Stock Returns of Federal Reserve Officials*

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Abstract

This paper examines the trading behavior of members of the Federal Reserve's Federal Open Market Committee (FOMC). First, we calculate the financial market returns of FOMC members relative to the overall market and examine if there is any evidence of abnormal returns. Second, we test whether FOMC members exhibit evidence of market timing around monetary policy announcements. We do not find any evidence that FOMC officials select securities that earn abnormal returns. However, our results regarding market timing are mixed. Though we do not find any evidence of security selection or portfolio rebalancing with respect to monetary policy decisions, we do find that stock sales by FOMC officials are typically succeeded by negative returns in the overall stock market.

Keywords: FOMC, Abnormal returns, Investment behavior, Elected officials
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1 Introduction

In order for central banks to function effectively, they must be trusted institutions. However, allegations in late 2021 regarding the market operations of Federal Reserve officials may have served to undermine this trust. In particular, a series of large volume and well-timed trading activities by some officials have raised questions about whether Federal Reserve insiders used their unique information advantage to outperform the market. These transactions have been particularly concerning in recent years given the large swings in financial markets and highly accommodative monetary policy.

The financial disclosures in 2021 showed that three members of the Federal Open Market Committee (FOMC) had actively traded in 2020. Most of these transactions were large in volume and consisted of individual stocks and bonds. In 2020, Eric Rosengren, then President of the Boston Fed, traded in real estate investment trusts (REITs) constructed from mortgage-backed securities. These trades occurred while the Federal Reserve actively pursued Quantitative Easing policies that involved purchases of mortgage-backed securities, thereby significantly affecting their value. Similarly, Richard Clarida, former Vice Chair of the Fed, was criticized for re-balancing his portfolio in February 2020, only a day before the Fed released a press statement announcing plans to safeguard the economy from the evolving risk of coronavirus on economic activity. Robert Kaplan, former President of the Dallas Fed, has been questioned for his many multi-million dollar trades in individual securities and interest-rate funds without citing a clear date for his transactions (The Wall Street Journal, 2021b). Media and government have since raised questions about whether Federal Reserve officials were using insider information on Fed's policies to make opportunistic trades. In a letter to the Securities and Exchange Commission, Senator Elizabeth Warren asked for a review of financial transactions of Federal Reserve officials to determine the legality of these transactions (The Wall Street Journal, 2021a). While no allegations were substantiated, between 2020 and 2021, all of the above three Federal Reserve officials resigned from their positions, citing various reasons (The Wall Street Journal, 2021c).

In his testimony to Congress in September 2021, Jerome Powell, the chair of the Federal Reserve, announced his intentions to update the rules regarding trading practices of Federal Reserve officials. The new rules prohibit central bankers from holding and trading individual stocks and bonds, sector funds, agency securities, cryptocurrencies, commodities, or foreign currencies, as well as entering into derivative contracts and engaging in short sales.[1] Senior Fed officials are also required to announce non-retractable notice for trades at-least 45 days in advance, obtain prior approval of their investment plans, hold their investments for longer periods, and face tighter requirements on financial disclosures. Aside from regular FOMC meetings, trading will also be restricted during periods of heightened financial market stress (Federal Open Market Committee, 2022). These rules are designed to strengthen the public's confidence in the monetary policymakers. The FOMC formally adopted the new rules in February 2022.

Concerns about well-timed trading by senior central bank officials are not limited to the Federal Reserve. In 2012, the chairman of the Swiss National Bank resigned from his position amid controversy over currency trades conducted by his spouse (Reuters, 2012). The trades coincided with significant foreign exchange interventions by the Swiss central bank to weaken the strong franc. Further, the European Central Bank, in response to growing concerns over potential conflicts of interest, followed the Federal Reserve in implementing stricter trading rules for its staff.

As policymakers, members of the FOMC have a significant information advantage about the future path of interest rates and upcoming changes in monetary policy.[2] It is therefore important to analyze whether trade portfolios of these individuals reflect the superior in-

[1]These rules are stricter than the previous rules, which prohibited members of the Board of Governors from owning stock in any bank, banking institution trust company, or primary government securities dealer. Further, the trades of senior officials should be above reproach and not incorporate any information obtained in an official capacity.

[2]The literature on Fed information effect suggests that Federal Reserve officials also hold an informational advantage about the future path of the macroeconomy. However, Bauer and Swanson (2023) find evidence disputing the theory that Fed officials hold superior macroeconomic information than private forecasters. We are agnostic about any potential macroeconomic information advantage and focus our analysis on whether information advantages about monetary policy materialize into high portfolio returns for Fed officials.

formation they have over other investors. Indeed, according to the literature on informed trading (see, e.g., Bernile et al. 2016, Nicola 2023), there is evidence of higher returns before macroeconomic news and FOMC announcements. In particular, Nicola (2023) find that information leaks from Fed officials to institutional investors can explain significantly higher stock market returns before the scheduled FOMC announcements. We argue that superior information about monetary policy could also be used by Fed officials towards enhancing their personal portfolio performance.

In this paper, we analyze the financial market transactions of FOMC members to study whether Fed officials benefit from opportunely timing their stock market transactions. The accusations of misuse of insider information against FOMC members have three main components. First, the informational advantage of FOMC members allows them to trade better performing securities, which was most notable in the criticisms against Eric Rosengren. Second, FOMC members can also use their informational advantage to adjust their portfolio in favor of the asset class with the best returns, as was made clear in the accusation against Richard Clarida. Third, incomplete financial reporting may allow FOMC officials to hide details about their trading activities. While the paper cannot address any reporting oversights, the data suggests that this issue is largely limited to Robert Kaplan's transactions.

To test whether insider information about monetary policy is reflected in the average transaction by FOMC officials, we ask the following questions. 1) Do the returns earned by FOMC members beat the average returns of the market? 2) Is there any evidence that the trading behavior of FOMC members is different around monetary policy announcements, particularly announcements with surprise changes in monetary policy? 3) Do FOMC members strategically rebalance their portfolio to take advantage of surprise monetary policy announcements?

Building upon the literature examining abnormal returns of members of Congress, we calculate the stock market returns of members of the FOMC to test whether portfolios of FOMC members earn higher returns than the market. To test whether FOMC members

incorporate superior private information about upcoming rate changes, we measure the response of abnormal returns on FOMC portfolios to changes and surprises in monetary policy. To test whether there is any opportunistic rebalancing of portfolios, we evaluate the relative and absolute returns of stock and bond market indices following every transaction.

We find no evidence of abnormal returns on portfolios of FOMC members. In fact, our results suggest that, if anything, stocks returns of members of the FOMC may under perform relative to the overall market. One possible explanation for the relative poor performance is the restrictions on trade by Fed Board members and other senior officials around the FOMC meeting dates as well as the restriction on transactions of certain assets, constraining the trades by FOMC members. Lucca and Moench (2015) show that average stock market returns increase by 0.5% just before the scheduled FOMC announcements. More broadly, Cieslak et al. (2019) show that the markets exhibit higher excess returns in even weeks starting from the week prior to the scheduled FOMC meeting. The timing constraints imposed by Federal Reserve trading policies may prevent Fed officials from maximizing their returns. We also do not find any evidence that transactions of FOMC members reflect the direction of monetary policy decisions. However, we cannot rule out the use of superior information by FOMC members to re-balance their portfolios away from stocks.

The structure of the paper is as follows. Section 2 reviews the relevant literature. Section 3 discusses the data and methodology. Section 4 estimates the abnormal returns of FOMC members. Section 5 analyzes the market timing of transactions. Section 6 considers the robustness of our results. Section 7 concludes.

2 Related Literature

Our paper is closely related to the literature examining the abnormal stock market returns of members of the United States Congress. Ziobrowski et al. (2004) look at the portfolios of U.S. Senators during the period 1993-1998 and find evidence of significantly positive excess

returns on these portfolios. Building on their paper, Ziobrowski et al. (2011) look at the portfolio of members of U.S. House of Representatives between 1985 to 2001 and find further evidence of positive abnormal returns. Similar results are found in Cherry et al. (2017) and Stephan et al. (2021). Abdurakhmonov et al. (2022) find evidence that, at least in the short-term, these abnormal returns are larger when stocks are purchased by members of Congress who have direct jurisdiction over the firm. However, other recent studies by Eggers and Hainmueller (2013) and Belmont et al. (2022) find no evidence of superior performance of portfolios of U.S. House and Senate representatives in recent years. On the contrary, they find some evidence of under-performance by these portfolios compared to the average investor.

All of the aforementioned studies limit their analysis to the policymakers in Congress. Our paper departs from this literature by studying the abnormal returns of FOMC members. The actions of the central bank have large impacts on financial markets, which has been evident in the aftermath of the pandemic. Aikman et al. (2024) use trades of senior Fed officials, including Robert Kaplan and Eric Rosengren, among others, to identify shocks to public trust in the Fed. They find that decline in credibility of the Fed can significantly and persistently influence macroeconomic forecasts and raise inflation expectations. Trust in central bank has also been shown to improve anchoring of inflation expectations, and the conduct of monetary policy (Christelis et al., 2020). Our study offers a systematic analysis of financial market activity of monetary policymakers to assess whether instances of opportunistic trading represent a broader concern within the Federal Reserve.

Our paper also contributes to the literature studying economic effects of political connections. Firms that hire former government officials or cultivate political connections often see an increase in corporate value, driven by factors such as preferential treatment, reduced regulatory scrutiny, and access to privileged information (Michelson, 2023; Faccio, 2006). Such connections also translate into privileged access to funding, leading to higher sub-optimal investment in the economy (Bussolo et al., 2022). Given the significant impact of monetary

policy information on financial markets, evidence of excess portfolio returns among FOMC members may raise concerns about unfair advantages stemming from their positions. Public scrutiny over possible information leaks from the Federal Reserve increased in 2017, when the President of the Federal Reserve Bank of Richmond resigned after admitting to sharing confidential policy deliberations with a financial analyst.

The role of the information advantage on trading behavior has also been studied in the context of private banking and non-banking financial institutions. Lowry et al. (2019) studies whether there are positive spillovers from information on clients retained by investment banks and their asset returns. They find evidence of informed trading in the options market. Haselmann et al. (2021) uses data on German banks and find that their trading positions are profitably adjusted around days of corporate events announcing substantial news, even when such events are unscheduled. Similar results have been found in information spillovers across banking and trading institutions (Massa and Rehman, 2008). Our paper contributes to the literature on informed trading by looking at the information advantage held by central bankers on interest rate policy on their private trading behavior.

3 Data and Methodology

3.1 Data

We obtain data on Federal Open Market Committee (FOMC) members from financial disclosure statements.[3] These statements are available upon request from regional Federal Reserve banks and the Federal Reserve Board.[4] The statements contain detailed records of the financial market transactions of each FOMC member that include the date of transaction, name of security, type of transaction, and the bin of transaction size.[5] Data on select FOMC mem-

[3]More accurately, we obtain data on all members on the Board of Governors and Reserve Bank Presidents, regardless of whether they are voting members on the committee in a given year.

[4]Financial disclosure statements for Federal Reserve Board of Governors are available for download from the Board's website.

[5]Fed officials are not required to state the exact value of their transaction, only the bin to which each transaction belongs. Moreover, the size of the bins varies across the Federal Reserve System. We consolidate

bers is available from 2009 through 2022. However, trades are available for the majority of FOMC members from 2015-2021.[6] Data on financial markets are obtained from Bloomberg and the Center for Research in Security Prices (CRSP).

Close to three quarters of the trades in our sample are under $50,000 in size, and approximately 20% of transactions are over $50,000 but under $250,000. Only 6.6% of transactions are over $250,000. We categorize our data into three broad categories based on Bloomberg's security classifications: common stock, equity focused funds, and fixed income securities. Common stocks include securities that are classified as ADRs and Tracking Stocks; both of these form a very small proportion of the sample. Equity focused funds consist of all funds that are focused on investing in equities, which includes mixed allocation funds. Fixed income securities includes all bond focused funds and money market securities. Any security classification which is not contained in the above three categories are reported as "Others". This include Real Estate Investment Trust (REITs), real estate focused funds, private equity funds, state and municipality bonds, and University of California retirement funds. Approximately 20% of our sample contains transactions in common stocks, another 34% are equity-based funds, and 20% are fixed income securities and funds.[7] It is also interesting to note that less than 20% of transactions in fixed income securities are sale of securities while transactions in stocks are equally split between purchases and sales. Our baseline analysis includes all assets categorized as common stocks as well as funds that focus on equities. We also extend the baseline analysis for different portfolio constructions: a portfolio of only common stock, a portfolio of only fixed income securities, and the full portfolio combining all assets for which we have pricing data.

As Table 1 shows, the trading activity varies heavily by individuals, with Lael Brainard, Jerome Powell, Eric Rosengren, Robert Kaplan, Patrick Harker, and Lorreta Mester ac-

this information across reports and group transactions into five bins. Table A1 provides a summary of all bins reported.

[6]There are a total of 58 trades between 2009 and 2014, though we only have trading data for 29 of these trades. Including these trades in our analysis does not change the results.

[7]Table A2 summarizes the frequency of trades by the size of transactions and asset class, and Table A3 summarizes the characteristics of the common stocks traded by FOMC officials.

counting for over 81% of all transactions. We also look at how the trading frequency varies depending on an individual's work experience. Of the 21 FOMC officials in our sample, 6 have extensive experiences in investment firms, while the rest have served in various positions including academia, other policy agencies, and other roles within the Federal Reserve prior to joining the FOMC. The individuals with investment banking experience account for approximately 41% of all trades. However, 80% of these trades are associated with only 2 individuals: Jerome Powell and Robert Kaplan.

All of Robert Kaplan's transactions are ambiguous on the date on which the trades are executed, with the date column listing the term "Multiple dates" for each transaction. 89% of these trades are over $100,000. The lack of clarity regarding dates almost certainly results in an under-counting of Kaplan's trades. The ambiguity on dates also limit our sample of transactions for Fed chairman, Jerome Powell. Approximately 37% of Powell's transactions are dropped from the sample due to lack of a clear recorded date. Over 93% of these transactions are under $100,000. Our data includes the exact date of transactions for all remaining Fed officials.

It is also interesting to note the variation in frequency of trading among other FOMC members, with Raphael Bostic, James Bullard, Charles Evans, and Esther George reporting zero trades in the past four years.[8] While the lack of any trading activity may be puzzling, it is important to note that the forms only disclose purchases, sales, or exchanges of real estate or securities in excess of $1,000 and do not necessarily include money market investments.[9] We cannot rule out the possibility of omission of some trades by FOMC members, either intentionally or due to errors in reporting. However, given the role of ethics officers in this process, we assume omissions to be minimal and treat our data set as though it is the full universe of trades over this period.

[8]Years in which FOMC reported disclosures with no trades are represented by a 0. Years without disclosures are left blank.

[9]Moreover, the disclosures don't include the following: (1) a personal residence, unless rented out; (2) cash accounts (e.g., checking, savings, CDs, money market accounts) and money market mutual funds; (3) Treasury bills, bonds, and notes; and (4) holdings within a federal Thrift Savings Plan account. Additional exceptions apply.

Finally, we exclude the following from our empirical analysis: (1) All transactions recorded to have occurred over "Multiple dates". This drops all transactions by Robert Kaplan from our sample, and roughly 37% of all transactions by Jerome Powell. (2) All transactions which do not involve a purchase or sale of security and are listed as "Exchange". (3) Transactions that do not specify whether they are a purchase or sale (missing type of transaction). This excludes 8 transactions by Thomas Barkin. (4) All assets for which Bloomberg pricing data is not available, which includes private equity funds as well as state and municipal bonds. After making the above adjustments, our sample contains a total of 1045 transactions from 14 Fed officials, over a period from 2015 to 2021.[10] We also exclude bonds and bond-based funds from our baseline analysis although we reintroduce them when discussing the full portfolio in Section 6.

3.2 Methodology

To assess whether members of the FOMC have earned superior returns on their investments, we use two approaches: the buy-and-hold abnormal returns (BHAR) approach and the calendar-time portfolio approach. The BHAR approach, which provides our preferred estimates, calculates the abnormal returns of an investment relative to a benchmark. In particular, BHAR is given by

$$BHAR_{i,t,h} = \prod_{t=t_0}^{t_0+h}(1+R_{i,t}) - \prod_{t=t_0}^{t_0+h}(1+R_{b,t}), \tag{1}$$

where $BHAR_{i,t,h}$ is the BHAR of asset i over horizon h, t_0 is the date of the trade, and $R_{i,t}$ and $R_{b,t}$ are the returns of the asset and the benchmark, respectively, on day t. We calculate the BHAR relative to two benchmarks. The first benchmark is the Value-Weighted Index published by the Center for Research in Security Prices (CRSP), which gives an estimate of daily overall fluctuation in the stock market. Our second benchmark is the

[10] To avoid over-weighing repeat trades we combine the transactions of the same type for the same stock on the same date by the same individual. This reduces our effective sample size to 946 transactions.

Daniels Greenblatt Titman and Wermers (DGTW) size-value-momentum matched portfolio, as described in Daniel et al. (1997). We then take the average BHAR across all trades to obtain the mean BHAR for the portfolio. A positive mean BHAR would indicate that a portfolio's transactions outperformed the benchmark on average. This methodology is testing for whether there are abnormal returns but is agnostic about the reason for these abnormal returns (e.g., better stock picking, better market timing).

The results are calculated and reported separately for purchase and sale transactions. This is due to the fact that positive abnormal returns on purchases are desirable, as they indicate that assets outperformed the market after being added to the portfolio. However, for sales, these positive abnormal returns would indicate that assets outperformed after they left the portfolio, which would be undesirable.

To complement our BHAR results, particularly in regards to adjusting for risk, and to address any potential concerns with this approach (see Kothari and Warner 2007 for an overview) we also consider the calendar-time portfolio approach. The methodology is as follows – first, we construct a portfolio of all security transactions undertaken within a particular time period by each member of the FOMC. We consider trades made in the previous year, although results are qualitatively similar if shorter horizons such as one month or three months are considered instead. Next, we calculate the daily return for this constructed portfolio, which is aggregated into monthly return. These monthly returns are then included in several standard factor models regressions. For instance, one of these regressions is of the form

$$R_{p,t} - R_{f,t} = \alpha_i + \beta(R_{m,t} - R_{f,t}) + s_p SMB_t + h_p HML_t + \epsilon_{p,t},$$

where $R_{p,t}$ is the monthly portfolio return at time t, $R_{f,t}$ is the risk-free rate, and $R_{m,t}$ is the market return which we calculate as the CRSP value-weighted index at time t. The constant term α in this regression indicates whether there are any abnormal returns to account for

risk.[11] The β accounts for the sensitivity to the excess market return, s_p accounts for the sensitivity to the difference in returns between a portfolio of small cap stocks and a portfolio of large cap stocks, and h_p accounts for the sensitivity to the difference in returns from a low book-to-market portfolio to a high book-to-market portfolio.

The calendar-time portfolio approach is conducted in two ways: using an equally-weighted portfolio and using a trade-weighted portfolio. Under the equal weight portfolio, each trade contributes equally. Under the trade weighted portfolio, each trade is weighted by the midpoint of minimum and maximum of the trade value.[12]

4 Security Selection

4.1 BHAR Approach

Figure 1 shows our baseline estimate of the mean BHAR of both purchases and sales for all FOMC members for whom data is available for up to one year (255 trading days) after the transaction date. These results suggest that purchases by FOMC members underperformed relative to the CRSP benchmark, which is contrary to the spirit of the recent allegations, though the results are only significant at shorter horizons. Sales also underperformed relative to the benchmark, though the estimates are not significant at any horizon. While the negative abnormal returns of sales is consistent with the recent allegations, the estimates of the abnormal returns for purchases are more negative than those for sales at most horizons. Taken together, these results suggest that the returns of FOMC members are not superior. To the extent that something is unusual, it is that the overall returns are lower than we would

[11] One may be concerned that the insider information is driving β rather than α (e.g., FOMC members switch from more sensitive stocks to less sensitive stocks when they anticipate bad news), but if this was the case, the difference should be picked up by the BHAR approach.

[12] There are a few transactions with no max value. For these transactions, the minimum value was used instead of the midpoint. There might be some concern about the introduction of measurement error due to the imputation of the midpoint of each bin. However, the transaction size of trades only enters our analysis in determining the relative weighting when calculating trade-weighted portfolio returns. Any concern about the transaction size is addressed by the consistency of results when using equally-weighted portfolios.

expect. Not only are purchases significantly negative at shorter horizons, they constitute a much larger portion of transactions.

Numerical estimates of Figure 1 at one month, three month, six month, and one year horizons can be found in the top panel of Table 2. We can see that relative to the CRSP benchmark, assets purchases by FOMC members underperformed by 1.2%, 0.6%, and 1.6% at the 3-month, 6-month, and 1-year horizon, respectively, though only the results at the 3-month horizon are significant. On the sale side, assets earned -1.1%, 0.1%, and -0.1% relative to the CRSP benchmark at the 3-month, 6-month, and 1-year horizon, respectively, though none of these results were significant.

In addition to the estimates using the CRSP benchmark, Table 2 also shows the results relative to the DGTW benchmark. Since the DGTW benchmark is comparing these assets to other assets with similar characteristics, the abnormal returns may be more precise than just comparing to the overall stock market. The estimates relative to the DGTW benchmark are similar to those relative to the CRSP, though the estimates of abnormal returns for sale transactions are closer to those of the purchases. In particular, at the 3-month, 6-month, and 1-year horizon, purchases significantly underperformed by -1%, -1.2%, and -2.6% while sales underperformed by -1.4%, -1.3%, and -3.3%.[13]

Individual level estimates of the most frequent trading FOMC members are shown in the bottom panel of Table 2. Although the lower number of transactions, particularly on the sell side, make these estimates less representative, they are still interesting and broadly consistent with the overall results. Estimates of Eric Rosengren's abnormal returns are worse than the FOMC overall. In particular, the assets outperformed by over 10% in the year after he sold them, which is contrary to any allegations that he was profiting from superior knowledge. Chair Jerome Powell, who would likely have the largest informational advantage of any FOMC member, has a mean BHAR of -5.1% and -6.7% on purchases

[13]We also separate large transactions (those over $250,000) from small transactions (those under $50,000) to see if transaction size matters for returns. The results, which are shown in Table A4, suggest that larger transactions are not necessarily more profitable.

and sales, respectively, after one year.

4.2 Calendar-Time Portfolio Approach

In addition to the BHAR approach shown in the previous section, we also calculate excess returns using the calendar-time portfolio approach and accounting for systematic risk factors from Sharpe (1964), Fama and French (1992), and Fama and French (2015). The results, which are shown in Table 3, are broadly consistent with those shown in the previous section. The alpha values, which can be thought of as the excess return, are negative for the buy portfolio in all cases and positive for the sell portfolio excluding the CAPM, but not statistically significant for either portfolio under any model. Using the Fama-French 3-factor model on equally weighted portfolio, we find that purchase transactions have an alpha of -0.19 – approximately -2% annually – while sale transactions have an alpha of 0.02. It is also worth noting that the β in the majority of specifications is slightly less than 1, suggesting that FOMC officials are purchasing stocks and funds that tend to be less volatile than the overall market. This is not surprising given that FOMC officials tend to be closer to retirement than the average market participant. To the extent that this is true, some of the underperformance found in the previous section for both purchases and sales may be due to the lower level of risk being taken. However, even taking this lower risk tolerance into account, the underperformance still remains.

In total, these results indicate that the FOMC does not systematically outperform the market, which may suggest that the FOMC either does not have superior information to market participants or, for whatever reason, does not incorporate this information into their personal trading decisions. Of course, our results do not apply to individual trades, some of which may have outperformed for this very reason. However, to the extent that these trades exist, they are relatively infrequent and not sufficiently profitable to drive the overall results. Alternatively, any superior information that FOMC members have is more than offset by the trading restrictions that they face, such as the restriction on purchasing stocks in the

banking sector.[14]

5 Market Timing

It is possible that rather than selecting assets that outperform the market, FOMC members are able to more effectively time financial transactions due to superior information about upcoming changes in monetary policy.[15] Figure 2 shows when trades were executed, relative to the nearest regularly scheduled FOMC meeting. As Figure 2 indicates, there were relatively few trades made in the week or two leading up to an FOMC meeting, which would likely be the most beneficial time to make trades informed by monetary policy. This is likely predominantly due to the FOMC's financial blackout periods. The trading blackout period typically begins on the Saturday prior to a week before an FOMC meeting and lasts till the final day of an FOMC meeting, which is usually a Wednesday.[16] However, there are some trades made during this period; potential explanations can include long-scheduled programmed payouts or oversights on timing from financial advisors (Bialek, 2022).

In this section, we test whether FOMC officials use their superior information about monetary policy to better time their transactions.

5.1 Security Selection and Market Timing

First, we directly test whether FOMC officials use their superior information about monetary policy to better time the purchase or sale of particular securities. To measure the extent of this superior information on market timing, we use two measures: the actual change and the surprise change in the Federal Funds Rate at the next regularly scheduled FOMC meeting

[14]On a related note, some transactions may occur for mechanical reasons rather than the preferences by FOMC officials. For instance, individuals may be required to divest for reasons unrelated to the market. Further, in a few instances, what is indicated as a sale in our data may actually be the maturity of a bond; however, this would have no impact on our baseline results.

[15]There is some evidence of money managers successfully timing the market (see, e.g., Jiang et al. 2007 and Chen and Liang 2007), though the results are mixed.

[16]The new rules that the FOMC adopted in Februrary 2022 extended the financial blackout period by one day, so that it matches the external communication blackout period.

after a transaction. The idea is that the abnormal returns that FOMC members can earn is higher when there are large (surprise) changes in monetary policy.[17] The results for this estimation are shown in the top panel of Table 4. These results indicate that trades made prior to large changes in monetary policy – whether anticipated or unanticipated – did not appear to systematically earn higher short-term returns, which support the conclusion that FOMC members were not benefiting from knowledge about monetary policy decisions.[18]

There might be concerns that FOMC members are able to benefit from the information communicated in Federal Reserve speeches, particularly those made by the Federal Reserve Chair. This is particularly important during our sample period as more public correspondence from FOMC officials has resulted in smaller surprises from FOMC meetings. Indeed, the trades by Richard Clarida received substantial criticism for closely preceding a significant statement released by the Chair Jerome Powell. We focus solely on speeches made by the chair because these speeches appear to contain the most information and have the largest impact on financial markets. Neuhierl and Weber (2019) show that speeches by Fed chair and vice chair contain information on path of interest rate and future conduct of monetary policy. Similarly, Rosa (2016) show that only communication by the Fed chair significantly increases asset price volatility and trading volume. We address the issues of market timing with respect to Fed speeches in Part B of Table 4. Our sample contains 129 speeches by the chair between April 2015 and May 2021. We test whether trades made prior to speeches that cause surprise rate changes earn higher abnormal returns. On average, we find no evidence of market timing by Fed officials with respect to speeches by Fed chairs. The results are statistically insignificant except for sales which are positive and weakly significant at three months horizon.

We also specifically consider the period around COVID-19. Interestingly, there are no

[17] Our independent variable is the absolute change in target and surprise measures of monetary policy to measure the size of change, independent of its direction.

[18] Given the potential asymmetric relationship between monetary policy and asset prices (e.g, Chen, 2007), we also separately explore the impact of positive and negative surprises separately on returns on purchases and sales by FOMC officials. As shown in Table A5, both positive and negative surprises have similar effect on returns.

trades by any FOMC officials in March or April of 2020. There are a total of 47 trades in the six months following the outbreak of COVID in March, which are broadly consistent with the trading behavior in the previous months, prior to any knowledge or response to COVID. We repeat our baseline analysis on a subset of the data from March 2020 through February 2021. As shown in Table A6, the results are insignificant with the exception of 12-month horizon, which is negative for both purchases and sales at roughly the same magnitude, suggesting that trades around COVID-19 were not unusual.

5.2 Asset Allocation and Market Timing

Our results clearly show that FOMC members do not systematically choose particular securities that outperform the corresponding benchmark. Further, we do not find any evidence that FOMC members use information about monetary policy surprises to buy and sell particular securities that would benefit from upcoming monetary policy decisions. However, our analysis has not yet addressed the question of whether FOMC officials appear to be able to benefit by timing the market when rebalancing their portfolio (e.g., selling stocks in favor of other assets classes), which may be motivated by knowledge about monetary policy.

Figure 3 shows the bifurcation of Figure 2 by asset class and type of transaction. The purchases panel indicates that FOMC officials are actively purchasing both stocks and bonds, but it does not correlate strongly with the FOMC meeting cycle. However, the sales panel indicates that there are few and infrequent bond sales across the FOMC cycle, but a relatively large amounts of stock sales that occur just before the FOMC blackout period.

Superior information about the future path of interest rates could allow FOMC officials to avoid potential losses by adjusting their portfolio. For example, news about a positive interest rate shock can potentially lower the price of both stocks and bonds. A well-timed sale of stocks, for instance, would then result in avoidance of future losses. In this section, we want to address whether FOMC members use their information about monetary policy to make such adjustments.

One simple way to answer this question is to consider the relationship between monetary policy surprises, which proxy for additional information available to FOMC members, and transactions made by these officials. In other words, are FOMC officials more likely to sell (buy) stocks and, to a lesser extent, bonds before a positive (negative) surprise shock. We estimate this by calculating the Kuttner surprise of the FOMC meeting immediately succeeding a transaction.[19] We calculate these surprises separately for purchases and sales of both stock-based and bond-based assets and take the average across all transactions for each asset class and transaction type. The results are shown in Table A7. In all cases, the average surprise change was negative. For the full sample, the average policy surprise is more negative for sales than for purchases, which is surprising as negative policy surprises are typically associated with higher stock prices. If we restrict the sample to the three weeks prior to an FOMC meeting, this relationship reverses. Given the large volume of stock transactions close to FOMC meetings, as well as the fact that information would be clearer and more valuable closer to FOMC meetings, the more focused results seem more appropriate here. We also repeat the process with the monetary policy factors from Swanson (2021).

One concern about the above approach is that we are only considering the monetary surprise at the upcoming meeting. This potentially ignores monetary policy surprises in the interim that arise from other events, like speeches by Fed chair. Further, it is not clear how to determine if the results in Table A7 are significant. To address for these shortcomings, we consider a separate approach that examines the returns of the overall asset class in the period following the transaction.

An alternative way to test whether FOMC officials are advantageously adjusting the asset allocation of their portfolios is to examine the market returns for each asset class following their transactions. In our baseline analysis (Section 4.1), we calculate how an asset

[19]The Kuttner surprise measures the change in the Federal Funds rate that was unexpected by markets. The measure is constructed by taking the difference in federal funds futures contracts in a short window around FOMC announcements.

transaction performs relative to the asset's benchmark (e.g., returns on a stock transaction is compared to the stock benchmark). However, that does not allow us to capture the return relative to other asset classes, such as whether a stock sale proceeds a period in which the market return on stocks is lower than the market return on other assets. In particular, it may be the case that individuals rebalance their portfolio towards or away from stocks, as they are more volatile than bonds and may respond differently to some types of policy news.

To test whether FOMC officials are adjusting their portfolio between asset classes, we calculate the relative market return between stocks and bonds following each purchase and sale transaction. We then average these returns across all transactions for each asset class. The relative returns as calculated follows:

$$V_{t,h} = \prod_{t=t_0}^{t_0+h}(1 + R_{m,t}) - \prod_{t=t_0}^{t_0+h}(1 + R_{b,t}),$$

where $R_{m,t}$ represents the return of the stock market and $R_{b,t}$ represent the return of the bond market index. If $V_{t,h}$ is positive, then the stock market outperformed the bond index over the given horizon. To account for the possibility that individuals may simply liquidate their position rather than rebalance their portfolio, we also calculate the cumulative average return (not relative to a benchmark) separately for stocks and bonds for both purchases and sales.[20] However, given the concerns about Vice Chair Clarida were largely related to rebalancing, we focus on the relative market return.

These results, which are shown in the top panel of Table 6, are mixed. Each cell shows the average market return of stocks relative to the market return of bonds for 1 month and 3 months horizon from the date of transaction. If we look at relative returns on bond purchases, we find that on average, after FOMC officials purchased bonds, stock market significantly outperformed the bond market at both 1 month and 3 month horizon. This is true for bond purchases even when we restrict our sample to purchases that happened within three weeks prior to a FOMC meeting. Similarly, we see little evidence that bonds are sold

[20]These results, which are shown in Part B of Table 6, are broadly consistent with those in Part A.

at advantageous times, both for the full and restricted sample.

Looking at stock market transactions, we do not find evidence that stock purchases are well timed, at least at the 1-month horizon. However, following the sale of stocks by FOMC members, the stock market significantly underperforms the bond market at both the 1- and 3-month horizon. This is perhaps concerning given both the large amount of stock sales that occur shortly before the FOMC blackout period as well as the fact that we would expect this measure to be positive on average, as stocks tend to outperform bonds over the long-run.

In some ways it is difficult to conclusively test for the presence of insider information in adjustment of portfolio as we do not observe the exact monetary value of each transaction in the financial disclosures. Moreover, there is no prevalent methodology to test how insider information can be used to re-balance portfolios between different asset class. In this section, we present two different ways of testing whether FOMC officials are using information advantage for personal gains. When we look at surprise monetary policy shocks, on average, we do not find any evidence that the FOMC trading pattern reflects future monetary policy surprises. However, when looking at relative market returns, we do find that on average, FOMC officials tend to sell stocks prior to periods in which stocks underperform relative to bonds. Thus, we cannot completely rule out potential market timing of stock sales by FOMC officials.

6 Robustness

In this section, we consider the robustness of our results to alternative portfolio construction, alternative timing, and alternative monetary policy factors. We also consider the trades of senior FOMC staff members, who may have had similar information sets to members of the FOMC.

6.1 Alternative Portfolios

We provide estimates of the mean BHAR under alternative constructions of the portfolio, which are shown in Table 5. In addition to our preferred portfolio, which consists of all common stocks and stock-based funds as well as alternative investments like REITs, we also provide estimates for three other portfolios. The Common Stocks portfolio consists of only common stocks and ADRs and excludes all funds. The Bond Portfolio consists of bonds and bond-based funds. The Full Portfolio consists of all assets for which trading data is available, which includes bond-based funds as well as everything in baseline portfolio. These added bonds and bond-based funds are benchmarked relative to the S&P U.S. Aggregate Bond Index.[21]

The goal of estimating the mean BHAR for different portfolios is twofold. First, it shows that our overall results are not sensitive to the inclusion or omission of specific trades. Second, the expected response across assets might be different, depending on the perceived source of the FOMC's informational advantage. In particular, the FOMC may have a greater advantage investing in fixed-income assets given the importance of the federal funds rate.

The estimates for the bond portfolio and full portfolio are qualitatively similar to those in which bonds are removed, which suggests that omitting these transactions does not bias our baseline results. The results on bond portfolio suggest that at the one year horizon sale of bonds significantly underperforms the benchmark by 2.3%. However, it is important to keep in mind that there is only a small number of bond sale transactions over our sample period. If the portfolio is restricted to only common stock, the results are still broadly consistent with the same story: a lack of superior returns by the FOMC. However, the estimates are noticeably different from the baseline. At the three-month horizon, purchases underperform by 2.9% relative to the CRSP while sales underperform by -0.6%.

[21] The S&P U.S. Aggregate Bond Index is a broad metric that tracks a wide variety of U.S. government, municipal, quasi-government, and corporate bonds.

6.2 Trades by Senior Staff Members

In February 2022, a report published by The Wall Street Journal (2021d) highlighted the high frequency of trades in early 2020 by some senior staff members at the Federal Reserve Board amidst Fed's large and frequent interventions to stimulate the economy. In this section, we extend our baseline analysis to the trades conducted by Federal Reserve senior staff members in divisions closely working with the FOMC.[22] Given that senior staff also have access to inside information but serve in a less scrutinized position, it is not unreasonable to believe that their behavior may differ from FOMC members.

The final sample contains trading information of eight senior staff members who reported non-zero trades within our sample period, with majority of trades being conducted by a single staff member. Consistent with the result for FOMC members, we do not find any evidence of insider trading by the senior staff members. On average, we find that both purchases and sales of staff portfolio equally under-perform the market over 12 month period, resulting in a net zero abnormal returns on the hedged portfolio. We restrict the focus of our main analysis to the trading activities of monetary policymakers and relegate the results on staff portfolio to the Appendix.[23]

6.3 Alternative Timing of Transactions

Given that the timing of transactions may positively or negatively affect returns, one useful exercise is to vary the timing of FOMC member transactions and repeat our previous calculations. If FOMC members are constricted by rules and regulations, this variation should, on average, improve returns. However, if FOMC members are using superior information,

[22]Because of the large number of staff members working at the Federal Reserve Board, we limited our analysis to Directors, Deputy Directors, and Senior Associate Directors at three divisions: Monetary Affairs, Research and Statistics, and Office of Board Members. We selected these three divisions because their description explicitly states that the researchers here provide background information to FOMC. For example, for the Monetary Affairs division, the description states - "The Division also monitors financial conditions, assists the Board and FOMC in preparing policy communications, maintains records of FOMC deliberations and decisions, ..."

[23]See Table A8 for details.

this variation should make the timing of their trades worse and decrease returns.

Cieslak et al. (2019) argue that most of the equity premium from FOMC announcements are earned over week 0, 2, 4, and 6, between two scheduled FOMC meetings, with week 0 starting on the day before a scheduled announcement day. Due to the constraints imposed by blackout trading periods, Federal Reserve officials cannot completely optimize their returns with respect to the market. Take for example, a recurring stock purchase scheduled by a Fed official two weeks prior to an FOMC meeting (before the beginning of the blackout period). If, as suggested by Cieslak et al. (2019), the average excess returns are higher in even weeks, then transactions by FOMC officials made in odd weeks (due to blackout restrictions) can explain why both purchases and sales of FOMC officials tend to underperform the market.

We first test whether the portfolio of FOMC officials would earn a different abnormal return under an alternative timing. To do so, we randomly adjust the date of transactions within ± 90 days of each transaction. We then calculate the log abnormal returns for all stocks purchased or sold by FOMC members over 1, 3, 6, and 12 month periods. We simulate the data 5000 times alternating the timing of transaction with each simulation. Table 7 reports the mean BHAR and standard deviation for our simulations. Abnormal returns in the first row are calculated relative to the CRSP Value Weighted Index. Abnormal returns in the second row are calculated relative to the DGTW benchmark when possible and to the CRSP Value Weighted Index otherwise. The results are quantitatively similar to our baseline results suggesting that the portfolios of FOMC members are neither under- nor over-performing due to the timing restrictions.

We also test whether the relative and absolute performance of stock and bond indices varies in response to a change in the timing of the transactions. Table 8 shows the Monte Carlo simulations for the rebalancing exercise introduced in Section 5.2. Part A of Table 8 shows the relative return of stock market index to the bond market index for buy and sell transactions performed within ± 90 days of the original transaction; Part B shows the average cumulative return for the stock and bond market, respectively. The most noticeable

difference between these results and those under the previous timing is that stock market no longer performs poorly – absolutely or relative to the bond market – following stock sales. Thus, the Monte Carlo simulations raise concerns that, on average, FOMC officials may have avoided unrealized losses by opportunely timing their sales of stocks.

6.4 Alternative Monetary Policy Factors

One drawback of only considering the surprise change in the federal funds rate is that it does not take into consideration other monetary policy tools like large-scale asset purchases (LSAPs) or forward guidance as an alternative source of information. To alleviate potential concerns about FOMC officials taking advantage of the information contained in these policy tools, we test whether the results in Table 4 are robust to alternative measures of monetary policy shocks. Specifically, we use the shocks from Swanson (2021), which uses principal component analysis to decompose each monetary policy announcement into surprise movements in three factors: Federal Funds Rate, Forward Guidance, and LSAPs. Consistent with our baseline results on security selection and market timing, we do not find any evidence of average excess returns by FOMC officials.[24]

7 Conclusion

The literature studying the trading behavior of public policymakers has been limited to analyzing the returns on portfolios of members of Congress, while ignoring the behavior of monetary policymakers. Our research fills this critical gap in the literature by examining the trading behavior of FOMC members. Additionally, we contribute to the growing literature on informed trading by investigating whether the trading behavior of Federal Reserve officials is consistent with the idea that incorporating monetary policy information leads to higher returns.

[24]Refer to Table A9 for more details.

We analyze the trading behavior of FOMC members across two main dimensions. First, we test whether portfolios of FOMC officials earn abnormal returns and whether these returns can be predicted by surprise monetary policy decisions. We find that there is no evidence of abnormal returns on transactions by FOMC officials. Neither can the returns on transactions by FOMC officials be predicted by surprise changes in federal funds rate. Indeed, to the extent that there is any difference between the returns of the FOMC and those of the overall market, it would appear that the purchases of securities by FOMC is underperforming the market in the short run, perhaps as a result of trading restrictions or an inability to fully capture pre-FOMC drift returns.

Second, we test whether trades by FOMC officials are well timed and reflect superior information about future surprise movements in monetary policy. Moreover, do the timing of their transactions suggest that they are re-balancing their portfolios to avoid unanticipated future loses in the asset market. We do not find any evidence that trades in stocks or bonds by FOMC officials reflect information about the direction of monetary policy surprises in the future. This result is consistent for surprise changes in federal funds rate, forward guidance, and LSAP shocks. However, we find some evidence that FOMC officials sell stocks preceding a fall in the return on the stock market relative to the bond market, thus, correctly anticipating and avoiding a lower future return on their stock holdings. We do not observe such effects for transactions in bonds. This behavior is slightly puzzling as superior information on monetary policy is potentially more advantageous in predicting future returns in the bonds market.

One limitation of our analysis is the smaller sample size compared to studies on congressional stock returns—both in terms of the number of officials included and the length of the sample period for which consistent data is available. Congressional and FOMC trading activity also diverge in the nature of their informational advantages: while members of Congress are likely to possess insights into forthcoming regulatory changes, FOMC members have access to privileged information regarding future monetary policy decisions. Nonethe-

less, our findings align with recent research on congressional portfolio performance. Belmont et al. (2022), for example, examine trades by members of Congress following the adoption of the STOCK Act and find that their portfolios tend to underperform the market.

The Federal Reserve's decisions have a substantial impact on financial market movements. Collectively, the six press conferences by FOMC during 2022 resulted in a 1% (equivalent to $300 billion) change in S&P 500 market value (Narain and Sangani, 2023). Given this considerable influence, any allegations of insider trading could severely undermine public trust in the central bank. On average, we do not find strong evidence of opportunistic trading behavior by FOMC officials, suggesting that the rules restricting trading behavior by monetary policymakers have successfully mitigated concerns about officials exploiting their informational advantages to earn abnormal returns.

However, our findings do raise concerns about the high volume of stock sales by FOMC officials prior to the trading black-out periods. When considered alongside evidence of information leaks from the Federal Reserve to financial markets (Cieslak et al., 2019), the increase in trading activity near FOMC meetings raises concerns about transparency and accountability within the Fed. Aikman et al. (2024) find that reduced trust in FOMC reduce economic activity and raise inflation expectations. To this end, we argue that the recent tightening of regulations regarding common stock trading with non-retractable 45 days notice may be necessary to reduce the perception that FOMC officials can perform well-timed transactions. Besides the restrictions on actual trading behavior, our findings suggest that the regulators must also ensure better financial reporting in the future.

While not highly prevalent, instances of unusually large or improperly timed trading has occurred for officials at central banks across the world. The Fed's adoption of new regulations can provide other central banks with a roadmap to improve their trading rules, thereby strengthening central bank credibility. If imposing stricter trading regulations and better reporting standards remove the perception of potential misbehavior and result in greater trust in the members of the central bank, such regulations may also improve the

conduct of monetary policy.

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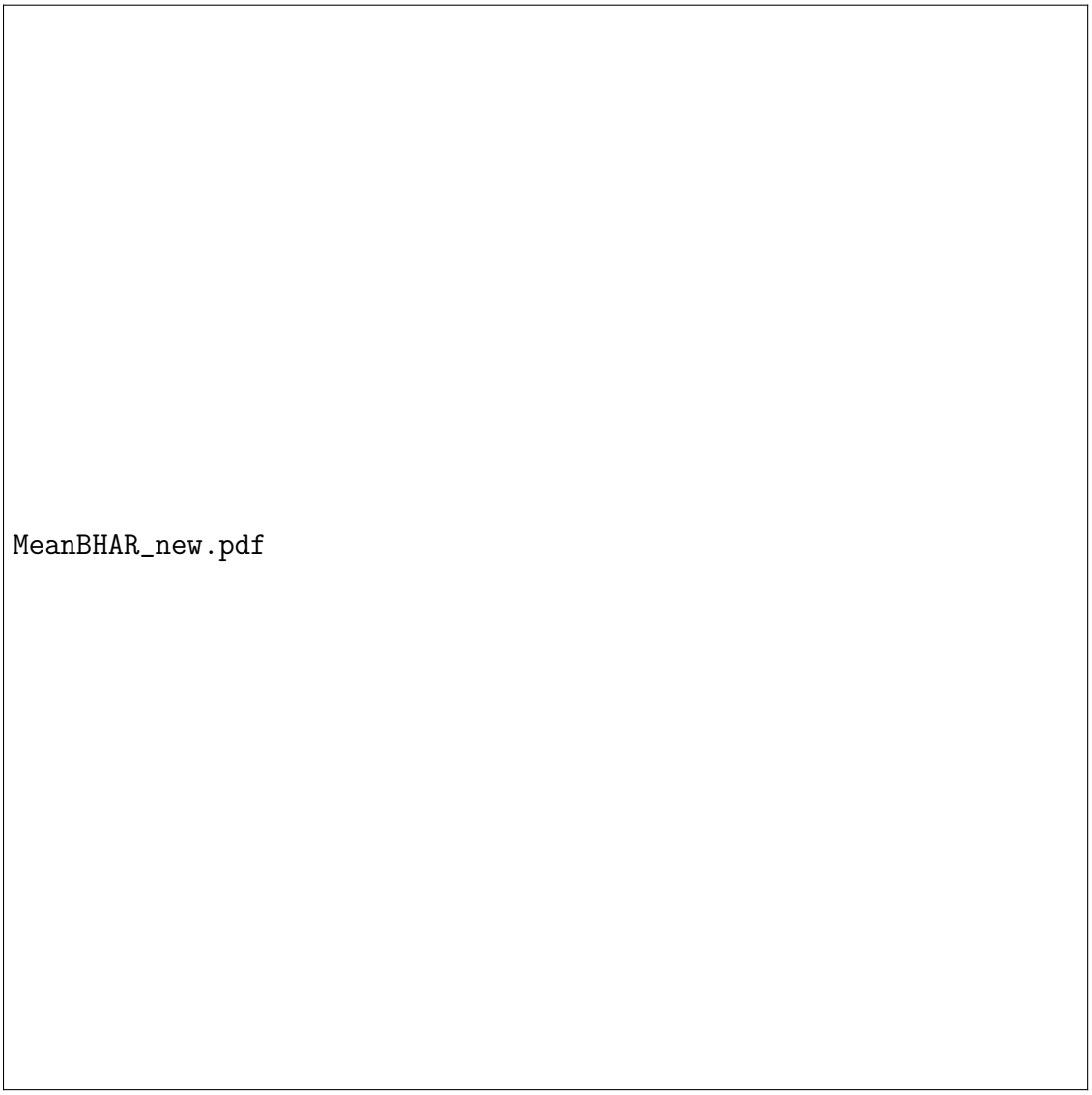
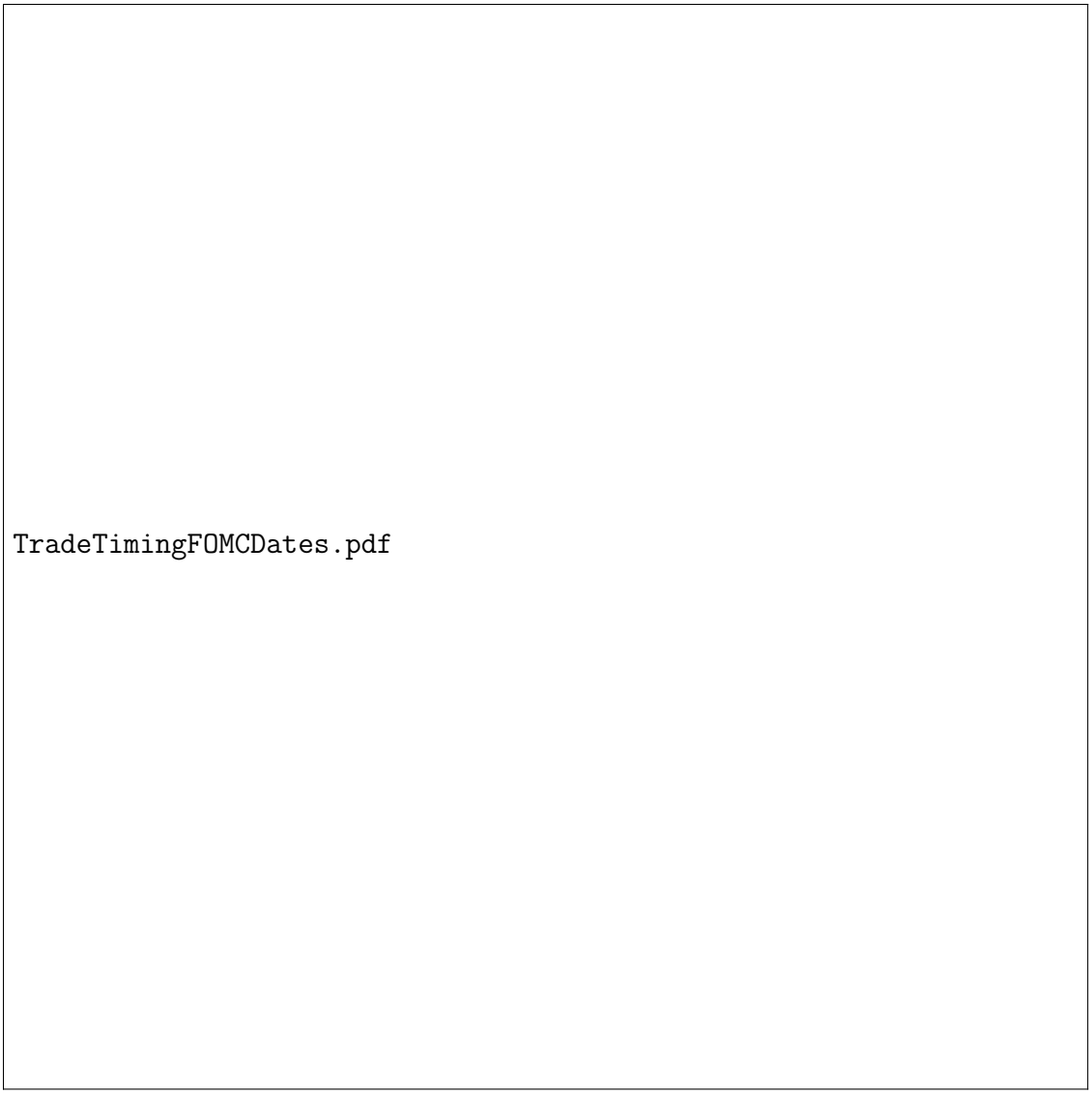
Figures

Figure 1: Buy and Hold Abnormal Returns



Notes: The solid line shows the Buy and Hold Abnormal Returns (BHAR) for all transaction from the trade date forward. The trade transactions are for FOMC officials over the sample period 2015 to 2021. The returns are the cumulative excess returns (in percentage points) from the CRSP Value Weighted Index. The dotted lines are the 95% confidence intervals.

Figure 2: Timing of FOMC Trades Relative to Meeting Dates



Notes: The above figure shows the frequency of stock market transactions by FOMC members around the date of scheduled FOMC meetings.

Figure 3: Timing of FOMC Trades: Transaction Type and Asset Class

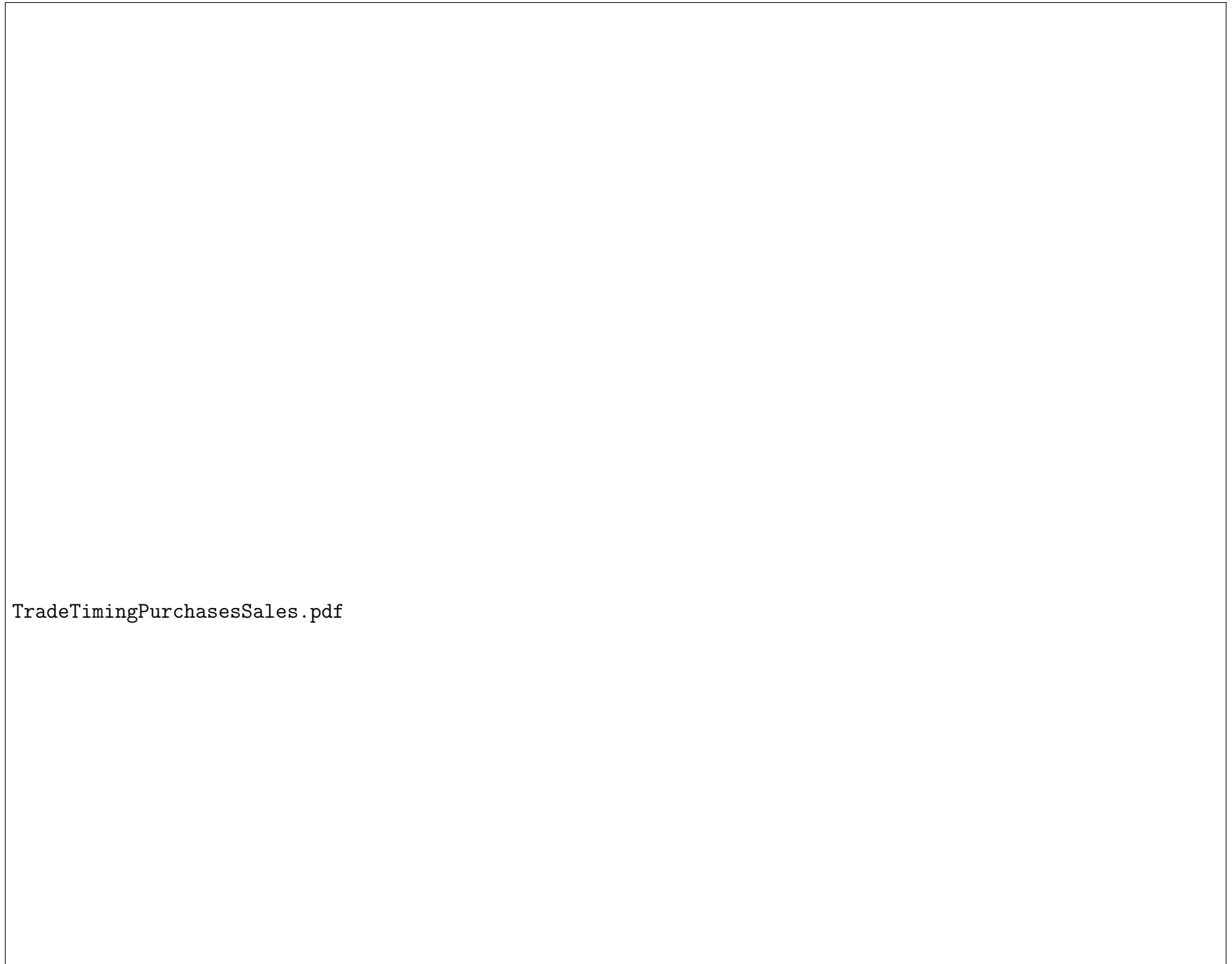


Table 1: FOMC Members Trading Activity by Year

	2015	2016	2017	2018	2019	2020	2021	Total
Thomas Barkin			2	20	6	5		33
Raphael Bostic			0	0	0	0		0
Michellel Bowman					3	3	1	7
Lael Brainard	6	85	84	133	37	0		345
James Bullard	0	1	0	0	0	0		1
Richard Clarida				14	8	8		30
Mary Daly						0		0
William Dudley	0	16	5					21
Charles Evans		0	1	0	0	0		1
Stanley Fischer	3	23	42					68
Esther George	1	0	0	0	0	0		1
Patrick Harker	13	31	13	17	29	33	23	159
Robert Kaplan		54	41	51	38	47		231
Neel Kashkari	0	2	0	7	0	0		9
Lorreta Mester		30	21	27	21	18		117
Jerome Powell	58	84	62	34	45	26		309
Randal Quarles			12	39	33	2	1	87
Eric Rosengren	0	8	44	37	27	68		184
Daniel Tarullo	1							1
John Williams				4	11	15		30
Janet Yellen		11	28					39
All	82	345	355	383	258	225	25	1673

Notes: The above table summarizes the frequency of stock market transactions by FOMC members, by year. Blanks are years for which the individual does not have an available financial disclosure statement and zero represents no financial transactions reported. Robert Kaplan's transactions are counted twice, one as Purchase and another as Sale, when the type of transaction is listed as "Purchase/Sale".

Table 2: Mean BHAR

	Purchases (N=457)				Sales (N=207)			
	1 Month	3 Months	6 Months	1 Year	1 Month	3 Months	6 Months	1 Year
Part A: All FOMC officials								
BHAR Market	-0.004	-0.012**	-0.006	-0.016	-0.000	-0.011	0.001	-0.001
	(0.003)	(0.005)	(0.008)	(0.013)	(0.005)	(0.007)	(0.016)	(0.023)
BHAR DGTW	-0.003	-0.010**	-0.012*	-0.026**	-0.000	-0.014**	-0.013	-0.033
	(0.002)	(0.005)	(0.007)	(0.011)	(0.004)	(0.007)	(0.012)	(0.021)
Part B: Officials with high trading frequency								
Jerome Powell	−0.010	−0.002	−0.015	−0.051**	−0.013***	−0.015**	−0.031***	−0.067***
	(0.010)	(0.015)	(0.021)	(0.026)	(0.005)	(0.007)	(0.009)	(0.015)
Lael Brainard	0.001	−0.007	−0.009	−0.031**	0.002	−0.024*	−0.037*	−0.087***
	(0.004)	(0.005)	(0.007)	(0.012)	(0.004)	(0.014)	(0.022)	(0.021)
Eric Rosengren	-0.017**	-0.062***	-0.025	-0.056	0.005	0.006	0.077*	0.105*
	(0.008)	(0.017)	(0.033)	(0.050)	(0.011)	(0.017)	(0.041)	(0.057)
Patrick Harker	-0.004	-0.013	-0.051***	-0.114***	-0.006	-0.077**	-0.125***	-0.149***
	(0.004)	(0.008)	(0.011)	(0.017)	(0.018)	(0.036)	(0.032)	(0.050)

Notes: We calculate the log abnormal returns for all stocks purchased or sold by FOMC members over 1, 3, 6, and 12 month periods. Part A shows the mean log abnormal returns for our baseline sample with standard errors reported in parenthesis. Abnormal returns in the first row are calculated relative to the CRSP Value Weighted Index. Abnormal returns in the second row are calculated relative to the DGTW benchmark when possible and to the CRSP Value Weighted Index otherwise. Part B reports individual estimates for FOMC members with over 150 total trades in our sample; the number of observations for purchases are 10, 171, 94, and 58, for Powell, Brainard, Rosengren, and Harker respectively. The number of observations for sales are 30, 13, 72, and 10. Superscripts *, **, and *** denote significance at 10 percent, 5 percent, and 1 percent, respectively.

Table 3: Calendar-Time Portfolio Abnormal Returns

	Buy EW			Sell EW			Buy TW			Sell TW		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Alpha	−0.31	−0.18	−0.19	−0.17	0.02	−0.01	−0.31	−0.26	−0.28	−0.11	0.07	0.10
	(0.30)	(0.30)	(0.31)	(0.28)	(0.29)	(0.29)	(0.25)	(0.26)	(0.26)	(0.51)	(0.53)	(0.54)
Mkt.RF	1.08***	1.02***	1.06***	0.93***	0.88***	0.93***	0.94***	0.94***	0.98***	0.95***	0.88***	0.91***
	(0.06)	(0.07)	(0.08)	(0.06)	(0.07)	(0.07)	(0.05)	(0.06)	(0.07)	(0.11)	(0.12)	(0.14)
SMB		0.16	0.12		0.08	0.04		−0.01	−0.07		0.17	0.06
		(0.12)	(0.14)		(0.12)	(0.13)		(0.11)	(0.12)		(0.21)	(0.24)
HML		0.07	0.03		0.16*	0.10		0.06	0.03		0.12	0.19
		(0.10)	(0.11)		(0.09)	(0.11)		(0.08)	(0.10)		(0.17)	(0.19)
RMW			−0.18			−0.15			−0.24			−0.38
			(0.21)			(0.19)			(0.18)			(0.36)
CMA			0.19			0.25			0.18			−0.12
			(0.21)			(0.19)			(0.18)			(0.36)
Observations	60	60	60	60	60	60	60	60	60	60	60	60
R^2	0.84	0.85	0.86	0.81	0.83	0.84	0.85	0.85	0.86	0.59	0.60	0.61

Notes: The above regressions show the results for excess portfolio returns of FOMC members using both the CAPM and Fama-French three factor model. Dependent variables are the monthly return on the portfolio of purchases and sales by FOMC members in the past 365 days. EW and TW are the equal-weighted and trade-weighted portfolios of purchases and sales within the previous year. Mkt.Rf is the excess return of the CRSP value-weighted index over the risk free rate; SMB is the difference between a portfolio of small stocks to big stocks; HML is the difference high book-to-market stocks and low-book to market stocks portfolio; RMW is the difference between robust and weak operating profitability portfolios; and CMA is the difference between conservative vs aggressive investment portfolios. Superscripts *, **, and *** denote significance at 10 percent, 5 percent, and 1 percent, respectively.

Table 4: Relationship between Monetary Policy and BHAR

	Target Change				Surprise Change			
	Purchases		Sales		Purchases		Sales	
	1 Month	3 Month	1 Month	3 Month	1 Month	3 Month	1 Month	3 Month
Part A: Scheduled FOMC Meetings								
Rate Change	−0.01	−0.04	−0.04	−0.01	−0.06	−0.32	−0.09	−0.05
Magnitude	(0.01)	(0.04)	(0.03)	(0.07)	(0.05)	(0.20)	(0.07)	(0.17)
Constant	−0.00	−0.01*	0.00	−0.01	−0.00	−0.01*	0.00	−0.01
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)
Observations	680	680	259	259	680	680	259	259
Part B: Chair Speeches								
Rate Change					−0.08	−0.10	0.25	1.06*
Magnitude					(0.21)	(0.53)	(0.45)	(0.63)
Constant					−0.00	−0.01***	−0.00	−0.01*
					(0.00)	(0.00)	(0.00)	(0.01)
Observations					666	666	254	254

Notes: We regress the 1- and 3-month log abnormal returns for purchases and sales of FOMC members on Federal funds rate changes. Target change is the actual change in Fed funds rate. Surprise change is the Kuttner surprise change in the Fed funds rate (see Kuttner 2001). Robust standard errors are in parenthesis. Part A shows the response of abnormal returns to the target and surprise change in Fed Funds rate following a scheduled FOMC meetings. Part B shows the result for surprise change in Fed Funds rate following a speech by the Fed Chair. Superscripts *, **, and *** denote significance at 10 percent, 5 percent, and 1 percent, respectively.

Table 5: Mean BHAR of Alternative Portfolios

	Purchases				Sales			
	Baseline	Stocks	Bonds	Full	Baseline	Stocks	Bonds	Full
One	-0.004	-0.015*	-0.001	-0.003*	-0.000	0.002	0.001	-0.001
Month	(0.003)	(0.009)	(0.001)	(0.002)	(0.004)	(0.008)	(0.001)	(0.004)
Three	-0.012**	-0.029**	-0.006***	-0.011***	-0.011	-0.006	-0.003	-0.009
Months	(0.005)	(0.014)	(0.001)	(0.003)	(0.007)	(0.011)	(0.007)	(0.006)
Six	-0.006	0.029	-0.012***	-0.009*	0.001	0.018	-0.008	-0.001
Months	(0.008)	(0.033)	(0.002)	(0.005)	(0.014)	(0.025)	(0.007)	(0.013)
One	-0.016	0.032	-0.026***	-0.024***	-0.001	0.052	-0.023**	-0.007
Year	(0.013)	(0.052)	(0.002)	(0.009)	(0.020)	(0.034)	(0.009)	(0.018)
Observations	457	86	187	681	207	130	40	259

Notes: We calculate the log abnormal returns for all stocks purchased or sold by FOMC members over 1, 3, 6, and 12 month periods under alternative portfolios. Baseline portfolio includes common stocks and stock-based funds, stocks only include transactions involving common stock and ADR, bonds include bonds, and bond-based funds, and full portfolio considers all assets for which pricing data was available. The mean abnormal returns are reported with standard errors in parenthesis. Abnormal returns are calculated relative to the CRSP Value Weighted Index with the exception of any bonds in the full portfolio, which are calculated relative to the S&P U.S. Aggregate Bond Index. Superscripts *, **, and *** denote significance at 10 percent, 5 percent, and 1 percent, respectively.

Table 6: Asset Allocation and Rebalancing

	Full Sample				Three Weeks Prior			
	Purchases		Sales		Purchases		Sales	
	1 Month	3 Month	1 Month	3 Month	1 Month	3 Month	1 Month	3 Month
Part A: Relative Return								
Stocks	0.004	0.014***	-0.008**	-0.011*	-0.020***	0.028***	-0.019***	-0.014**
	(0.003)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)
Observations	457	457	207	207	150	150	93	93
Bonds	0.012***	0.022***	0.008	-0.002	-0.016*	0.015*	-0.004	0.019
	(0.004)	(0.006)	(0.006)	(0.017)	(0.009)	(0.009)	(0.017)	(0.026)
Observations	187	187	40	40	59	59	12	12
Part B: Cumulative Return								
Stocks	0.005**	0.020***	-0.007*	-0.004	-0.020***	0.034***	-0.022***	-0.012**
	(0.002)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)
Observations	457	457	207	207	150	150	93	93
Bonds	0.001	0.007***	0.001	0.010***	0.001	0.009***	-0.002	0.009**
	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)	(0.002)	(0.002)	(0.004)
Observations	187	187	40	40	59	59	12	12

Notes: In Part A, we calculate the mean relative return of overall stock market (CRSP benchmark) to the S&P Aggregate Bond index in the 1 and 3 month period following transactions for stocks and bonds, split across purchases and sales. In Part B, we calculate the mean cumulative return of stock market index (CRSP benchmark) and S&P bond market in the 1 and 3 month period following transactions for stocks and bonds, split across purchases and sales. The full sample consists of all trades. Three Weeks Prior consists of only trades that occurred in the three weeks prior to an FOMC meeting.

Table 7: Mean BHAR- Monte Carlo Simulations with Alternate Timings

	Purchases (N=457)				Sales (N=207)			
	1 Month	3 Months	6 Months	1 Year	1 Month	3 Months	6 Months	1 Year
BHAR Market	-0.005^{*}	-0.012^{**}	-0.009	-0.012^{*}	-0.003	-0.005	-0.004	-0.002
	(0.003)	(0.005)	(0.007)	(0.007)	(0.006)	(0.011)	(0.012)	(0.015)
BHAR DGTW	-0.005^{**}	-0.012^{***}	-0.015^{***}	-0.024^{***}	-0.005	-0.013^{*}	-0.024^{***}	-0.044^{***}
	(0.003)	(0.003)	(0.004)	(0.005)	(0.004)	(0.007)	(0.007)	(0.010)

Notes: We calculate the log abnormal returns for all stocks purchased or sold by FOMC members over 1, 3, 6, and 12 month periods. The table shows the results for Monte Carlo Simulations described in Section 6. Superscripts *, **, and *** denote significance at 10 percent, 5 percent, and 1 percent, respectively.

Table 8: Rebalancing - Monte Carlo Simulations with Alternative Timings

	Full Sample				Three Weeks Prior			
	Purchases		Sales		Purchases		Sales	
	1 Month	3 Month	1 Month	3 Month	1 Month	3 Month	1 Month	3 Month
Part A: Relative Return								
Stocks	0.009***	0.024***	0.005*	0.016***	0.010**	0.027***	0.006	0.015**
	(0.002)	(0.003)	(0.003)	(0.004)	(0.004)	(0.005)	(0.004)	(0.006)
Bonds	0.008***	0.022***	0.008	0.003	0.008	0.020**	0.006	0.027
	(0.003)	(0.004)	(0.009)	(0.012)	(0.005)	(0.008)	(0.018)	(0.025)
Part B: Cumulative Return								
Stocks	0.010***	0.030***	0.007*	0.023***	0.011***	0.032***	0.006	0.018***
	(0.002)	(0.003)	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.006)
Bonds	0.001	0.006***	0.003***	0.011***	0.002**	0.007***	0.003	0.009**
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.004)

Notes: In Part A, we calculate the mean relative return of overall stock market (CRSP benchmark) to the S&P Aggregate Bond index with 5,000 Monte Carlo Simulations described in Section 6. In Part B, we calculate the mean cumulative return of stock market index (CRSP benchmark) and S&P bond market using the same algorithm. We calculate returns over the 1 and 3 month period following transactions for stocks and bonds, split across purchases and sales. The full sample consists of all trades. Three Weeks Prior consists of only trades that occurred in the three weeks prior to an FOMC meeting.

Appendix A: Additional Figures and Tables

Table A1: Details on Trade Brackets Reported

Brackets Reported	Frequency	Percent	Details
1000 - 15000	217	13.70	Jerome Powell (102), Randal Quarles (41), Lael Brainard (31), Janet Yellen (21), Stanley Fischer (19), Michelle Bowman (3)
15000 - 50000	363	22.92	Lael Brainard (244), Jerome Powell (71), Stanley Fischer (37), Randal Quarles (6), Janet Yellen (4), Daniel Tarullo (1)
1000 - 50000	474	29.99	Eric Rosengren (175), Patrick Harker (122), Lorreta Mester (117), John Williams (30), William Dudley (20), Thomas Barkin (5), Neel Kashkari (4), Charles Evans (1)
50000 - 100000	156	9.85	Jerome Powell (95), Lael Brainard (37), Randal Quarles (11), Stanley Fischer (11), Michelle Bowman (2)
100000 - 250000	75	4.36	Jerome Powell (33), Lael Brainard (28), Janet Yellen (5), Randal Quarles (4), Richard Clarida (4), Stanley Fischer (1)
50000 - 250000	68	3.98	Patrick Harker (26), Thomas Barkin (15), Robert Kaplan (10), Eric Rosengren (8), Neel Kashkari (5), William Dudley (2), Esther George (1), James Bullard (1)
250000 - 500000	43	2.21	Thomas Barkin (8), Jerome Powell (6), Patrick Harler (6), Randal Quarles (5), Robert Kaplan (5), Janet Yellen (4), Lael Brainard (3), Eric Rosengren (2), Michelle Bowman (2), Richard Clarida (2)
500000 - 1000000	21	1.33	Randal Quarles (8), Patrick Harker (5), Richard Clarida (5), Robert Kaplan (2), Jerome Powell (1)
>1000000	160	9.91	Robert Kaplan (150), Thomas Barkin (5), Randal Quarles (3), William Dudley (2)
1000000 - 5000000	26	1.58	Richard Clarida (16), Randal Quarles (9), Jerome Powell (1)
5000000 - 25000000	3	0.19	Richard Clarida (3)

Notes: The figures in the brackets show the number of transaction for each official in a particular transaction bracket.

Table A2: Summary Statistics

	Purchases	Sales	Total	Percentage
Transaction Size				
\$1000-\$50000	806	248	1054	64.15%
\$50000-\$250000	151	136	287	17.47 %
\$250000-\$500000	17	18	35	2.13%
\$500000-\$1000000	15	7	22	1.34%
$>$ \$1000000	127	118	245	14.91%
Asset Class				
Common Stock	138	185	323	19.66%
Equity-Based Funds	479	90	569	34.63%
Fixed Income	275	55	330	20.09%
Other	224	197	421	25.62%

Notes: In this table we summarize the volume of transactions made by FOMC members in our sample. The figures show the frequency of purchase and sales transactions within each transaction size bracket. We also split the transactions by asset classes. Robert Kaplan's transactions are counted twice, one as Purchase and another as Sale, when the type of transaction is listed as "Purchase/Sale".

Table A3: Stock Characteristics

GICS Sector				
	Purchases	Sales	Total	Percentage
Basic Materials	3	6	9	4.17%
Communications	36	32	68	31.48%
Consumer, Cyclical	2	17	19	8.80%
Consumer, Non-cyclical	17	27	44	20.17%
Energy	11	7	18	8.33%
Financial	0	1	1	0.46%
Industrial	11	26	37	17.13%
Technology	6	10	16	7.41%
Utilities	0	4	4	1.85%

Firm size				
	Mean	Median	SD	Large Cap
Market Cap (billions)	130.4	67.5	150.5	85.0%
Employees (thousands)	96.1	62.9	105.1	

Notes: In this table we summarize the trade average characteristics of all common stocks. The figures show the frequency of purchase and sales transactions by GICS sector. We also describe the distribution of firm size by both market cap and number of employees. Large cap firms are defined as firms with at least $10 billion in market cap.

Table A4: BHAR by Trade Size

	Purchases				Sales			
	1 Month	3 Months	6 Months	1 Year	1 Month	3 Months	6 Months	1 Year
Small Trades	-0.003	-0.013***	-0.007	-0.016	0.001	-0.009	0.014	0.022
	(0.003)	(0.005)	(0.009)	(0.015)	(0.006)	(0.009)	(0.021)	(0.029)
Large Trades	-0.005	-0.006	-0.026*	-0.057***	-0.005	-0.033	-0.071*	-0.069
	(0.004)	(0.009)	(0.015)	(0.021)	(0.009)	(0.031)	(0.040)	(0.044)

Notes: We calculate the log abnormal returns for all stocks purchased or sold by FOMC members satisfying the specified size threshold over 1, 3, 6, and 12 month periods. Small trades include trades under $50,000; large trades include trades of at least $250,000. Abnormal returns are calculated relative to the CRSP Value Weighted Index. For small trades, there were 407 purchases and 157 sales; for large trades there were 16 purchases and 12 sales. Superscripts *, **, and *** denote significance at 10 percent, 5 percent, and 1 percent, respectively.

Table A5: Relationship between Monetary Policy and BHAR - Surprise Direction

	Surprise Change			
	Purchases		Sales	
	1 Month	3 Month	1 Month	3 Month
Part A: Positive Changes				
Surprise Change Magnitude	−0.42	−0.63	−0.29	0.16
	(0.29)	(0.45)	(0.49)	(0.57)
Constant	0.01	−0.00	0.01	−0.02*
	(0.00)	(0.01)	(0.01)	(0.01)
Observations	232	232	68	68
Part B: Negative Changes				
Surprise Change Magnitude	−0.06	−0.33	−0.09	−0.03
	(0.05)	(0.21)	(0.08)	(0.18)
Constant	−0.00	−0.00	0.00	−0.01
	(0.00)	(0.00)	(0.01)	(0.01)
Observations	278	278	115	115

Notes: We regress the 1- and 3-month log abnormal returns for purchases and sales of FOMC members on Federal funds rate changes. Target change is the actual change in Fed funds rate. Surprise change is the Kuttner surprise change in the Fed funds rate (see Kuttner 2001). Robust standard errors are in parenthesis. Part A shows the response of positive surprise changes to the Fed Funds rate following a scheduled FOMC meetings while Part B shows the result for negative surprise changes. Superscripts *, **, and *** denote significance at 10 percent, 5 percent, and 1 percent, respectively.

Table A6: Mean BHAR during COVID

	Purchases (N=55)				Sales (N=15)			
	1 Month	3 Months	6 Months	1 Year	1 Month	3 Months	6 Months	1 Year
COVID Trades	-0.001	-0.006	-0.030	-0.112***	0.007	0.032	0.025	-0.115***
	(0.009)	(0.012)	(0.019)	(0.028)	(0.015)	(0.029)	(0.032)	(0.044)

Notes: We calculate the log abnormal returns for all stocks purchased or sold by FOMC members satisfying the specified size threshold over 1, 3, 6, and 12 month periods. Only trades between March 2020 through February 2021 are included. Abnormal returns are calculated relative to the CRSP Value Weighted Index. Superscripts *, **, and *** denote significance at 10 percent, 5 percent, and 1 percent, respectively.

Table A7: Asset Allocation and Monetary Policy Shocks

	Full Sample		Three Weeks Prior	
	Purchases	Sales	Purchases	Sales
Part A: Kuttner Surprise				
Stocks	-0.009	-0.024	-0.018	-0.010
Bonds	-0.003	-0.006	-0.005	-0.019
Part B: High Frequency Shocks				
Federal Funds Factor				
Stocks	0.12	0.16	0.16	0.17
Bonds	0.14	0.14	0.20	0.21
Forward Guidance Factor				
Stocks	-0.09	0.04	-0.14	0.25
Bonds	-0.12	-0.37	-0.30	-0.08
LSAP Factor				
Stocks	-0.05	0.05	-0.06	-0.06
Bonds	-0.07	-0.04	-0.03	0.04

Notes: We calculate the mean Kuttner surprise for stocks and bonds split across purchases and sales. The full sample consists of all trades in the sample. Three Weeks Prior consists of only trades that occurred within the three weeks prior to an FOMC meeting. Changes in Federal funds rate factor, Forward Guidance factor, and LSAP factor are calculated using the high frequency identification in Swanson (2021). The end of sample in Part B is June 2019 due to unavailability of monetary policy factors.

Table A8: Mean BHAR of Federal Reserve Board Senior Staff

	Purchases			Sales		
	Common Stocks	Baseline	Full Portfolio	Common Stocks	Baseline	Full Portfolio
One Month	-0.000	-0.003	-0.005	-0.000	-0.004	-0.003
	(0.005)	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)
Three Months	0.003	-0.004	-0.006	0.004	-0.005	-0.008
	(0.010)	(0.009)	(0.008)	(0.009)	(0.007)	(0.007)
Six Months	0.009	-0.005	-0.008	0.013	-0.006	-0.007
	(0.018)	(0.014)	(0.013)	(0.012)	(0.010)	(0.009)
One Year	-0.000	-0.033*	-0.034***	-0.015	-0.034**	-0.034***
	(0.024)	(0.020)	(0.018)	(0.015)	(0.013)	(0.012)
Observations	191	245	273	320	399	444

Notes: We calculate the log abnormal returns for all stocks purchased or sold by Senior Federal Reserve Board staffs over 1, 3, 6, and 12 month periods under alternative portfolios. Common stock only considers transactions involving common stock and ADR, baseline considers common stocks and stock-based funds, and full portfolio considers all assets for which pricing data was available. The mean abnormal returns are reported with standard errors in parenthesis. Abnormal returns are calculated relative to the CRSP Value Weighted Index with the exception of any bonds in the full portfolio, which are calculated relative to the S&P U.S. Aggregate Bond Index. Superscripts *, **, and *** denote significance at 10 percent, 5 percent, and 1 percent, respectively.

Table A9: Relationship between Monetary Policy and BHAR – Extended

	Purchases		Sales	
	1 Month	3 Month	1 Month	3 Month
Federal Funds Rate factor	0.01	−0.01	-0.00	0.03
	(0.02)	(0.02)	(0.02)	(0.05)
Forward Guidance factor	−0.00	0.00	−0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.01)
LSAP factor	0.02	0.01	0.01	0.02
	(0.01)	(0.02)	(0.02)	(0.03)
Constant	−0.00	−0.00	0.00	−0.02
	(0.00)	(0.00)	(0.01)	(0.01)
Observations	510	510	191	191

Notes: We regress the 1- and 3-month abnormal returns for purchases and sales of FOMC members on Federal funds rate changes. The rate change is decomposed into surprise changes in Federal funds rate factor, Forward Guidance factor, and LSAP factor calculated using the high frequency identification in Swanson (2021). The end of sample is restricted to June 2019 due to unavailability of monetary policy changes. Robust standard errors in parenthesis. Superscripts *, **, and *** denote significance at 10 percent, 5 percent, and 1 percent, respectively.