Active Mutual Fund Common Owners' Returns and Proxy Voting Behavior

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Abstract

Active equity mutual funds owning shares in product market competitors have higher risk-adjusted returns, even after fees. This positive association comes from their common ownership positions, and remains robust after controlling for industry concentration, common stock selection, and the tendency to invest in firms with more common ownership. These funds charge higher fees and are active voters: more likely to vote *against* executive pay-for-performance and *for* directors with existing directorships in competitors. Our findings suggest that actively managed equity mutual funds are incentivized to soften product market competition, and proxy voting may serve as a mechanism for influencing corporate policy.

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I. Introduction

Common ownership has been increasing in the United States (Azar, 2012; Backus, Conlon, and Sinkinson, 2021). This trend has sparked discussions among policymakers, industry practitioners, and academics as to whether it poses an antitrust issue.[1] Existing empirical research has focused on how firm- or industry-level measures of common ownership relate to product prices, but the evidence remains inconclusive.[2] Per Rotemberg (1984), a firm incorporating its shareholders' preferences will maximize the joint profits of its own and its competitors, potentially softening competition when shareholders commonly own competitors' stock. In this framework, common owners benefit from the reduced product market competition. However, this raises two natural

[1]The United States Federal Trade Commission (FTC) had a one-day hearing at the New York University School of Law on December 6, 2018, titled "Hearings on Competition and Consumer Protection in the 21st Century", including Commissioner of the FTC Noah Phillips and Commissioner of the Securities and Exchange Commission Robert Jackson Jr., and academics whose work is cited in this paper.

[2]Some studies document that the rise in common ownership may increase product prices, particularly in the banking and the airline industries (Azar, Schmalz, and Tecu, 2018; Azar, Raina, and Schmalz, 2022), accelerate market share growth, facilitate product market coordination (He and Huang, 2017), and increase future expected profits (Boller and Morton, 2019). Backus, Conlon, and Sinkinson (2020) argue that common ownership could significantly affect ready-to-eat cereal prices. However, some other research finds little robust evidence that common ownership affects firm behavior (Koch, Panayides, and Thomas, 2021; Lewellen and Lowry, 2021).

follow-up empirical questions: (1) whether common owners are financially rewarded for holding common ownership positions and (2) how they manifest their preferences in corporate policy.[3]

This paper studies the returns and voting behavior of institutional investors adopting high common ownership strategies. We test three hypotheses. First, we study whether active investors who choose to own product market competitors earn higher returns. Second, because most common owners are institutional investors that have an incentive to create value for their end clients (Lewellen and Lewellen, 2022), we test whether the end clients of these institutional investors benefit net of fees, and whether fund managers themselves are financially rewarded. Third, we test the extent to which common owners vote in favor of corporate policies that potentially soften product market competition (Antón et al. 2023). Jointly, these three hypotheses shed light on the plausibility of the common ownership hypothesis by focusing on a key premise and mechanism: whether and how common ownership is associated with higher value for common institutional owners and their clients. We test these hypotheses in the data by focusing on actively managed equity mutual funds.

Studying actively-managed equity mutual funds has four advantages.[4] First, by the end of 2018, the funds in our sample managed $3.8 trillion in assets, and many were large common owners. Second, the literature offers a well-established framework to evaluate mutual fund

[3] López and Vives (2019), Azar and Vives (2021), and Antón, Ederer, Giné, and Schmalz (2023) all assume that common owners do not face any incentive issues themselves, implicitly assuming that common owners always find it in their interests to affect corporate policy in an anticompetitive way that may take the form of both passive (e.g., reduction in attention) and active (e.g., voting for M&A) mechanisms.

[4] Following the literature, we define the universe of actively-managed mutual funds as the full universe of mutual funds, excluding index funds. Therefore, our analyses include funds that are "fundamental indexers" and do not distinguish between discretionary or quantitative funds.

performance, allowing us to relate common ownership positions to investment performance. Third, active funds have incentives to outperform, creating cross-sectional variation in investment strategies and returns. This variation allows us to compare funds with different levels of common ownership. Fourth, active funds are likely more attentive than passive ones. Corporate managers may therefore be more responsive to their preferences (Gilje, Gormley, and Levit, 2020).

Our analysis proceeds in three steps. First, we derive a fund-level common ownership ("CO") measure based on the existing theoretical literature (Rotemberg, 1984; O'Brien and Salop, 2000; Backus et al., 2021). This measure is a weighted average of competitors' pairwise "profit weights" in a fund's portfolio (see detailed definition in Section B). It quantifies the internalization of competitors' future profits for the portfolio firms owned by a fund. In particular, the measure captures not only the profit considerations among competing portfolio firms but also the incentive and ability of a fund to influence firms' corporate policy. Therefore, if firms incorporate common owners' preferences, this measure should correlate positively with common owners' portfolio profits.

We find that actively managed equity funds with higher CO outperform their peers with lower CO, based on both factor- and benchmark-adjusted returns. In portfolio analyses, we find that the abnormal raw return of the top CO decile portfolio is 1 to 2% higher per year than that of the bottom CO portfolio. The annualized Sharpe ratio is also higher. Corroborating this evidence, we find similar results using Fama-MacBeth and panel regressions controlling for fund characteristics. Our further investigation uncovers three patterns in the underlying mechanism: (1) high CO funds' superior performance comes from CO positions outperforming non-CO holdings, (2) the effect is stronger in industries with higher overall common ownership intensity, and (3) the effect is particularly strong when held firms are in concentrated industries, where funds could more effectively influence competitive outcomes.

Our results remain robust using a matched sample of funds with similar characteristics. We also mitigate concerns over several alternative explanations, including portfolio industry concentration, common stock selection, and funds' tendency to select firms with high common ownership. Specifically, we conduct the following three tests. First, using the Fama-MacBeth regression approach, we disentangle the common ownership effect from the effect of portfolio industry concentration as documented by Kacperczyk, Sialm, and Zheng (2005). Second, by controlling for the average number of institutional investors of portfolio firms, we further establish that the outperformance is not compromised by the fund managers' abilities that result in commonly selecting high-performing firms. Third, using a modified measure that captures funds' asset allocation to firms with different levels of common ownership, we show that the results are not likely driven by fund managers' tendency to select firms with high firm-level common ownership. Besides, the performance of active funds with high common ownership is fairly persistent over time.[5] In robustness tests, we further show that these results are robust to two variants of CO measures, alleviating concerns about the definition of competitors and the functional form of a firm's objective function.[6]

[5] Such persistent outperformance appears inconsistent with the idea that market participants fully recognize the superior returns of high-CO strategies and arbitrage away the associated alphas. In the following sections, we discuss several potential barriers that may hinder the widespread adoption of CO strategies.

[6] The first measure defines industry peers based on the Fama-French 12 industry classifications, instead of the Hoberg-Phillips textual network industry classifications (TNIC). The second measure uses an overlapping ownership approach, similar to the main CO measure, but adjusts profit weights based on firms' relative investor concentration, following Backus et al. (2021).

Our second analysis studies whether active fund managers would have an incentive to adopt a high CO strategy. If fund managers must expend costly efforts to monitor portfolio companies and influence policy in order to outperform, they should be compensated. A fund manager's objective function is the product of fund size and fees (Berk and Green, 2004). CO can affect fund manager payoffs through fees and flows. We find that funds with higher CO have higher expense ratios and management fees. However, we do not find strong empirical evidence relating CO to average fund flows.[7] A back-of-the-envelope calculation suggests that a one-standard-deviation increase in CO raises a fund manager's total compensation by about $333,000 over five years (excluding flow effects). This amounts to 17.4% of the median compensation of $1.92 million. Including performance-related flows would modestly raise the estimate.

Finally, we study whether high-CO funds are active monitors and whether they vote in line with maximizing their payoffs and supporting corporate policies that potentially soften competition. Edmans, Levit, and Reilly (2019) show that if common owners do not threaten to exit but instead express their preferences through their "voice," they are more likely to be active monitors. High-CO funds appear to be active monitors following the definition in Iliev and Lowry (2015). That is, they tend to disagree with the leading proxy advisor (ISS)'s recommendations and rely less on ISS recommendations when voting. In addition, funds with higher CO are more likely to vote against proposals increasing executives' stock or options that tend to increase their

[7] Internet Appendix Table B.10 shows that higher CO firms appear to receive more flows on average, but the relation decreases by a factor of 10 and flips signs when conditioning on a fund's cross-sectional performance. Instead, CO appears to moderate flow-performance sensitivity, increasing sensitivity for low performance and reducing sensitivity for medium and high performance.

pay-performance sensitivity. We also find that they are more likely to support directors who hold an existing directorship with industry peers of the focal firm. Shared director connections have been empirically documented to potentially transmit peer effects, like changes in corporate policy in response to higher hedge fund activism threats (Gantchev, Gredil, and Jotikasthira 2019).

In brief, we find that funds with higher CO tend to outperform and charge higher fees while still delivering alpha to their investors. These funds also vote for corporate policies consistent with the common ownership hypothesis. However, we do not establish causal relationships. For instance, high-CO active funds may have informational advantages about their portfolio firms, which could affect both returns and voting. Still, we provide evidence suggesting this channel is less likely. Nonetheless, relative to the existing academic literature, our findings contribute twofold. First, our study contributes to the broad literature on the cross-section of mutual fund performance. Previous literature documents many factors or strategies that drive the variation in the cross-section of mutual fund performance.[8] However, to our knowledge, no study relates the common ownership facet of funds' strategies to performance and fund managers' payoffs. Second, we contribute to the growing literature on common ownership. The extant literature primarily focuses on the effect of common ownership on product market outcomes at the firm or industry level.[9] A notable exception is Lewellen and Lewellen (2022), who examine

[8]For example, portfolio pumping (Carhart, Kaniel, Musto, and Reed 2002); active stock selection (Cremers and Petajisto 2009); portfolio industry concentration (Kacperczyk et al. 2005); name changing (Cooper, Gulen, and Rau 2005); fee waiving (Christoffersen 2001); cross-fund subsidization (Gaspar, Massa, and Matos 2006) and strategic allocation of fund managers (Fang, Kempf, and Trapp 2014).

[9]For example, see He and Huang (2017); Azar et al. (2018); Boller and Morton (2019); Azar and Vives (2019); Xie and Gerakos (2020); Charoenwong and Asai (2021).

management fees charged by institutional shareholders and conclude that institutional shareholders gain modestly from common ownership in the most concentrated industries. Focusing on actively-managed equity mutual funds, we find that funds holding product market competitors earn higher abnormal returns. Moreover, we study payoffs to mutual fund managers and their incentive for adopting common ownership strategies. Our findings on both mutual fund returns and voting behavior also relate to the literature on institutional investor corporate governance, such as He and Huang (2017), who find that common institutional ownership facilitates active forms of product market coordination, such as joint ventures, resource sharing, and coordination of research and development expenditures.

II. Empirical Framework and Data

A. Hypotheses

The theoretical foundation for our approach comes from Rotemberg (1984): a framework where firms with common owners balance the interests of various shareholders, incorporating competitors' profits into their objective functions. However, the implications for market outcomes remain theoretically ambiguous. For instance, López and Vives (2019) derive that common ownership can increase innovation and profits under certain conditions, while Azar and Vives (2021) distinguish between intra-industry common ownership (which may reduce competition) and inter-industry common ownership (which may enhance welfare). Moreover, common owners may be unable or unwilling to promote anticompetitive behavior either because such actions may violate legal or regulatory constraints, or because large, diversified funds (which are more likely to be common owners) have limited incentives or capacity to engage in firm-specific product-market decisions.

Previous papers empirically studying the effect of common ownership on market-level outcomes have reported evidence suggesting anticompetitive effects. Azar et al. (2018) find that common ownership among airlines was associated with higher ticket prices, and He and Huang (2017) document increased market share and reduced product market competition following institutional cross-ownership events. However, subsequent methodological critiques have raised questions about identification strategies and measurement used. Koch et al. (2021) challenge the robustness of earlier airline industry findings, highlighting potential confounds in market structure analysis, Lewellen and Lowry (2021) identify limitations in empirical approaches used to establish causal relationships between institutional ownership patterns and product market outcomes, and Dennis, Gerardi, and Schenone (2022) demonstrate that accounting for route-specific demand factors materially affects inferences about common ownership's competitive effects in airline prices.

The empirical impact of common ownership on firm behavior and market outcomes remains an open question. However, essentially all papers rely on a common premise: the payoff to common owners increases when firms consider these owners' broader portfolio interests. Therefore, given the methodological challenges in the empirical literature, we take a different approach to studying common ownership. Rather than attempting to establish causal effects on product market competition—a task that has proven difficult, given the lack of plausibly exogenous variation—we analyze the behavior of mutual funds with varying levels of common ownership, focusing specifically on their performance outcomes and governance decisions. This approach allows us to document systematic patterns in institutional investor conduct and incentives.

Our first hypothesis tests whether active fund managers with common ownership positions achieve superior returns for themselves and their investors. Higher returns from CO strategies could indicate that these funds encourage portfolio firms to behave anticompetitively. Furthermore, such outperformance could create a self-reinforcing cycle: investors allocate more capital to high-CO funds, strengthening fund managers' incentives to engage actively with firm management. However, the plausibility of this mechanism has been questioned in the literature. Common owners may be unwilling or unable to support anticompetitive practices due to various reasons. First, as agents, fund managers face inherent conflicts of interest (e.g., Cohen, Coval, and Pastor 2005; Agarwal, Gay, and Ling 2014; Bebchuk, Cohen, and Hirst 2017), and broker-sold active funds typically have weaker incentives to generate alpha (Guercio and Reuter 2014), potentially discouraging efforts to pursue CO benefits. Second, implementing CO strategies also involves costly managerial effort and possible legal risks, which must be weighed against potential gains, given that manager compensation depends on both fund size and fees (Berk and Green 2004). Finally, even if CO strategies produce short-term outperformance, such gains could diminish over time as other investors adopt similar approaches. Moreover, alternative explanations—such as portfolio industry concentration, common stock selection, or CO stock-picking—may also drive the observed outperformance of high-CO funds.

To address the concerns above, we proceed as follows. First, we develop a fund-level CO measure, capturing the extent to which funds internalize the future profits of competing firms in their portfolios. Using this measure, we design tests to evaluate whether the superior returns observed in high-CO funds can be attributed to a common ownership channel. Specifically, we conduct three distinct analyses: (1) comparing returns of CO holdings directly against non-CO holdings within the same fund, (2) examining the impact of industry-level common ownership intensity on the relation between fund CO and returns, and (3) exploring whether the relationship is stronger in concentrated industries where potential anticompetitive influence might be greater. Furthermore, we also investigate whether economic incentives exist for managers to adopt CO strategies, by examining how fund-level CO relates to fund fees and manager compensation. Finally, to rule out alternative explanations, we implement matched-sample analyses and explicitly control for portfolio industry concentration, common stock selection, or the tendency to select firms with high common ownership.

Our second hypothesis examines whether mutual fund managers exercise their governance rights in ways consistent with common ownership theory. For example, Shekita (2022) documents 30 cases of interventions by common owners, all of which required not only the attention of the common owner but also the active participation in engaging with corporate managers. This analysis requires linking financial payoffs with fund managers' voting patterns, focusing on votes that could facilitate inter-firm coordination or affect managerial incentives. Specifically, we test whether voting behavior is consistent with theoretical predictions that common owners would reduce executive pay-performance sensitivity (Antón et al., 2023). While we do not establish causality, systematic patterns in voting behavior provide evidence of how funds exercise their governance rights under common ownership.

B. Derivation of Fund-Level Measure of Common Ownership

We derive our fund-level measure of common ownership by building upon the established firm-level measure of common ownership used in the existing literature. We begin with the concept of profit weights between firms, then extend this to create fund-specific profit weights, and finally aggregate these into our fund-level common ownership measure.

1. Review of Firm-Level Common Ownership

The literature typically measures common ownership based on how much a firm considers competitors' profits in its decision-making. For a shareholder s of the firm m, we denote her cash flow right as $\beta_{s,m}$, which equals the ratio of shares she owns to the total number of shares outstanding in firm m.[10] She is considered a common owner if she holds positive stakes in both firm m and its competitor n, i.e., $\beta_{s,m} > 0$ and $\beta_{s,n} > 0$. According to O'Brien and Salop (2000) and Backus et al. (2021), common owners have an incentive to maximize total portfolio profits, leading firm managers to internalize profits across firms held by the same shareholders. The weight (termed "profit weight" or $\kappa_{m,n}$) that firm m places on its competitor n's profits is defined as

$$\kappa_{m,n} = \frac{\sum_{\forall s} \beta_{s,m}\beta_{s,n}}{\sum_{\forall s} \beta_{s,m}^2}. \tag{1}$$

This weight represents the extent to which focal firm m incorporates competitor firm n's profits into its own objective function.[11] The numerator of equation (1) is the inner product of common

[10] Following standard practice, we assume her control right, $\gamma_{s,m}$, equals her cash flow right. This assumption follows the "one share, one vote" rule applicable to most US public firms (Backus et al., 2021).

[11] For the detailed proofs, see Backus et al. (2021). In the framework of common ownership, a firm's objective function shifts from maximizing only its own profits to one that also considers competitors' profits: $Q_m(x_m, x_{-m}) \propto \pi_m + \sum_{n \neq m} \kappa_{m,n}\pi_n$, where x_m and x_{-m} represent strategic choices by firm m and its competitors and π indicates firm profits.

ownership across all common owners, and the denominator is the focal firm m's ownership concentration (akin to the Herfindahl-Hirschman Index) as a scalar. Thus, this measure can be interpreted as the strength of common ownership relative to the ownership concentration of the focal firm. Theoretically, when $\kappa_{m,n} = 1$, firm m values firm n's profits equally to its own when maximizing its objective function. $\kappa_{m,n}$ could exceed one, indicating firm m places more weight on competitor n's profits than its own. These profit weights are key components of the "modified HHI delta" measure used in empirical studies of common ownership such as Azar et al. (2018).[12]

2. From Firm-Level to Fund-Level Common Ownership

To derive our fund-level measure, we first consider how a specific fund p contributes to the profit weight between firms. By decomposing the numerator in equation (1), we define the pairwise profit weight $\kappa_{p,m,n}$ specific to fund p as:

$$\kappa_{p,m,n} = \frac{\beta_{p,m}\beta_{p,n}}{\sum_{\forall s}\beta_{s,m}^2}. \tag{2}$$

This measures the value to focal firm m of a dollar of profit generated for competitor firm n, specifically attributable to fund p's common ownership. Building on this, we calculate the aggregate value to firm m of profits generated by all its competitors, attributable to fund p:

$$\kappa_{p,m} = \frac{\sum_{\forall n\neq m}\beta_{p,m}\beta_{p,n}}{\sum_{\forall s}\beta_{s,m}^2}. \tag{3}$$

[12] The modified HHI (MHHI), introduced by Bresnahan and Salop (1986), comprises normal HHI and an MHHI delta, the latter capturing the additional market concentration due to common ownership.

Specifically, the numerator of $\kappa_{p,m}$ represents the inner product of fund p's common ownership in focal firm m ($\beta_{p,m}$) and competitors n ($\beta_{p,n}$), with competitors identified using Hoberg-Phillips TNIC data.[13] As a scalar, the denominator represents firm m's ownership concentration based on all available ownership data sourced from 13F, 13D, 13G filings, and other public reports, not just fund p's ownership.[14]

Finally, we define our fund-level common ownership measure, CO_p, by aggregating $\kappa_{p,m}$ across all portfolio firms held by fund p:

$$CO_p = \sum_m w_{p,m} \kappa_{p,m}, \tag{4}$$

where $w_{p,m}$ represents the proportion of fund p's total portfolio value invested in firm m, calculated as the product of the firm's stock price and the number of shares held by the fund, divided by the fund's total investment value at each quarter end.

CO_p measures the extent of common ownership within fund p's portfolio and can be interpreted as the portfolio-weighted average value, specific to fund p, of a dollar of profits accruing to competitors relative to a dollar of profits for the focal portfolio firms themselves. The intuition is that as common ownership increases, portfolio firms may have an incentive to reduce competition and thus potentially gain larger profits, of which common owners receive a proportion.[15] CO_p not only measures the consideration for profits of competing firms but also the

[13] In our main analyses, we identify competitors using Hoberg-Phillips TNIC data on an annual basis. For robustness, we also consider Fama-French 12 industry classifications.

[14] Our robustness tests focusing only on holdings data from 13F and 13Ds show consistent results.

[15] Internet Appendix A illustrates this intuition through a simplified Cournot competition example.

fund's ability and incentive to influence the policies of firm m. Since CO_p depends critically on portfolio weights, we consider it part of a fund's investment strategy.[16]

Our definition of fund common owners requires fund p to hold both firm m and its competitor n to make $\sum_{\forall n \neq m} \beta_{p,m}\beta_{p,n}$ in CO_p non-zero.[17] If fund p only holds firm m without holding its competitor n, then the incentive and the ability to facilitate coordination between firm m and n would be low. Even if a fund obtains outperformance by holding only one side of a pair of competitors, it's possible that fund p simply picks stocks and free-rides other funds holding both firms m and n. Therefore, our empirical analyses will seek to disentangle these effects in Section D. In the following analyses, CO refers to CO_p from equation (4).

The connection between our fund-level CO and industry-level common ownership (e.g., MHHI delta), has important empirical implications. If fund-level CO is merely capturing idiosyncratic fund characteristics unrelated to broader competitive effects, we would not expect the relationship between fund CO and fund performance to vary with industry-level common ownership concentration. However, if fund CO is capturing a fund's participation in potentially anticompetitive ownership structures, then the performance benefits should be more pronounced in industries with high common ownership concentration. We test this prediction in Section C by

[16] Larger funds tend to have higher $\kappa_{p,m}$, as maintaining existing portfolio weights and increasing assets under management will increase CO_p as $\kappa_{p,m}$ rises and $w_{p,m}$ remains fixed for all positions m. Therefore, it is important for us to include size controls.

[17] CO_p is bounded below by zero. When it equals zero, fund p holds a single firm or a set of firms that are not product market competitors. In both cases, fund p contributes zero to the profit weights. Like $\kappa_{m,n}$ and the MHHI deta, CO_p has no theoretical upper bound and could exceed one. However, even if firm-level profit weights exceed one (firms value competitors' profits above their own), the fund-level CO_p may remain well below one because it represents portfolio-weighted profit weights specific to the fund.

examining how our fund-level CO effects vary with industry-level MHHI delta. We acknowledge that our fund-level measure captures only a single fund's contribution to the overall common ownership structure rather than the complete industry-level common ownership central to theories of anticompetitive effects. However, this approach allows us to directly examine which funds benefit from common ownership positions and how these benefits relate to broader industry structures, thereby addressing a key premise in the common ownership hypothesis.

C. Data Sources

We construct our sample by merging fund characteristics, stockholdings, stock characteristics, and fund voting data from different databases. In our analyses, we use observations from three levels: (1) fund-by-month observations to study returns and fund characteristics, (2) fund-by-year observations to study fees and active monitoring activities, and (3) fund- (or fund-family-)by-proposal to study voting behavior on specific proposals.

We obtain the fund names, monthly returns, monthly total net assets (TNA), investment objectives, and other fund characteristics from the CRSP Survivorship Bias-Free Mutual Fund Database. Following Huang, Sialm, and Zhang (2011), we identify actively managed United

States equity mutual funds based on their objective codes and their disclosed asset compositions.[18] Because data coverage on the monthly TNA and quarterly portfolio holdings before 1999 is limited and of poor quality, our sample period spans from January 1999 to December 2018. We restrict to funds domiciled in the United States, and exclude money market funds, index funds, fixed income funds, and funds that manage less than $5 million in the previous month and those whose total equity holding in dollar value (calculated from the mutual fund holding data discussed below) is less than $5 million in a quarter. For funds with multiple share classes, we calculate the weighted average monthly fund returns by the weights of share class TNA.

We obtain mutual funds' portfolio holdings from the Thomson Reuters Mutual Fund Holdings Database (S12) and the CRSP Mutual Fund Holdings Database. Recent studies show that the Thomson stockholdings data have problems with missing new funds after 2008, while CRSP portfolio holdings data are "inaccurate prior to the fourth quarter of 2007" (Schwarz and Potter, 2016; Zhu, 2020). To circumvent data quality problems, we consolidate the Thomson stockholdings data before the second quarter of 2010 with the CRSP stockholdings data on and

[18] From Huang et al. (2011): "We first select funds with the following Lipper objectives: CA, CG, CS, EI, FS, G, GI, H, ID, LCCE, LCGE, LCVE, MC, MCCE, MCGE, MCVE, MLCE, MLGE, MLVE, MR, NR, S, SCCE, SCGE, SCVE, SG, SP, TK, TL, UT. If a fund does not have any of the above objectives, we select funds with the following Strategic Insights objectives: AGG, ENV, FIN, GMC, GRI, GRO, HLT, ING, NTR, SCG, SEC, TEC, UTI, GLD, RLE. If a fund has neither the Lipper nor the SI objectives listed above, then we use the Wiesenberger Fund Type Code to select funds with the following objectives: G, G-I, G-S, GCI, IEQ, ENR, FIN, GRI, HLT, LTG, MCG, SCG, TCH, UTL, GPM. If none of these objectives are available, and the fund holds more than 80% of its value in common shares, then the fund will be regarded as equity fund."

after that quarter.[19] Beyond mutual funds' holding data, we also consolidate comprehensive ownership data containing both institutional and individual owners, using all available 13-F filings, 13-D filings, 13-G filings and other publicly reported ownership. We only keep firms with a minimum of 10% available aggregated ownership to circumvent the problem of missing ownership information, although our results remain robust without this restriction.[20] To tackle asynchronicities in reported holdings, we keep the stockholdings reported at each quarter end. For those who did not report at the quarter end, we use their most recent holding positions before each quarter end. To our knowledge, this is one of the most comprehensive ownership data used for

[19]The CRSP Mutual Fund Holding data miss out on a large number of funds before the second quarter of 2010. The number of unique active funds, according to our definition of active funds, jumps from 138 in Q1 2010 to 1,451 in Q2 2010. Thus we use CRSP Mutual Fund Holding data only after Q2 2010.

[20]13-F filings are for registered investment companies like funds, 13-D filings also apply to individuals who own greater than 5%, and 13-G filings are simplified version of Form 13-D, which apply to owners who also satisfy additional criteria like being a qualified institutional owner under Rule 13d-1(b), a passive investor in terms of exercising control over a company (Rule 13d-3(b)), and owning less than 20% of the firm. In our Thomson Reuters ownership data with information on 94.6 million owner-firm reports, 13-F's constitute slightly over 80% of filings, 13-D's constitute 0.09%, and 13-G's constitute 0.16%. The remaining fraction comes from other sources. Other reported ownership may be subject to voluntary disclosure and include news updates, proxy filings, fund prospectuses, Form 20-F, Form 3's, shareholder reports, and even foreign regulatory filings that apply to foreign owners of the American firms in our sample.

calculating common ownership.[21] To identify firm competitors, we use the Hoberg-Phillips TNIC data that provide pairwise competition linkages based on textual analysis of firms' product information.[22] In a robustness check, we use the Fama-French 12 Industry Classification to identify industry peers.

At the stock level, we obtain stock fundamentals data from the CRSP-Compustat Merged database. The returns of the Fama-French five factors and the momentum factor are sourced from Kenneth French's website. The factor returns of the q-factor model are from the Hou-Xue-Zhang q-factors data library. We study common stock held by mutual funds listed on the NYSE, Nasdaq, or AMEX stock exchanges. We restrict our sample to stocks with non-missing information on month-end prices, monthly returns, four-digit SIC industry code, and annual net sales. Stock prices, returns, and the number of outstanding shares are sourced from CRSP. Firm fundamentals data, such as firm sales, come from Compustat.

For the fund voting analysis, we obtain fund voting data from the ISS Voting Analytics dataset that includes all management and shareholder proposals for public companies in their proxy statements since 2003. For each proposal, the dataset contains the information on the short description of the proposal, the type of proposal categorized using ISS's system

[21] Previous studies mostly use 13-F filings, which omit the impact of individual investors' ownership on firms. Although individuals and institutional investors filing schedule 13-G must satisfy the criteria of having "no intention of influencing control" of the issuer among other criteria for 13-D exemption, they hold significant stakes on firms even if these investors are not actively voting their shares to affect corporate policy. Amel-Zadeh, Kasperk, and Schmalz (2022) show the importance of accounting for filings other than the 13-F to measure ownership composition.

[22] In the TNIC data, the score variable measures the similarity of products among rivals. Pairwise, firms are treated as competitors if the similarity score exceeds the minimum threshold needed to be included in the database.

(ISSAgendaItemID), management and ISS recommendation, and mutual fund votes for the proposal—vote for, against, abstaining, and withholding. We follow Peter Iliev's note to link mutual funds between ISS and CRSP and then to Thomson Reuters.[23] 3,121 funds in ISS are identified during the 2003-2018 period. Because this study focuses on the proposals potentially related to competition, we keep the proposals on stock or stock option plans and elections of directors.[24]

Consolidating the above datasets results in a final sample including 6,681 actively managed equity funds with 379,806 fund-month observations. Since we consolidate the CRSP and Thomson Reuters mutual fund datasets, 3,351 unique funds are identified in the CRSP sample and 3,332 in the TR sample. Often, a fund has two separate identifiers, one in each subsample. Table 1 reports summary statistics on CO and other fund characteristics commonly used in the mutual fund literature. All variables are defined in the Appendix.

[Table 1 Here]

III. Common Ownership and Mutual Fund Returns

This section first describes mutual funds' common ownership (CO) characteristics and then studies the relationship between CO and fund returns. We then address alternative explanations and potential confounders of the results.

[23] See https://bpb-us-e1.wpmucdn.com/sites.psu.edu/dist/b/169215/files/2023/08/voting-link-note-v2.pdf

[24] ISS sets ISSAgendaItemID as M0501, M0503, M0507, M0509, M0510, M0522, and M0524 for stock or stock option plans and M0201 for director elections.

A. Common Ownership as a Fund Strategy

We observe a substantial variation in fund CO across U.S. actively managed equity mutual funds. The maximum CO is 7.12% after winsorization at the 99th percentile, with a mean of 0.22% and a standard deviation of 0.94%. Table 2 presents some of the top CO funds across different years in our sample.[25]

[Table 2 Here]

CO is a persistent characteristic of mutual funds: it has an autocorrelation of 0.809, driven by the extreme deciles of CO (see Internet Appendix Table B.1). The table also shows that a fund in the lowest decile of CO in a quarter is over 87% likely to stay in the same decile in the next quarter. In contrast, those in the top decile are over 91% likely to stay in the same decile quarterly. Other deciles are slightly less absorbing, with between 60-78% likely to stay in the same decile. For example, the CO measure for Hodges Capital Small Intrinsic Value Fund, quoted in the introduction of this paper, moved from below the 50th percentile in 2014 to above 80th percentile in 2018. This allocation is consistent with the portfolio construction methodology on Hodges Capital's website, which states that their managers may "concentrate the number of holdings in the portfolio within a certain sector during a sector pullback".[26]

We further study the factor exposures of funds with varying levels of CO. We sort funds into decile portfolios based on their CO measure in the previous quarter and then compute the value-weighted monthly returns for each decile portfolio as well as the high-minus-low (HML)

[25] Internet Appendix Figure B.1 shows the histogram of the CO measure with a log scale, suggesting a lognormal-like distribution where a small fraction of funds appear to adopt investment strategies with high CO.

[26] See https://hodgescapital.com/process as of July 2022.

portfolio formed by buying high CO portfolios and selling the low CO portfolios. Table 3 shows the Fama-French 6-factor (Fama and French (2015) with momentum) loadings of different CO decile portfolios. We find that funds with higher CO tend to have higher loadings on the size factor, with the loading on the high-minus-low CO decile portfolio reaching 0.173 (t-statistic > 5).[27] For these funds, we also observe a slight but statistically insignificant (at the 5% level) tilt toward value stocks and low profitability firms. These style characteristics – the size tilt, value orientation, and focus on firms with potential for profitability improvement – align with patterns documented in the activist investor literature. Brav, Jiang, Kim et al. (2010) and Brav, Jiang, and Kim (2015) show that activist investors typically target smaller firms with lower valuations where they can more effectively influence corporate policies and enhance profitability.

[Table 3 Here]

Although CO is defined based on competitors in the same industry classification, it is not primarily driven by funds specializing in a particular industry. For example, the correlation between Kacperczyk et al. (2005)'s portfolio industry concentration (PIC) measure and CO is 0.12. Removing sector funds from our analyses does not qualitatively alter the summary statistics and empirical results. Therefore, although funds may not allocate their portfolios to hit a

[27] Our CO measure is based on cash flow rights of funds and does not directly depend on the market capitalization of portfolio firms, so funds can achieve a higher CO by investing more in smaller companies. To illustrate this point, let's consider two hypothetical funds, A and B, each with a portfolio of $10 million, investing in three firms: X ($100 million), Y ($1 billion), and Z ($10 billion). Fund A invests equally in X and Y, while fund B invests equally in Y and Z. As a result, fund A owns a higher percentage of portfolio firms than fund B and thus has a higher CO. This also means that fund A can exert greater control over corporate decisions compared to fund B, despite the equal dollar allocations.

particular value of CO, funds' common ownership position is a persistent and unique fund characteristic that is not accounted for in traditional factor exposures or standard measures of portfolio industry concentration.

B. Fund Returns

1. Portfolio Sorts

To evaluate fund performance, we use both risk- and benchmark-adjusted return measures. The former uses the 6-factor (Fama and French (2015) with momentum), Ferson and Schadt (1996), Pastor and Stambaugh (2003), and q-5-factor (Hou, Mo, Xue, and Zhang, 2021) models to calculate alpha. For example, the Fama-French 6-factor alpha is the intercept from the following time-series regression:

$$
\begin{aligned}
(5) \qquad r_{p,t} - r_t^f = \alpha_p + \beta^M \left(r_t^M - r_t^f\right) + \beta^S SMB_t + \beta^H HML_t + \beta^R RMW_t + \\
\beta^C CMA_t + \beta^U UMD_t + \varepsilon_{p,t},
\end{aligned}
$$

where $r_{p,t}$ is the return in month t for fund portfolio p, r_t^f is the Treasury-bill rate in month t, r_t^M is the value-weighted stock market return in month t, and SMB_t, HML_t, RMW_t, CMA_t, and UMD_t correspond to the Fama-French size, value, profitability, investment, and momentum factors, respectively.[28] Using the Morningstar benchmark data, we calculate the benchmark-adjusted returns as

$$
(6) \qquad \alpha_p^{BM} = r_{p,t} - r_t^{BM(p)},
$$

[28]The Fama-French data were downloaded in January 2021.

where the indices follow from equation (5) and $r_t^{BM(p)}$ is the return of the benchmark identified by Morningstar for fund portfolio p. For all these analyses, standard errors are Newey-West corrected up to three lags, allowing for autocorrelation in returns for up to three months.

At the beginning of each quarter, we sort decile portfolios based on their most recent quarterly CO measures. We then compute the value-weighted risk- and benchmark-adjusted monthly fund returns in the next quarter using the aforementioned models. Table 4 reports the results of portfolio sorting.

[Table 4 Here]

Panel A shows that US actively managed equity mutual funds with a larger degree of common ownership exhibit better gross performance. The adjusted returns of funds in the top decile of CO are 1.08 to 1.92% per annum (9-16 basis points per month) greater than those in the bottom decile of CO. Although the volatility of portfolio returns is higher, the overall annualized Sharpe ratio of high CO funds is also 0.11 higher than those with low CO. Panel B in Table 4 documents that the higher gross returns also appear to flow through to higher net-of-fee returns. To visualize the performance history, Figure 1 shows the cumulative returns of the CO portfolios throughout our sample period.

[Figure 1 Here]

For robustness, we consider three alternative measures of funds' common ownership, all detailed in the Internet Appendix. We continue to find a positive relationship between active funds' performance and their common ownership positions.[29]

2. Regression Analysis

In this analysis, we use Fama-MacBeth regression specifications that control for mutual fund characteristics that may be associated with fund performance using the following specification:

$$r_{p,t} = \alpha + \beta CO_{p,t-1} + cZ_{p,t-1} + \eta_{p,t}, \tag{7}$$

where $CO_{p,t-1}$ is the measure of common ownership of fund p in the previous quarter end, $Z_{p,t-1}$ is a matrix of fund control variables including lagged one-month log TNA, lagged one-year expense (EXPENSE_RATIO), lagged one-year turnover (TURNOVER_RATIO), lagged one-month flows (FUND_FLOW), lagged one-year age (FUND_AGE), and lagged one-month net-of-fee raw returns (FUND_RETURN). The dependent variable, $r_{p,t}$, is either funds' monthly gross or net-of-fee raw returns, Fama-French 6-factor alpha, Ferson and Schadt (1996) alpha, Pastor and Stambaugh (2003) alpha, q-factor alpha, or benchmark-adjusted return. The alphas are

[29]The first alternative measure uses the Fama-French 12 industries instead of the Hoberg-Phillips classifications (Internet Appendix Table B.2). The second is based on the current profit weight measure ($\kappa_{p,m}$) but excludes the relative investor concentration component from the calculation of the CO measure (detailed in Internet Appendix B, with results reported in Internet Appendix Table B.2). The third relies on alternative ownership data for calculating the denominator of $\kappa_{p,m}$, using only 13-F filings as well as both 13-F and 13-D filings (Internet Appendix Table B.3).

the difference between actual and expected fund returns, with factor loadings being estimated based on rolling 36-month regressions.[30]

Panel A in Table 5 reports the Fama-MacBeth regression results for gross returns, and Panel B reports the results for net-of-fee returns. Across all specifications in both panels, fund performance is statistically significantly positively associated with CO after controlling for standard fund characteristics. In terms of economic magnitude, moving from funds in the lowest 10th percentile of the CO distribution to the top 90th percentile of CO (equivalent to a 3.8-standard-deviation increase in CO) is associated with a 9-basis-point (2.364×3.8) increase in monthly Fama-French 6-factor net-of-expenses alpha in column (2) of Panel B. The improvement in alpha is meaningful, given that the average net-of-fee alpha is negative 10 basis points monthly.[31] As additional robustness, we consider panel regressions in Internet Appendix Table B.4 with year-month fixed effects and standard errors clustered at the fund and year levels. We find quantitatively and qualitatively similar results.

[Table 5 Here]

Overall, the results in the regression approach are consistent with those in the portfolio sorts. Notably, funds with higher CO tend to have higher gross and net-of-fee returns. These

[30]The alphas for most of the funds from 2010 Q2 to 2013 Q2 cannot be estimated in the CRSP sample alone because these funds are missing in the three-year estimation window before 2010 Q2. We remedy this issue by estimating the alphas for these funds in this period based on the TR sample and then adding the alphas to the corresponding CRSP funds using MFLink.

[31]In Internet Appendix Figure B.2, we depict a binned scatterplot of the residualized Fama-French 6-factor alpha and CO measure. We do not find that outliers drive the CO-return relationship.

findings suggest that not only do funds with higher CO measure tend to do better in terms of average returns and Sharpe ratio, they also share the gains with their end investors.

C. Drivers of the CO-Performance Link

In this subsection, we provide three sets of results that highlight the sources of the underlying outperformance of high-CO funds, distinct from simple industry specialization. First, funds earn superior returns predominantly from positions with positive common ownership, as opposed to positions without such overlap. We decompose each fund's portfolio into CO positions (defined as holdings with $\kappa_{p,m} > 0$) and non-CO positions ($\kappa_{p,m} = 0$) and then compute the holding-based returns for those CO and non-CO portfolios. Applying both Fama–MacBeth and panel regression methods with appropriate controls, we find that CO positions of high CO funds significantly outperform non-CO positions. As shown in Table 6, the estimated coefficients for CO positions range from 0.954 to 2.964 and are statistically significant at the 1% level, while those for non-CO positions are markedly smaller and often insignificant. This pattern, observed in both raw and risk-adjusted returns, provides evidence that the superior performance of funds is driven directly by their common ownership positions.

[Table 6 Here]

Second, our CO measure captures an individual fund's common ownership positions, which differs from firm- and industry-level common ownership that aggregates common ownership across all shareholders' stakes. When we stratify our sample by industry-level common ownership intensity—proxied by the MHHI delta used in Azar et al. (2018)—we observe that for portfolio firms in industries with high MHHI delta, CO positions yield robust and economically significant coefficients (ranging from 1.374 to 2.945, as shown in Panel A of Table

7). In contrast, these effects are substantially muted in industries with low MHHI delta. The differences between the coefficients on CO from the two regressions are statistically significant at the 1% level across all specifications. This finding shows that the benefits of CO are contingent on a broader ownership network that collectively influences industry competitive dynamics.[32]

[Table 7 Here]

Third, the effect of common ownership is further reinforced in concentrated industries, where market power enhances the ability of funds to influence competitive dynamics. Using the Herfindahl-Hirschman Index (HHI) based on the Hoberg-Phillips 25 text-based industry classifications to measure industry concentration, we further partition the CO positions into portfolio firms in more concentrated industries (HHI above the median in a year-month) and those in less concentrated industries (below-median HHI industries).[33] The results in Panel B of Table 7 demonstrate that the positive association between CO and fund performance is pronounced in concentrated industries, where funds can more effectively leverage their ownership positions to influence competitive outcomes. In less concentrated industries, this relationship is weaker, underscoring the importance of market structure in enhancing the anti-competitive effects of common ownership. Altogether, these findings show that CO positions are associated with superior performance through a mechanism distinct from industry effects, though the relationship is amplified in environments with high overall common ownership and certain market structures.

[32] For robustness, we partition CO positions into portfolio firms with above-median firm-level common ownership and those with below the median. Internet Appendix Table B.8 shows that the positive relation between fund CO and fund returns is driven by the subset of portfolio firms that are commonly held by the fund and at the same time with high-firm-level common ownership, corroborating the results on the industry-level common ownership.

[33] The Hoberg-Phillips text-based industry classifications are sourced from the Hoberg-Phillips Data Library.

D. Robustness Tests

This subsection attempts to address omitted variable concerns on the positive relation between fund-level common ownership positions and fund performance. First, we matched high CO funds with low CO funds based on 12 observable fund characteristics. Using the matched sample, we replicate the positive relationship. Then, we consider three alternative explanations that may drive our results: portfolio industry concentration effects, common selection, and funds' tendency to select firms with high common ownership.

1. Matched Sample Analysis

To alleviate the omitted variable concerns, we first implement a matching strategy and additional robustness tests on fund performance. We match high CO funds with low CO funds based on 12 observable characteristics—including all variables listed in Table 1 expect for CO—using propensity score matching (PSM). For each fund in the top half of the CO distribution, we identify a matched fund in the bottom half with the closest observable characteristics without replacement. The matching is conducted quarterly to ensure contemporaneous relevance and avoid look-ahead bias.

The covariate balance analysis demonstrates that treated (high CO) and control (low CO) funds are remarkably similar across all observable dimensions. As shown in Internet Appendix Figure B.3 and Table B.5, none of the differences in key fund characteristics are statistically significant. This balanced matching helps mitigate concerns about selection on observables. Subsequent fund performance regressions in Internet Appendix Table B.6—estimated using both Fama-MacBeth and fixed-effects models—confirm that the positive relationship between CO and performance remains robust. This holds across various performance measures as well as across alternative matching samples based on coarsened exact matching (CEM) and other characteristic combinations.

2. Alternative Explanations

Next, we evaluate three possible alternative explanations for our main finding: portfolio industry concentration (PIC), common selection (CS), and common-ownership stock picking (COSP) to ensure that the positive association between fund-level common ownership and fund performance is not driven by these confounders.

[Table 8 Here]

First, actively managed funds with higher CO may concentrate their holdings in particular industries where they possess informational advantages. Kacperczyk et al. (2005) demonstrate that funds with high PIC tend to outperform more diversified peers, raising the concern that our results might simply reflect a PIC effect. Importantly, however, the PIC measure–constructed across ten industries–does not necessarily imply high CO, nor does a high CO strategy require industry concentration. Nevertheless, to address this, we include PIC as a control in our Fama–MacBeth regressions. As shown in columns (1)–(2) of Table 8, the coefficient of CO remains positive and statistically significant even after accounting for PIC, whose correlation with CO is below 0.20.

Second, the common selection (CS) effect posits that funds can co-hold stocks with superior intrinsic return potential – regardless of fund-level CO. Following Alti and Sulaeman (2012) and Sias, Starks, and Titman (2006), we proxy for this effect by the portfolio-weighted change in the number of institutional investors. For each stock in the portfolio of a fund, we calculate the quarterly change in the number of institutional holders and aggregate these changes using portfolio weights.[34] Columns (3)–(4) of Table 8 include this CS measure as an additional control. Again, the positive relation of CO to performance remains unchanged, indicating that the selection of high-quality stocks in combination does not drive our results.

Third, fund managers might simply select firms characterized by high firm-level common ownership (i.e., high profit weights) without necessarily holding stakes in their competitors. To address this concern, we construct the CO stock-picking measure (COSP):

$$COSP_p = \sum_m w_{p,m}\kappa_m, \tag{8}$$

where $\kappa_m = \sum_n s_n \kappa_{m,n}$. We first calculate the firm-level common ownership measure κ_m by summing all pairwise profit weights, $\kappa_{m,n}$, of the firm m to its competitors n weighted by s_n, the relative sales percentage. Then $COSP_p$ is the sum of the profit weights for all stocks held in the portfolio p, weighted by the portfolio weights of the stocks $w_{p,m}$. Unlike the CO measure, $COSP_p$, considers the common ownership of all shareholders (based on our comprehensive ownership data sourced from 13F, 13D, 13G, etc.) in a firm and does not require the fund to invest in both the focal firm and its competitors. Funds that invest in a firm but do not invest in its competitors are less likely to actively engage in corporate decision-making to soften competition, as they would only gain if the focal firm outcompetes its competitors. Columns (5)–(6) of Table 8

[34] Backus et al. (2021) provides a clear example of why profit weights do not directly depend on the number of investors. They consider that, in a market with only two firms, there are N identical common owners, each holding 1% and x% of the ownership in firms A and B, respectively. Then, the profit weight that firm A (B) places on firm B's (A's) profit is x (1/x). Both profit weights do not directly depend on N, the number of common investors.

show that the CO coefficient remains significant after controlling for funds' stock picking on firms with varying degrees of common ownership.

Although our robustness tests rule out the three alternative explanations, our analysis remains inherently correlational and cannot establish that common ownership causally reduces competition or increases fund returns. Although our results align with theoretical predictions–such as greater CO effects for portfolio firms in industries with high overall common ownership and concentration–we cannot entirely rule out alternative mechanisms. Yet, any viable competing explanation would need to satisfy three stringent criteria: (1) produce superior returns at the individual position level (CO versus non–CO holdings), (2) interact positively with industry–level common ownership intensity (MHHI delta), and (3) be amplified in highly concentrated industries (HHI). Absent these features, alternative theories are unlikely to reproduce the cross–sectional and within–fund patterns we observe. Establishing causality will require future research that exploits exogenous variation in CO or directly measures changes in competitive behavior.

E. Return Persistence and Implementation Barriers

Our last analysis relating CO and fund performance examines whether the persistence in alphas aligns with the persistence in CO as discussed in Section A. Using the portfolio sort analysis, we study the long-term performance of CO decile portfolios with varying levels of past CO, ranging from 1 to 6 years. Table 9 reports the results.

[Table 9 Here]

We find that funds with high CO outperform those with low CO for at least six years after forming the portfolios. The persistence in performance coupled with the persistence in fund CO positions shows a strategy that is profitable yet not widely replicated. Several frictions may constrain wider adoption of CO strategies. First, effective implementation requires specialized governance expertise and engagement resources to monitor and influence multiple portfolio firms. Second, our measure captures meaningful ownership overlap across competitors, necessitating substantial position sizes that smaller funds may be unable to accumulate. Third, regulatory scrutiny from antitrust authorities increases compliance costs and legal risks. Finally, business relationships between institutional investors and portfolio companies may create conflicts that constrain governance engagement (Brickley, Lease, and Smith, 1988). These barriers may explain why CO strategies remain profitable over extended periods without being arbitraged away. If fund managers overcome these hurdles, they should be compensated accordingly. We investigate this compensation question next by examining the incentives of fund managers to adopt CO strategies.

IV. Fund Manager Payoffs

In this section, we study how CO relates to fund manager payoffs. To do so, we employ the framework from Berk and Green (2004) and consider the first-order effects of fund managers' payoffs from management fees. Since high-CO funds earn positive gross and net-of-fee alphas, we next study whether fund managers also share in the surplus by charging higher fees. Then, taking the results from fund returns and fees together, we conduct a back-of-the-envelope calculation to estimate the relationship between CO and fund managers' compensation.

A. Fund Fees

To study the differences in fees, we use a panel regression with fund-by-year observations with the following specification:

$$(9)\quad EXPENSE\_RATIO_{p,t}(MANAGEMENT\_FEE_{p,t}) = \alpha_{j(p),t} + \beta CO_{p,t} + X'_{p,t-1}\Gamma + \varepsilon_{p,t},$$

where p indexes a fund, $j(p)$ is the fund family, and t indexes a year. The dependent variables are either fund expense ratios or management fees in year t. The control variables in $X_{p,t-1}$ follow those in equation 7. In addition, we include fund family-by-year fixed effects $\alpha_{j(p),t}$ to account for time-varying fund family policies (e.g., Hortaçsu and Syverson 2004; Gil-Bazo and Ruiz-Verdú 2009; Guercio and Reuter 2014). Standard errors are clustered by both fund and year, allowing for shocks to fees that commonly affect all funds and autocorrelated shocks within a fund through time.

Table 10 shows that, after controlling for time-varying fund and fund-family characteristics, CO is positively associated with expense ratios and management fees—both in the cross-section (columns (1) and (3)) and within the fund family (columns (2) and (4)). Economically, a one-standard-deviation increase in fund CO is associated with 4.38 basis points ($4.673\times$ 0.94%) higher expense ratios and 2.34 basis points ($2.497\times$ 0.94%) higher management fees.

[Table 10 Here]

To assess whether the relation between CO and fund manager fees is plausibly meaningful as an incentive for fund managers to adopt common ownership strategies, we next consider the average fund manager's compensation.

B. Implications for Fund Manager Compensation

We conduct a simple back-of-the-envelope calculation similar to Lewellen and Lewellen (2022). However, where Lewellen and Lewellen (2022) consider an exogenous increase in the value of a portfolio position, we consider the payoff to a manager adopting a high-CO strategy. Following Berk and Green (2004), fund managers' objective is to maximize their compensation specified as:

$$(10)\quad COMPENSATION_{p,t} = TNA_{p,t-1} \times (1 + r_{p,t}) \times (1 + FUND\_FLOWS_{p,t})\times$$
$$(1 - EXPENSE\_RATIO_{p,t}) \times MANAGEMENT\_FEE_{p,t},$$

where $TNA_{p,t-1}$ is the lagged total net assets, $r_{p,t}$ is the gross monthly return, $FUND\_FLOWS_{p,t}$ is the fund flow represented as a fraction of $TNA_{p,t-1}$. $EXPENSE\_RATIO_{p,t}$ and $MANAGEMENT\_FEE_{p,t}$ denote the fund's expense ratio and management fee, respectively.

Using our most conservative estimates, funds with a one-standard-deviation (0.94%) higher CO have 3.58 basis points higher monthly raw gross returns (column (1) of Panel A in Table 5), 2.55 basis points higher annual expense ratio (column (2) of Table 10), and 1.25 basis points higher annual management fees (column (4) of Table 10). Internet Appendix Table B.10 shows that average fund flows are not significantly affected by CO, conditional on fund returns, and there is no existing theory suggesting that fund-level CO should be unconditionally correlated with fund flows. Therefore, we assume no relation between CO and average fund flows.

For a typical fund in our sample with the median value of all characteristics, fund managers earn around 2.2% (approx. $41,000) more annual compensation relative to the median $1.92 million if they adopt a strategy with a one-standard-deviation higher CO. Over 5 years, the fund manager earns around 17.4% (approx. $333,000) more cumulative compensation, since the increase in annual compensation compounds through the CO-return relation. This calculation shows that active mutual fund managers seem financially incentivized to pursue common ownership strategies.[35]

V. Fund Manager Voting on Corporate Policies

Our earlier findings reveal that funds with larger common ownership positions achieve higher performance and deliver superior returns to their investors despite charging higher fees. These elevated fees could reflect compensation for costly monitoring efforts directed at corporate policies among competing firms. Therefore, in this section, we study whether funds with higher CO intend to engage with their portfolio companies in ways consistent with the common ownership hypothesis. Specifically, we investigate whether mutual funds with substantial

[35] Our estimate of the first-order effect of CO on managerial compensation is a lower bound. In Internet Appendix Table B.10, we show that CO has positive direct effects on average fund flows conditional on fund performance. In addition, there exists a non-trivial relationship between CO and flow-performance sensitivity. We find that CO dampens inflows for high-performing funds but increases outflows for low-performing funds. However, higher returns still relate to more inflows, even with the dampened effects. Therefore, since higher CO is related to higher returns on average, the flow-performance relation will result in an even larger economic magnitude than that reported above. For simplicity, we do not consider this third-order relation of CO on flow-performance sensitivity in the back-of-the-envelope calculation.

ownership stakes across competing firms strategically vote to maximize their portfolio returns and reduce incentives for competition between product market rivals.

To this end, we focus on mutual funds' voting on corporate policy proposals in shareholder meetings. Motivated by the voice model of Edmans et al. (2019), which demonstrates that common owners have stronger monitoring incentives, we utilize classifications and recommendations from Institutional Shareholder Services (ISS) to test: (1) whether active mutual funds with higher CO tend to be more active monitors (Iliev and Lowry, 2015), and (2) whether they systematically vote to reduce executive pay-performance sensitivity (Antón et al., 2023) and support the appointment of "common directors" who hold positions across competing firms (Azar and Vives, 2021).

A. Active Monitoring

We first examine whether funds with larger common ownership are more active monitors of their portfolio firms. Following Iliev and Lowry (2015), we define active monitoring as the propensity to vote independently of ISS recommendations. Specifically, for each fund in a year, we calculate the percentage of votes where the fund votes differently from ISS recommendations. We relate this proxy for active voting to funds' CO along with other fund characteristics measured in the previous year at the fund-year level.

Table 11 reports the results. In column (1), we find that funds with higher CO are associated with greater disagreement with ISS, which is proxied by the percentage of proposals in which the fund votes against ISS recommendations (Iliev and Lowry, 2015). In terms of economic magnitude, a one-standard-deviation increase in fund CO is associated with a

4.26-percentage-point (0.474×0.09) increase in disagreement with ISS recommendations, representing a substantial increase relative to the unconditional mean of 9.0%.

[Table 11 Here]

Besides, we consider two variants of active voting measures: the percentage of votes where the fund votes differently from ISS recommendations among *contentious* proposals in column (2) and *consensus* proposals in column (3). We find that high-CO funds are still positively related to disagreement with ISS. Importantly, as evidenced in column (3), even for proposals where the recommendations of ISS and management align, high-CO funds are still more likely to disagree with them, indicating active voting.[36]

An alternative proxy for active voting proposed by Iliev and Lowry (2015) is the voting RPI, defined as the R^2 value from a regression of fund votes on ISS recommendations. Following their approach, we focus on governance and compensation-related proposals that our sample funds vote on and estimate the above regression separately for each fund in a year. A lower R^2 indicates more active voting by a mutual fund. Then, we examine whether this active voting indicator is related to the fund's CO measured in the year prior to the proposals. The results are reported in Panel B of Table 11. In column (1), we find that the voting behaviors of mutual funds with higher CO are less likely to be explained by ISS recommendations. In terms of economic

[36] As a robustness check, we also conduct a similar analysis at the fund family level by regressing the percentage of disagreement with ISS within a fund family in a year on the fund family CO. Internet Appendix Table B.11 shows that the results are robust to this fund-family-level analysis. We also find that high-CO funds earn superior returns when they also have low turnover ratios (Internet Appendix Table B.9). This suggests that common owners are likely to be long-term shareholders who exploit the common ownership effects, corroborating the findings of the active monitoring.

magnitude, a one-standard-deviation increase in fund CO is associated with a 15-percentage-point (1.667×0.09) decline in the R^2 from regressions of fund votes on ISS recommendations. These results are robust and even stronger when we estimate the R^2 using contentious or consensus governance and compensation proposals. Again, these findings suggest that high-CO funds are active voters whose voting activities are less likely to be explained by ISS recommendations.

B. Executive Compensation Proposals

We next investigate how mutual fund common owners vote on specific proposals related to executive compensation. Antón et al. (2023) theoretically demonstrate that managerial compensation tends to be less sensitive to own-company performance in the presence of common ownership as weaker managerial incentives can soften competition within industries. Analogously, we test whether high-CO funds have an incentive to reduce competition among portfolio firms by voting against the proposals related to the approval of executives' performance-related compensation, such as stock or stock option plans.

Using ISS Voting Analytics data, we estimate fund-by-proposal level regressions of the form

$$VOTE_{p,k(i,t)} = \alpha_{j(p),t} + \gamma_{k(i,t)} + \beta CO_{p,i,t} + X'_{p,t-1}\Gamma + \varepsilon_{p,k(i,t)t}, \quad (11)$$

where p indexes a fund, i is a portfolio company, $k(i,t)$ is a specific corporate policy proposal for firm i in year t, and $j(p)$ indicates the fund family of fund p. Observations are structured at the fund-by-proposal level, where a portfolio company could have multiple proposals in the same year. Control variables in $X_{p,t-1}$ are the same as those in equation (9), measured at the year-end preceding the proposal. We incorporate proposal fixed effects $\gamma_{k(i,t)}$ and fund family-by-year fixed effects $\alpha_{j(p),t}$. The former accounts for unobserved heterogeneity at the firm, proposal, and time period levels, while the latter controls for time-varying fund family voting patterns (e.g., a family's general propensity to follow ISS recommendations). With these sets of fixed effects, our identification comes from exploiting variation in votes for a given proposal after controlling for time-varying family unobserved heterogeneity. The dependent variable $VOTE_{p,k(i,t)}$ varies based on the specific analyses below, and the key independent variable is the previous year-end fund-firm CO measure, i.e., fund p's common ownership in firm i ($\kappa_{p,m}$ in equation (3)). Standard errors are clustered at the fund level, allowing for correlated voting behavior across proposals within a fund (Iliev and Lowry, 2015).

Recognizing the substantial influence of fund families on individual fund voting decisions, we also conduct parallel analyses at the fund family-by-proposal level using the following specification:

$$\%VOTE_{j,k(i,t)} = \alpha_{j,t} + \gamma_{k(i,t)} + \beta CO_{j,i,t} + \varepsilon_{j,k(i,t)t}, \tag{12}$$

where the subscripts follow equation (11). In this analysis, the dependent variable is the percentage of voting for or against a proposal in a fund family. The key independent variable is the weighted sum of common ownership in a firm across all funds affiliated with the fund family, using each fund's lagged one-quarter TNA as the weights. The regression includes proposal fixed effects as well as the family-by-year fixed effects, which absorb any time-varying variations within a fund family. Thus, family characteristics are omitted from the regression. The standard errors are clustered at the fund family level.

In our fund-by-proposal level analysis, the dependent variable is an indicator equal to one if a fund votes against proposals approving stock or stock option plans. Column (1) in Panel A of Table 12 reveals that funds with larger common ownership in the firm are more likely to oppose such executive incentive plans. A one-standard-deviation increase in the fund-firm CO (0.13) corresponds to a 23-basis-point ($0.13 \times 1.8\%$) increase in the probability of voting against stock or stock option plans. Column (2) of Panel A confirms that families with higher common ownership are more likely to oppose these compensation mechanisms.

[Table 12 Here]

To directly assess whether these voting patterns translate into lower pay-performance sensitivity, we examine the relationship between a fund's CO measure and the average executive compensation "delta" – the sensitivity of executive wealth to changes in stock price – across its portfolio firms. Using executive delta data from 1999-2018 (Core and Guay, 2002; Coles, Daniel, and Naveen, 2006), we construct a fund's portfolio delta as the log of the weighted average executive delta of its portfolio firms at year-end.[37] Column (3) in Panel A of Table 12 shows that fund-level CO is significantly negatively associated with portfolio-weighted executive compensation delta. In economic terms, a one-standard-deviation increase in fund-level CO (0.94%) correlates with a 22.4% decrease in the log of portfolio-weighted executive compensation delta. The higher propensity of mutual fund common owners to vote against executive stock compensation plans manifests in lower overall pay-performance sensitivity for portfolio firms' executives.

[37]See `https://sites.temple.edu/lnaveen/data/` for the data.

C. Director Elections

Finally, we investigate whether high-CO funds support director nominees who simultaneously serve on boards of competing firms ("CO-directors"). Such interlocking directorates could facilitate coordination between competitors by creating information channels and aligned governance across firms. The existence of such directors might seem surprising given Section 8 of the Clayton Act, which nominally prohibits horizontal directorships in competing corporations. However, despite this legal prohibition, our data reveals the persistent presence of CO-directors. From the proposal description, we extract the names of the proposed director nominees (52,951 directors from 227,638 distinct election proposals). Using Hoberg-Phillips industry classifications, we identify 1,968 proposals involving CO-directors, corresponding to 660 individual directors during our sample period. This prevalence aligns with findings from other studies, such as Gopalan, Li, and Zaldokas (2022), who identify 1,492 instances of new direct board connections to product market peers over a similar period.

The persistence of the CO-directors, despite legal restrictions, can be attributed to several institutional factors. First, Section 8 suffers from definitional ambiguity regarding "competitors" and lacks clear guidelines for determining when companies truly compete (Nili, 2020). Jorgensen and Clark (1979) documented how technical challenges in defining competition, determining "substantial" competitive relationships, and proving competitive harm, combined with a regulatory preference for voluntary compliance, created an environment where interlocks continued. Second, historical enforcement of Section 8 has been irregular and lenient. Kramer (1949) noted minimal enforcement in the Act's first 35 years, while Wilson (1976) characterized enforcement as "on-again-off-again," with only brief periods of regulatory activism. These enforcement challenges have persisted into the modern era—between 2010-2019, the FTC and DOJ brought zero Section 8 cases to trial.[38]

In our fund-by-proposal level analysis, the sample includes all available director elections (both CO-director and other director elections) voted on by our sample funds. We employ a similar specification as in equation (11). The dependent variable is a binary indicator equal to one if a fund votes for a nominated director. To facilitate interpretation, we interact an indicator for CO-director elections with a dummy for high fund-firm CO, which equals one if the fund-firm CO measure exceeds the family median at the year-end before the election. Column (1) in Panel B of Table 12 shows that the propensity to vote for director nominees is significantly and positively related to the funds' common ownership in the firm when the directors have existing directorships in the firm's competitors. In economic terms, funds with high common ownership are 0.7% to 1.5% more likely to support CO-directors, representing approximately 10.3%-22.1% of the standard deviation in overall approval rates for director nominees. However, the coefficient on high fund-firm CO alone is insignificant, suggesting that funds with higher common ownership are not generally more supportive of directors without cross-firm connections. These results remain robust in our fund family-by-proposal analysis shown in Column (2). Through the lens of revealed preference, these results indicate that active mutual fund common owners strategically use proxy voting to support directors with positions across industry competitors. This finding

[38]Rakib (2019) argues that Section 8's enforcement mechanisms remain "toothless," as the absence of monetary penalties and reliance on voluntary compliance creates minimal deterrence. This regulatory gap has recently prompted renewed attention, with the FTC filing its first formal Section 8 action in over 40 years in August 2023 involving EQT and Quantum.

aligns with Azar and Vives (2021), who demonstrate that firm pairs with higher levels of common ownership have an increased probability of sharing directors.

Collectively, these voting patterns suggest that high-CO funds actively use their governance rights in ways consistent with facilitating coordination among portfolio firms. They vote more independently of ISS recommendations, oppose executive incentive plans that might intensify competition, and support CO-directors who could facilitate coordination across competing firms.[39]

VI. Conclusion

Common ownership has risen in the United States over the past few decades. While empirical studies examine whether common ownership has anticompetitive effects on firms or the industries they operate, this paper takes a different perspective by investigating the benefits and incentives of common owners who jointly invest in product market competitors. Using U.S. actively managed equity mutual fund data from 1999 to 2018, we find a positive relation between fund common ownership and performance, both before and after fees. These findings suggest that common institutional investors and their end investors earn from higher returns, consistent with the common ownership hypothesis. Funds with a larger degree of common ownership also charge higher fees. Taking fund returns and fees together suggests that fund managers are financially incentivized to adopt the common ownership strategy. To corroborate this incentive, we provide additional evidence that funds with higher common ownership are more active voters and appear to vote in ways that could soften firm competition.

[39] As a falsification test, we find no significant relationship between CO and voting on auditor ratification proposals, which are unrelated to competition concerns (Internet Appendix Table B.13).

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Appendix

Variable	Definition
FUND_RETURN	The net-of-fee monthly fund returns are obtained from the CRSP Survivorship Bias-Free Mutual Fund Database. When a portfolio has multiple share classes, we aggregate them into weighted average fund returns using the lagged TNA of share class as the weights.
RISK_ADJUSTED_RETURN	We use multiple factor models to compute the fund alphas (i.e., the Fama-French 6-factor model, the Ferson-Schadt conditional model, the Paster-Stambaugh liquidity model, the Hou-Xue-Zhang q-5-factor model).
BENCHMARK_ADJUSTED _RETURN	For each fund, we obtain its benchmark index and the monthly index return from Morningstar. If a fund's benchmark is not available, the S&P 500 Index will be assigned as the benchmark index for that fund. Benchmark-adjusted returns are computed as the difference between the fund's actual return and benchmark index returns.
TNA	We obtain the total net assets on the share class level from the CRSP Mutual Fund Database. For each fund in a month, we sum up the share class TNA to the fund level.
FUND_AGE	The number of years that a fund exists since its first offer date which is sourced from the CRSP Mutual Fund Database.
FUND_FLOWS	Fund flows are computed using the following equation: $$Fund\_Flows_{p,t} = \frac{TNA_{p,t} - TNA_{p,t-1}(1 + r_{p,t})}{TNA_{p,t-1}},$$ where $TNA_{p,t}$ and $TNA_{p,t-1}$ are total net assets for fund p at months t and $t-1$, respectively; and $r_{p,t}$ is cumulative fund return in month t.
EXPENSE_RATIO	The expense ratio of a fund is on annual basis and sourced from the CRSP Mutual Fund Database.
MANAGEMENT_FEE	The management fee of a fund is on annual basis and sourced from the CRSP Mutual Fund Database.
TURNOVER_RATIO	The turnover ratio of a fund is on annual basis and obtained from the CRSP Mutual Fund Database.
NUM_OF_STOCKS_HELD	The number of common stocks held in a fund's portfolio at quarter-end. We require that the stocks are listed on the NYSE, Nasdaq, or AMEX stock exchanges.
NUM_OF_STOCKS_HELD (PIC)	Kacperczyk et al. (2005)'s portfolio industry concentration measure, defined as the log of $\sigma(w_{i,p,t} - \bar{w}_{i,t})$, where $w_{i,p,t}$ is the fund p's portfolio weight in industry i in month t and $\bar{w}_{i,t}$ is the portfolio weight in industry i for the CRSP value-weighted market portfolio in month t.

Variable	Definition
COMMON_SELECTION (CS)	The average change in the number of institutional investors for portfolio stocks, weighted by portfolio weights of the stocks.
CO_STOCK_PICKING (COSP)	The portfolio weighted average firm-level common ownership, calculated as the sum of all pairwise profit weights $\kappa_{m,n}$ of the firm m to its competitors n weighted by s_n, the relative sales percentage.
IDIOSYNCRATIC_VOLATILITY	The standard deviation of the residuals obtained from the Carhart's 4-factor model. For each month, we regress the daily fund returns on the four factors.
RETURN_VOLATILITY	The standard deviation of fund daily returns, measured within each quarter.
FUND_COMMON_OWNERSHIP (CO)	Our primary fund CO measure that captures the extent of common ownership within fund p's portfolio. The measure can be interpreted as the portfolio-weighted average value, specific to fund p, of a dollar of profits accruing to competitors relative to a dollar of profits for the focal portfolio firms themselves. See Section B for details.
FUND_FIRM_CO ($\kappa_{p,m}$)	A fund's common ownership in a firm measured at quarter-end.
FUND_FAMILY_FIRM_CO	A fund family's common ownership in a firm measured at quarter-end, computed as the weighted sum of fund-firm CO across all funds in a fund family using each fund's lagged quarter TNA as the weights.
CO_FF12	The alternative fund CO measure. We define industry peers based on the Fama-French 12 industry classifications rather than the Hoberg-Phillips textual network industry classifications (TNIC).
CO_COSINE	The alternative fund CO measure. The variable construction is similar to the main CO measure, except that firms' pairwise profit weights are further divided by the firms' relative investor concentration following Backus et al. (2021).
MHHI_DELTA	The modified HHI delta introduced by Azar et al. (2018). This measure is the weighted average common ownership in an industry.
HHI	The Herfindahl-Hirschman Index that captures industry competitiveness.
DISAGREEMENT_WITH_ISS	The percentage of proposals in which the fund votes against ISS recommendations in a year, either for a fund or a fund family.
VOTING_RPI	the R-squared value from a regression of fund votes on ISS recommendations in a year, either for a fund or a fund family.
VOTE_FOR	An indicator variable set to one if the fund votes for a proposal, and zero otherwise.
LOG_OF_PORTFOLIO_FIRMS_DELTA	The log of the weighted average executive delta of a fund's portfolio firms at year-end. The executive delta data is obtained from Core and Guay (2002) and Coles et al. (2006).

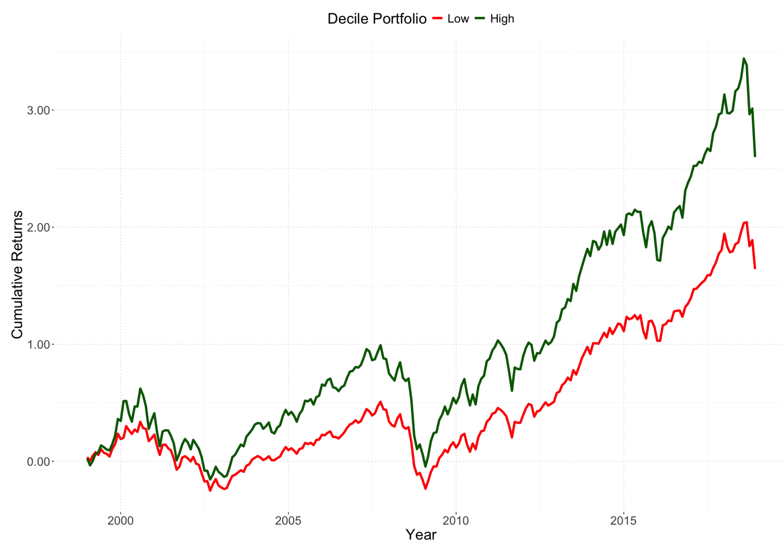
Figures and Tables

FIGURE 1

Time Series Plots

The figures present the cumulative returns of top and bottom decile fund portfolios formed based on funds' common ownership (CO, as defined in Section B). The portfolios are value-weighted by fund TNA, rebalanced at the end of each quarter, and held for one quarter. The HML is the long-short portfolio formed by buying the high CO decile portfolio and selling the low one. Panel A shows the cumulative raw returns of the high CO (green line) and low CO (red line) portfolios from 1999 to 2018. Panel B shows the cumulative raw returns for the HML portfolio over the same period.

Panel A: Cumulative Returns of High and Low CO Portfolios



Panel B: Cumulative Returns of High-Minus-Low Portfolios

TABLE 1

Summary Statistics

This table presents summary statistics for mutual fund characteristics and fund-level common ownership measure. For each variable, we report the mean, standard deviation, and the 25^{th}, 50^{th} (median), and 75^{th} percentiles. The sample contains 379,806 fund-month observations, except for the rolling estimates of Fama-French 6-factor alphas, which have 330,588 observations due to the estimation window requirement. All variables are defined in the Appendix.

	Mean	SD	25^{th}	50^{th}	75^{th}
TOTAL_NET_ASSETS (TNA, $M)	1,155.612	2,681.423	77.400	266.900	922.675
FUND_RETURN (Monthly, %)	0.710	4.644	-1.673	1.077	3.475
6_FACTOR_ALPHA (Monthly, %)	-0.099	3.543	-0.972	-0.124	0.731
FUND_AGE (Years)	14.561	12.492	6.041	11.921	18.764
FUND_FLOWS (Monthly, %)	0.089	4.819	-1.457	-0.495	0.740
EXPENSE_RATIO (Annual,%)	1.041	0.571	0.807	1.100	1.390
MANAGEMENT_FEE (Annual, %)	0.606	0.385	0.431	0.684	0.851
TURNOVER_RATIO (Annual, %)	67.995	73.272	19.980	49.000	91.000
NUMBER_OF_STOCKS_HELD	100.709	152.469	43.000	65.000	101.000
PORTFOLIO_INDUSTRY_CONCENTRATION (PIC, Log)	5.970	1.232	5.324	5.902	6.481
RETURN_VOLATILITY (Quarterly, %)	8.968	6.625	5.752	7.494	10.273
IDIOSYNCRATIC_VOLATILITY (Quarterly, %)	2.366	4.537	1.344	1.864	2.751
CO (Quarterly, %)	0.226	0.937	0.000	0.002	0.029

TABLE 2

Top CO Funds

This table presents the top five CO funds selected based on the CO measure as of the end of years 2000, 2005, 2010, 2015, and 2018. The funds' CO (%), management fee (%), expense ratio (%), and TNA ($billion) are measured as of the end of each year.

Year	Asset Manager: Fund Name	CO (%)	Management Fee (%)	Expense Ratio (%)	Fund TNA ($B)
	Seligman Communications and Information Fund, Inc.	0.837	0.822	1.621	6.537
	Franklin Strategic Series: Franklin Small Cap Growth Fund	0.638	0.448	0.939	12.851
2000	Firsthand Funds: The Technology Value Fund	0.622	1.824	1.830	3.301
	The Munder Funds, Inc.: NetNet Fund	0.538	1.097	2.335	3.664
	Franklin Strategic Series: Franklin Biotechnology Discovery Fund	0.398	0.560	1.090	1.342
	Fidelity Puritan Trust: Fidelity Low-Priced Stock Fund	0.704	0.676	0.880	36.721
	HomeState Group: Emerald Select Banking & Finance Fund	0.588	1.094	1.815	0.297
2005	FBR Funds: FBR Small Cap Financial Fund	0.512	0.960	1.460	0.432
	Fidelity Mt Vernon Street Trust: Fidelity Growth Company Fund	0.366	0.730	0.970	27.415
	John Hancock Investment Trust II: John Hancock Regional Bank Fund	0.360	0.754	1.427	2.114
	Fidelity Mt Vernon Street Trust: Fidelity Growth Company Fund	0.499	0.637	0.807	37.341
	Federated Equity Funds: Federated Kaufmann Fund	0.309	1.351	2.037	7.486
2010	John Hancock Investment Trust II: John Hancock Regional Bank Fund	0.230	0.790	1.427	0.677
	Fidelity Select Portfolios: Biotechnology Portfolio	0.143	0.560	0.870	1.038
	Growth Fund of America, Inc	0.139	0.271	0.727	161.799
	Fidelity Select Portfolios: Biotechnology Portfolio	2.683	0.548	0.730	14.942
	John Hancock Investment Trust II: John Hancock Regional Bank Fund	0.326	0.774	1.363	0.833
2015	Fidelity Advisor Series VII: Fidelity Advisor Biotechnology Fund	0.196	0.548	1.148	3.781
	Federated Equity Funds: Federated Kaufmann Fund	0.141	1.352	1.999	5.513
	T Rowe Price Small-Cap Value Fund, Inc	0.136	0.637	0.819	7.204
	Fidelity Select Portfolios: Biotechnology Portfolio	1.422	0.542	0.720	6.512
	John Hancock Investment Trust II: John Hancock Regional Bank Fund	0.334	0.748	1.377	1.113
2018	T Rowe Price Small-Cap Value Fund, Inc	0.221	0.640	0.760	8.523
	Federated Equity Funds: Federated Kaufmann Fund	0.127	0.000	0.000	5.529
	PRIMECAP Odyssey Funds: PRIMECAP Odyssey Aggressive Growth Fund	0.119	0.000	0.000	9.204

TABLE 3

Factor Loadings of Fund Portfolios

This table reports the factor loadings in the Fama-French 6-factor model for each decile fund portfolio sorted by fund CO. The factor loadings of the HML portfolios formed by buying the high CO portfolios and selling the low CO portfolios are reported in the bottom row. All t-statistics of the estimated factor loadings are Newey-West corrected with up to three-month lags and reported in parentheses.

CO Bin	β^{M}	$t(\beta^{M})$	β^{SMB}	$t(\beta^{SMB})$	β^{HML}	$t(\beta^{HML})$	β^{RMW}	$t(\beta^{RMW})$	β^{CMA}	$t(\beta^{CMA})$	β^{UMD}	$t(\beta^{UMD})$
Low	0.960	(67.823)	-0.060	(-3.177)	-0.035	(-1.806)	0.066	(2.962)	0.039	(1.320)	-0.012	(-0.995)
2	0.972	(73.572)	-0.066	(-4.299)	0.000	(0.027)	0.060	(3.198)	-0.027	(-1.252)	-0.007	(-0.647)
3	0.984	(84.839)	-0.045	(-2.699)	-0.007	(-0.314)	0.063	(3.727)	-0.030	(-1.326)	0.003	(0.225)
4	0.982	(73.761)	-0.012	(-0.713)	-0.021	(-0.911)	0.061	(3.056)	-0.012	(-0.427)	0.006	(0.587)
5	1.002	(57.699)	0.068	(0.864)	-0.042	(-1.406)	0.105	(1.530)	0.066	(0.908)	0.030	(1.775)
6	0.997	(44.115)	0.004	(0.221)	-0.012	(-0.386)	0.052	(2.435)	0.013	(0.388)	0.006	(0.338)
7	1.003	(55.869)	0.021	(1.603)	-0.006	(-0.212)	0.022	(1.205)	0.013	(0.474)	0.017	(0.896)
8	1.006	(54.779)	0.046	(2.044)	-0.019	(-0.627)	0.001	(0.035)	-0.014	(-0.406)	0.001	(0.059)
9	0.976	(49.125)	0.099	(4.296)	-0.027	(-0.850)	-0.069	(-1.995)	0.019	(0.444)	0.020	(1.070)
High	0.964	(43.151)	0.114	(3.784)	-0.007	(-0.244)	-0.020	(-0.367)	0.007	(0.135)	-0.007	(-0.716)
HML	0.004	(0.206)	0.173	(5.152)	0.028	(0.979)	-0.085	(-1.835)	-0.032	(-0.732)	0.005	(0.373)

TABLE 4

Portfolio Sorting

This table presents the performance of decile fund portfolios sorted by fund CO. The portfolios are value-weighted by fund TNA, rebalanced at the end of each quarter, and held for one quarter. The HML is the long-short portfolio formed by buying the high CO decile portfolio and selling the low one. All portfolio returns and return volatility are represented in percentages at a monthly rate. Panel A reports the portfolio sorting results for the gross returns, while Panel B reports the net-of-expenses returns. All t-statistics are Newey-West corrected with up to 3-month lags.

Panel A: Gross Returns

$COBin$	$Sharpe$	SD	r	$t(r)$	α^{FF6F}	$t(\alpha^{FF6F})$	α^{FS}	$t(\alpha^{FS})$	α^{PS}	$t(\alpha^{PS})$	α^{Q5}	$t(\alpha^{Q5})$	a^{BM}	$t(a^{BM})$
Low	0.328	4.078	0.378	(1.298)	-0.051	(-1.138)	-0.027	(-0.624)	-0.023	(-0.439)	-0.062	(-1.501)	0.002	(0.050)
2	0.338	4.135	0.395	(1.345)	-0.025	(-0.654)	0.015	(-0.369)	-0.014	(-0.317)	-0.044	(-1.271)	0.013	(0.400)
3	0.347	4.188	0.410	(1.375)	-0.025	(-0.639)	-0.025	(-0.617)	-0.012	(-0.246)	-0.054	(-1.452)	0.042	(1.047)
4	0.344	4.196	0.407	(1.347)	-0.041	(-1.004)	-0.044	(-1.147)	-0.021	(-0.462)	-0.054	(-1.450)	0.031	(0.748)
5	0.415	4.389	0.512	(1.667)	-0.011	(-0.222)	-0.009	(-0.195)	0.033	(0.474)	-0.037	(-0.777)	0.143	(1.454)
6	0.388	4.281	0.467	(1.506)	0.002	(0.039)	0.008	(-0.168)	0.011	(0.193)	-0.018	(-0.343)	0.093	(2.001)
7	0.360	4.329	0.439	(1.411)	-0.030	(-0.661)	-0.039	(-1.058)	-0.031	(-0.695)	-0.029	(-0.716)	0.053	(1.171)
8	0.395	4.471	0.496	(1.561)	0.038	(0.720)	0.032	(0.603)	0.025	(0.425)	0.040	(0.911)	0.132	(2.436)
9	0.408	4.451	0.510	(1.594)	0.055	(1.138)	0.027	(0.722)	0.021	(0.496)	0.052	(1.115)	0.124	(1.847)
High	0.444	4.398	0.547	(1.731)	0.086	(1.787)	0.068	(1.368)	0.063	(1.111)	0.058	(1.284)	0.164	(2.287)
HML	0.563	1.047	0.169	(2.932)	0.138	(3.406)	0.096	(1.904)	0.086	(1.839)	0.120	(3.085)	0.162	(2.897)

Panel B: Net-of-Expenses Returns

$COBin$	$Sharpe$	SD	r	$t(r)$	α^{FF6F}	$t(\alpha^{FF6F})$	α^{FS}	$t(\alpha^{FS})$	α^{PS}	$t(\alpha^{PS})$	α^{Q5}	$t(\alpha^{Q5})$	a^{BM}	$t(a^{BM})$
Low	0.256	4.080	0.296	(1.016)	-0.133	(-2.959)	-0.110	(-2.540)	-0.104	(-2.032)	-0.143	(-3.473)	-0.080	(-2.088)
2	0.270	4.141	0.317	(1.077)	-0.103	(-2.670)	-0.093	(-2.370)	-0.092	(-2.094)	-0.121	(-3.496)	-0.064	(-1.947)
3	0.282	4.191	0.335	(1.122)	-0.099	(-2.554)	-0.100	(-2.516)	-0.085	(-1.838)	-0.128	(-3.472)	-0.033	(-0.851)
4	0.280	4.199	0.333	(1.100)	-0.114	(-2.806)	-0.118	(-3.086)	-0.094	(-2.092)	-0.127	(-3.386)	-0.043	(-1.061)
5	0.355	4.392	0.439	(1.427)	-0.083	(-1.641)	-0.082	(-1.778)	-0.039	(-0.571)	-0.109	(-2.294)	0.070	(0.721)
6	0.324	4.284	0.392	(1.261)	-0.073	(-1.290)	-0.083	(-1.781)	-0.064	(-1.125)	-0.092	(-1.815)	0.018	(0.385)
7	0.295	4.332	0.362	(1.161)	-0.106	(-2.378)	-0.116	(-3.151)	-0.108	(-2.377)	-0.106	(-2.584)	-0.024	(-0.551)
8	0.330	4.474	0.416	(1.307)	-0.041	(-0.776)	-0.048	(-0.915)	-0.054	(-0.918)	-0.040	(-0.910)	0.052	(0.976)
9	0.342	4.453	0.429	(1.339)	-0.025	(-0.513)	-0.054	(-1.459)	-0.059	(-1.390)	-0.028	(-0.597)	0.043	(0.650)
High	0.385	4.399	0.476	(1.505)	0.016	(0.339)	-0.002	(-0.050)	-0.007	(-0.128)	-0.012	(-0.272)	0.093	(1.311)
HML	0.601	1.047	0.180	(3.127)	0.149	(3.677)	0.107	(2.127)	0.097	(2.077)	0.131	(3.362)	0.174	(3.095)

TABLE 5

Fama-MacBeth Regression

This table shows the results of the Fama-MacBeth cross-sectional regressions. The dependent variables are funds' monthly raw returns, estimated Fama-French 6-factor alpha, Ferson-Schadt alpha, Pastor-Stambaugh alpha, q-factor alpha, or benchmark-adjusted returns all represented as monthly returns in percentages. Returns are measured before expenses in Panel A and after expenses in Panel B, represented as a percentage. The main independent variable is the fund's common ownership (CO) measured in the previous quarter end. The control variables are lagged one-month log TNA, lagged one-year EXPENSE_RATIO, lagged one-year TURNOVER_RATIO, lagged one-month FUND_FLOW, lagged one-year FUND_AGE, and lagged one-month FUND_RETURN. All independent variables are winsorized at the 1% and 99% levels. ***,**,* denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Gross Returns

	r	$\hat{\alpha}^{FF6F}$	$\hat{\alpha}^{FS}$	$\hat{\alpha}^{PS}$	$\hat{\alpha}^{Q5}$	a^{BM}
	(1)	(2)	(3)	(4)	(5)	(6)
CO	3.580***	2.386***	2.498***	2.133***	2.580***	3.033***
	(1.380)	(0.747)	(0.868)	(0.742)	(0.780)	(1.027)
Constant	0.607**	-0.061	0.093	0.115*	-0.130	0.092
	(0.243)	(0.062)	(0.088)	(0.070)	(0.099)	(0.116)
Controls	✓	✓	✓	✓	✓	✓
Observations	379,806	330,588	330,588	330,588	330,588	379,806
Adjusted R^2	0.827	0.130	0.147	0.141	0.177	0.271

Panel B: Net-of-Expenses Returns

	r	$\hat{\alpha}^{FF6F}$	$\hat{\alpha}^{FS}$	$\hat{\alpha}^{PS}$	$\hat{\alpha}^{Q5}$	a^{BM}
	(1)	(2)	(3)	(4)	(5)	(6)
CO	3.564***	2.364***	2.478***	2.115***	2.563***	3.010***
	(1.380)	(0.747)	(0.869)	(0.741)	(0.779)	(1.027)
Constant	0.603**	-0.066	0.088	0.110	-0.135	0.087
	(0.243)	(0.062)	(0.088)	(0.070)	(0.099)	(0.116)
Controls	✓	✓	✓	✓	✓	✓
Observations	379,806	330,588	330,588	330,588	330,588	379,806
Adjusted R^2	0.828	0.130	0.146	0.140	0.176	0.270

TABLE 6

Decomposing Fund Portfolios: CO Positions

This table presents results on decomposed portfolios to explore the mechanisms underlying the superior performance of high CO funds. The table compares the performance of CO portfolios versus non-CO portfolios. In the odd columns, the dependent variables are CO portfolio returns which are holding-based returns, measured as the weighted average of the monthly returns of the portfolio firms in which the fund holds common ownership (i.e., $\kappa_{p,m} > 0$). In the even columns, the dependent variables are non-CO portfolio returns which are the weighted average of the monthly returns of the portfolio firms in which the fund does not hold common ownership (i.e., $\kappa_{p,m} = 0$). To construct the weighted average portfolio returns, the weights are the investment weights of the fund in each firm measured in the previous quarter. The monthly stock returns are measured as either raw returns or risk-adjusted returns using the 6-factor model. Test of differences reports statistical tests comparing coefficients between regressions. The key independent variable is the fund's common ownership (CO) measured in the previous quarter end. Control variables are the same as in Table 5. Regressions are estimated using both Fama-MacBeth (FM) and panel approaches with month fixed effects. Standard errors reported in parentheses are Newey-West adjusted for up to 3-month lags in FM regressions and are clustered by fund and month in panel regressions. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent Var:	r		$\hat{\alpha}^{FF6F}$		r		$\hat{\alpha}^{FF6F}$	
Portfolios:	CO	Non-CO	CO	Non-CO	CO	Non-CO	CO	Non-CO
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CO	2.964***	0.460	1.613**	0.781**	1.279**	0.379	0.954***	0.543***
	(1.014)	(0.523)	(0.703)	(0.349)	(0.498)	(0.287)	(0.348)	(0.207)
Test of Dif>0	2.504**		0.832		0.900*		0.519*	
	(1.140)		(0.785)		(0.575)		(0.403)	
Regression	FM	FM	FM	FM	Panel	Panel	Panel	Panel
Fund Controls	✓	✓	✓	✓	✓	✓	✓	✓
FE: Month					✓	✓	✓	✓
Observations	330,583	330,465	330,583	330,465	330,583	330,465	330,583	330,465
R^2	0.734	0.706	0.168	0.160	0.677	0.666	0.092	0.108

TABLE 7

Decomposing Fund Portfolios: Industry Concentration

This table presents results on decomposed portfolios to explore mechanisms underlying the superior performance of high CO funds across different industry characteristics. We focus on the CO portfolios that consist of portfolio firms commonly held by funds ($\kappa_{p,m} > 0$), as defined in Table 6. Panel A examines the performance of CO portfolios partitioned by Modified Herfindahl-Hirschman Index Delta (MHHI Delta, referred to in Azar et al. (2018)). The odd columns show results for CO portfolios consisting of firms in industries with above-median MHHI Delta among the portfolios, while the even columns present results for CO portfolios of firms in industries with below-median MHHI Delta. Panel B examines CO portfolios partitioned by industry concentration (HHI). The odd columns show results for CO portfolios consisting of firms from above-median HHI industries, while the even columns present results for CO portfolios consisting of firms from below-median HHI industries. The monthly stock returns are measured as either raw returns or risk-adjusted returns using the 6-factor model. The key independent variable is the fund's common ownership (CO) measured at the previous quarter end. Control variables are the same as in Table 5. Regressions are estimated using both Fama-MacBeth (FM) and panel approaches with month fixed effects. Test of differences reports statistical tests comparing coefficients between regressions. Standard errors reported in parentheses are Newey-West adjusted for up to 3-month lags in FM regressions and are clustered by fund and month in panel regressions. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. In both panels, the sample period is from 1999 to 2015 during which the Hoberg-Phillips 25 industry classifications are available.

Panel A: High- vs Low-MHHI-Delta Portfolios (Conditional on CO Portfolios)

Dependent Var:	r		$\hat{\alpha}^{FF6F}$		r		$\hat{\alpha}^{FF6F}$	
MHHI-Delta Portfolios:	High	Low	High	Low	High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CO	2.945***	0.421	1.676***	0.005	1.731***	0.246	1.374***	-0.166
	(0.808)	(0.477)	(0.597)	(0.263)	(0.376)	(0.249)	(0.275)	(0.189)
Test of Dif>0	2.524***		1.671***		1.485***		1.540***	
	(0.938)		(0.652)		(0.451)		(0.334)	
Regression	FM	FM	FM	FM	Panel	Panel	Panel	Panel
Controls	✓	✓	✓	✓	✓	✓	✓	✓
FE: Month					✓	✓	✓	✓
Observations	264,368	253,061	264,368	253,061	264,368	253,061	264,368	253,061
R^2	0.656	0.639	0.163	0.171	0.593	0.599	0.092	0.127

Panel B: High- vs Low-HHI Portfolios (Conditional on CO Portfolios)

Dependent Var:	r		$\hat{\alpha}^{FF6F}$		r		$\hat{\alpha}^{FF6F}$	
HHI Portfolios:	High	Low	High	Low	High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CO	3.108***	0.322	2.031***	-0.349	2.144***	-0.238	1.697***	-0.570***
	(0.851)	(0.578)	(0.658)	(0.374)	(0.375)	(0.283)	(0.287)	(0.201)
Test of Dif>0	2.786***		2.380***		2.382***		2.267***	
	(1.029)		(0.757)		(0.470)		(0.350)	
Regression	FM	FM	FM	FM	Panel	Panel	Panel	Panel
Fund Controls	✓	✓	✓	✓	✓	✓	✓	✓
FE: Month					✓	✓	✓	✓
Observations	264,368	242,077	264,368	242,077	264,368	242,077	264,368	242,077
R^2	0.637	0.652	0.154	0.248	0.583	0.600	0.090	0.196

TABLE 8

Portfolio Industry Concentration, Common Selection, and Stock Picking

This table shows the results of the Fama-MacBeth cross-sectional regressions controlling for variables that represent alternative explanations. The dependent variables are funds' monthly returns and Fama-French 6-factor alpha, which are measured after expenses and represented as monthly returns in percentages. The main independent variable is the fund's common ownership measured by CO. Columns (1) and (2) include KSZ's portfolio industry concentration (PIC) as the control variable. Columns (3) and (4) include the measure of common selection of institutional investors (CS) as the control variable. Columns (5) and (6) include the measure of stock picking on firm-level common ownership (COSP) as the control variable. Other standard control variables are the same as in Table 5. ***,**,* denote significance at the 1%, 5%, and 10% levels, respectively.

Additional Controls:	*PIC*		*CS*		*COSP*	
Dependent Var:	r	$\hat{\alpha}^{FF6F}$	r	$\hat{\alpha}^{FF6F}$	r	$\hat{\alpha}^{FF6F}$
	(1)	(2)	(3)	(4)	(5)	(6)
CO	2.748**	1.714**	3.238***	2.202***	1.618*	2.084***
	(1.069)	(0.705)	(1.088)	(0.720)	(0.968)	(0.742)
Constant	0.257	-0.170	0.493**	0.066	0.981***	0.028
	(0.229)	(0.106)	(0.220)	(0.108)	(0.346)	(0.102)
Fund Controls	✓	✓	✓	✓	✓	✓
Observations	379,806	330,588	379,806	330,588	379,806	330,588
Adjusted R^2	0.857	0.163	0.858	0.165	0.845	0.146

TABLE 9

Persistence

This table reports the long-term performance measured by the 6-factor net-of-fee alphas of each decile portfolio sorted by their lagged n-year CO, using a calendar time portfolio approach. For example, the column of CO$_{t-2}$ shows the performance of the decile portfolios sorted by their past CO in the lagged two years. The HML is the long-short portfolio formed by buying the high lagged n-year CO decile portfolio and selling the low one. All t-statistics are Newey-West adjusted.

$CO\ Bin$	CO_{t-1}	$t(CO_{t-1})$	CO_{t-2}	$t(CO_{t-2})$	CO_{t-3}	$t(CO_{t-3})$	CO_{t-4}	$t(CO_{t-4})$	CO_{t-5}	$t(CO_{t-5})$	CO_{t-6}	$t(CO_{t-6})$
Low	-0.080	(-1.933)	-0.088	(-2.259)	-0.093	(-2.457)	-0.097	(-2.497)	-0.100	(-2.574)	-0.099	(-2.604)
2	-0.101	(-2.724)	-0.106	(-2.880)	-0.108	(-2.925)	-0.112	(-2.993)	-0.113	(-2.998)	-0.115	(-3.008)
3	-0.125	(-3.155)	-0.123	(-3.100)	-0.124	(-3.072)	-0.122	(-3.044)	-0.122	(-3.020)	-0.121	(-3.004)
4	-0.128	(-2.950)	-0.127	(-2.882)	-0.127	(-2.881)	-0.118	(-2.708)	-0.118	(-2.693)	-0.119	(-2.739)
5	-0.091	(-2.015)	-0.085	(-1.863)	-0.086	(-1.895)	-0.083	(-1.816)	-0.078	(-1.658)	-0.081	(-1.725)
6	-0.087	(-1.493)	-0.085	(-1.574)	-0.087	(-1.639)	-0.088	(-1.723)	-0.087	(-1.737)	-0.084	(-1.726)
7	-0.112	(-2.394)	-0.105	(-2.156)	-0.100	(-2.132)	-0.100	(-2.135)	-0.101	(-2.158)	-0.101	(-2.154)
8	-0.047	(-0.804)	-0.052	(-0.946)	-0.053	(-0.949)	-0.054	(-0.966)	-0.052	(-0.925)	-0.049	(-0.882)
9	-0.073	(-1.726)	-0.066	(-1.382)	-0.065	(-1.311)	-0.066	(-1.308)	-0.064	(-1.273)	-0.062	(-1.229)
High	0.009	(0.174)	0.006	(0.110)	0.001	(0.018)	0.000	(0.003)	-0.001	(-0.018)	0.002	(0.033)
HML	0.089	(2.323)	0.094	(2.642)	0.094	(2.634)	0.097	(2.811)	0.099	(2.928)	0.100	(2.937)

TABLE 10

Fund Fees

This table presents panel regressions studying the relation between fund CO and fund fees. The observations are at the fund-year level. The dependent variables are annualized fees and expenses reported in CRSP, represented in percentages. The main independent variable is the fund's average common ownership (CO) measured in the previous year. The regressions controls for lagged one-month log TNA, lagged one-year EXPENSE_RATIO, lagged one-year TURNOVER_RATIO, lagged one-month FUND_FLOW, lagged one-year FUND_AGE, and lagged one-month FUND_RETURN. In columns (1) and (3), the regressions incorporate year fixed effects, while in columns (2) and (4), the regressions include fund family-by-year fixed effects. Robust standard errors are clustered by fund and year. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively.

	EXPENSE_RATIO (%)		*MANAGEMENT_FEE (%)*	
	(1)	(2)	(3)	(4)
CO	4.673***	2.551***	2.497***	1.253***
	(0.858)	(0.572)	(0.562)	(0.403)
Fund Controls	✓	✓	✓	✓
FE: Year	✓		✓	
FE: Fund Family × Year		✓		✓
Observations	33,093	33,093	33,093	33,093
Adjusted R^2	0.282	0.590	0.161	0.575

TABLE 11

Active Monitoring

This table examines the relation between funds' common ownership positions (CO) and measures of active voting. Panel A presents results on disagreement with ISS voting recommendations. The sample is at the fund-year level. The dependent variable in column (1) is the percentage of all proposals where the fund votes differently from ISS recommendations. Column (2) uses the percentage of contentious proposals where the fund votes differently from ISS recommendations, and column (3) uses the percentage of consensus proposals where the fund votes differently from ISS recommendations. Contentious proposals are those where ISS and management recommendations differ, while consensus proposals are those where ISS and management recommendations align. Panel B presents results on voting RPI, which is the voting reliance on public information introduced by Iliev and Lowry (2015). The dependent variable in column (1) is the R-squared from a regression of fund votes on ISS recommendations among all governance and compensation proposals for a given fund in a year. Column (2) uses the R-squared from regressions focusing on contentious governance and compensation proposals, and column (3) uses consensus governance and compensation proposals. A lower R-squared indicates more active voting by a mutual fund. All regressions include fund-level CO as the key independent variable along with fund controls, all measured in the previous year. The regressions incorporate year fixed effects. Standard errors clustered at the fund level are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Disagreement with ISS

Dependent Var:	DISAGREEMENT_WITH_ISS		
Dep Var Definition:	Disagreement of *All* Proposals	Disagreement of *Contentious* Proposals	Disagreement of *Consensus* Proposals
	(1)	(2)	(3)
CO	0.474***	1.984***	0.252***
	(0.118)	(0.416)	(0.095)
Fund Controls	✓	✓	✓
FE: Year	✓	✓	✓
Mean of Dep Var	0.090	0.511	0.043
SD of Indep Var	0.009	0.009	0.009
Observations	11,632	11,373	11,623
Adjusted R^2	0.051	0.040	0.032

Panel B: Voting RPI

Dependent Var:	VOTING_RPI		
Dep Var Definition:	R-squared from a Regression Based on *All* Proposals	R-squared from a Regression Based on *Contentious* Proposals	R-squared from a Regression Based on *Consensus* Proposals
	(1)	(2)	(3)
CO	-1.667***	-1.679***	-4.291***
	(0.371)	(0.419)	(0.538)
Fund Controls	✓	✓	✓
FE: Year	✓	✓	✓
Mean of Dep Var	0.326	0.336	0.272
SD of Indep Var	0.009	0.009	0.009
Observations	11,446	10,589	11,421
Adjusted R^2	0.056	0.053	0.088

TABLE 12

Voting Behavior: Specific Proposal Types

This table presents the results of the regressions that relate a mutual funds' voting decisions on specific proposals to the common ownership positions at the fund or fund family level. In Panel A, the sample consists of proposals approving stock or stock option plans. In column (1), the unit of observation is fund-by-proposal. The dependent variable is an indicator variable that equals one if a fund votes against stock or stock option plans, and the key independent variable is fund-firm CO. In column (2), the observation level is fund family-by-proposal. The dependent variable is the percentage of voting against stock or stock option plans in the fund family, and the independent variable is the fund family-firm CO. In column (3), the regression is estimated at the fund-year level. The dependent variable is the log of portfolio-weighted average executives' pay-performance sensitivity (delta) in portfolio firms held by a fund in a year, similar to the analysis Antón et al. (2023), and the independent variable is fund CO. In Panel B, the dependent variables are indicator variables set to one if funds vote for director nominees in column (1) and the percentage of votes for director nominees in column (2). Fund-firm CO and fund family-firm CO are the key independent variables in columns (1) and (2), respectively. In all regressions, the control variables are lagged one-year log TNA, EXPENSE_RATIO, TURNOVER_RATIO, FUND_FLOW, FUND_AGE, and FUND_RETURN. All regressions except column (3) of Panel A include fund family-by-year and proposal fixed effects. The regression in column (3) of Panel A includes fund family-by-year fixed effects. The robust standard errors are clustered at the fund level for the fund-proposal analysis and at the fund family for the fund family-proposal analysis. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Stock Plans and Pay-Performance Sensitivity

	VOTE_AGAINST_ STOCK_PLANS	%_OF_VOTING_AGAINST STOCK_PLANS	LOG_OF_PORTFOLIO_ FIRMS_DELTA
	(1)	(2)	(3)
FUND_FIRM_CO	0.018***		
	(0.005)		
FUND_FAMILY_FIRM_CO		0.017***	
		(0.006)	
CO			-23.895***
			(2.728)
Fund Controls	✓		✓
FE: Fund Family × Year	✓	✓	✓
FE: Proposal	✓	✓	
Mean of Dep Var	0.18	0.17	5.90
Observations	279,406	154,877	33,093
Observation level	Fund-Proposal	Family-Proposal	Fund-Year
Adjusted R^2	0.493	0.477	0.688

Panel B: Director Elections

	VOTE_FOR	%_OF_VOTING_FOR
	(1)	(2)
HIGH_FUND_FIRM_CO×CO_DIRECTOR_ELECTION	0.007**	
	(0.003)	
HIGH_FUND_FIRM_CO	-0.00005	
	(0.001)	
HIGH_FUND_FAMILY_FIRM_CO×CO_DIRECTOR_ELECTION		0.015**
		(0.007)
HIGH_FUND_FAMILY_FIRM_CO		0.002
		(0.001)
Fund Controls	✓	
FE: Fund Family × Year	✓	✓
FE: Proposal	✓	✓
Mean of Dep Var	0.93	0.93
Observations	5,837,453	3,123,425
Observation Level	Fund-Proposal	Family-Proposal
Adjusted R^2	0.400	0.389

Internet Appendix

A. CO Measure

A. CO Measure and Common Owners' Profits

This appendix shows that our prediction on the association between common ownership strategy presence and fund performance has a sound theoretical foundation. First, $\kappa_{m,n}$ is the key pairwise component used by Azar et al. (2018) in the Modified HHI, which captures the extent to which competitors m and n are connected by common ownership and control links. In the framework of Rotemberg (1984), Backus et al. (2021) further define such component as the profit weights that firm m places on its competitors n's profits. Similarly, our measure is also developed on the pairwise profit weights. The difference is that we aggregate the fund-specific profit weights to the fund level, to capture the fund's common ownership positions. Furthermore, we augment this measure using a more precise competition linkage provided by Hoberg and Phillips (2016).

Second, to illustrate that the common ownership strategy and mutual fund performance might be positively associated, we provide the following simple oligopoly scenario where there are only two industry competitors m and n facing Cournot competition. We assume that both firms face the same product market demand curve:

$$P = A - Q.$$

Thus, the profit function of the firms is expressed as:

$$\Pi_m = q_m(A - q_m - q_n)$$

$$\Pi_n = q_n(A - q_m - q_n),$$

where we denote firm profit as π and product quantity as q. Following Backus et al. (2021), the firms' objective function can be written as:

$$\max_{q_m} q_m(A - q_m - q_n) + \kappa_{m,n} q_n(A - q_m - q_n)$$

$$\max_{q_n} q_n(A - q_m - q_n) + \kappa_{n,m} q_m(A - q_m - q_n).$$

The solution is

$$q_m = \frac{-\kappa_{m,n} q_n - q_n + A}{2}$$
$$q_n = \frac{-\kappa_{n,m} q_m - q_m + A}{2}$$

Note that $\kappa_{m,n}$ and $\kappa_{n,m}$ can be different in theory. However, for simplicity, we assume the two are equal, which indicates that the ownership structure is identical in both firms. Under this assumption, the firms' optimal product quantity is the same and equal to $\frac{A}{3+\kappa}$. Plugging this optimal quantity back to the firm profit function, we can obtain both firms' optimal profits as $\frac{A^2(1+\kappa)}{(3+\kappa)^2}$. When $0 \leq \kappa \leq 1$, the firm profit is increasing on κ.

In the case where fund f is the only common owner, $\kappa_{m,n}$ is the same as the fund-specific profit weight $\kappa_{p,m}$. Finally, fund p's profit Π_p from holding in B_m and B_n dollar value in firm m

and n is computed as:

$$\Pi_p = \frac{B_m}{M_m}\pi_m + \frac{B_n}{M_n}\pi_n = B_m \frac{A^2(1+\kappa)}{M_m(3+\kappa)^2} + B_n \frac{A^2(1+\kappa)}{M_n(3+\kappa)^2}.$$

where M_m and M_n are the market value of firm m and n. Then, we proceed to define fund p's profit per unit π_f as fund f's profit Π_f divided by fund f's total net assets TNA_f, which can be expressed as:

$$\pi_p = \frac{\Pi_p}{TNA_p} = \frac{\frac{B_m}{M_m}\pi_m + \frac{B_n}{M_n}\pi_n}{TNA_p} = w_m \frac{A^2(1+\kappa)}{M_m(3+\kappa)^2} + w_n \frac{A^2(1+\kappa)}{M_n(3+\kappa)^2}.$$

where w_m and w_n are the investment weights of fund p on firm m and n. Note that the fund's profitability can be interpreted as an increasing function of κ (when $0 \leq \kappa \leq 1$). Our measure of fund-level common ownership (CO) captures the same elements with a similar functional feature. Thus, we expect a positive relationship between our fund common ownership measure and fund level profitability.

B. Alternative Measures of Fund Common Ownership

Backus et al. (2020) extract the relative investor concentration component from the profit weight. They have

$$\begin{aligned}
\kappa_{m,n} &= \frac{\sum_{\forall s} \beta_{s,m}\beta_{s,n}}{\sum_{\forall s} \beta_{s,m}^2} \\
&= \frac{\sum_{\forall s} \beta_{s,m}\beta_{s,n}}{\sqrt{\sum_{\forall s} \beta_{s,m}^2} \cdot \sqrt{\sum_{\forall s} \beta_{s,n}^2}} \cdot \frac{\sqrt{\sum_{\forall s} \beta_{s,n}^2}}{\sqrt{\sum_{\forall s} \beta_{s,m}^2}},
\end{aligned}$$

where $\frac{\sum_{\forall s} \beta_{s,m}\beta_{s,n}}{\sqrt{\sum_{\forall s} \beta_{s,m}^2} \cdot \sqrt{\sum_{\forall s} \beta_{s,n}^2}} = cos(\beta_{s,m}, \beta_{s,n})$. They decompose profit weights into two components: overlapping ownership and relative investor concentration. Mathematically, overlapping ownership is the cosine of the angle between the positions that investors hold in m and those that investors hold in n so that it has the nice property that $cos(\beta_{s,m}, \beta_{s,n}) \in [0, 1]$. Economically, the cosine distance represents the overlapping ownership which leads to the incentive of a firm to maximize the profits of another firm. A zero cosine distance corresponds with no common owners while a cosine distance of one corresponds to the identical shareholding structure. We calculate the weighted average of the pairwise cosine distance measure for each fund quarter to capture the presence of fund-level common ownership. Replacing the previous profit weight measure with this new overlapping ownership measure yields the alternative measure:

$$CO_p^{Cosine} = \sum_m w_{p,m} \frac{\sum_{\forall n \neq m} \beta_{p,m}\beta_{p,n}}{\sqrt{\sum_{\forall s} \beta_{s,m}^2} \cdot \sqrt{\sum_{\forall s} \beta_{s,n}^2}}.$$

B. Additional Empirical Results

A. Property of Fund Common Ownership

FIGURE B.1

Distribution of Fund CO

The figure below shows the histogram of the CO measure multiplied by 10,000, and the horizontal axis is shown on a log scale with base 10. we do not use the log transformation in our main analyses to retain the theoretical consistency with our measurement derivation, similar to how relations of market-level variables with HHI or changes in the HHI rather than taking its log transformation. Nonetheless, our main results in the paper are also robust to taking the log transformation. The measure is winsorized at the 1% and 99% levels.

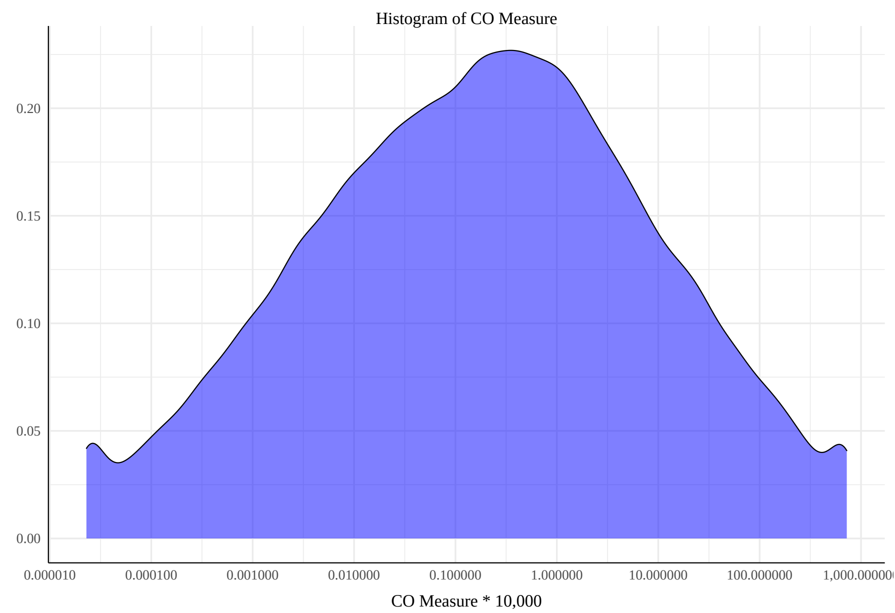


TABLE B.1

Persistence of Fund Common Ownership

This table examines the persistence of funds' common ownership (CO) across time. Panel A shows the results of panel regressions studying the autocorrelations of CO measures within funds across time. The dependent variable is CO_t and the main independent variable is CO_{t-1}, where we consider three different CO measures. The first measure (CO) is our main CO measure as defined in Section B. The second measure (CO_FF12) is computed in the same way as the main CO measure, except that industry peers are identified by the Fama-French 12 industry classifications. The third is the overlapping ownership measure (CO_COSINE), which is calculated the same way as the main CO measure, except that the firms' pairwise profit weights are further divided by relative investor ownership concentration following (Backus et al., 2021). All regressions include fund fixed effects and standard errors are clustered by fund. Panel B presents the quarterly transition matrix for our main CO measure. Funds are sorted into decile bins based on their CO measure in the previous quarter and the values report the fraction of the funds staying in each CO decile bin in quarter t. Each row is CO Bin_{t-1} from the previous quarter, while each column shows CO Bin_t in the current quarter. Values are rounded to the nearest basis point. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Autocorrelation of CO

Dep Var:	CO_t		
CO Variant=	CO	CO_FF12	CO_COSINE
	(1)	(3)	(4)
CO_{t-1}	0.812***	0.736***	0.847***
	(0.019)	(0.037)	(0.016)
FE: Fund	✓	✓	✓
Observations	118,543	118,543	118,543
Adjusted R^2	0.925	0.889	0.942

Panel B: CO Bin Transition Matrix

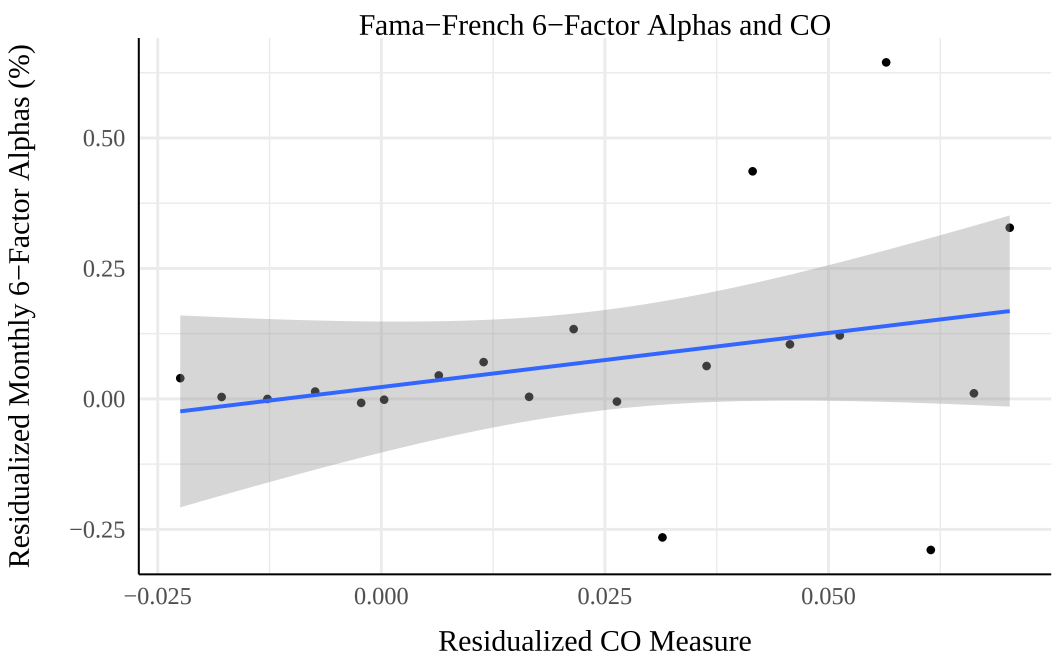
	$CO\ Bin_t$									
$CO\ Bin_{t-1}$	1	2	3	4	5	6	7	8	9	10
1	87.07	11.29	1.16	0.30	0.10	0.03	0.01	0.01	0.01	0.02
2	10.22	74.03	13.58	1.60	0.32	0.14	0.05	0.03	0.03	0.00
3	0.70	13.99	67.92	15.2	1.59	0.38	0.16	0.04	0.02	0.00
4	0.17	1.37	15.55	64.96	15.45	1.94	0.40	0.13	0.04	0.00
5	0.03	0.28	1.35	16.00	64.21	15.60	2.05	0.36	0.10	0.02
6	0.02	0.15	0.44	1.79	16.38	63.72	15.92	1.31	0.27	0.00
7	0.01	0.03	0.17	0.29	1.79	16.36	65.21	14.83	1.19	0.11
8	0.00	0.01	0.06	0.09	0.28	1.50	15.69	70.08	12.03	0.26
9	0.01	0.02	0.01	0.02	0.10	0.20	0.79	12.41	78.23	8.22
10	0.01	0.00	0.01	0.00	0.03	0.05	0.11	0.33	8.35	91.11

B. Binscatter Plots

FIGURE B.2

$\hat{\alpha}^{FF6F}$ **and CO**

The figure below shows the bin scatter plot of the Fama-French 6-factor monthly net-of-expenses alphas and CO. Both variables are residualized with respect to control variables in a linear regression specification including year-month fixed effects. The control variables are lagged log TNA, EXPENSE_RATIO, TURNOVER_RATIO, FUND_FLOW, FUND_AGE, and FUND_RETURN. The 20 bins are split based on the residualized CO measure, and then both x- and y- variable values are means of the residualized CO measure and residualized Fama-French 6-factor monthly alpha.



C. Alternative Construction of Fund Common Ownership

TABLE B.2

Portfolio Sorting Using Alternative CO Measures

This table reports the monthly net-of-expenses returns of decile portfolios sorted by alternative CO measures. In Panel A, funds are sorted by CO measure with profit weight constructed based on the Fama-French 12 industry classification (CO_FF12), while in Panel B, funds are sorted by CO measure with profit weight constructed by cosine distance (CO_COSINE). All t-statistics are Newey-West adjusted up to three-month lags.

Panel A: CO Measure with Profit Weight Constructed by FF 12 Industry Classification (CO_FF12)

CO^{FF} Bin	$Sharpe$	SD	r	$t(r)$	α^{FF6F}	$t(\alpha^{FF6F})$	α^{FS}	$t(\alpha^{FS})$	α^{PS}	$t(\alpha^{PS})$	α^{Q5}	$t(\alpha^{Q5})$	a^{BM}	$t(a^{BM})$
Low	0.224	4.123	0.263	(0.905)	-0.147	(-4.226)	-0.119	(-3.436)	-0.136	(-3.704)	-0.147	(-4.318)	-0.118	(-3.609)
2	0.276	4.166	0.326	(1.100)	-0.098	(-2.997)	-0.090	(-2.601)	-0.090	(-2.256)	-0.127	(-4.267)	-0.048	(-1.292)
3	0.263	4.207	0.313	(1.047)	-0.116	(-3.344)	-0.121	(-3.642)	-0.110	(-2.882)	-0.134	(-4.380)	-0.053	(-1.527)
4	0.256	4.229	0.308	(1.006)	-0.124	(-3.442)	-0.135	(-4.139)	-0.115	(-3.106)	-0.144	(-3.648)	-0.061	(-1.532)
5	0.363	4.351	0.445	(1.462)	-0.062	(-1.375)	-0.060	(-1.350)	-0.030	(-0.481)	-0.086	(-2.054)	0.072	(0.774)
6	0.299	4.297	0.363	(1.169)	-0.098	(-2.105)	-0.109	(-2.884)	-0.099	(-2.207)	-0.113	(-2.581)	-0.022	(-0.511)
7	0.295	4.376	0.365	(1.159)	-0.086	(-2.090)	-0.110	(-3.150)	-0.107	(-2.590)	-0.090	(-1.930)	-0.017	(-0.356)
8	0.325	4.461	0.409	(1.276)	-0.041	(-0.692)	-0.055	(-1.007)	-0.058	(-0.923)	-0.037	(-0.757)	0.055	(0.933)
9	0.309	4.455	0.389	(1.206)	-0.037	(-0.807)	-0.072	(-1.798)	-0.088	(-2.117)	-0.038	(-0.828)	0.024	(0.425)
High	0.402	4.385	0.495	(1.569)	0.014	(0.273)	0.003	(0.058)	0.007	(0.119)	-0.017	(-0.374)	0.104	(1.372)
HML	0.722	1.125	0.232	(3.418)	0.160	(3.806)	0.122	(2.459)	0.143	(2.630)	0.130	(3.320)	0.221	(3.433)

Panel B: CO Measure with Profit Weight Constructed by Cosine Distance (CO_COSINE)

CO^{Cosine} Bin	$Sharpe$	SD	r	$t(r)$	α^{FF6F}	$t(\alpha^{FF6F})$	α^{FS}	$t(\alpha^{FS})$	α^{PS}	$t(\alpha^{PS})$	α^{Q5}	$t(\alpha^{Q5})$	a^{BM}	$t(a^{BM})$
Low	0.300	4.022	0.342	(1.182)	-0.087	(-1.610)	-0.060	(-1.033)	-0.054	(-0.908)	-0.118	(-2.276)	-0.037	(-0.778)
2	0.257	4.161	0.304	(1.026)	-0.104	(-2.491)	-0.101	(-2.381)	-0.101	(-2.181)	-0.120	(-3.167)	-0.069	(-2.073)
3	0.268	4.195	0.319	(1.062)	-0.122	(-2.764)	-0.123	(-2.982)	-0.103	(-2.037)	-0.145	(-3.412)	-0.052	(-1.273)
4	0.277	4.266	0.335	(1.090)	-0.111	(-2.829)	-0.129	(-3.611)	-0.107	(-2.561)	-0.119	(-2.967)	-0.031	(-0.627)
5	0.387	4.365	0.475	(1.522)	-0.043	(-0.727)	-0.041	(-0.714)	-0.008	(-0.112)	-0.078	(-1.393)	0.091	(0.946)
6	0.310	4.245	0.373	(1.222)	-0.083	(-1.754)	-0.093	(-2.312)	-0.074	(-1.543)	-0.093	(-2.097)	-0.001	(-0.019)
7	0.285	4.356	0.351	(1.118)	-0.105	(-2.223)	-0.120	(-3.222)	-0.114	(-2.547)	-0.113	(-2.441)	-0.030	(-0.672)
8	0.312	4.406	0.388	(1.229)	-0.060	(-1.061)	-0.065	(-1.173)	-0.063	(-1.004)	-0.054	(-1.133)	0.034	(0.632)
9	0.320	4.542	0.411	(1.259)	-0.013	(-0.316)	-0.047	(-1.284)	-0.080	(-2.073)	-0.017	(-0.410)	0.031	(0.458)
High	0.396	4.381	0.487	(1.544)	0.010	(0.196)	-0.005	(-0.095)	-0.001	(-0.012)	-0.019	(-0.407)	0.100	(1.360)
HML	0.496	1.023	0.145	(2.295)	0.097	(1.958)	0.055	(0.906)	0.054	(0.988)	0.100	(2.200)	0.137	(2.166)

TABLE B.3

Portfolio Sorting with CO Measures based on only 13F and both 13F & 13D

This table reports the monthly net-of-expenses returns of decile portfolios sorted by alternative CO measures. In Panel A, funds are sorted by CO measure with profit weight measure based on 13F holding data, while in Panel B, funds are sorted by CO measure with profit weight measure based 13F and 13D holding data. All t-statistics are Newey-West adjusted up to 3-month lags.

Panel A: CO Measure with Profit Weight Based on Only 13F Holding Data

$CO\ Bin$	$Sharpe$	SD	r	$t(r)$	α^{FF6F}	$t(\alpha^{FF6F})$	α^{FS}	$t(\alpha^{FS})$	α^{PS}	$t(\alpha^{PS})$	α^{Q5}	$t(\alpha^{Q5})$	a^{BM}	$t(a^{BM})$
Low	0.254	4.045	0.292	(1.015)	-0.137	(-3.330)	-0.110	(-2.822)	-0.106	(-2.267)	-0.154	(-4.118)	-0.092	(-2.456)
2	0.279	4.109	0.325	(1.113)	-0.087	(-2.499)	-0.072	(-1.984)	-0.075	(-1.894)	-0.112	(-3.592)	-0.045	(-1.386)
3	0.283	4.167	0.335	(1.136)	-0.098	(-2.634)	-0.097	(-2.506)	-0.081	(-1.807)	-0.128	(-3.807)	-0.038	(-1.026)
4	0.263	4.208	0.314	(1.032)	-0.132	(-3.215)	-0.137	(-3.665)	-0.112	(-2.508)	-0.147	(-3.783)	-0.060	(-1.629)
5	0.351	4.390	0.435	(1.413)	-0.079	(-1.676)	-0.079	(-1.659)	-0.042	(-0.613)	-0.101	(-2.321)	0.067	(0.668)
6	0.317	4.253	0.381	(1.235)	-0.087	(-1.650)	-0.090	(-1.907)	-0.071	(-1.274)	-0.110	(-2.379)	-0.003	(-0.074)
7	0.307	4.320	0.375	(1.206)	-0.088	(-1.908)	-0.101	(-2.681)	-0.090	(-1.933)	-0.094	(-2.325)	-0.002	(-0.041)
8	0.307	4.479	0.389	(1.219)	-0.066	(-1.747)	-0.074	(-2.003)	-0.086	(-2.264)	-0.048	(-1.284)	0.040	(0.781)
9	0.336	4.454	0.420	(1.310)	-0.032	(-0.631)	-0.055	(-1.292)	-0.060	(-1.213)	-0.032	(-0.684)	0.028	(0.449)
High	0.393	4.409	0.485	(1.530)	0.022	(0.453)	0.003	(0.049)	-0.002	(-0.036)	-0.007	(-0.153)	0.101	(1.375)
HML	0.622	1.087	0.193	(3.198)	0.160	(3.684)	0.113	(2.188)	0.104	(2.163)	0.147	(3.629)	0.192	(3.207)

Panel B: CO Measure with Profit Weight Based on 13F & 13D Holding Data

$CO\ Bin$	$Sharpe$	SD	r	$t(r)$	α^{FF6F}	$t(\alpha^{FF6F})$	α^{FS}	$t(\alpha^{FS})$	α^{PS}	$t(\alpha^{PS})$	α^{Q5}	$t(\alpha^{Q5})$	a^{BM}	$t(a^{BM})$
Low	0.255	4.049	0.293	(1.022)	-0.135	(-3.299)	-0.109	(-2.771)	-0.104	(-2.220)	-0.153	(-4.134)	-0.089	(-2.415)
2	0.282	4.105	0.328	(1.123)	-0.085	(-2.461)	-0.070	(-1.952)	-0.074	(-1.872)	-0.110	(-3.513)	-0.042	(-1.309)
3	0.285	4.173	0.337	(1.141)	-0.096	(-2.561)	-0.094	(-2.404)	-0.080	(-1.770)	-0.127	(-3.778)	-0.035	(-0.912)
4	0.267	4.285	0.318	(1.046)	-0.128	(-2.992)	-0.135	(-3.462)	-0.110	(-2.407)	-0.143	(-3.622)	-0.055	(-1.472)
5	0.350	4.386	0.433	(1.409)	-0.080	(-1.703)	-0.080	(-1.698)	-0.041	(-0.614)	-0.103	(-2.367)	0.064	(0.647)
6	0.316	4.254	0.380	(1.233)	-0.087	(-1.672)	-0.090	(-1.893)	-0.072	(-1.302)	-0.111	(-2.442)	-0.005	(-0.114)
7	0.300	4.325	0.367	(1.174)	-0.097	(-2.106)	-0.108	(-2.846)	-0.098	(-2.094)	-0.100	(-2.459)	-0.005	(-0.114)
8	0.313	4.483	0.396	(1.241)	-0.056	(-1.453)	-0.068	(-1.806)	-0.081	(-2.106)	-0.043	(-1.117)	0.043	(0.822)
9	0.336	4.451	0.422	(1.318)	-0.030	(-0.604)	-0.052	(-1.237)	-0.057	(-1.175)	-0.029	(-0.649)	0.031	(0.505)
High	0.390	4.409	0.484	(1.527)	0.021	(0.433)	0.001	(0.028)	-0.003	(-0.048)	-0.008	(-0.170)	0.100	(1.362)
HML	0.613	1.087	0.190	(3.154)	0.156	(3.629)	0.110	(2.155)	0.101	(2.119)	0.144	(3.565)	0.189	(3.160)

D. Panel Regressions

TABLE B.4

Panel Regressions

This table shows the results of the panel regressions. The dependent variables are monthly raw returns, Fama-French 6-factor alpha, Ferson-Schadt alpha, Pastor-Stambaugh alpha, q-factor alpha, or benchmark-adjusted returns are all represented as monthly returns in percentages. Returns are measured before expenses in Panel A and after expenses in Panel B. The main independent variable is the fund's common ownership (CO) measured in the previous quarter end. The control variables are lagged log TNA, EXPENSE_RATIO, TURNOVER_RATIO, FUND_FLOW, FUND_AGE, and FUND_RETURN. We include year-month fixed effects and cluster the standard errors at the fund and year levels. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Gross Returns

	r	$\hat{\alpha}^{FF6F}$	$\hat{\alpha}^{FS}$	$\hat{\alpha}^{PS}$	$\hat{\alpha}^{Q5}$	a^{BM}
	(1)	(2)	(3)	(4)	(5)	(6)
CO	2.077*	1.979***	2.221***	1.618**	2.337***	2.126**
	(1.179)	(0.626)	(0.614)	(0.621)	(0.757)	(0.993)
Fund Controls	✓	✓	✓	✓	✓	✓
Observations	379,806	330,588	330,544	330,588	330,588	379,806
$\sigma(e)$	2.189	1.682	2.117	1.678	1.834	2.021
Adjusted R^2	0.781	0.070	0.067	0.069	0.066	0.147

Panel B: Net-of-Expenses Returns

	r	$\hat{\alpha}^{FF6F}$	$\hat{\alpha}^{FS}$	$\hat{\alpha}^{PS}$	$\hat{\alpha}^{Q5}$	a^{BM}
	(1)	(2)	(3)	(4)	(5)	(6)
CO	2.055*	1.950***	2.193***	1.593**	2.312***	2.096**
	(1.178)	(0.621)	(0.613)	(0.617)	(0.756)	(0.992)
Fund Controls	✓	✓	✓	✓	✓	✓
Observations	379,806	330,588	330,544	330,588	330,588	379,806
$\sigma(e)$	2.189	1.681	2.117	1.677	1.834	2.020
Adjusted R^2	0.781	0.070	0.066	0.068	0.066	0.146

E. Covariate Balance & Robustness Tests with Matched Sample

FIGURE B.3

Covariate Balance Before and After Matching

This figure presents the covariate balance plot on standardized mean differences for the raw and matched sample using PSM on 12 matching variables (fund TNA, fund age, portfolio industry concentration, idiosyncratic volatility, management fee, number of stocks held, return volatility, turnover ratio, fund flows, expense ratio, 6-factor alpha, and fund net returns) without replacement.

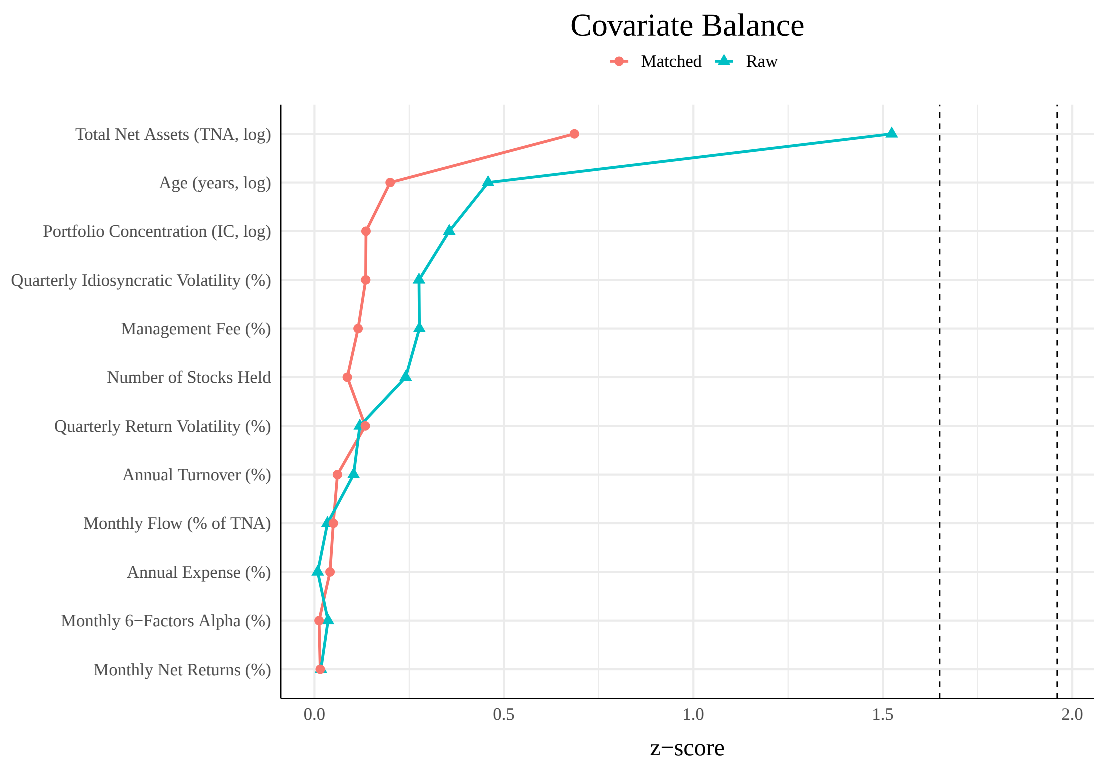


TABLE B.5

Covariate Balance After Matching

This table shows the covariate balance of observables using the matched fund samples. The variables are the log value of total net assets (TNA), age, log value of portfolio industry concentration, management fee, quarterly idiosyncratic volatility, number of stocks held, quarterly return volatility, annual turnover, monthly 6-factors alpha, monthly net return, monthly flow, and annual expense. All variables are lagged one year. We report the mean value for the treated and control samples and the difference and t-value between the two samples.

Variable	Mean		Difference	T-value
	Treated	Control		
TOTAL_NET_ASSETS (TNA, Log)	6.794	4.749	2.045	1.199
FUND_AGE (Years, Log)	2.658	2.346	0.312	0.429
PORTFOLIO_INDUSTRY_CONCENTRATION (PIC, Log)	6.177	5.771	0.406	0.329
MANAGEMENT_FEE (Annual, %)	0.694	0.604	0.091	0.263
IDIOSYNCRATIC_VOLATILITY (Quarterly, %)	2.464	2.090	0.374	0.261
NUMBER_OF_STOCKS_HELD	104.242	82.772	21.470	0.221
RETURN_VOLATILITY (Quarterly, %)	9.100	8.527	0.573	0.116
TURNOVER_RATIO (Annual, %)	66.436	72.047	5.611	0.080
6_FACTOR_ALPHA (Monthly, %)	-0.097	-0.129	0.032	0.018
FUND_RETURN (Monthly, %)	0.710	0.647	0.062	0.014
FUND_FLOWS (Monthly, % of TNA)	-0.214	-0.188	0.025	0.006
EXPENSE_RATIO (Annual, %)	1.079	1.078	0.001	0.002

TABLE B.6

Fama-MacBeth Regression Using Matched Sample

This table shows the results of the Fama-MacBeth cross-sectional regressions using the matched fund samples. The dependent variables are monthly raw returns, estimated Fama-French 6-factor alpha, Ferson-Schadt alpha, Pastor-Stambaugh alpha, q-factor alpha, or benchmark-adjusted returns, all represented as monthly returns in percentages. Returns are measured before expenses in Panel A and after expenses in Panel B, represented as monthly percentages. The main independent variable is the fund-level common ownership (CO) measured in the previous quarter end. The control variables are lagged log TNA, EXPENSE_RATIO, TURNOVER_RATIO, FUND_FLOW, FUND_AGE, and FUND_RETURN. All independent variables are winsorized at the 1% and 99% levels. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Gross Returns

	r	$\hat{\alpha}^{FF6F}$	$\hat{\alpha}^{FS}$	$\hat{\alpha}^{PS}$	$\hat{\alpha}^{Q5}$	a^{BM}
	(1)	(2)	(3)	(4)	(5)	(6)
CO	4.006***	2.607***	2.889***	2.413***	3.096***	3.323***
	(1.348)	(0.822)	(0.947)	(0.807)	(0.803)	(1.003)
Fund Controls	✓	✓	✓	✓	✓	✓
Observations	330,466	330,466	330,422	330,466	330,466	330,466
R^2	0.855	0.158	0.183	0.178	0.224	0.345

Panel B: Net-of-Expenses Returns

	r	$\hat{\alpha}^{FF6F}$	$\hat{\alpha}^{FS}$	$\hat{\alpha}^{PS}$	$\hat{\alpha}^{Q5}$	a^{BM}
	(1)	(2)	(3)	(4)	(5)	(6)
CO	3.967***	2.560***	2.844***	2.369***	3.052***	3.279***
	(1.349)	(0.823)	(0.947)	(0.807)	(0.803)	(1.004)
Fund Controls	✓	✓	✓	✓	✓	✓
Observations	330,466	330,466	330,422	330,466	330,466	330,466
R^2	0.855	0.158	0.183	0.178	0.224	0.344

F. Fund CO and Past Performance

TABLE B.7

Regression of CO on Past Fund Performance

This table shows the results of the panel regressions of CO on past fund performance and other fund characteristics. The dependent variables are the common ownership measured by CO. The independent variable is lagged one-quarter Fama-French 6-factor alpha, lagged one-quarter log TNA, lagged one-year expense ratio, lagged one-year turnover ratio, lagged one-quarter flows, lagged one-year age, and lagged one-quarter CO. All independent variables are winsorized at the 1% and 99% levels. We include year-month fixed effects and fund fixed effects and cluster the standard errors at the fund and year levels. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively.

	CO							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LAG_$\hat{\alpha}^{FF6F}$	-0.022							0.020
	(0.033)							(0.016)
LAG_LOG$_TNA$		0.186***						0.031***
		(0.017)						(0.004)
LAG_EXPENSE_RATIO			-0.168***					0.001
			(0.039)					(0.011)
LAG_TURNOVER_RATIO				-0.040***				-0.003
				(0.012)	LAG			(0.003)
LAG_FUND_FLOW					0.032			0.157***
					(0.037)			(0.027)
LAG_FUND_AGE						-0.003**		0.0004
						(0.002)		(0.001)
LAG_CO							0.810***	0.803***
							(0.017)	(0.017)
FE: Quarter	✓	✓	✓	✓	✓	✓	✓	✓
FE: Fund	✓	✓	✓	✓	✓	✓	✓	✓
Observations	120,500	120,500	120,500	120,500	120,500	120,500	120,500	120,500
Adjusted R^2	0.764	0.775	0.764	0.764	0.764	0.764	0.926	0.926

G. Decomposing CO Portfolios

TABLE B.8

High vs. Low Firm-CO Portfolios

This table presents results on decomposed portfolios to explore mechanisms underlying the superior performance of high CO funds. The regression results compare the performance of High-Firm-CO portfolios versus Low-Firm-CO portfolios, conditional the CO positions held by the fund (referred to Panel A of Table 6). The odd columns show results for CO portfolios consisting of firms with above-median firm-level CO measures among the portfolio firms, while the even columns present results for CO portfolios of firms with below-median firm-level CO measures. The dependent variables across all columns are the holding-based portfolio returns which are computed as the weighted average monthly returns of the firms in each group with the weights being the investment weights of the fund in the firm measured in the previous quarter. The key independent variable is the fund's common ownership measured in the previous quarter end. Control variables are the same as Table 5. Regressions are estimated using both Fama-MacBeth (FM) and panel approaches with month fixed effects. Standard errors reported in parentheses are Newey-West adjusted up to 3-month lags for FM regressions and are clustered by fund and month for panel regressions. Test of differences reports statistical tests comparing coefficients between regressions. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent Var:	r		$\widehat{\alpha}^{FF6F}$		r		$\widehat{\alpha}^{FF6F}$	
Firm-CO Portfolios:	High	Low	High	Low	High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CO	2.225***	0.873*	1.163***	0.364	1.390***	0.014	0.983***	0.007
	(0.661)	(0.465)	(0.451)	(0.332)	(0.328)	(0.252)	(0.243)	(0.178)
Test of Dif>0	1.352***		0.799*		1.376***		0.947***	
	(0.809)		(0.560)		(0.414)		(0.301)	
Regression	FM	FM	FM	FM	Panel	Panel	Panel	Panel
Controls	✓	✓	✓	✓	✓	✓	✓	✓
FE: Month					✓	✓	✓	✓
Observations	330,583	330,571	330,583	330,571	330,583	330,571	330,583	330,571
R^2	0.666	0.667	0.145	0.121	0.608	0.609	0.080	0.075

H. Fund CO and Turnover

TABLE B.9

Turnover

This table presents the performance of fund portfolios sorted first by fund turnover ratio and then by fund CO (3×5 sorts). The portfolios are rebalanced every quarter and held for one quarter. The monthly portfolio net-of-expenses returns are value-weighted according to fund TNA. All t-statistics are Newey-West corrected with up to 3-month lags. The low turnover is 9.23%, medium is 46.3%, and high is 145% per annum.

Ranked by Turnover	Ranked by CO	r_t	$t(r)$	α^{FF6F}	$t(\alpha^{FF6F})$	α^{FS}	$t(\alpha^{FS})$	α^{PS}	$t(\alpha^{PS})$	α^{Q5}	$t(\alpha^{Q5})$	a^{BM}	$t(a^{BM})$
	Low	0.332	(1.145)	-0.103	(-2.440)	-0.079	(-1.798)	-0.062	(-1.250)	-0.143	(-3.698)	-0.044	(-1.166)
Low	High	0.473	(1.569)	-0.016	(-0.311)	-0.001	(-0.013)	0.021	(0.389)	-0.030	(-0.647)	0.085	(1.401)
	HML	0.141	(2.672)	0.087	(2.126)	0.078	(1.892)	0.083	(2.506)	0.112	(2.569)	0.129	(2.599)
	Low	0.312	(1.064)	-0.110	(-3.167)	-0.092	(-2.670)	-0.096	(-2.395)	-0.113	(-3.425)	-0.069	(-2.091)
Medium	High	0.546	(1.647)	0.059	(0.796)	0.067	(0.764)	0.057	(0.488)	-0.030	(-0.327)	0.164	(1.378)
	HML	0.233	(2.090)	0.169	(2.998)	0.159	(1.907)	0.153	(1.387)	0.083	(0.974)	0.234	(2.234)
	Low	0.314	(1.019)	-0.091	(-1.858)	-0.105	(-2.332)	-0.128	(-2.759)	-0.094	(-1.721)	-0.056	(-1.001)
High	High	0.309	(0.786)	-0.094	(-1.308)	-0.184	(-2.596)	-0.259	(-3.443)	-0.071	(-0.755)	-0.061	(-0.413)
	HML	-0.005	(-0.037)	-0.004	(-0.060)	-0.078	(-1.310)	-0.131	(-1.969)	0.023	(0.304)	-0.005	(-0.043)

I. Fund Common Ownership and Fund Flows

Since fund inflows impact fund managers' rewards, we examine whether fund CO could affect future fund flows. Column (1) in Internet Appendix Table B.10 presents the estimated monthly panel regressions of fund flows on CO with year-month fixed effects. The coefficient of CO measure is 4.769, suggesting that a one-standard-deviation increase in CO (i.e., 0.94) is associated with a 4.47 bps increase in fund flows, which is economically significant relative to the unconditional mean (of 0.09% of total net assets). In column (2), the results of the panel regressions with funds and year-month fixed effects show a qualitatively similar and even a more positive relation. In column (3), we examine the moderating effect of CO on the flow-performance sensitivity. To this end, we replace CO_{t-1} with High CO, set to one if fund CO is above the median CO in a month. Following Sirri and Tufano (1998), we find that fund flows are more sensitive to the high CO funds with bad past performance, indicating that investors may be concerned about certain risks and, hence, less loyal to the high CO funds when the funds perform poorly. On the other hand, we find that fund flow is less sensitive to past performance for high CO funds that perform better, which may be why the performance of the CO strategy is persistent.

TABLE B.10

CO and Fund Flows

This table presents panel regressions studying the relation between CO and fund flows. The observations are at the fund-month level. The dependent variables are estimated monthly fund flows. In columns (1) and (2), the key independent variables are (1) CO_{t-1}, the lagged one-month fund common ownership measure, and (2) $Return_{t-1}$, the lagged one-month fund returns. In column (3), Low, Medium, and High Return are lagged fund return variables in percentile rank defined as of Sirri and Tufano (1998). High CO is an indicator variable set to one if the fund CO is above the median CO in the previous month. All regressions incorporate unreported control variables, including lagged log TNA, EXPENSE_RATIO, TURNOVER_RATIO, FUND_FLOW, FUND_AGE, and FUND_RETURN. Robust standard errors are clustered by fund and year. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively.

	FUND_FLOWS (% TNA)		
	(1)	(2)	(3)
CO_{t-1}	4.769***	9.647***	
	(1.410)	(3.104)	
$FUND\_RETURN_{t-1}$	0.176***	0.165***	
	(0.018)	(0.019)	
$HIGH\_CO_{t-1}$			-0.247*
			(0.119)
LOW_RETURN_{t-1}			1.730**
			(0.607)
$LOW\_RETURN_{t-1} \times HIGH\_CO_{t-1}$			2.268***
			(0.635)
$MEDIUM\_RETURN_{t-1}$			0.593***
			(0.126)
$MEDIUM\_RETURN_{t-1} \times HIGH\_CO_{t-1}$			-0.236*
			(0.117)
$HIGH\_RETURN_{t-1}$			5.897***
			(0.404)
$HIGH\_RETURN_{t-1} \times HIGH\_CO_{t-1}$			-1.345**
			(0.556)
Controls	✓	✓	✓
FE: Year-Month	✓	✓	✓
FE: Fund		✓	
Observations	379,806	379,806	379,806
Adjusted R^2	0.141	0.196	0.141

J. Supplementary Tests on Voting Behavior

TABLE B.11

Active Monitoring: Fund-Family-Level Analysis

This table examines the relation between fund families' common ownership positions and disagreement with ISS voting recommendations and voting reliance on public information (RPI, referred to Iliev and Lowry (2015)). The sample is at the fund family-year level. The dependent variable is the percentage of proposals where funds in a fund family vote differently from ISS recommendations in column (1), and voting RPI measure defined as the R-squared value from a regression of fund votes in a fund family on the ISS recommendation (estimated separately for each fund family) in column (2). The key independent variable is the fund family's common ownership (FUND_FAMILY_CO). All regressions include lagged fund family controls and year fixed effects. Standard errors clustered at the fund family level are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	DISAGREEMENT_WITH_ISS	VOTING_RPI
	(1)	(2)
FUND_FAMILY_CO	0.359*	-3.647***
	(0.206)	(1.325)
Fund Family Controls	✓	✓
FE: Year	✓	✓
Mean of Dep Var	0.047	0.338
SD of Indep Var	0.009	0.009
Observations	2,235	2,201
Adjusted R^2	0.036	0.026

TABLE B.12

Active Voting for Consensus Proposals

This table reports the results on the relation between fund CO and voting behavior on consensus proposals where ISS recommends voting with management. The dependent variable in columns (1) and (2) is an indicator variable equal to one if the fund votes against both ISS and management recommendations, and zero otherwise. The dependent variable in columns (3) and (4) is the percentage of funds within a fund family that vote against both ISS and management recommendations. Columns (1) and (3) focus on shareholder-sponsored proposals, while columns (2) and (4) focus on management-sponsored proposals. Fund-Firm CO measures the common ownership of a fund at the proposal firm. Fund Family-Firm CO measures the common ownership of a fund family at the proposal firm. All regressions include lagged fund or fund family controls, along with the proposal and fund family-by-year fixed effects. Standard errors clustered at the fund level are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent Var:	VOTING_AGAINST_ISS (AND MGMT)		%_OF_VOTING_AGAINST_ISS (AND MGMT)	
Sponsor:	Shareholder	Management	Shareholder	Management
	(1)	(2)	(3)	(4)
FUND_FIRM_CO	0.074**	0.001		
	(0.035)	(0.001)		
FUND_FAMILY_FIRM_CO			0.127***	0.001
			(0.025)	(0.001)
Controls	✓	✓	✓	✓
FE: Proposal	✓	✓	✓	✓
FE: Fund Family×Year	✓	✓	✓	✓
Mean of Dep Var	0.016	0.017	0.072	0.017
SD of Indep Var	0.019	0.106	0.030	0.109
Observations	159,034	7,805,821	72,620	4,398,950
Adjusted R^2	0.311	0.171	0.355	0.141

TABLE B.13

Voting Behavior: Placebo Test

This table presents the results of the placebo test on mutual fund common owners' voting behavior. The sample consists of proposals ratifying auditors. In column (1), the unit of observations is fund-by-proposal. The dependent variable is an indicator variable that equals one if a fund supports the ratification of the auditor and zero otherwise, and the key independent variable is fund-firm CO. In column (2), the observation level is fund family-by-proposal. The dependent variable is the voting percentage for ratifying the auditor in the fund family, and the independent variable is the fund family-firm CO. The control variables in column (1) are lagged log TNA, EXPENSE_RATIO, TURNOVER_RATIO, FUND_FLOW, FUND_AGE, and FUND_RETURN for fund-by-proposal level analysis. All regressions include fund family-by-year and proposal fixed effects. The robust standard errors are clustered at the fund-by-year level in column (1) and at the fund family-by-year in column (2). ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively.

	VOTE_FOR_RATIFYING_AUDITOR	%_OF_VOTING_FOR_RATIFYING_AUDITOR
	(1)	(2)
FUND_FIRM_CO	-0.0002	
	(0.0003)	
FUND_FAMILY_FIRM_CO		-0.0003
		(0.0005)
Fund Controls	✓	
FE: Fund Family × Year	✓	✓
FE: Proposal	✓	✓
Mean of Dep Var	0.98	0.98
Observations	879,268	486,722
Observation Level	Fund-Proposal	Family-Proposal
Adjusted R^2	0.377	0.390