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Friendly Investing and Information Sharing in the Asset Management Industry

Benjamin Golez
University of Notre Dame Mendoza College of Business
bgolez@nd.edu (corresponding author)

Antonino Emanuele Rizzo
Nova School of Business and Economics
emanuele.rizzo@novasbe.pt

Rafael Zambrana
University of Notre Dame Mendoza College of Business
rzambra2@nd.edu

Abstract

Do asset managers engage in friendly investing to obtain privileged investment information? We test this hypothesis in the context of mutual fund connections to financial groups. Using brokers as the source of connections, we find that funds overweight the stock of connected financial groups and side with management in contested votes. We also find that fund performance improves with the extent of friendly investing. The improvement stems from trading the stock of companies that borrow from connected financial groups. Brokerage commissions do not drive the results. Our findings suggest that funds can obtain valuable information by acting as friendly shareholders.

I. Introduction

Generating investment ideas is the single most important task of active asset managers. The quality of investment ideas drives a fund's performance and fund flows, which ultimately determines the total amount of fees and a fund manager's compensation (Ang (2014)). Not surprisingly, asset managers pay billions of dollars in commissions for investment research services every year (Goldstein, Irvine, Kandel, and Wiener (2009)). While the debate about the optimal design of the fee for external investment advice is ongoing (Brennan and Chordia (1993)), we uncover a new channel by which asset managers can obtain valuable investment information, that is, by acting as friendly shareholders for large financial institutions.

Our starting point is the observation that asset managers frequently interact with financial institutions, such as banks and brokers. These institutions not only

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provide services to asset managers but also are privy to privileged investment information about other client funds and companies. Notably, the majority of these financial institutions are publicly traded. As such, they are potential candidates to enter the portfolio of asset managers. This gives asset managers a unique opportunity to curry favor with financial institutions and lure them into sharing their privileged investment information.

Specifically, asset managers may divert some of their funds and consider friendly investing in the stock of financial institutions with which they have business ties. The Securities and Exchange Commission (SEC) requires funds to disclose holdings in certain business partners, but it does not disallow investments in connected companies.[1] For financial institutions, investments by connected asset managers can lead to a stable ownership base and friendly shareholder votes. For asset managers, friendly investing may be a small price to pay to obtain valuable investment information.

We test our hypothesis in the context of business connections between mutual funds and financial groups. Modern financial conglomerates provide everything from investment services to lending and have a large network of business ties with their clients. Mutual funds work most closely with their brokerage divisions (Goldstein et al., 2009). We use brokerage services as a source of connection between mutual funds and financial groups.

Asset managers would be particularly interested in currying favors with the financial groups that are most likely to have valuable investment information. The potential for the internal flow of investment information is presumably largest in financial groups with diversified investment services and a large network of clients. Massa and Rehman (2008) show that information can flow from the lending division of a financial group to its investment division. Our analysis focuses on financial groups that include both an investment division and a lending division.

Our data run from 1996 to 2020 and include actively managed diversified equity funds. We link mutual funds and financial groups using the information on brokers provided in N-SAR filings. On average, our sample includes 62 publicly traded financial groups and 1,917 funds per year.

We start by showing that funds tilt their portfolios toward connected financial groups. We express fund holdings relative to a fund's benchmark or relative to funds following the same investment objective. We find that funds overweight connected financial groups unconditionally and conditionally. After controlling for time-varying unobservable stock and fund characteristics as well as time-invariant differences across fund–stock pairs, connected funds overweight their broker's parent companies by 0.133% in benchmark-adjusted terms and by 0.075% in style-adjusted terms. Connected funds also hold a 4-times-greater fraction of shares outstanding of financial groups than unconnected funds. Cumulatively, connected funds hold around 11% of connected financial groups' shares, on average, per year.

Next, we show that connected funds behave as friendly shareholders for financial groups. They use their holdings to benefit connected financial groups in

[1]For details, see the 1940 Investment Company Act, Section 270.12d3-1.

two ways. First, we show that when a financial group is under selling pressure from unconnected funds, connected funds step in and increase their holdings in connected financial groups. Moreover, we show that these trades are not profitable and, thus, are not made to enhance a fund's performance. Instead, consistent with our hypothesis, we find that investments in connected stocks help stabilize the stock price of financial groups. By acting as friendly shareholders, connected funds are able to provide financial stability to their connected financial groups.

Second, connected funds are more likely to side with the management of connected financial groups in contested votes. Specifically, when Institutional Shareholder Services (ISS) recommends voting against the management proposal, connected funds are significantly less likely to follow the ISS recommendation than unconnected funds.

At the same time, funds are rewarded for being friendly shareholders. We show that a fund's overall performance improves with the ownership of connected financial groups. The improvement in performance stems from the part of the fund's portfolio involving companies that have a lending relationship with connected financial groups. We design a test to account for the timing of loan approvals. We find that when funds engage in informed trades in connected companies, the profitability of these trades increases with fund holdings of connected financial groups. These results hold after we control for fund commissions paid to connected financial groups, as well as after we control for other observable and unobservable fund and stock characteristics.

Overall, we provide evidence that funds overweight connected financial groups and that the extent of over-weighting is related to a fund's trading performance in stocks for which the connected financial group is likely to possess privileged information. This is consistent with our hypothesis that funds act as friendly shareholders for financial groups to entice them to share investment information.

A potential concern is that our results are driven by an unknown omitted factor that jointly determines fund portfolio choices and a fund decision to use the services of a given financial group. We address this concern by exploiting exogenous changes in fund connections that happen due to mergers of financial institutions. Using a difference-in-difference approach, we show that when a connection between a fund and a financial group arises because of a merger, newly connected funds invest significantly more in the financial group's stock after the merger than other similar funds. Newly connected funds also increase their holdings in connected financial groups during distress, and they side with the management in contested votes. Hence, our holdings results hold even when we focus on first-time connections generated exogenously through mergers of financial institutions.

Another potential concern is that our results could be driven by familiarity. Since funds work with brokers, they could be familiar with their ultimate owners, which could explain why they overweight connected financial groups. We address this concern by showing that funds overweight connected financial groups that offer commercial banking services, but they do not overweight financial groups that do not offer commercial banking services. Since funds can be familiar with both types of financial groups, but brokers that are a part of a financial conglomerate with a lending arm are more likely to possess private information about other client

companies, we conclude that this evidence is consistent with our quid pro quo explanation, but inconsistent with a familiarity story.

We also want to note that, while investing in connected financial groups may be beneficial for fund managers and fund investors, certain limitations exist. The more money funds invest in connected financial groups, the less money they are left with to invest in other stocks. Since positive performance comes from investments in other stocks, this limits how much managers can invest in connected financial groups. The documented relationship is also implicit and, hence, fragile. We find that the documented quid pro quo relationship strengthens with the length of a fund's connection to a given financial group.

We contribute to several strands of the literature. First, we contribute to the work that explores how asset managers' business connections affect portfolio choices (Kacperczyk and Schnabl (2013), Golez and Marin (2015), Ferreira, Matos, and Pires (2018), Franzoni and Giannetti (2019), Gil-Bazo, Hoffmann, and Mayordomo (2020), and Zambrana (2021)). While these studies focus on asset managers that belong to financial groups, one distinct feature of our study is that asset management firms are not part of financial conglomerates. Instead, they are clients of financial groups. In this context, our article is closely related to Cohen and Schmidt (2009), who analyze how 401(k) trustees invest in the sponsor firm's stock. They show evidence that pension funds overinvest in sponsor firms to attract flows. In comparison, we show that mutual funds act as friendly shareholders for financial institutions to obtain privileged investment information. As most asset managers are clients of large publicly traded financial groups, the patterns we document affect the whole mutual fund industry, and they have implications for the financial stability of large financial institutions.[2]

Second, we contribute to the literature on fund–broker relations (Goldstein et al. (2009), Edelen, Evans, and Kadlec (2012), Chung and Kang (2016), Qian and Zhong (2018), Barbon, Di Maggio, Franzoni, and Landier (2019), Di Maggio, Franzoni, Kermani, and Sommavilla (2019), Gokkaya, Liu, Pool, Xie, and Zhang (2019), and Kumar, Mullally, Ray, and Tang (2020)). While these articles mostly speak to the importance of brokers for asset managers, we use brokers as a source of connection between funds and financial groups and show that funds obtain privileged investment information from connected financial groups. In this sense, our article is most closely related to Kumar et al. (2020), who show that brokers share valuable investment information with clients that generate high income for brokers in terms of trading and lending fees. Differently from Kumar et al. (2020), we uncover a new channel through which funds entice financial institutions to share privileged information, that is, by acting as friendly shareholders for brokers' ultimate owners. Another difference is that we document the effects for mutual funds, while Kumar et al. (2020) focus on hedge funds. Unlike hedge funds, mutual funds rarely short-sell or borrow to take leverage. As such, mutual funds have a smaller potential to generate income for brokers and would be more prone to

[2]Since the documented relationship between funds and financial institutions is beneficial to fund investors, the equilibrium outcome of this relationship does not hinge on captive investors (in contrast to Golez and Marin (2015), Ferreira et al. (2018), and Gil-Bazo et al. (2020)).

alternative channels to obtain investment information.[3] We show that our results are not driven by brokerage commissions. Lastly, we contribute to the literature on business connections and shareholders' voting behavior (Davis and Kim (2007), Butler and Gurun (2012), Cvijanović, Dasgupta, and Zachariadis (2016), and Calluzzo and Kedia (2019)).[4]

The remainder of the article is organized as follows: Section II describes our data sources and presents summary statistics. Section III asks what funds do for connected financial groups. Section IV asks what funds receive for being friendly shareholders. Section V presents additional results. Section VI concludes.

II. Data

In Section II, we discuss data sources and present descriptive statistics.

A. Data Collection

We obtain data on open-ended U.S. mutual funds from 1996 to 2020. The data on mutual fund characteristics and net returns are from the CRSP Survivor Bias-Free U.S. Mutual Fund database. We calculate gross returns before expenses by adding one-twelfth of the fund expense ratio to the net monthly return. CRSP provides information on multiple share classes issued by the same fund. To avoid multiple counting, we aggregate share-class-level data to the portfolio level. That is, we calculate total net assets (TNAs) as the sum of assets across all share classes, and we compute the value-weighted average of a fund's characteristics across share classes.[5]

We focus on actively managed diversified equity funds: funds with CRSP objective codes EDYG (Growth), EDYB (Blend), EDYI (Value), EDCM (Mid-Cap), EDCS (Small-Cap), and EDCI (Micro-Cap). To avoid passive funds, we eliminate funds with the CRSP objective code EDCL (S&P 500 Index Objective Funds). We also eliminate funds if their names include the words "index," "S&P," or "ETF." Finally, to exclude possible hedge funds, we do not consider funds with the CRSP objective codes EDYH (Long/Short Equity Funds) or EDYS (Dedicated Short Bias Funds).

We obtain funds' quarterly holdings from two sources. We start with the Thomson Reuters mutual fund holdings database.[6] The Thomson Reuters data has been available since 1996, but its coverage deteriorates over time (Zhu (2020)). Therefore, for the period from 2004 onward, when CRSP reports mutual funds holdings, we complement Thomson Reuters data with the CRSP Mutual Fund

[3]Kumar et al. (2020) show that hedge funds generate the most income for brokers through lending fees.

[4]In a contemporaneous paper, Kumar, Tang, and Wei (2021) show that brokers allocate hot initial public offerings (IPOs) to mutual funds in exchange for friendly votes.

[5]We aggregate returns, turnover, and expenses, weighting each share class by its TNA. Fund age is computed as of the month-end relative to the fund's first offer date. For the qualitative attributes of the funds, such as name or investment objective, we choose that of the oldest among all share classes.

[6]We use MFLINKS tables to merge Thomson Reuters mutual fund holdings data with CRSP data. The MFLINKS tables are available through Wharton Research Data Services (WRDS) and provide a reliable way to merge Thomson and CRSP databases.

Holdings Data. After requiring non-missing observations for the main fund-level variables, our final sample includes, on average, 1,917 mutual funds per year.

Data on mutual funds' brokers come from the Form N-SAR and Form N-CEN reports. Under the Investment Company Act of 1940, all registered investment companies must file Form N-SAR with the SEC twice a year. The N-SAR filings provide investment company information about a fund's operations and finances. Of particular interest to us is the identity of brokers that receive the largest commissions from the investment company and the brokerage commissions paid by mutual funds during the reporting period. The data list the 10 largest brokers per investment company. We find N-SAR reports filed between 1996 and 2018 and Form N-CEN reports filed between 2019 and 2020 in the SEC's Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system.

We proceed in 3 steps to identify the ultimate owners of brokers' firms. First, we search for each broker's name in the SEC's IAPD online database and look at Schedule A of Form ADV, listing all direct owners and executive officers. We then merge the list of brokers in the N-SAR and N-CEN reports with the companies in Form ADV. This approach enables us to infer whether brokers are owned by publicly traded companies and the identities of these companies. Next, we search the CRSP stock database to find the PERMNOs of the corresponding publicly traded stocks. For the matched PERMNOs, we obtain monthly stock returns from the CRSP stock files. For brokers for whom we could not find a match using this procedure, we manually search their ultimate owners using the online *BrokerCheck* tool provided by FINRA. We restrict the sample of brokers to those that belong to publicly traded financial groups. We also require that financial groups offer commercial banking services.

In addition, we obtain data on mutual fund proxy voting from the ISS Voting Analytics database. This data set provides the voting records of individual mutual funds from all shareholder meeting proposals for Russell 3000 companies from 2003 to 2020. The records are compiled from their N-PX filings. ISS reports fund votes on each company proposal and other proposal-level information, such as the description of the proposal, proposal number, sponsor type (management or shareholder), meeting date, management recommendation, and ISS recommendation. To merge the ISS database with the CRSP Mutual Fund database, we use the linking table between a fund's CUSIP and the fund's CRSP portfolio number provided by WRDS. For funds for which no link exists, we manually match them to the ISS Voting Analytics database. To identify brokers' stocks in the ISS database, we use the CUSIP/PERMNO link provided by WRDS. Our final sample includes 276 fund families voting on 262,902 proposals and 36,640 meetings of 5,726 firms.

B. Descriptive Statistics

We define a fund as connected to a financial group if the family of the fund is a client of the financial group's broker division; otherwise, we define it as unconnected. Using the point of view of a mutual fund, we then also distinguish between connected and unconnected financial groups.

Panel A of Table 1 presents preliminary statistics for our sample of mutual funds. These statistics are reported as time-series averages. There are 1,917 funds

TABLE 1

Summary Statistics

Panel A of Table 1 presents time-series averages for the total number of funds, number of funds holding shares of connected financial groups, and percentage of fund total net assets (TNAs) invested in connected financial groups. Panel B reports the time-series averages for the total number of financial groups in our sample, the number of financial groups with shares held by connected funds, and the percentage of financial group shares held by client funds. Panel C presents the number of observations, mean, standard deviation, 25th percentile, median, and 75th percentile for fund-level variables. Panel D presents the same statistics for financial group variables. Panel E reports the ownership of financial groups by the connected and unconnected funds. A mutual fund is connected to a financial group if its fund family is a client of its broker's division. FUND_HOLDING (BENCHMARK_ADJUSTED) is the percentage of fund TNAs invested in the financial group in excess of the weight of the financial group in the fund's benchmark. FUND_HOLDING (STYLE_ADJUSTED) is the percentage of fund TNAs invested in the financial group minus the average weight of the financial group in the portfolio of all funds in the same style of the fund. OWNERSHIP is the percentage of shares outstanding of a given stock held by funds. The sample consists of actively managed U.S. domestic equity mutual funds over the 1996–2020 period. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Mutual Fund Sample

	Total Funds	Funds Holding Shares of Connected Financial Groups	Fund TNA Invested in Connected Financial Groups
TIME_SERIES_AVERAGE	1,917	1,696	5.70%

Panel B. Financial Groups

	Total Financial Groups	Financial Groups with Shares Held by Connected Funds	Financial Groups' Shares Held by Connected Funds
TIME_SERIES_AVERAGE	62	61	11.19%

Panel C. Mutual Fund Variables

	No. of Obs.	Mean	Std. Dev.	25%	50%	75%
FUND_SIZE	451,327	1.70	6.14	0.06	0.25	1.06
FUND_AGE	451,327	82.60	104.78	17.00	50.00	108.00
EXPENSE_RATIO	451,327	1.21	0.44	0.94	1.15	1.45
LOAD_FEE	451,327	3.53	4.32	0.00	0.00	7.50
FUND_TURNOVER	451,327	0.85	0.86	0.34	0. 63	1.06
FUND_FLOWS	451,327	1.00	0.09	0.95	0.99	1.05
FAMILY_SIZE	451,327	151.65	426.80	2.07	16.65	89.13

Panel D. Financial Groups Variables

	No. of Obs.	Mean	Std. Dev.	25%	50%	75%
MARKET_CAPITALIZATION	5,8888	7.94	2.37	6.16	8.11	9.83
BM	5,8888	0.83	0.70	0.46	0.65	0.96
12_MONTH_LAGGED_RETURN	5,8888	0.14	0.36	–0.06	0.12	0.31
RETURN_VOLATILITY	5,8888	0.34	0.30	0.20	0.27	0.39
PROFITABILITY	5,8888	0.01	0.03	–0.01	0.01	0.02

Panel E. Mutual Fund-Financial Group Variables

	Connected Funds	Unconnected Funds	Difference
FUND_HOLDING_BENCHMARK_ADJUSTED	0.216%	0.036%	0.179%***
FUND_HOLDING_STYLE_ADJUSTED	0.122%	0.019%	0.103%***
OWNERSHIP	0.025%	0.006%	0.019%***

per year. About 88% of funds hold shares of their connected financial groups. On average, funds invest 5.7% of their TNAs in connected financial groups.

Panel B of Table 1 reports similar statistics for our sample of financial groups. On average, we have 62 financial groups per year. Almost all of these financial groups have shares held by their connected funds. Cumulatively, connected funds hold around 11% of the shares of these financial groups.

Panel C of Table 1 reports summary statistics for the mutual fund variables used in our analysis. These include fund size, age, expense ratio, load fee, turnover, monthly fund flows, and family size. These statistics are similar to those reported in other studies. Panel D of Table 1 presents summary statistics for

the characteristics of our sample of financial groups. These characteristics include MARKET_CAPITALIZATION, BM, 12_MONTH_LAGGED_RETURN, RETURN_VOLATILITY, and PROFITABILITY. Again, these statistics are similar to those reported in other studies.

In Table IA1 in the Supplementary Material, we report univariate comparisons for connected funds and institutions. Panel A of Table IA1 in the Supplementary Material shows comparisons between the sample of funds that invest a significant fraction of their TNA in the stocks of connected financial groups (High Connected Holdings) and funds that hold a small fraction of their TNA in the stocks of connected financial groups (Low Connected Holdings). We define High Connected Holdings as funds with a percentage of TNA invested in the financial group's stocks above the median. High Connected Holdings are larger, are part of larger families, and have higher turnover but attract lower flows. This suggests that investing in connected financial groups is strongest among active funds with a stable investor base.

In Panel B of Table IA1 in the Supplementary Material, we compare financial groups with high and low ownership by connected funds. We define high and low ownership using the median of the unconditional distribution of the fraction of shares held by connected funds. Institutions with High Ownership by Connected Funds have higher market capitalization and are more profitable.

Finally, Panel E of Table 1 reports statistics for funds' investments in financial groups. FUND_HOLDING (BENCHMARK_ADJUSTED) measures the percentage of the fund's assets invested in a given stock in excess of the weight of the stock in the fund's benchmark.[7] FUND_HOLDING (STYLE_ADJUSTED) measures the percentage of the fund's assets invested in a given stock in excess of the average portfolio weight of all the active funds in the fund's investment objective. A fund's investment objective is one of the 6 CRSP objective codes defined in Section II.A. OWNERSHIP measures the total percentage of shares outstanding of a given stock held by funds. Thus, OWNERSHIP is defined from the perspective of a stock, whereas FUND_HOLDING is defined from the perspective of a fund. We calculate averages for these three variables separately for connected and unconnected funds for our sample of financial groups. Since funds work with more than one broker, we base our statistics on all possible pairs of funds and financial groups. The only exception occurs when both the broker and the fund belong to the same financial group. We eliminate such pairs because of the different incentives and the regulation that disallows funds to hold stocks of their ultimate owners.[8] We find that connected funds have higher holdings of financial groups than unconnected funds. Relative to a fund's benchmark, funds invest on average 0.22% of their assets in the

[7]We identify the benchmark for each fund using Cremers and Petajisto (2009) minimum active share approach. That is, the benchmark that results in the lowest active share for a given fund is considered that fund's benchmark. Our set of benchmarks is similar to that used by Cremers and Petajisto (2009) and matches that used by Cremers, Fulkerson, and Riley (2022). It includes the S&P 500, S&P 400, S&P 600, Russell 1000, Russell 2000, Russell 3000, Russell Mid Cap, and the value and growth components of each of these benchmarks.

[8]According to the 1940 Investment Company Act, funds in the United States are generally not allowed to hold the stock of their ultimate owner. The exception may occur in the case of a merger when there is a grace period during which a fund may unload shares of its ultimate owner.

stock of connected financial groups. Relative to funds following the same investment objective, funds invest on average 0.12% of their assets in the stock of connected financial groups. For unconnected funds, these figures are much lower (0.04% and 0.02%, depending on whether we measure holding relative to the fund's benchmark or relative to the fund's investment objective). Connected funds also hold a 4-times-greater fraction of shares outstanding of financial groups than unconnected funds.

III. What Do Funds Do for Connected Financial Groups?

According to our hypothesis, mutual funds engage in friendly investing in financial groups to entice them to share privileged information. The descriptive statistics suggest that funds hold a substantial fraction of connected financial groups. This section formally tests whether connections to a financial group affect fund portfolio choices.

We then ask whether mutual funds behave as friendly shareholders and use their holdings to benefit connected financial groups. Specifically, we analyze whether funds increase the stock of connected financial groups during turmoil times and whether they are more likely to vote with the management of connected financial groups.

A. Financial Groups Overweighting

To test whether funds invest more in connected financial groups than in unconnected financial groups, we consider the following multivariate regression:

$$(1) \qquad \text{FUND\_HOLDING}_{ijt} = \beta_0 + \beta_1 \,\text{CONNECTED}_{ijt} + \beta_2 X_{it-1} + \delta + \varepsilon_{ijt}.$$

The dependent variable $\text{FUND\_HOLDING}_{ijt}$ is defined in two different ways. First, as the percentage of fund i's TNAs invested in stocks of the financial group j in excess of the weight of the stock in the fund's benchmark in quarter t (benchmark-adjusted). Second, as the percentage of fund i's TNAs invested in stocks of the financial group j in excess of the average portfolio weight of all the active funds in the fund i's investment objective in quarter t (style-adjusted). The first measure captures the portfolio decisions of funds relative to their passive benchmarks, whereas the second variable measures the portfolio decisions relative to the fund's active peers. If a fund does not hold stocks of a given financial group, we set the value of $\text{FUND\_HOLDING}_{ijt}$ to 0. The main independent variable CONNECTED_{ijt} is an indicator variable equal to 1 if the family of the fund i is a client of a broker that belongs to financial group j in quarter t. X is a vector of control variables at the fund level, including fund size, age, expense ratio, load fees, turnover, flows, and fund family size. These variables are defined in the Appendix. δ denotes different sets of fixed effects. Standard errors are clustered at the fund and year-quarter levels.[9]

We start with a regression that includes controls for observable fund characteristics, as well as stock-by-time fixed effects and fund-by-stock fixed effects. Stock-by-time fixed effects absorb time-varying differences across stocks, whereas

[9]The results remain unchanged when clustering standard errors at the fund family level.

TABLE 2

Fund Holdings of Financial Groups

Table 2 presents estimates of the model: $Y_{ijt} = \beta_0 + \beta_1 \text{CONNECTED}_{ijt} + \beta_2 \mathbf{X}_{ijt-1} + \delta + \varepsilon_{ijt}$. In the first 2 columns, the dependent variable is FUND_HOLDING (BENCHMARK_ADJUSTED)$_{ijt}$, the percentage of fund i total net assets invested in the financial group j in quarter t in excess of the weight of financial group j in the fund's benchmark. In the last 2 columns, the dependent variable is FUND_HOLDING (STYLE_ADJUSTED)$_{ijt}$, the percentage of fund i total net assets invested in the financial group j in quarter t minus the average weight of financial group j in the portfolio of all funds in the same style of fund i. The main independent variable CONNECTED$_{ijt}$ is an indicator variable equal to 1 if the family of the fund i is a client of a broker that belongs to financial group j in quarter t. X is a vector of control variables at the fund level (fund size, expense ratio, loads, turnover, flows, age, and fund family size). These variables are defined in the Appendix. δ denotes fixed effects. The sample includes actively managed U.S. domestic equity mutual funds and publicly traded financial groups. Our sample period runs from 1996 to 2020. Robust t-statistics clustered at the fund and quarter-year levels are shown in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	FUND_HOLDING (BENCHMARK_ADJUSTED)		FUND_HOLDING (STYLE_ADJUSTED)	
	1	2	3	4
CONNECTED	0.135***	0.133***	0.077***	0.075***
	(24.04)	(24.80)	(18.62)	(19.79)
FUND_SIZE	−0.023***		−0.018***	
	(−13.60)		(−13.60)	
EXPENSE_RATIO	0.041		0.047	
	(0.56)		(0.72)	
LOAD_FEE	−0.446***		−0.354***	
	(−8.96)		(−9.31)	
FUND_TURNOVER	0.069		0.056	
	(0.84)		(1.16)	
FUND_FLOWS	−0.023***		−0.017***	
	(−4.55)		(−4.33)	
FUND_AGE	−0.002***		−0.002***	
	(−2.79)		(−2.90)	
FAMILY_SIZE	0.003***		0.003***	
	(3.38)		(4.22)	
Stock × time FE	Yes	Yes	Yes	Yes
Fund × stock FE	Yes	Yes	Yes	Yes
Fund × time FE		Yes		Yes
No. of obs.	11,512,776	11,512,776	11,512,776	11,512,776
Adj. R^2	0.568	0.596	0.529	0.560

fund-by-stock fixed effects absorb time-invariant differences across fund–stock pairs. Next, we replace controls for observable fund characteristics with fund-by-time fixed effects. This is the most restrictive version since fund-by-time fixed effects absorb *any* time-varying differences across funds.

Table 2 reports the results. The results suggest that broker connections are an important determinant of portfolio allocations to financial groups. In our most restrictive specification, where we control for time-varying unobservable stock and fund characteristics as well as time-invariant differences across fund–stock pairs, the coefficient on CONNECTED shows that funds overweight their broker's parent companies by 0.133% in benchmark-adjusted terms. This estimate is statistically significant at the 1% level and economically large. The estimated coefficient for CONNECTED represents about 38% of the unconditional benchmark-adjusted holding position (0.35%). The last column of Table 2 looks at fund holdings in style-adjusted terms. The results are again statistically significant and economically relevant. Funds overweight the stocks of connected financial groups by 0.075%, which is roughly 31% of the unconditional style-adjusted holding position (0.24%).

Overall, we conclude that asset managers are more likely to hold connected financial groups and that such overweighting represents a significant deviation from funds' unconditional portfolio choices.

B. Portfolio Allocation During Times of Distress

Next, we analyze how funds trade the stock of connected financial groups and test whether funds use their connected holdings to benefit their brokers. One clear advantage of friendly shareholders is the stability they provide as a shareholder base. They may invest in connected financial groups even when other investors shy away. We test whether funds increase their holdings in connected financial groups when these firms are under selling pressure.

We look at downward price pressure events caused by the widespread selling of a firm's shares. Following Cohen and Schmidt (2009), we define periods of distress as times when the percentage of the firm's stocks sold by the aggregate mutual fund industry is greater than 1% of shares outstanding in a given quarter.

We then examine how funds trade in a stock of a company when the company is in distress. To tease out the differential effect of fund connections, we run the following regression:

$$\Delta\text{FUND\_HOLDINGS}_{ijt} = \beta_0 + \beta_1 \text{CONNECTED}_{ijt} \times \text{DISTRESS}_{jt} + \beta_2 \text{CONNECTED}_{ijt} + \beta_3 X_{it-1} + \delta + \varepsilon_{ijt}. \quad (2)$$

The dependent variable $\Delta\text{FUND\_HOLDINGS}_{ijt}$ is either the change in benchmark-adjusted holdings or the change in style-adjusted holdings of fund i in stock j between quarter $t-1$ and quarter t.[10] CONNECTED is an indicator variable equal to 1 if the family of the fund i is a client of a broker that belongs to financial group j in quarter t. DISTRESS is an indicator variable equal to 1 if the percentage of the firm's stock sold by the aggregate mutual fund industry is greater than 1% of shares outstanding in a given quarter. X is a vector of control variables at the fund level, including fund size, age, expense ratio, load fees, turnover, flows, and fund family size. δ denotes different sets of fixed effects, including stock-by-time, fund-by-stock, and fund-by-time fixed effects. Standard errors are clustered at the fund and year-quarter levels.

Table 3 reports the results. Point estimates for the coefficient on the interaction term CONNECTED × DISTRESS confirm that funds increase their holdings in financial groups when such groups are in distress. On average, connected funds increase their stake in the connected financial groups around negative shocks by 0.10% more than unconnected funds, which is roughly 15% (17%) of the unconditional standard deviation of the change in benchmark-adjusted (style-adjusted) holdings.

These results are robust to controlling for time-varying unobservable stock and fund characteristics, as well as time-invariant differences across fund–stock pairs. All specifications indicate a significant difference in trading behavior between connected and unconnected funds. The trading patterns are in line with funds providing support for the stock price of connected financial groups.

[10]We exclude observations when a fund does not hold a given stock either in the previous quarter or the current quarter. If it is the first time (first quarter) a fund holds a stock, we set the change in actual holdings equal to positive 100%. If the fund sold all the shares in a stock, we set the value of change in holdings at that time to negative 100%.

TABLE 3

Trading Financial Groups Stock

Table 3 explores differences in funds' investment choices when funds trade connected financial groups' stocks as compared to other stocks in their portfolio, and presents estimates of the following model: $\Delta Y_{ijt} = \beta_0 + \beta_1 \text{CONNECTED}_{ijt} + \beta_2 \text{DISTRESS}_{jt} + \beta_3 \text{CONNECTED}_{ijt} \times \text{DISTRESS}_{jt} + \beta_4 \mathbf{X}_{ijt-1} + \delta + \varepsilon_{ijt}$. In the first 2 columns, the dependent variable is the change in benchmark-adjusted holdings of fund i in stock j between quarter $t-1$ and quarter t. In the last 2 columns, the dependent variable is the change in style-adjusted holdings of fund i in stock j between quarter $t-1$ and quarter t. CONNECTED_{ijt} is an indicator variable equal to 1 if the family of the fund i is a client of broker j in quarter t. DISTRESS_{jt} is an indicator variable equal to 1 if the percentage of the firm j stocks sold by the aggregate mutual fund industry is greater than 1% of shares outstanding in quarter t. **X** is a vector of the control variables, including the same controls used in Table 2 and defined in the Appendix. The sample includes actively managed U.S. domestic equity mutual funds, as well as their full portfolios of stocks. Our sample period runs from 1996 to 2020. Robust t-statistics clustered at the fund and quarter-year levels are shown in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	ΔFUND_HOLDINGS (BENCHMARK_ADJUSTED)		ΔFUND_HOLDINGS (STYLE_ADJUSTED)	
	1	2	3	4
CONNECTED × DISTRESS	0.099***	0.089***	0.096***	0.089***
	(7.64)	(7.64)	(8.11)	(8.43)
CONNECTED	0.038***	0.028***	0.043***	0.030***
	(6.15)	(5.85)	(7.31)	(7.00)
FUND_SIZE	0.004		0.007***	
	(1.33)		(2.91)	
EXPENSE_RATIO	−4.439*		−4.054*	
	(−1.92)		(−1.94)	
LOAD_FEE	−0.046		−0.033	
	(−0.61)		(−0.50)	
FUND_TURNOVER	0.004		−0.004	
	(1.06)		(−1.49)	
FUND_FLOWS	−0.004		0.002	
	(−0.30)		(0.14)	
FUND_AGE	−0.014***		−0.008***	
	(−8.56)		(−6.66)	
FAMILY_SIZE	0.002		0.003	
	(0.89)		(1.19)	
Stock × time FE	Yes	Yes	Yes	Yes
Fund × stock FE	Yes	Yes	Yes	Yes
Fund × time FE		Yes		Yes
No. of obs.	21,641,333	21,641,333	21,641,333	21,641,333
Adj. R^2	0.138	0.251	0.089	0.221

Next, we ask whether the trading patterns of connected funds are driven by superior information. We assess the profitability of tradings by running the following regression:

$$\text{TRADE\_PROFITABILITY}_{ijt+1} = \beta_0 + \beta_1 \text{CONNECTED}_{ijt} \times \text{DISTRESS}_{jt} + \beta_2 \text{CONNECTED}_{ijt} + \beta_3 \mathbf{X}_{it-1} + \delta + \varepsilon_{ijt}. \quad (3)$$

The dependent variable $\text{TRADE\_PROFITABILITY}_{ijt+1}$ is measured as $\Delta\text{FUND\_HOLDINGS} \times \text{RETURN}$, that is, the product of the change in benchmark-adjusted or style-adjusted holdings of a fund in a stock between quarter $t-1$ and quarter t and the subsequent stock return (e.g., 1, 2, and 4 quarters ahead). The main independent variables are CONNECTED, which equals 1 if the family of the fund is a client of the financial group, and its interaction with DISTRESS, which equals 1 if the underlying stock suffers a negative shock in quarter t. As before, distress is defined as an indicator variable equal to 1 if the percentage of the firm's stock sold by the aggregate mutual fund industry is greater than 1% of shares outstanding in a given quarter. **X** is a vector of control variables at the fund level,

including fund size, age, expense ratio, load fees, turnover, flows, and fund family size. δ denotes different sets of fixed effects, including stock-by-time, fund-by-stock, and fund-by-time. Standard errors are clustered at the fund and year-quarter levels.

Panel A of Table 4 presents the results for one-quarter-ahead trading profitability. Results suggest that funds do not profit from trading connected financial groups during times of distress. If anything, the negative and significant coefficient for the interaction term $\text{CONNECTED}_{ijt} \times \text{DISTRESS}_{jt}$ indicates that, on average, they lose money trading connected financial groups. This result is robust to controlling for time-varying unobservable stock and fund characteristics as well as time-invariant differences across fund–stock pairs. Results in Panels B and C confirm that even if funds were to hold connected stock over longer periods (e.g., the next 6 or 12 months), they would still lose money on those trades. Overall, these results suggest that the differential trading behavior between connected and unconnected

TABLE 4

Profitability of Trading Financial Groups' Stocks

Table 4 presents results from regressions of trade profitability on connected funds, distress measures, and other fund characteristics, and presents estimates of the following model: $\text{TRADE\_PROFITABILITY}_{ijt} = \beta_0 + \beta_1 \text{CONNECTED}_{ijt} + \beta_2 \text{DISTRESS}_{jt} + \beta_3 \text{CONNECTED}_{ijt} \times \text{DISTRESS}_{jt} + \beta_4 \mathbf{X}_{ijt-1} + \delta + \varepsilon_{ijt}$. In the first 2 columns of Panel A, the dependent variable $\text{TRADE\_PROFITABILITY}_{ijt}$ is measured as $\Delta\text{FUND\_HOLDINGS(BENCHMARK\_ADJUSTED)} \times \text{RETURN}$, that is, the product of the change in benchmark-adjusted holdings of a fund in a stock between quarter $t-1$ and quarter t and the subsequent quarter stock return. In the last 2 columns, the dependent variable is measured as $\Delta\text{FUND\_HOLDINGS(STYLE\_ADJUSTED)} \times \text{RETURN}$. Panel B uses the next 6-month stock return, and Panel C uses the next 12-month stock return. CONNECTED_{ijt} is an indicator variable equal to 1 if the family of the fund i is a client of the financial group j in quarter t. DISTRESS_{jt} is an indicator variable equal to 1 if the percentage of the firm j stocks sold by the aggregate mutual fund industry is greater than 1% of shares outstanding in quarter t. $\mathbf{X}$ is a vector of the control variables, including the same controls used in Table 2 and defined in the Appendix. The sample includes actively managed U.S. domestic equity mutual funds, as well as their full portfolios of stocks. Our sample period runs from 1996 to 2020. Robust t-statistics clustered at the fund and quarter-year levels are shown in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A. 3-Month Trade Profitability

	PROFITABILITY (BENCHMARK_ADJUSTED)		PROFITABILITY (STYLE_ADJUSTED)	
	1	2	3	4
CONNECTED × DISTRESS	−0.765***	−0.727***	−0.726***	−0.735***
	(−4.11)	(−4.31)	(−4.22)	(−4.43)
CONNECTED	−0.091	−0.084	0.012	0.013
	(−1.41)	(−1.41)	(0.21)	(0.24)
FUND_SIZE	−0.037**		−0.023*	
	(−2.39)		(−1.70)	
EXPENSE_RATIO	7.192		3.137	
	(1.53)		(0.69)	
LOAD_FEE	−1.097*		−0.485	
	(−1.93)		(−1.16)	
FUND_TURNOVER	−0.010		−0.038***	
	(−0.42)		(−2.88)	
FUND_FLOWS	−0.007		−0.141	
	(−0.07)		(−1.38)	
FUND_AGE	−0.029**		−0.026***	
	(−2.35)		(−3.07)	
FAMILY_SIZE	0.021*		0.025**	
	(1.75)		(2.10)	
Stock × time FE	Yes	Yes	Yes	Yes
Fund × stock FE	Yes	Yes	Yes	Yes
Fund × time FE		Yes		Yes
No. of obs.	21,641,333	21,641,333	21,641,333	21,641,333
Adj. R^2	0.257	0.302	0.212	0.260

(continued on next page)

TABLE 4 (continued)
Profitability of Trading Financial Groups' Stocks

	PROFITABILITY (BENCHMARK_ADJUSTED)		PROFITABILITY (STYLE_ADJUSTED)	
	1	2	3	4
Panel B. 6-Month Trade Profitability				
CONNECTED × DISTRESS	−0.802***	−0.813***	−0.707***	−0.711***
	(−3.24)	(−3.48)	(−3.23)	(−3.43)
CONNECTED	−0.030	−0.018	0.060	0.048
	(−0.30)	(−0.20)	(0.63)	(0.56)
FUND_SIZE	−0.036		−0.013	
	(−1.42)		(−0.61)	
EXPENSE_RATIO	10.807		3.590	
	(1.26)		(0.58)	
LOAD_FEE	−1.837*		−0.813	
	(−1.84)		(−1.17)	
FUND_TURNOVER	−0.003		−0.057***	
	(−0.09)		(−3.04)	
FUND_FLOWS	−0.065		−0.232*	
	(−0.48)		(−1.89)	
FUND_AGE	−0.056***		−0.045***	
	(−3.25)		(−3.63)	
FAMILY_SIZE	0.049***		0.056***	
	(2.69)		(3.26)	
Stock × time FE	Yes	Yes	Yes	Yes
Fund × stock FE	Yes	Yes	Yes	Yes
Fund × time FE		Yes		Yes
No. of obs.	21,641,333	21,641,333	21,641,333	21,641,333
Adj. R^2	0.242	0.289	0.196	0.246
Panel C. 12-Month Trade Profitability				
CONNECTED × DISTRESS	−0.550	−0.583*	−0.537*	−0.556*
	(−1.59)	(−1.94)	(−1.88)	(−1.71)
CONNECTED	−0.030	0.014	0.169	0.159
	(−0.18)	(0.10)	(1.09)	(1.21)
FUND_SIZE	0.010		0.048	
	(0.27)		(1.62)	
EXPENSE_RATIO	2.485		−3.020	
	(0.18)		(−0.27)	
LOAD_FEE	−1.002		−0.274	
	(−0.70)		(−0.27)	
FUND_TURNOVER	0.028		−0.090***	
	(0.57)		(−2.84)	
FUND_FLOWS	−0.022		−0.267	
	(−0.11)		(−1.37)	
FUND_AGE	−0.106***		−0.067***	
	(−4.38)		(−3.84)	
FAMILY_SIZE	0.065**		0.057**	
	(2.26)		(2.19)	
Stock × time FE	Yes	Yes	Yes	Yes
Fund × stock FE	Yes	Yes	Yes	Yes
Fund × time FE		Yes		Yes
No. of obs.	21,641,333	21,641,333	21,641,333	21,641,333
Adj. R^2	0.219	0.269	0.177	0.229

funds in financial groups is not driven by an information advantage on the stocks of their connected financial groups.

C. Voting Behavior of Connected Fund Families

The ownership of connected financial groups also entitles fund families to voting rights. Business and social connections can influence the voting decisions

of institutional shareholders (e.g., Davis and Kim (2007), Butler and Gurun (2012), Cvijanović et al. (2016), Calluzzo and Kedia (2019), and Ferreira et al. (2018)). Thus, fund families could use their holdings to vote in favor of the financial groups' management.

The literature implies that mutual fund families typically vote in line with the ISS suggestions. Therefore, we are interested to see whether connected families are more likely to side with the management of the connected financial group when the ISS opposes the management's proposal. To test the importance of friendly voting by connected families in contentious proposals, we estimate the following equation:

$$\begin{aligned}(4)\quad \text{VOTING\_BEHAVIOR}_{fjt} = {} & \beta_0 + \beta_1 \text{CONNECTED}_{fjt} + \beta_2 \text{ISS\_DISAGREE}_{jt} \\ & + \beta_3 \text{CONNECTED}_{fjt} \times \text{ISS\_DISAGREE}_{jt} \\ & + \beta_4 \mathbf{X}_{ft-1} + \delta + \varepsilon_{fjt}.\end{aligned}$$

The dependent variable $\text{VOTING\_BEHAVIOR}_{ijt}$ is either the fraction of funds in a fund family that votes in favor of the management or the fraction of shares held by a fund family that vote in favor of the management. CONNECTED is an indicator variable equal to 1 if the family f is a client of the financial group j at time t. ISS_DISAGREE is an indicator variable with a value of 1 if the ISS recommends voting in opposition to management. $\mathbf{X}$ is a vector of family-level control variables, including family size, family age, expense ratio, load fees, turnover, and flows. We compute the TNA-weighted average of the fund expense ratio, load fees, turnover, and flows to construct the corresponding family-level variables. In this test, our sample period is restricted to fund families and stocks that are covered in the ISS Voting Analytics database, and it runs from 2003 to 2020. δ denotes different sets of fixed effects, including stock-by-time, family-by-stock, family-by-time, and proposal type-by-time fixed effects. Robust t-statistics are clustered at the family and quarter-year levels.

Table 5 presents the results. Regardless of the specification chosen, we see that conditional on the ISS recommending to vote against management, connected families have almost 4% more funds voting with management than families not connected to the financial group. This also represents 4% more in terms of shares held by a fund family that is used to vote in favor of fund management. These results are statistically and economically significant. For example, in terms of the fraction of funds in a family, the documented pro-management voting behavior represents around 9% of the unconditional mean of the fraction of funds voting with management when ISS disagrees (44%). Overall, results suggest that connections to a financial group are an important determinant of mutual fund families' votes and that families are more likely to vote with the management of the connected financial group compared to unconnected families.

IV. What Do Funds Gain from Connected Financial Groups?

We have documented that funds act as friendly shareholders for connected financial groups. They overweight connected financial groups in their portfolios and provide price support during times of distress. They are also more likely to cast their vote in line with the management of connected financial groups.

TABLE 5

Fund Families Voting Behavior

Table 5 explores the voting behavior of connected fund families. In the first 2 columns, we present the results of a multivariate analysis in which the dependent variable is the fraction of funds in a fund family that vote in favor of the management. In the second 2 columns, we use as a dependent variable the fraction of shares held by a fund family that is used to vote in favor of the management. ISS_DISAGREE is an indicator variable with a value of 1 if the ISS recommends voting in opposition to the management. CONNECTED is an indicator variable equal to 1 if the family is a client of broker *j* in quarter *t*. DISTRESS is an indicator variable equal to 1 if the percentage of the firm's stocks sold by the aggregate mutual fund industry is greater than 1% of shares outstanding in a given quarter. Family-level control variables include FAMILY_SIZE, FAMILY_AGE, EXPENSE_RATIO, LOAD_FEES, TURNOVER, and FLOWS. We compute the TNA-weighted average of the FUND_EXPENSE_RATIO, LOAD_FEES, TURNOVER, and FLOWS to construct the corresponding family-level variables. In this table, our sample period runs from 2003 to 2020, and the sample is restricted to fund families and stocks that are covered in the ISS Voting Analytics database. Robust *t*-statistics clustered at the family and quarter-year levels are shown in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Fraction of Funds in a Family		Fraction of Shares Held by Family	
	1	2	3	4
ISS_DISAGREE × CONNECTED	0.037**	0.038**	0.038**	0.039**
	(2.11)	(2.16)	(2.18)	(2.22)
ISS_DISAGREE	−0.466***	−0.466***	−0.467***	−0.467***
	(−11.76)	(−11.76)	(−11.82)	(−11.82)
CONNECTED	−0.001	−0.004	−0.001	−0.003
	(−0.26)	(−0.67)	(−0.19)	(−0.54)
FAMILY_SIZE	0.001**		0.001**	
	(2.37)		(2.16)	
FAMILY_FLOWS	0.001		0.001	
	(0.32)		(0.36)	
FAMILY_TURNOVER	−0.006**		−0.006**	
	(−2.48)		(−2.53)	
FAMILY_EXPENSE_RATIO	−0.669		−0.647	
	(−0.90)		(−0.85)	
FAMILY_LOAD_FEE	0.034		0.037	
	(0.96)		(1.01)	
Stock × time FE	Yes	Yes	Yes	Yes
Family × stock FE	Yes	Yes	Yes	Yes
Family × time FE		Yes		Yes
Proposal type × time FE	Yes	Yes	Yes	Yes
No. of obs.	2,221,353	2,221,353	2,221,353	2,221,353
Adj. R^2	0.534	0.547	0.533	0.546

A natural question that arises is what funds gain by engaging in such behavior. According to our hypothesis, funds invest in connected financial groups to entice them to share valuable investment information. In Section IV, we provide evidence of the flow of investment information from financial groups to connected funds.

A. Decomposing Fund Performance

We use fund holdings to study the effect of investing in connected financial groups on fund performance. If financial groups reward funds for friendly investing with investment information, we expect a fund's overall performance to increase with a fund's holdings of connected financial groups.

We test this prediction by relating fund performance to fund family holdings in connected financial groups:

$$R_{it} = \beta_0 + \beta_1 \text{CONNECTED\_HOLDINGS}_{it-1} + \beta_2 \text{COMMISSIONS}_{it-1} + \beta_3 \mathbf{X}_{it-1} + \delta + \varepsilon_{it}. \quad (5)$$

The dependent variable is the portfolio return based on the FF4-factor model abnormal returns of stocks included in fund i portfolio in month t. The main independent variable CONNECTED_HOLDINGS is defined, for each fund i, as the fund family holdings in the stocks of their connected financial groups. Kumar et al. (2020) show that brokers share information with high-income generating clients. We use brokerage commissions to control for fund payments to connected financial groups. We measure COMMISSIONS as the total fees paid by the fund family to brokers over family TNA.[11] $\mathbf{X}$ is a vector of fund characteristics that have been shown to affect fund performance, including fund size, expense ratio, load fees, turnover, flows, fund age, and family size. We denote fund and style-by-time fixed effects with δ.

Columns 1 and 2 of Table 6 report the results. We find that the fund's overall performance improves with an increase in the fund's holdings of connected financial groups. The estimated coefficient on the CONNECTED_HOLDINGS is positive

TABLE 6

Decomposing Fund Performance

Table 6 shows estimates of regressions of monthly fund returns on the percentage of fund family TNA invested in connected financial groups. The dependent variables are the (%) return of the fund portfolio computed using the stock abnormal returns from the FF4-factor model of all stocks in which fund i invests in month t (columns 1 and 2); stocks in which fund i invests in month t that are borrowing clients of connected financial groups (column 3 and 4); and stocks in which fund i invests in month t excluding the stocks that are borrowing clients of financial groups (column 5 and 6). The main independent variable CONNECTED_HOLDINGS is defined, for each fund i, as the fund family holdings in the stocks of their connected financial groups. We also include COMMISSIONS, measured as the total fees paid by the fund family to brokers over family TNA. Control variables include the same fund-level controls used in Table 2 and defined in the Appendix. The sample includes actively managed U.S. domestic equity mutual funds from 1996 to 2020. Robust t-statistics clustered at the fund and quarter-year levels are shown in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	All Stocks		Borrowers		Non-Borrowers	
	1	2	3	4	5	6
CONNECTED_HOLDINGS	0.031**	0.029**	0.044***	0.042***	−0.048	−0.055
	(2.26)	(2.09)	(3.12)	(2.97)	(−1.26)	(−1.41)
COMMISSIONS		0.120*		0.118		0.392*
		(1.67)		(1.56)		(1.86)
FUND_SIZE	−0.035***	−0.035***	−0.035***	−0.035***	−0.028	−0.027
	(−5.58)	(−5.53)	(−5.91)	(−5.86)	(−1.55)	(−1.49)
EXPENSE_RATIO	−3.464*	−3.425*	−3.243	−3.205	−9.556	−9.429
	(−1.73)	(−1.71)	(−1.65)	(−1.63)	(−1.57)	(−1.55)
LOAD_FEE	0.397***	0.388***	0.435***	0.425***	0.607	0.576
	(2.93)	(2.87)	(2.88)	(2.83)	(1.61)	(1.52)
FUND_TURNOVER	0.014	0.015	0.018*	0.018*	0.006	0.006
	(1.42)	(1.43)	(1.84)	(1.85)	(0.16)	(0.17)
FUND_FLOWS	0.159	0.159	0.129	0.129	0.519	0.518
	(1.05)	(1.05)	(0.89)	(0.89)	(1.36)	(1.36)
FUND_AGE	0.002	0.001	0.001	0.001	−0.006	−0.007
	(0.47)	(0.40)	(0.38)	(0.32)	(−0.69)	(−0.78)
FAMILY_SIZE	0.001	−0.001	0.001	−0.001	0.006	0.001
	(0.18)	(−0.13)	(0.11)	(−0.18)	(0.36)	(0.06)
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes
Style × time FE	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	451,251	451,251	451,251	451,251	451,251	451,251
Adj. R^2	0.365	0.365	0.373	0.373	0.239	0.239

[11]In Table IA2 in the Supplementary Material, we define CONNECTED_HOLDINGS and COMMISSIONS as the change between month $t-1$ and the previous 36-month average, and the results remain unchanged.

and significant. A 1-standard-deviation increase in CONNECTED_HOLDINGS (0.42) increases the overall risk-adjusted fund performance by 15 basis points per year ($0.42 \times 0.029 \times 12$).

A fund's overall performance also increases with an increase in total brokerage commissions paid by the fund family. However, brokerage commissions cannot explain our results. The estimated coefficient on connected holdings hardly changes when we control for fund family commissions. Our evidence also suggests that the effect of connected holdings is statistically and economically more important. We find that a 1-standard-deviation increase in COMMISSIONS (0.07) increases the overall risk-adjusted fund performance by 10 basis points per year ($0.07 \times 0.120 \times 12$). This result is statistically significant at the 10% level.

Next, we look into subsets of stocks in the fund's portfolios. According to our hypothesis, the improvement in funds' performance should come from stocks in which financial groups are likely to possess superior information. One way in which a financial group can obtain superior investment information about a stock is through its lending division (e.g., Massa and Rehman (2008)). In particular, a financial group with a lending division can obtain private information about their borrowing clients. Such privileged information can then be shared with the broker's clients. This suggests that the improvement in funds' performance should come from "borrowers" stocks.

We test this prediction by decomposing the funds' holdings into two portfolios: borrowers and non-borrowers stocks. The Borrowers portfolio includes companies that have borrowed from any of the connected financial groups. The Non-Borrowers portfolio includes all other stocks. We repeat regression from equation (5) separately for the two portfolios. If our prediction is correct, the performance of the borrowers' portfolio should be related to connected holdings.

Columns 3–6 of Table 6 report the results. The performance of a portfolio involving borrowing stocks is positively and significantly correlated with the holdings in connected financial groups. A 1-standard-deviation increase in connected holdings increases the overall risk-adjusted fund performance by 21 basis points per year ($0.42 \times 0.042 \times 12$). We do not observe any statistically significant relationship between the performance of non-borrowing stocks and connected holdings.

Like in the case of all stocks, fund family commissions paid to the brokers do not explain the documented improvement in the performance of "borrowers" portfolio. The estimated coefficient on connected holdings hardly changes when we control for fund family commissions.

The impact of COMMISSIONS on portfolio performance displays a reverse pattern. The estimated coefficient on COMMISSIONS is insignificantly related to the performance of borrowing stocks, but positively and significantly associated with the performance of all the other non-borrowing stocks.

In Table IA3 in the Supplementary Material, we repeat the analysis using calendar portfolios. We find that funds with high levels of connected holdings (e.g., the top quintile of the distribution of connected holdings) display positive risk-adjusted returns. For the subset of funds with high levels of connected holdings, we also show that only the portfolio of borrowing stocks exhibits a positive and significant alpha, whereas the alpha of the portfolio of non-borrowing stocks is

close to 0 and statistically insignificant. To sum up, our tests suggest that funds extract value from their connections with financial groups.

B. Information Flow Between Financial Groups and Connected Funds

We have documented an association between funds' portfolio performance in "borrowing" stocks and funds' investments in connected financial groups. This is consistent with our hypothesis that funds invest in connected financial groups to obtain privileged investment information. Next, we exploit the granularity of our data to provide more evidence for the information flow from financial groups to their friendly shareholders. Similarly to Massa and Rehman (2008) and Kumar et al. (2020), we look at funds trading behavior around loan deals initiated by the commercial arm of connected financial groups.

We run the regression of trade profitability on the connected lender holdings and connected lender commissions:

$$\begin{aligned}(6)\quad \text{TRADE\_PROFITABILITY}_{ijt+1} = {} & \beta_0 + \beta_1 \text{CONNECTED\_LENDER\_HOLDINGS}_{ijt} \\ & + \beta_2 \text{CONNECTED\_LENDER\_COMMISSIONS}_{ijt} \\ & + \beta_3 \mathbf{X}_{it-1} + \delta + \varepsilon_{it}.\end{aligned}$$

The dependent variable TRADE_PROFITABILITY is measured as ΔFUND_HOLDINGS(BENCHMARK_ADJUSTED) $\times$ RETURNF, that is, the product of the change in benchmark-adjusted holdings of a fund in a stock between quarter $t-1$ and quarter t and the subsequent quarter stock return.[12] The main independent variable, CONNECTED_LENDER_HOLDINGS, is measured at time t as the family holdings of the connected financial group that initiates a loan to stock j in quarter $t+1$, and 0 otherwise. Thus, we explore whether trades in quarter t involving shares of financial group's clients that receive a loan in quarter $t+1$ are profitable for funds. We also control for CONNECTED_LENDER_COMMISSIONS, measured as fees paid by the fund family to the connected financial group that initiates a loan to stock j over family TNA. $\mathbf{X}$ is a vector of fund characteristics that have been shown to affect fund performance, including fund size, expense ratio, load fees, turnover, flows, fund age, and family size. δ denotes stock $\times$ time and fund $\times$ stock fixed effects, which absorb unobservable characteristics of funds and stocks that might confound the results, even if those characteristics are time-varying (e.g., stock-specific shocks or stock risk exposures). Standard errors are clustered at the fund and year-quarter levels.

Table 7 reports the results. The coefficient for CONNECTED_LENDER_HOLDINGS in column 1 is positive and statistically significant. This suggests that funds make money when trading shares of financial groups' client stocks around the time when these companies obtain a new loan from the lending arm of the connected financial group. Column 2 shows that this result is robust to controlling for brokerage commissions paid by the fund family. While connected holdings are significantly associated with trade profitability, the estimated coefficient on commissions is statistically insignificant.

[12] In Table IA4 in the Supplementary Material, we adjust portfolio holdings using the fund's styles, and the results remain unchanged.

TABLE 7

Information Flow Between Financial Groups and Connected Funds

Table 7 explores differences in funds' trade profitability when funds trade in stocks of firms that receive loans from the connected financial groups. The dependent variable is measured as ΔFUND_HOLDINGS(BENCHMARK_ADJUSTED)× RETURN, i.e., the product of the change in benchmark-adjusted holdings of a fund in a stock between quarter $t-1$ and quarter t and the subsequent quarter stock return. The main independent variable, CONNECTED_LENDER_HOLDINGS, is measured as the family holdings of the connected financial group that initiates a loan to stock j in quarter $t+1$, and 0 otherwise. We also include CONNECTED_LENDER_COMMISSIONS, measured as fees paid by the fund family to the connected financial group that initiates a loan to stock j over family TNA. Control variables include the same fund-level controls used in Table 2 and defined in the Appendix. The sample includes actively managed U.S. domestic equity mutual funds, as well as their full portfolios of stocks. Our sample period runs from 1996 to 2020. Robust t-statistics clustered at the fund and quarter-year levels are shown in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	1	2	3	4
CONNECTED_LENDER_HOLDINGS	0.065**	0.062**	0.053**	0.049**
	(2.22)	(2.10)	(2.19)	(2.01)
CONNECTED_LENDER_COMMISSIONS		0.062		0.081*
		(1.22)		(1.83)
FUND_SIZE	−0.367**	−0.368**		
	(−2.39)	(−2.39)		
EXPENSE_RATIO	0.717	0.718		
	(1.53)	(1.53)		
LOAD_FEE	−0.110*	−0.110*		
	(−1.93)	(−1.93)		
FUND_TURNOVER	−0.010	−0.010		
	(−0.42)	(−0.42)		
FUND_FLOWS	−0.007	−0.007		
	(−0.07)	(−0.07)		
FUND_AGE	−0.290**	−0.290**		
	(−2.35)	(−2.35)		
FAMILY_SIZE	0.211*	0.211*		
	(1.73)	(1.73)		
Stock × time FE	Yes	Yes	Yes	Yes
Fund × stock FE	Yes	Yes	Yes	Yes
Fund × time FE			Yes	Yes
No. of obs.	21,641,333	21,641,333	21,641,333	21,641,333
Adj. R^2	0.257	0.257	0.302	0.302

In columns 3 and 4 of Table 7, we include fund *times* time fixed effect to compare trades profitability within the fund at the same point in time. We still find that overweighting the stock of connected financial groups allows funds to profit from trading borrowing stocks. A 1-standard-deviation increase in connected lender holdings (0.2) leads to about 4 basis points ($0.05 \times 0.2 \times 4$) improvement in benchmark-adjusted annual profitability per trade. Meanwhile, a 1-standard-deviation increase in brokerage commissions (0.06) improves the annual benchmark-adjusted profitability by about 2 basis points per trade ($0.08 \times 0.06 \times 4$).[13]

Overall, the results confirm our hypothesis that there exists a valuable information flow from financial groups to connected funds.

V. Additional Results

In Section V, we provide further results supporting our main hypothesis. We first study the implications of funds' behavior for the financial stability of

[13]In Table IA5 in the Supplementary Material, we run the regression of trade profitability on changes in connected lender holdings and commissions. The main results remain unchanged.

connected financial groups. Next, we explore how the funds' decision to hold the stock of financial groups varies with the length of their relationship with the brokers. We also exploit exogenous changes in brokerage business ties to address the possibility of endogeneity in the matching between mutual funds and financial groups. Finally, we discuss whether our results could be driven by familiarity.

A. Financial Stability

We have documented that funds overweight the stock of connected financial groups and increase their stake during times of distress. If connected funds effectively provide price support, we expect their actions to mitigate the riskiness of financial groups' stocks (Golez and Marin, 2015). We also expect the risk-reducing effects to be strongest on the left tail of the stock return distribution.

We test this prediction by estimating the following regression:

$$Y_{jt+1} = \beta_0 + \beta_1 \text{CONNECTED\_FUNDS}_{jt} + \beta_2 \mathbf{X}_{jt} + \delta + \varepsilon_{jt}. \tag{7}$$

We use a set of different risk measures as dependent variables. We always compute risk measures using daily data over the quarter $t + 1$. We start with two standard measures of stock riskiness: stock return volatility and idiosyncratic volatility. To distinguish between the left and the right tails of the stock return distribution, we additionally use the expected shortfall measure, computed as the average of the worst 5% of daily stock j returns in quarter $t + 1$. As the proxy of funds' overall involvement in the trading of financial groups' stocks (CONNECTED_FUNDS), we use OWNERSHIP_CONNECTED_FUNDS, which measures the overall fraction of shares held by their client funds and NUMBER_CONNECTED_FUNDS, which measures the number of funds connected to a given financial group. $\mathbf{X}$ is a set of control variables, including market capitalization, BM ratio, 12-month-lagged return, profitability, and block ownership. We limit our sample to the financial sector, as defined in Acharya, Pedersen, Philippon, and Richardson (2017). Standard errors are clustered at the stock and quarter-year level.

Table 8 reports the results. We find that an increase in the shares held by client funds leads to a statistically significant reduction in the firm's total volatility and idiosyncratic volatility. A 1-standard-deviation increase in OWNERSHIP_CONNECTED_FUNDS (5%) leads to about a 1% reduction in return volatility and in idiosyncratic volatility. These reductions correspond to a drop of 2% and 3% compared to the sample average return volatility and idiosyncratic volatility, respectively.

An increase in the shares held by client funds also reduces companies' left tail risk. A 1-standard-deviation increase in OWNERSHIP_CONNECTED_FUNDS leads to a 0.1% increase in the expected shortfall measure, a 2% increase compared to its sample average (−4%). These results imply an economically meaningful impact on the financial stability of connected financial groups.

A potential concern is that the choice of the fraction of shares of financial groups to hold may be endogenous to the riskiness of financial companies (Hong, Wang, and Yu (2008)). Therefore, we repeat the analysis using the number of funds connected to a given financial group as the independent variable. This measure is largely exogenous to the stock's riskiness, and it measures a fund's overall potential

TABLE 8

Financial Stability of Financial Groups' Stocks

Table 8 explores the implications of financial groups' connections to client funds for financial groups' stocks. The dependent variables are stock-level measures of risk, including stock return volatility, idiosyncratic volatility, and expected shortfall. In the first 3 columns, the main independent variable OWNERSHIP_CONNECTED_FUNDS measures each financial group's fraction of shares held by its client funds in quarter $t-1$. In the last 3 columns, the main independent variable is NUMBER_CONNECTED_FUNDS, computed as the number of funds that are clients of each broker in quarter $t-1$. We control for market capitalization, BM ratio, previous 12-month stock return, profitability, and the overall fraction of firm shares held by blockholders. The Appendix defines these variables. Our sample period runs from 1996 to 2020 and is limited to the financial sector, as defined in Acharya et al. (2017). Robust t-statistics clustered at the stock and quarter-year levels are shown in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Return Volatility	Idiosyncratic Volatility	Expected Shortfall	Return Volatility	Idiosyncratic Volatility	Expected Shortfall
	1	2	3	4	5	6
OWNERSHIP_CONNECTED_FUNDS	−0.158***	−0.171***	0.014**			
	(−2.78)	(−3.44)	(2.18)			
NUMBER_CONNECTED_FUNDS				−0.216*	−0.235**	0.015*
				(−1.83)	(−2.53)	(1.68)
MARKET_CAPITALIZATION	−0.065***	−0.070***	0.006***	−0.065***	−0.070***	0.006***
	(−8.58)	(−9.05)	(8.17)	(−8.58)	(−9.04)	(11.25)
BM	0.014**	0.014**	−0.001	0.013**	0.014**	−0.001
	(2.01)	(2.17)	(−0.90)	(1.99)	(2.15)	(−1.12)
12_MONTH_LAGGED_RETURN	−0.053***	−0.055***	0.005***	−0.053***	−0.055***	0.005***
	(−4.40)	(−4.78)	(4.38)	(−4.40)	(−4.78)	(4.68)
PROFITABILITY	−0.340***	−0.328***	0.031***	−0.340***	−0.328***	0.031***
	(−7.68)	(−7.58)	(7.46)	(−7.68)	(−7.57)	(12.19)
BLOCK_OWNERSHIP	0.034***	0.032***	−0.004***	0.034***	0.032***	−0.004***
	(3.49)	(3.47)	(−3.62)	(3.49)	(3.47)	(−3.67)
Stock FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	113,566	113,566	113,566	113,566	113,566	113,566
Adj. R^2	0.532	0.524	0.590	0.532	0.524	0.590

to intervene during times of distress. As reported in columns 4–6 of Table 8, we find very similar results when we relate the number of fund connections to a financial group's stock riskiness.

To sum up, we conclude that funds can mitigate the riskiness of financial groups' stocks by acting as friendly shareholders.

B. The Length of Business Relationships

Our evidence suggests that funds obtain privileged information by acting as friendly shareholders for connected financial institutions. Such business relationships may take time to evolve through repeated interactions between brokers and connected funds. Therefore, we expect this behavior to be more prevalent among funds that have long and strong business relationships with financial groups. To test this prediction, we estimate the following regression model:

$$\begin{aligned}(8)\qquad \text{FUND\_HOLDING}_{ijt} = {} & \beta_0 + \beta_1 \text{CONNECTED}_{ijt} + \beta_2 \text{RELATIONSHIP}_{ijt} \\ & + \beta_3 \text{CONNECTED}_{ijt} \times \text{RELATIONSHIP}_{ijt} \\ & + \beta_4 \mathbf{X}_{it-1} + \delta + \varepsilon_{ijt}.\end{aligned}$$

The dependent variable $\text{FUND\_HOLDING}_{ijt}$ is defined either as the percentage of fund i's TNAs invested in the financial group j in excess of the weight of the

stock in the fund's benchmark in quarter t (benchmark-adjusted) or as the percentage of fund i's TNAs invested in the financial group j in excess of the average portfolio weight of all the active funds in the fund i's investment objective in quarter t (style-adjusted). CONNECTED_{ijt} is an indicator variable equal to 1 if the family of the fund i is a client of the financial group j in quarter t. $\text{RELATIONSHIP}_{ijt}$ measures the difference in quarters between the first date on which we observe broker j working for the family of fund i and the current date t. $\mathbf{X}$ is a vector of control variables that includes the same controls as in Table 1 and defined in the Appendix. δ denotes fixed effects. Standard errors are clustered at the fund and year-quarter levels.

Table 9 reports the results. We confirm our previous evidence that funds overweight connected financial groups in their portfolios. The estimated coefficient for the interaction term suggests that ownership increases with the length of the business relationship between management companies and brokerage firms.

TABLE 9

Fund Holdings of Connected Financial Groups: Client Relationship

Table 9 presents estimates of the model $Y(\%)_{ijt} = \beta_0 + \beta_1 \text{CONNECTED}_{ijt} + \beta_2 \text{RELATIONSHIP}_{ijt} + \beta_3 \text{CONNECTED}_{ijt} \times \text{RELATIONSHIP}_{ijt} + \beta_4 X_{ijt-1} + \delta + \varepsilon_{ijt}$. In the first 2 columns, the dependent variable is FUND_HOLDING (BENCHMARK_ADJUSTED)$_{ijt}$, the percentage of fund i total net assets invested in the financial group j in quarter t in excess of the weight of financial group j in the fund's benchmark. In the last 2 columns, the dependent variable is FUND_HOLDING (STYLE_ADJUSTED)$_{ijt}$, the percentage of fund i total net assets invested in the financial group j in quarter t minus the average weight of financial group j in the portfolio of all funds in the same style of fund i. CONNECTED_{ijt} is an indicator variable equal to 1 if the family of the fund i is a client of a broker that belongs to financial group j in quarter t. $\text{RELATIONSHIP}_{ijt}$ measures the difference in quarters between the first date in which we observe broker j working for the family of fund i and the current date t. X is a vector of control variables, including the same controls as in Table 2 and defined in the Appendix. The sample includes actively managed U.S. domestic equity mutual funds and publicly traded financial groups. Our sample period runs from 1996 to 2020. Robust t-statistics clustered at the fund and quarter-year levels are shown in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	FUND_HOLDING (BENCHMARK_ADJUSTED)		FUND_HOLDING (STYLE_ADJUSTED)	
	1	2	3	4
RELATIONSHIP_LENGTH × CONNECTED	0.361***	0.317***	0.243***	0.213***
	(11.71)	(11.68)	(10.11)	(10.36)
RELATIONSHIP_LENGTH	0.050***	0.042***	0.030***	0.027***
	(3.95)	(3.47)	(3.13)	(2.91)
CONNECTED	0.102***	0.107***	0.054***	0.057***
	(23.79)	(24.92)	(18.16)	(19.42)
FUND_SIZE	−0.023***		−0.018***	
	(−14.01)		(−13.97)	
EXPENSE_RATIO	0.059		0.059	
	(0.74)		(0.85)	
LOAD_FEE	−0.409***		−0.330***	
	(−8.29)		(−8.73)	
FUND_TURNOVER	0.001		0.001	
	(0.74)		(1.06)	
FUND_FLOWS	−0.024***		−0.017***	
	(−4.77)		(−4.49)	
FUND_AGE	−0.001**		−0.001**	
	(−2.05)		(−2.26)	
FAMILY_SIZE	0.003***		0.003***	
	(3.42)		(4.28)	
Stock × time FE	Yes	Yes	Yes	Yes
Fund × stock FE	Yes	Yes	Yes	Yes
Fund × time FE		Yes		Yes
No. of obs.	11,512,776	11,512,776	11,512,776	11,512,776
Adj. R^2	0.570	0.597	0.531	0.561

In particular, we find that conditional on being connected, a 1-standard-deviation increase in relationship length (14 quarters) increases the fund's overweighting by an additional 13% (0.317 × 0.14) of the unconditional benchmark-adjusted holding position (0.35%).

C. The Matching of Funds and Brokers

A connection between a fund and a financial group is inherently endogenous. A potential concern is that our results are driven by an unknown omitted factor that jointly determines fund portfolio choices and a fund decision to use the services of a given financial group. For example, optimism about the business outlook of a given financial group may lead a fund family to both overweight this financial group in their portfolio and to hire their brokerage services. We address this concern by exploiting exogenous changes in fund connections that happen due to mergers of financial institutions.

We use acquisitions of privately-held brokerage firms as exogenous shocks to business ties between funds and brokers' ultimate owners. To identify the mergers of brokerage firms that occurred in our sample period (1996–2020), we start with the list provided by Han, Kim, and Nanda (2020), created using the SDC Platinum Mergers and Acquisition database. From this list, we exclude mergers of publicly-traded brokers, as ownership in the acquirer firm would increase mechanically in the mutual fund's portfolio when the target stock disappears and is replaced with the stock of the merged company. We end up with a total of nine mergers that identify shocks to the connections between funds and financial groups (see Table IA8 in the Supplementary Material for the full list of mergers). We keep connections generated through mergers only if the fund was not connected to the acquiring financial group already before the merger. For example, when Goldman Sachs Group (GS) completed the acquisition of Spear, Leeds & Kellogg (SLK) on Nov. 2, 2000, all funds that were clients of SLK's brokerage arm are now connected with GS. We count it as a new connection if a fund had no connection to GS before the merger. It is difficult to imagine that SLK's client funds had a say in the merger. The resultant connection is a by-product of the merger and, hence, unlikely to be a choice on the part of the funds.

We repeat the main analysis using the sample of brokerage groups involved in the mergers of brokerage firms. That is, for the sample of new connections, we identify connected brokers with an indicator variable that only turns on after the merger takes place. Specifically, we run the following regression:

$$\text{FUND\_HOLDING}_{ijt} = \beta_0 + \beta_1 \text{POST}_{ijt} \times \text{TREATED}_{ijt} + \beta_2 \mathbf{X}_{it-1} + \delta + \varepsilon_{ijt}. \quad (9)$$

The dependent variable $\text{FUND\_HOLDING}_{ijt}$ is defined either as the percentage of fund i's TNAs invested in the financial group j in excess of the weight of the stock in the fund's benchmark in quarter t (benchmark-adjusted) or as the percentage of fund i's TNAs invested in the financial group j in excess of the average portfolio weight of all the active funds in the fund i's investment objective in quarter t (style-adjusted). The main independent variables are: POST_{jt}, an indicator variable equal to 1 after an acquisition event involving financial group j; TREATED_{ijt} if the family of the fund i is a client of a broker acquired by financial group j.

TABLE 10

Fund Holdings of Connected Financial Groups: Brokers' Acquisitions

Table 10 presents estimates of the model: $Y(\%)_{ijt} = \beta_0 + \beta_1 \text{POST}_{jt} \times \text{TREATED}_{ijt} + \beta_2 X_{ijt-1} + \delta + \varepsilon_{ijt}$. In the first 2 columns, the dependent variable is FUND_HOLDING (BENCHMARK_ADJUSTED)$_{ijt}$, the percentage of fund i total net assets invested in the financial group j in quarter t in excess of the weight of financial group j in the fund's benchmark. In the last 2 columns, the dependent variable is FUND_HOLDING (STYLE_ADJUSTED)$_{ijt}$, the percentage of fund i total net assets invested in the financial group j in quarter t minus the average weight of financial group j in the portfolio of all funds in the same style of fund i. The main independent variables are: POST$_{jt}$, an indicator variable equal to 1 after an acquisition event involving financial group j; TREATED$_{ijt}$ if the family of the fund i is a client of a broker acquired by financial group j. X is a vector of control variables, including the same controls as in Table 2 and defined in the Appendix. The sample includes actively managed U.S. domestic equity mutual funds, as well as their holdings in financial groups involved in the mergers of brokerage firms, as detailed in Table IA8 in the Supplementary Material. Our sample period runs from 1996 to 2020. Robust t-statistics clustered at the fund and quarter-year levels are shown in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	FUND_HOLDING (BENCHMARK_ADJUSTED)		FUND_HOLDING (STYLE_ADJUSTED)	
	1	2	3	4
POST × TREATED	0.298***	0.368***	0.235***	0.304***
	(4.92)	(6.42)	(3.99)	(5.48)
FUND_SIZE	−0.681***		−0.671***	
	(−12.42)		(−12.42)	
EXPENSE_RATIO	2.403		2.369	
	(0.83)		(0.83)	
LOAD_FEE	−13.391***		−13.054***	
	(−7.61)		(−7.57)	
FUND_TURNOVER	1.076		0.703	
	(0.60)		(0.40)	
FUND_FLOWS	−0.241		−0.205	
	(−1.39)		(−1.19)	
FUND_AGE	−0.089***		−0.087***	
	(−3.17)		(−3.16)	
FAMILY_SIZE	0.119***		0.121***	
	(2.76)		(2.84)	
Stock × time FE	Yes	Yes	Yes	Yes
Fund × stock FE	Yes	Yes	Yes	Yes
Fund × time FE		Yes		Yes
No. of obs.	580,491	580,491	580,491	580,491
Adj. R^2	0.480	0.717	0.476	0.716

Thus, the coefficient on POST × TREATED compares changes in portfolio decisions between funds that exogenously acquire business ties with a broker due to mergers and other funds that do not acquire such connections. **X** is a vector of control variables, including the same controls as in Table 2 and defined in the Appendix. δ denotes fixed effects. Standard errors are clustered at the fund and year-quarter levels.

This difference-in-differences analysis allows us to study the impact of *exogenous* brokerage relationships on funds' portfolio decisions. Table 10 reports the results. We find that when a connection between a fund and a financial group arises because of a merger, newly connected funds invest significantly more in the financial group's stock after the merger than other similar funds.

In the Supplementary Material, we repeat other main results for a sample where we limit the connections to those generated by mergers of brokerage houses. In Table IA9 in the Supplementary Material, we show that funds buy shares of newly connected financial groups during times of distress. In Table IA10 in the Supplementary Material, we show that funds are more likely to vote with the management of the newly connected financial group compared to unconnected funds.

Thus, even when we make the fund–broker business ties exogenous, we continue to observe that a connection between a fund and a broker makes it more likely that the fund will behave as a friendly shareholder for the connected financial group.

D. Familiarity as an Alternative Explanation

Another potential concern has to do with the fact that since funds work with brokers, they could be familiar with their ultimate owners. Such familiarity could explain why funds overweight connected financial groups. We repeat our previous analysis to address this concern, including financial groups that offer brokerage services, but do not offer commercial banking services. Table 11 shows that funds overweight only those financial groups that offer commercial banking services. Since funds can be familiar with both types of financial groups, but financial groups with a lending arm are more likely to possess information about other companies, we conclude that this evidence is consistent with our quid pro quo explanation, but inconsistent with a familiarity story.

TABLE 11

Fund Holdings of Connected Brokers: Placebo Analysis

Table 11 presents estimates of the model: $FUND\_HOLDING_{ijt} = \beta_0 + \beta_1 CONNECTED_{ijt} \times LENDING\_DIVISION = 1_{jt} + \beta_2 CONNECTED_{ijt} \times LENDING\_DIVISION = 0_{jt} + \beta_3 X_{ijt-1} + \delta + \varepsilon_{ijt}$. In the first 2 columns, the dependent variable is FUND_HOLDING (BENCHMARK_ADJUSTED)$_{ijt}$, the percentage of fund i total net assets invested in the financial group j in quarter t in excess of the weight of financial group j in the fund's benchmark. In the last 2 columns, the dependent variable is FUND_HOLDING (STYLE_ADJUSTED)$_{ijt}$, the percentage of fund i total net assets invested in the financial group j in quarter t minus the average weight of financial group j in the portfolio of all funds in the same style of fund i. The main independent variable $CONNECTED_{ijt}$ is an indicator variable equal to 1 if the family of the fund i is a client of a broker that belongs to financial group j in quarter t. $LENDING\_DIVISION_{jt}$ is an indicator variable that identifies the set of brokers that are part of a financial group that offers commercial banking services. X is a vector of control variables, including the same controls as in Table 2 and defined in the Appendix. δ denotes fixed effects. The sample includes actively managed U.S. domestic equity mutual funds and publicly traded brokers. Our sample period runs from 1996 to 2020. Robust t-statistics clustered at the fund and quarter-year levels are shown in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	FUND_HOLDING (BENCHMARK_ADJUSTED)		FUND_HOLDING (STYLE_ADJUSTED)	
	1	2	3	4
CONNECTED × LENDING_DIVISION = 1	0.130***	0.126***	0.074***	0.071***
	(22.61)	(23.77)	(17.16)	(18.28)
CONNECTED × LENDING_DIVISION = 0	0.024*	0.027**	0.010	0.013
	(1.78)	(2.04)	(1.10)	(1.38)
FUND_SIZE	−0.021***		−0.017***	
	(−13.55)		(−13.64)	
EXPENSE_RATIO	0.033		0.040	
	(0.51)		(0.69)	
LOAD_FEE	−0.428***		−0.334***	
	(−8.73)		(−8.96)	
FUND_TURNOVER	0.043		0.048	
	(0.49)		(0.94)	
FUND_FLOWS	−0.021***		−0.015***	
	(−4.23)		(−4.07)	
FUND_AGE	−0.002**		−0.001***	
	(−2.59)		(−2.71)	
FAMILY_SIZE	0.003***		0.003***	
	(3.62)		(4.44)	
Stock × time FE	Yes	Yes	Yes	Yes
Fund × stock FE	Yes	Yes	Yes	Yes
Fund × time FE		Yes		Yes
No. of obs.	12,220,808	12,220,808	12,220,808	12,220,808
Adj. R^2	0.571	0.596	0.529	0.558

VI. Conclusion

Our study uncovers a new channel through which asset managers extract value from their relationships with financial groups. We present evidence that funds act as friendly shareholders for financial groups and are rewarded for such behavior with privileged investment information. Financial groups benefit from having friendly shareholders.

The documented relationship strengthens with the length of a fund's connection to a financial group, and it cannot be explained by the commissions that funds pay to connected brokers. While the relationship appears beneficial for all the parties involved, it violates the level playing field as it favors funds with better connections. This questions the current practice that allows mutual funds to be both clients and shareholders of financial groups. The SEC already requires funds to disclose holdings in the ultimate owners of their brokers in the semiannual Form N-SAR. However, except for the mandatory disclosure, funds are not subject to any particular restriction on how and when they can invest in their broker parent companies.

We place our study in the context of the mutual fund industry; however, friendly investing and information sharing may also be present among other institutional investors. We think this may constitute a promising area for future research.

Appendix. Variable Definitions

Main Independent Variables

CONNECTED: Indicator variable equal to 1 if the family of the fund is a client of the broker's financial group in a given quarter.

DISTRESS: Indicator variable equal to 1 if the percentage of the firm's stocks sold by the aggregate mutual fund industry is greater than 1% of shares outstanding in a given quarter.

ISS_DISAGREE: Indicator variable equal to 1 if the ISS recommends voting in opposition to the management.

CONNECTED_HOLDINGS: Measured as the fund family holdings in the stocks of their connected financial groups.

CONNECTED_LENDER_HOLDINGS: Measured as the family holdings of the connected financial group that initiates a loan to stock j in quarter $t + 1$, and 0 otherwise.

COMMISSIONS: Measured as fees paid by the fund family to the connected financial groups over family TNA.

CONNECTED_LENDER_COMMISSIONS: Measured as fees paid by the fund family to the connected financial group that initiates a loan to stock j over family TNA.

OWNERSHIP_CONNECTED_FUNDS: The fraction of the financial group's shares held by their client funds in quarter $t - 1$.

NUMBER_CONNECTED_FUNDS: The log of the number of funds that are clients of a financial group in quarter $t - 1$.

Fund-Level Control Variables

FUND_SIZE: Natural logarithm of total net assets (TNAs) under management (in millions of US$). Source: CRSP.

FUND_AGE: Natural logarithm of the number of years since the fund's inception date. Source: CRSP.

EXPENSE_RATIO: Total annual expenses and fees divided by year-end TNA (in %). Source: CRSP.

LOAD_FEE: Total front-end, deferred, and rear-end charges divided by year-end TNA (in %). Source: CRSP.

FUND_TURNOVER: Minimum of aggregate purchases and sales of securities divided by average TNA over the calendar year. Source: CRSP.

FUND_FLOWS: The net growth in fund assets beyond reinvested dividends (Sirri and Tufano (1998)) over the past month. Source: CRSP.

FAMILY_SIZE: Natural logarithm of TNA of all funds in the family, excluding the fund itself. Source: CRSP.

Dependent Variables (Table 8)

RETURN_VOLATILITY: The standard deviation of daily stock returns over quarter *t*. A minimum number of 10 daily returns is required for the calculation. Source: CRSP.

IDIOSYNCRATIC_VOLATILITY: The standard deviation of residuals from a regression of daily stock returns on the CAPM. Computed using daily returns over quarter *t*. A minimum number of 10 daily returns is required for the calculation. Source: CRSP.

EXPECTED_SHORTFALL: Average daily stock return computed using returns in the bottom 5% of the distribution of daily stock returns in quarter *t*. Source: CRSP.

Stock-Level Control Variables

MARKET_CAPITALIZATION: Natural logarithm of price times shares outstanding. Source: CRSP.

BM: The natural log of the ratio of the book value of equity to the market value of equity. Book equity is the total book value of assets minus total liabilities, plus balance sheet deferred taxes and investment tax credit if available, minus preferred stock liquidating value if available, redemption value if available, or carrying value. Market equity is price times shares outstanding from CRSP.

12_MONTH_LAGGED_RETURN: Cumulative annual stock return over the 12 months from $t - 12$ to $t - 1$. Source: CRSP.

PROFITABILITY: Ratio of operating income before depreciation (OIBDP) minus interest expenses (TIE) and income taxes (TXC), divided by total assets (AT). Source: Compustat.

BLOCK_OWNERSHIP: The overall fraction of firm shares held by blockholders. Source: Thompson Reuters.

Supplementary Material

To view supplementary material for this article, please visit http://doi.org/10.1017/S0022109023000741.

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