%. *t*-statistics based on the Driscoll and Kraay (1998) standard errors with 4 lags are reported in parentheses.

Panel A. Average Leverage		Panel B. Maximum Leverage	
$(R_{m,t}$ - $R_{f,t})$	0.399***	$(R_{m,t}$ - $R_{f,t})$	0.414***
	(21.54)		(21.12)
$(R_{m,t}$ - $R_{f,t})$* MP_{t-1}	0.370***	$(R_{m,t}$ - $R_{f,t})$* MP_{t-1}	0.360***
	(7.11)		(6.43)
$(R_{m,t}$ - $R_{f,t})$*$1_{\{AvgLvg_i>Med\}}$	-0.180***	$(R_{m,t}$ - $R_{f,t})$*$1_{\{MaxLvg_i>Med\}}$	-0.196***
	(-14.63)		(-15.98)
$(R_{m,t}$ - $R_{f,t})$* $MP_{t-1} * 1_{\{AvgLvg_i>Med\}}$	-0.140***	$(R_{m,t}$ - $R_{f,t})$* $MP_{t-1} * 1_{\{MaxLvg_i>Med\}}$	-0.139***
	(-2.72)		(-2.75)
$1_{\{AvgLvg_i>Med\}}$	Absorbed by FE	$1_{\{MaxLvg_i>Med\}}$	Absorbed by FE
Constant	0.336***	Constant	0.324***
	(4.85)		(4.28)
Fixed Effects	Y	Fixed Effects	Y
Observations	248,831	Observations	311,986
Number of groups	2,170	Number of groups	2,704
R^2_{within}	0.119	R^2_{within}	0.120

Table A.III. Hedge Fund Flows after FOMC Announcements

This table shows the results for the following regression:

$$Flow_{i,t} = c + a\,MP_t + b\,\delta_{i,t} + error_{i,t},$$

where MP_t is the change in target rate, and $\delta_{1i,t}$ is estimated from Equation (2) at the fund level using the past 36-month hedge fund returns. In Column (1), t-statistics based on the Driscoll and Kraay (1998) standard errors with 4 lags are reported in parentheses. In Columns (2) and (3), t-statistics based on standard errors clustered at the fund and at the year levels are reported in parentheses.

	(1)	(2)	(3)
	Flows	Flows	Flows
MP_t	1.170		1.476
	(1.16)		(1.39)
$\delta_{i,t}$		-0.023	-0.044
		(-0.91)	(-1.29)
$MP_t * \delta_{i,t}$			-0.027
			(-0.25)
Constant	0.830***	0.858***	0.876***
	(5.36)	(59.40)	(3.38)
Observations	800,931	662,677	662,677
Fund FE	Y	N	N
Time FE	N	Y	N
R^2_{within}	0.00	0.00	0.00