The Economics of Investor Engagement

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First Draft: June 2024
This Draft: February 2025[†]

ABSTRACT

Institutional investors engage with their portfolio companies to communicate information and preferences with corporate managers. We provide the first estimates of the costs and benefits of engagement using a discrete choice model and novel data on engagement. On average, $10,000 spent on engagement leads to a 0.3 bps expected increase in firm value. However, the costs and benefits vary significantly across funds and firms. Passive funds engage less than active funds due to lower fees. Counterfactual simulations show that as active funds shrink and passive investing rises, engagement generates more value for investors and society because active funds exhibit diseconomies of scale but passive funds do not. The results establish the importance of economic incentives as a driver of value creation by institutional investors.

Keywords: Corporate Governance, Engagement, Institutional Investors, Monitoring
JEL Classification Numbers: G12, G14

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I. Introduction

There are three main channels through which institutional investors can influence the behavior of portfolio firms: voting, exiting, and engaging with management. Every year, institutional investors expend considerable resources on engagement activities: in 2022, Vanguard engaged with over 1,300 portfolio companies and BlackRock engaged with over 2,500 companies worldwide.[1] Yet because these activities are typically unobservable, little is known about the economics of investor engagement. In this paper, we estimate a discrete choice model using newly released data on the engagement activities of institutional investors to quantify the costs and benefits of engagement.

Institutional investors engage with their portfolio companies to communicate information and preferences with corporate managers. Engagement can take several forms. Institutional investors may write letters or emails to corporate managers, communicate via phone calls, or meet with managers in person or virtually to gather information, express preferences, or propose specific actions. We hand-collect information on all such engagement activities from investor stewardship reports and find that the most important determinant of engagement is the dollar value of each investor's position in a company. While institutional investors engage with 4.2% of the companies in which they hold $10 million or less, they engage with 86% of the companies in which they hold $10 billion or more. Our results show that institutional investors choose to engage with portfolio companies in a manner that maximizes the value they capture from increasing firm value.

Turning to the discrete choice model, we estimate that institutional investors behave as if they expect $10,000 spent on engagement to increase firm value by 0.3 basis points.

[1]Engagement with management is the most popular form governance (McCahery, Sautner, & Starks, 2016). Engagement is used by 63% of institutional investors, while voting against management is used by 53%, and nearly half of the investors surveyed by McCahery et al. (2016) use exit strategies.

Moreover, we observe that the costs and benefits of engagement vary significantly across firms and funds. While the Big Three passive families (BlackRock, State Street, and Vanguard) engage with more firms than active funds families each year, they engage less than active fund families once we control for other determinants, most crucially position size. Our model shows why: passive funds and active funds are equally effective at engagement, and although passive funds have larger positions, their fees are lower so they do not capture as much of the value they create. Put differently, both the costs and the expected value creation for passive funds are similar to active funds, but the expected benefit that accrues to the fund is much lower due to their fee structure. As a result, passive institutions engage less.

To date, there has been relatively little research on the costs and benefits of engagement because interactions between investors and corporate executives were largely unobservable. We address this problem by manually collecting data on institutional investor engagement from recently released stewardship reports. These stewardship reports are compiled by large institutional investors each year, and publicly released in PDF form. We hand-collect and process these reports to build a sample of engagement activities from 2019 to 2023. Our sample includes 11 large institutional investors—comprising 4 large majority-passive institutions and 7 active institutions such as Dimensional Fund Advisors and T. Rowe Price.

The average institutional investor in our sample holds approximately 2,700 U.S. publicly listed firms, with passive families holding virtually the entire universe of firms on one extreme,[2] and the most concentrated active investor (Robeco) holding only around 1,100 firms. Institutional investors in our sample engage with 320 firms per year on average, approximately 12% of their portfolio. This fraction is the same between passive and active institutions, but the former hold much larger dollar positions. Controlling for the difference

[2]Accordingly, our sample covers the full cross-section of U.S. publicly listed firms.

in holding size, we find that passive institutions engage less than active ones.

To understand why, we develop a discrete choice model to estimate the costs and benefits of engagement. We motivate our model using the framework in Lewellen and Lewellen (2022) who examine whether institutional investors have an economic incentive to conduct engagement activities. The Lewellen and Lewellen (2022) framework assesses the returns to engagement based on the flow-performance sensitivity of each fund's assets under management (AUM) and each fund's fees. Motivated by this insight, we model the decision to engage as having two main components. First, raising the value of a firm via engagement will increase the value of a fund's AUM. Since funds typically earn fees as a fraction of their AUM, this will increase the fund's fee income. Second, increasing a firm's value will also improve the performance of the fund, which could attract additional inflows to the fund. Additional inflows will also increase AUM, leading to additional fee income.

Our discrete choice model is flexible yet parsimonious. The model imposes minimal structure on these two channels; it allows the benefits and costs to have a positive or negative sign and to be small or large for any fund or firm. Formally, by engaging at a cost c, the investor expects to raise the firm's value by the fraction b. We assume funds engage with a portfolio company whenever the expected benefit b exceeds the expected cost c.[3] Then, because our hand-collected data allows us to see which companies each fund engaged with each year, and we observe position sizes and fund fees, we can estimate the expected costs and benefits of engagement.

The model builds on the key insight of Lewellen and Lewellen (2022) that the benefits of

[3]The model's parameters are only identified up to a common scaling parameter. Following Dickstein and Morales (2018), we fix the value of one parameter and estimate the others. Specifically, we set the average fixed cost of engaging to \$10,000, which is approximately one-tenth of the the median compensation for a financial analyst in 2023 according to the U.S. Bureau of Labor Statistics. Our estimates can also be interpreted as the expected return to each \$10,000 spent on engagement. We discuss this assumption in greater detail in Section III.

engagement are increasing in the dollar value of an investor's holdings. Of course, the dollar value of holdings is closely related to the portfolio weight and the fraction of the firm held by institutional investors. However, when we consider all three measures jointly, we find that it is the dollar value of an investor's holdings that matters for engagement decisions. The intuition behind this finding is simple. Imagine that fund's assets all increase in value by the same fraction. In this case, the portfolio weights and the part of each firm's equity held do not change, but the dollar values of its holdings increase. Our model suggests that the fund should respond by engaging more with those portfolio firms. We find strong empirical evidence supporting this prediction.

We also explore firm-level traits that influence the costs and benefits of engagement. We find that the returns to engagement are significantly higher for smaller firms and for firms with worse financial performance. While investors behave as though $10,000 spent on engagement leads to a 0.3 basis point increase in firm value on average, we find this expected benefit is much larger for small-cap firms. Here, investors behave as though $10,000 spent on engagement leads to a 5.5 basis point increase in firm value. Yet, institutional investors are significantly less likely to engage with small-cap firms because they hold smaller dollar positions in those firms. We also find that the expected benefit of engagement is smaller for more profitable firms, suggesting that profitable firms have less room for improvement. In contrast, we find that the cost of engagement is higher for firms with entrenched management. As a result, our findings suggest engagement is less effective when dealing with firms in which management is entrenched due to the higher fixed cost of engaging.

Finally, we examine a counterfactual simulation to study the role of engagement in light of the recent rise of passive investing. A number of papers have discussed whether the rise of passive investing causes information production to be higher or lower than the social

optimum (e.g., Coles, Heath, and Ringgenberg (2022)), but to date, there is no evidence on whether this shift has an impact on engagement and value creation. Accordingly, we imagine a scenario in which passive investing continues to rise in line with the trend over the past 20 years such that passive funds eventually hold 90% of all mutual fund and ETF assets under management. We then examine whether, and how, this shift impacts engagement.

Using the estimates from our discrete choice model, we find that a continued rise in passive investing will result in passive institutions increasing their engagement with portfolio firms due to larger holdings. As a consequence, this shift enhances value creation for their investors and for society. Conversely, we find that active institutions engage less due to reduced holdings and capture a smaller fraction of the value they create. However, they actually create more value as they shrink because of diseconomies of scale in the active industry (consistent with Berk and Green (2004)). The findings suggest that the continued rise of passive investing is beneficial for passive funds and societal value but poses challenges for the active fund industry, highlighting a potential misalignment between value creation and value capture for active funds.

Overall, our research contributes to the extensive literature on the monitoring role of institutional investors. Since the foundational work by Admati, Pfleiderer, and Zechner (1994), this literature has primarily focused on investors' voting behavior and exit strategies.[4] While Kakhbod, Loginova, Malenko, and Malenko (2023) theoretically examine the impact of investor engagement, and Krueger, Sautner, and Starks (2020) conducted a survey to study institutional investor engagement practices, empirical research has been limited due to data constraints. Much of the existing empirical research focuses on one fund or a particular issue.

[4]On voting, Levit and Malenko (2011) note that most shareholder proposals are non-binding, and as a result, voting on these proposals generally fails to convey information to managers. Broccardo, Hart, and Zingales (2022) examine the role of the exit channel versus the voice channel. For a recent review of the literature, see Edmans and Holderness (2017).

For example, Hoepner, Oikonomou, Sautner, Starks, and Zhou (2024) examine whether engagement on ESG related issues changes firm's downside risk, while Dey, Starkweather, and White (2024) study how recommendations by the proxy advisor ISS impact whether a firm engages with investors; Becht, Franks, Mayer, and Rossi (2009) examine engagements by one activist hedge fund, while Dimson, Karakaş, and Li (2015) examine engagements by one small impact fund. Similarly, Carleton and Weisbach (1998) examine the influence of engagement activities conducted between TIAA-CREF and 45 of its portfolio companies between 1992 and 1996, while Becht, Franks, and Wagner (2023) examine engagement by one large asset manager and show evidence of profitable trading around private meetings with portfolio firms. More recently, Aggarwal, Litov, and Rajgopal (2023) and Azar, Duro, Kadach, and Ormazabal (2021) have explored the determinants and consequences of engagement actions by the Big Three fund families.

Our work contributes to the literature on the costs and benefits of monitoring. Gantchev (2013) examines activist campaigns and shows the high cost of pursuing proxy contests significantly reduces the returns to activism.[5] Lewellen and Lewellen (2022) analytically examine the incentives for institutional investors to engage with their portfolio companies (see also Brav, Malenko, and Malenko (2022)). Our paper extends the literature by building a large dataset of engagement actions by institutional investors and then estimating a flexible discrete choice model to provide the first large sample estimates of the the costs and benefits of engagement.

Our results also add to the literature on the role of passive investors. Over the last 20 years, trillions of investor dollars have moved from individual holdings into professionally

[5]For more research on shareholder activism see Brav, Jiang, Partnoy, and Thomas (2008), Bebchuk, Brav, Jiang, and Keusch (2020), Wahal (1996), as well as Denes, Karpoff, and McWilliams (2017) for a survey of the literature on shareholder activism.

managed institutions. At the same time, there has been a shift away from actively managed investing into passively managed index funds. Research suggests that institutional investors have both the incentives and the resources to monitor more closely than individual investors (Brav et al., 2022). At the same time, passive investors have less incentives and resources to monitor than active funds do (Bebchuk, Cohen, & Hirst, 2017) and devolve more power to firm management (Heath, Macciocchi, Michaely, & Ringgenberg, 2022) thereby impacting governance (Schmidt & Fahlenbrach, 2017). Our study expands this literature by providing direct evidence that *ceteris paribus*, passive funds engage less than active funds, and why. Our model estimates show that passive funds incur similar engagement costs and expected improvements to firm value as active funds do, but reap lower benefits, leading to less engagement. However, in a counterfactual world dominated by passive investing, passive institutions benefit from economies of scale, enhancing value creation for their investors and society. Meanwhile, active funds create more value in total as they shrink but they capture less of it. As a result, our paper sheds new light on the complicated mechanisms linking investors to firms, especially in light of the rapid increase in passive investing.

The rest of the paper proceeds as follows. In Section II, we describe the data and regulations around engagement. In Section III, we discuss our discrete choice model and related identifying assumptions. In Section IV, we present our main findings. In Section VI, we conclude.

II. Data and Stylized Facts about Engagement

A. Data

To examine the costs and benefits of engagement by institutional investors, we combine standard financial databases with newly released data on the engagement activities of investors that, to date, has not been extensively studied by academic research. Historically, engagement activities by institutional investors were largely unobservable, making it difficult to study the economics of engagement. However, around 2019, several large asset managers started including detailed information about their engagement activities in their annual stewardship reports. Moreover, starting in 2021 the United Nations Principles for Responsible Investment (PRI) required signatories to release an annual stewardship report. As a result, it is now possible to collect data on the engagement activities of many large institutional investors. These reports are typically released annually or quarterly and, among other things, include a list of firms with which the institutional investor engaged.

We hand-collect engagement data from the stewardship reports of eleven large institutional investors, including four passive institutions (BlackRock, Vanguard, State Street, and Northern Trust) and seven active institutions (Allianz, Axa, Dimensional, Robeco, T-Rowe Price, UBS, and Wellington). Our sample spans from 2019 to 2023 and covers all publicly traded US firms, including small, medium, and large capitalization firms across all industries.[6]

We then combine the engagement data with data from the Center for Research in Security Prices (CRSP) and financial data from Compustat. Our sample of firms consists of all publicly traded US incorporated firms in the CRSP-Compustat merged data from 2019 to

[6]Some institutions have engagement data available for a subset of years. See Table I for more details.

2023. We then obtain data on institutional investor holdings from the Thomson-Reuters 13F database, and data on individual funds and their holdings from the Thomson-Reuters S12 dataset and the CRSP mutual fund dataset. We first merge the S12 and CRSP MFDB holdings by taking the larger of the two holdings recorded for each fund-firm pair in December of each year. We then sum the holding of all funds offered in each year by each institution in our sample. We take the larger of the total holdings recorded for each institution-firm between the merged S12-MFDB (i.e., holdings of funds that disclose via Form S12) versus the institution-level 13F data, as of December of each year. In this way, we construct a comprehensive list of recorded holdings of US public firms for each institution in our sample.

We calculate the yearly weighted average fee for each institution as the average management fee across all funds offered by that institution, weighted by the total assets under management in each fund, dropping any fund-years that report a negative or missing fee.

Finally, we add data on the cost of capital for asset management companies, which we use to capitalize expected fees in future years, from Aswath Damodaran's website,[7] and we gather data on firms' governance practices, which we use in our cross-sectional tests based on firm characteristics, from the ISS governance database.

B. Rules and Regulations

Before presenting some stylized facts about the engagement activities of institutional investors, we provide a brief overview of the rules and norms that govern the engagement process. In the 2023 stewardship report, BlackRock states that "BlackRock Investment Stewardship (BIS) views engagement as a key mechanism for providing feedback or signaling concerns to companies about factors that affect long-term financial performance."

[7] `https://pages.stern.nyu.edu/~adamodar/New_Home_Page/home.htm`

As previously discussed, there are several ways institutional investors such as BlackRock can engage. Institutional investors can write letters or emails to a company's management team.[8] They might communicate with corporate managers via phone calls. Or, institutional investors might meet with corporate managers in person or virtually. Our sample includes all such activities as reported by institutional investors in their stewardship reports. Figure 1 shows an example of engagement reporting from Dimensional Fund Advisors' 2023 stewardship report.

These reports define engagement as any direct interaction between the institutional investor and a portfolio company where meaningful dialogue occurred (BlackRock (2023)). Institutional investors typically identify specific issues that are important to them and often engage with companies that operate in ways inconsistent with their values. In such cases, the engagement process involves a dialogue between the fund and a firm's management team to learn more about the reasons behind the identified issues.[9]

Commonly, fund managers engage with companies around quarterly earnings calls. Stewardship teams may accompany fund managers or act independently, and the people involved may depend on whether the investor is passive or active. A significant portion of engagement activities relate to proxy voting issues, particularly when an issue might lead to a vote against a director or, more broadly, against management recommendations. Other engagement activities occur off-season or are non-ballot related, covering a range of topics from discussions on corporate governance practices that could create long-term value to requests for the disclosure of environmental or social policies.[10]

[8]BlackRock's CEO Larry Fink is known for writing public letters that are the same for all companies held in BlackRock's portfolio. Because such letters do not address firm-specific issues, they are not counted as engagement in our sample.

[9]SEC Chair Mary Schapiro (2010) stated corporate directors should have "conversations with investors about how the company is governed – and why and how decisions are made."

[10]See Gatti, Strampelli, and Tonello (2024) for results from a survey on engagement practices.

While existing regulations do not directly address engagement *per se*, both companies and institutional investors are constrained in what they can communicate to each other. Much of the regulation governing communication between firms and investors consists of rules that restrict what corporate managers can disclose privately, without public disclosure. In particular, Regulation Fair Disclosure (Reg FD) constrains companies from selectively releasing material non-public information to investors unless the information is publicly released to everyone. If a company does reveal material non-public information to a subset of investors, then they are required to file a form 8-K. Similarly, institutional investors are constrained from trading on material non-public information according to Rule 10b5-1. Thus, even if an engagement activity led to the transfer of material non-public information from corporate managers to investors, the investors would be precluded from trading on it.

Engagement activities could also be constrained by rules governing proxy materials, in particular Rule 14a-6. If a company creates information for their investors about their actions related to an upcoming proxy vote, they are required to file that information with their proxy statement and publicly disclose the information. Finally, several companies have adopted bylaws that directly constrain their conduct when engaging with shareholders.

In general, while engagement between investors and corporate managers might initially appear to give investors an unfair advantage, existing regulation is designed to prevent any such advantage from occurring. Instead, engagement activities are intended to allow investors to communicate information and their preferences to corporate managers in a manner that benefits all investors in the firm. Indeed, the UN PRI (2023) defines investor stewardship as "the use of influence by institutional investors to maximise overall long-term value including the value of common economic, social and environmental assets, on which returns and clients' and beneficiaries' interests depend."

Of course, it remains unknown whether and how much the value of firms can be impacted by engagement activities. However, since engagement activities are costly, it is rational to expect that institutional investors would undertake them only if the expected benefits outweigh the costs. Accordingly, we first use our hand-collected engagement data to examine stylized facts about engagement, including the factors that determine it. We then use our discrete choice model to provide the first general estimates of the costs and benefits of engagement.

C. Stylized Facts about Engagement

In Table I, Panel A, we observe that the average institution in our sample holds approximately 2,700 firms, but there is substantial heterogeneity among different institutions. At the high end, passive investors each hold more than 3,000 firms, effectively encompassing the universe of US public equities, while at the low end, one active investor, Robeco, holds an average of 1,145 US stocks. Moreover, we observe that institutional investors differ significantly in the size of their holdings. On the one hand, passive investors such as BlackRock and Vanguard report the highest average holding sizes, which are $703 million and $847 million, respectively. On the other hand, active investors like Allianz and Axa hold smaller average positions of $54 million and $80 million, respectively.

Institutional investors in our sample engage with an average of 320 firms per year, or approximately 12% of their portfolio. Also here there is substantial heterogeneity within both active and passive families. For instance, among active investors, Wellington engages with 47% of its portfolio firms whereas Axa engages with only 2%. This suggests that the costs and benefits of engagement vary substantially.

In Panel B, we report summary statistics regarding the assets under management (AUM),

the fraction of AUM in passive funds, the average fees charged by the institutional investors in our sample, as well as our measure of investor's incentives to engage, denoted by κ, which is the present value of all expected fees from increasing firm value via engagement (we formally define κ in Section III). We find that there is a clear division between the four passive institutions in our sample—BlackRock, Vanguard, State Street, and Northern Trust—and the seven active institutions. First, the passive institutions are larger, with an average 13F AUM of 2 trillion US dollars compared to an average of 300 billion US dollars for the active institutions. Second, the passive institutions have between 58% (Northern Trust) and 96% (State Street) of their S12 fund assets in passively managed index funds. In contrast, among the seven active institutions, UBS has the highest fraction of passive AUM, with an average of only 4% of its S12 fund assets in index funds. For four of the seven active families, the fraction of passive AUM is zero.

For each institution-year, we compute the fee as the average management fees across all funds offered by the institution that year, weighted by the AUM in each fund at the beginning of the year. As expected, the four passive families tend to have significantly lower fees compared to active families. Importantly, as a result, they also tend to have significantly lower incentives to engage. For the four passive institutions the average κ across all years is 0.065 basis points, while for the seven active institutions the average κ is 0.219 basis points, more than three times higher. In other words, due to their lower fees, passive investors capture less than one third of the benefit that active investors do from increasing firm value through engagement.

C.1. What Determines Engagement?

Our data show that institutional investors engage with approximately 12% of their portfolio firms each year. However, relatively little is known about the determinants of their decision to engage. In other words, how do funds choose to engage with some portfolio firms and not others?

Lewellen and Lewellen (2022) argue that institutional investors benefit from engaging with their portfolio firms through two channels. First, if engagement increases firm value, then the fund's AUM will also increase. This means the fund will increase its income through management fees, which are typically calculated as a fixed percentage of AUM. Second, if engagement increases firm value, it will enhance fund performance, potentially attracting additional investor flows into the fund and thereby further increasing fee income. Importantly, both of these benefits are primarily determined by the dollar value of the firm's position in the firm. As a result, we start our analyses by exploring the relation between engagement and the dollar value of an institutional investor's position in a particular firm.

In Figure 2, Panel A, we observe a strong upward-sloping relation between engagement activities and the dollar size of the institutional investor's holding. For small holdings of $1 million or less, the average probability of engagement is just 4.2%. For large holdings of $10 billion or more, the probability of engagement is 87%. For the 43 largest holdings in our sample, institution investors engaged with the firm 100% of the time.

In Table II, we present ordinary least squares (OLS) regression estimates of the relation between engagement and the dollar value of the holding (*log($ Holding)*), as well as two highly related variables that could plausibly drive engagement behavior: (i) the fraction of the firm's equity that is held by the institutional investor (*FractionFirmEquity*), and (ii) the weight

in the institutional investor's portfolio that the holding represents (*FractionInstAUM*).[11] To ensure our estimates are not affected by time-varying investor traits, we include institution-by-year fixed effects. This approach means that we examine engagement decisions within each institution's portfolio at each point in time. We find that the dollar value of the holding is by far the strongest determinant of the decision to engage. In column 1, we find that a one standard deviation increase in *log($ Holding)* raises the probability of engaging by 10.6 percentage points (pp). By contrast, we observe that both the fraction of the firm's equity held and the fraction of the fund's portfolio that the holding represents are less important. Those two variables have smaller associations of only 0.9 percentage points and 3 percentage points, respectively.

Since variation in firm characteristics could drive both holding size and engagement, in Table II column 2 we add firm-by-year fixed effects, which sweep out *any* variation at the firm level that drives the decision to engage (e.g., changes in firm performance or corporate governance). We find that the coefficient on the dollar value of the holding falls only slightly from 10.6pp to 7.6pp. Thus, firm characteristics do explain some amount of the association between holding size and the decision to engage: Some firm-years systematically have larger holding sizes *and* are more likely to be engaged, and vice versa. Still, the dollar value of the holding remains the single most important determinant of the investor's decision to engage. Furthermore, when firm-by-year fixed effects are added, the association with the fraction of the firm's equity held becomes stronger, while the association with the portfolio weight disappears. These estimates suggest that when comparing engagement decisions within a given firm-year, the largest shareholders are more likely to engage, while the importance of the holding to the institution does not play a major role.

[11] For example, Cronqvist and Fahlenbrach (2008) show that large blockholders tend to have larger influences on company policies.

Finally, in Table II column 3 we add firm-by-institution fixed effects. These sweep out any non time varying differences in the match quality between funds and firms. Put differently, this estimate examines engagement decisions within the same fund-firm pair over time. This further reduces the scope for omitted variables to drive both holding size and engagement. We see that the associations of engagement with both the holding size and the fraction of the firm's equity held fall by roughly 50%. However, the dollar value of the holding remains the most important determinant of engagement decisions, consistent with our model and with the predictions of Lewellen and Lewellen (2022).[12]

In Figure 2, Panel B, we examine whether the relation between dollar holdings and engagement differs between passive and active institutions. At the extremes, we see a pattern similar to that observed in Panel A: The frequency of engagement is low (around 4%) for small dollar holdings and high (around 100%) for very large dollar holdings for both types of investors. However, for all intermediate holding sizes, the frequency is lower for passive investors. In other words, conditional on holding size, passive investors are less likely to engage. Whether this difference is due to differences between passive and active institutions in their fees, holdings, or expected costs and benefits of engagement is a key question we investigate through the lens of our discrete choice model.

III. A Discrete Choice Model of Engagement

Discrete choice models are used to dissect the determinants of economic agents' decisions among a discrete set of choices. In our setting, the choice set is simple: Each institutional investor j chooses to engage ($engage$=1) or not engage ($engage$=0) with each firm i in their

[12]For robustness, in the Internet Appendix (Table A1), we present estimates of the same relationships using logit and probit models; the conclusions are the same.

portfolio in year t.

We model this choice based on Lewellen and Lewellen (2022) and our stylized facts presented above. Consider an institutional investor (j) who holds the dollar value $\$DV$ in firm i's traded equity, has total assets under management of AUM, and charges yearly management fees m as a percent of AUM. By engaging at a cost c, the investor could raise the value of firm i' by the fraction b in expectation. Without loss of generality, we set the payoff of not engaging to zero.

If the institutional investor chooses to engage with a firm, it could benefit them in two different ways. First, because funds fees m are calculated as a fraction of AUM, increasing the value of the firm via engagement will increase the fund's AUM, thereby increasing their fees. Formally, increasing firm value by b will lead to higher fees in the amount $b \times \$DV \times m$. Second, increasing the value of firm i in the fund's portfolio might also attract more capital into the fund. Formally, flows into the fund $= \eta \times (b \times \$DV/AUM)$ where η is the elasticity of flows to fund performance and $\$DV/AUM$ is the weight the fund has in a particular stock. Thus, inflows yield a benefit to the fund of (η × b × DV / AUM) × AUM × m = η × b × DV × m. We assume that the higher AUM from both channels and therefore the higher fee income is persistent, and the institutional investor capitalizes the present value using their cost of capital r_{jt}.

In addition, the institution receives a private signal ϵ about the expected value of engaging with each firm, which is drawn from some distribution centered at zero and with standard deviation σ, consistent with standard models of private information (e.g., Malenko and Malenko (2023)).

In total, the expected net benefits (ENB) from engaging are given by:

$$ENB = E[(b_{ijt} \cdot DV_{ijt} \cdot m_{jt}) \cdot (1+\eta) \cdot \frac{1}{r_{jt}} - c_{ijt} + \epsilon_{ijt}] \tag{1}$$

$$ENB = \kappa \cdot b \cdot DV - c + \epsilon \tag{2}$$

where $\kappa = m(1+\eta)/r$, is the present value to the institution of increasing the value of their stake in the firm by one dollar. We compute the average fee across all funds, weighted by assets under management, for each family-year. For the discount rate r we use the yearly cost of capital for asset management firms from Aswath Damodaran's website. Our value of η comes from Lewellen and Lewellen (2022). That paper estimates flow-to-performance sensitivities at the family level and finds that a 1% higher return is followed by higher inflows of 1.39% of the fund's AUM.[13]

To illustrate, suppose that the management fee m is 10 basis points and the discount rate r is 5%. If the institution takes an action that raises the value of its stake in firm X by one dollar, this raises the fund's AUM directly by one dollar. In addition, by the end of year 1, the fund attracts \$1.39 in additional inflows. Since the fund collects 10 basis points of the additional AUM each year in perpetuity, the present value to the fund is $\kappa = 0.0010$ * (1+1.39) / 0.05 = 0.0478.

The example above illustrates that (1) funds have an incentive to engage as long as engagement is expected to be value-creating; (2) the incentive varies one-for-one with the dollar value of the holding; (3) the fraction of the value created for the fund that the fund's management captures varies one-for-one with fund fees and is generally less than 100%; (4) such engagement also creates positive externalities for other shareholders of the same firm, which leads to free-rider problems or a level of engagement that is below the social optimum.

[13]Evidence suggests investors in passive funds also chase returns, leading to significant flow-to-performance sensitivities for passive funds (Dannhauser & Pontiff, 2024).

The investor engages with the firm if the expected net benefit is positive (i.e., $ENB_{ijt} > 0$). For the simplest case in which κ, b, c, σ are the same for all funds and firms:

$$0 < \kappa \cdot b \cdot DV_{ijt} - c + \sigma\epsilon_{ijt} \tag{3}$$

The fund engages with the firm with probability:

$$Pr\left(\epsilon_{ijt} > -\frac{1}{\sigma}[\kappa \cdot b \cdot DV_{ijt} - c]\right) = 1 - \Phi\left(-\frac{1}{\sigma}[\kappa \cdot b \cdot DV_{ijt} - c]\right) \tag{4}$$

where Φ is the cumulative distribution function of the private signal.

Identification of the costs and benefits is possible because the benefit of engaging varies directly with the dollar value of the holding. If some part of the cost of engaging varies with the portfolio weight, then we include that in b, which captures the "net variable benefits" of engaging. The fixed cost of engagement can vary by fund and firm, as well as over time. If there is any fixed benefit of engaging with a firm that does not depend on its portfolio weight, then we include that in c which captures the "net fixed cost" of engaging.[14]

Our estimates are based on the revealed preferences of institutional investors. As such, our estimates might not have a causal interpretation. Rather, the actions we observe reflect equilibrium behavior given expected costs and benefits. Nevertheless, our analysis still has identifying assumptions. First, if an omitted variable jointly impacts the decision to engage and the costs or benefits of engaging, then our estimates of the costs and benefits of engaging could be biased. However, we note that our panel regressions exploit the high dimensionality of our data to rule out a number of possible confounders. Specifically, in Table II we include a variety of fixed effects including institution $\times$ year fixed effects, which sweep out time varying

[14]In other words, c measures the net fixed cost (costs less benefits) and the flexibility of our model allows the resulting estimates to be positive or negative.

characteristics in a fund family (including variation in the incentives to engage), firm × year fixed effects, which sweep out time varying characteristics within firms (such as CEO quality and performance), and even institution × firm fixed effects, which account for the possibility of endogenous matching between funds and firms. In all cases, our main estimates of the relation between the dollar value of holdings and engagement are relatively stable, suggesting that the assumptions underlying our discrete choice model (which assumes the dollar value of holdings is the primary driver of engagement) are supported in the data. We also note that all of our conclusions hold when we instrument for each institution's passive holdings, suggesting that omitted variables are unlikely to significantly alter the equilibrium behavior we observe.

Our analysis also assumes that funds decide to engage on a firm-by-firm basis. That is, the decision to engage with a particular firm is independent of the decision to engage with other portfolio firms; all that matters is the cost and expected benefit of engaging in that firm. There are two reasons this assumption is likely reasonable. First, as discussed above, our analysis in Table II finds that the dollar value of holdings is the primary driver of the decision to engage in a particular firm, suggesting that other motivations to engage, if they exist, have a smaller impact.[15] However, it could be that institutions lack the bandwidth to engage with all firms for which the benefits exceed the costs. In such a case, our analysis implicitly assumes they could scale up their engagement activities (possibly by hiring a new employee) to handle the additional profitable engagement activities. Since the institutions in our sample are all profit maximizing firms, this assumption also seems plausible.

In estimating this type of model, the parameters are only identified up to a common

[15]Note that this evidence also suggests that several other explanations are unlikely. For example, behavioral motivations for engaging (e.g., a warm glow from engaging, private perquisites, etc.) should not generate a strong relation between the dollar value of holdings and the probability of engaging.

scaling parameter. Following the existing literature (e.g. Dickstein and Morales (2018)), we fix the value of one parameter and estimate the others. Specifically, we scale our estimates so that the average fixed cost of engaging across all institutions and all firms equals $10,000. This is one-tenth of the typical yearly salary of an equity analyst.[16] The scaling factor still allows both the variable and fixed costs and benefits to vary across funds and firms, and all comparative statics are invariant to the choice of scale.

IV. Results

A. Baseline Estimates

In this section, we present the results of our discrete choice model, which allows us to estimate the benefits and costs of engagement across institutions, firms, and years:

$$PrEngage_{ijt} = 1 - \Phi(b \cdot \kappa \cdot DV_{ijt} - c_{ijt}) \tag{5}$$

Recall that κ_{it} for each institution-year $= m_{it} \cdot (1 + \eta)/r_t$. We set $\eta = 1.39$ following Lewellen and Lewellen (2022), and r equal to the cost of capital for asset management firms in that year from Aswath Damodaran's website. Table I shows the sample average of κ for each institution, as well as the sample average of fees (m) for each institution. With κ, DV, and the observed engagement choices in hand, we estimate model (5) with a probit link function. The results are almost identical if we use a logit link function instead.

We report the baseline estimates, by institution, in Table III. The estimated effect of engagement on firm value, averaged across institutions, is 0.31 basis points (bps). That is,

[16]The Bureau of Labor Statistics reports the median annual wage for financial analysts was $99,010 in May 2023. See https://www.bls.gov/ooh/business-and-financial/financial-analysts.htm.

the institutions in our data behave as if they expect engaging with a portfolio firm to raise the firm's value by 0.31 bps (0.000031) on average. The estimated effect of engagement on firm value is slightly larger for passive institutions (0.34 bps) than for active institutions (0.30 bps). There is substantial variation among institutions in the expected effect on firm value, ranging from 0.10 bps for T. Rowe Price to 0.72 bps for Vanguard. Overall, all of the expected benefit coefficients are strictly positive and are estimated with high precision.

On the costs side, the average cost of engagement for active institutions is \$10,148, compared to an average cost of \$9,705 for passive institutions. Active institutions generally have a higher cost of engagement, with costs reaching \$13,907 for Axa. Wellington is an outlier with a very low estimated cost of engagement (\$1,410). In other words, relative to the number and dollar value of their holdings, Wellington engages much more frequently than the other institutions. We suspect this may be because Wellington prominently sub-advises funds at other institutions.

Since the expected benefits of engagement to firm value are slightly larger for passive institutions compared to active institutions, and the costs are slightly lower, why do passive institutions engage less, as shown in Figure 2b? Column 5 of Table III provides the answer. We multiply each institution's estimated effect on firm value b by the expected fraction of value creation that the institution captures, κ, to produce the expected benefit of engagement to the institution itself. We see that the comparison is very different; the benefits that passive institutions expect to reap from engagement (0.02 bps) are one-third those of active institutions (0.06 bps). This is because passive institutions capture three times less of *any* value creation at their portfolio firms, due to their lower fees (Table Ib).

A.1. Heterogeneity and Endogeneity

When interpreting our baseline estimates, two separate but related aspects need to be considered. The first aspect is heterogeneity in the expected benefits and costs of engagement. These are estimated from the dependence of the engagement decision on the dollar value of the holding, as highlighted in Figure 2. If (as is surely the case) the relative costs and benefits of engagement are heterogeneous across firms, then the estimate is a weighted average of the underlying values weighted by how marginal the engagement decision is. Put differently, if some firms have zero expected benefits of engagement they will never be engaged and their true benefit will not enter into the probit estimate. If some firms have large benefits of engagement, they will always be engaged and similarly their true benefit will not enter into the probit estimate. It follows that our model estimates are an average of the expected firm-fund-year expected benefits, weighted by how much they are on the margin of the engagement decision.[17]

The second aspect is potential endogeneity. The benefits and costs of engagement will be estimated in an unbiased manner as long as they are uncorrelated with the institution's holdings of the firm within each institution-year. However, it is possible that holdings and engagement decisions are endogenously related. Institutions might overweight portfolio firms with higher expected benefits and lower expected costs. To address this possibility, we instrument the holding size of each firm in each institution-year with the holdings of that institution's passive funds. Because passive fund holdings are determined only by inflows and outflows in the individual funds and the weight of the firm in the index, each institution's passive holdings cannot be chosen endogenously with the expected costs and benefits of

[17]Numerical simulations confirm that in the presence of heterogeneous expected benefits, our estimates are not an upper or lower bound on those benefits, but a weighted average as described.

engagement.[18]

The results are presented in the Internet Appendix Section 2. The instrumented estimates are similar to our main estimates presented in Table III, both on the cost and benefit side. We find similar results when we lag the instrumental passive holdings by one or more years, further distancing the holding size from the engagement decision. These findings suggests that an omitted variable bias or reverse causality bias that impacts the relation between holding size and engagement decisions within each institution-year is likely small, if it exists.

A.2. Conventional Panel Estimates

The structure that our discrete choice model imposes on the data lends our estimates greater statistical power. As a check on our findings, the Internet Appendix presents standard panel difference-in-differences estimates of the effects of engagement on firm value and governance. In these estimates we compare portfolio firms that were engaged versus not engaged, for two years prior and two years after engagement. There is a small positive association of engagement with changes in firm value (i.e. equity returns): Engaged firms have equity returns that are 31 to 79 basis points per year higher post-engagement. However, because stock returns are noisy, those estimates are less precise: none are statistically significant at conventional levels and the 95% confidence intervals include both zero (no effect of engagement) and our baseline estimates in Table III. That is, a standard panel difference-in-differences estimate yields results that are consistent with our baseline estimates, but less precisely estimated.

Another advantage of our model-based approach is that it is unclear over what time horizon we should expect engagement to improve firm value, or in what ways it should improve

[18] *"The unique feature of passive funds is that they are required to hold most public stocks regardless of whether their fund managers agree or disagree with the firms' policies."* (Kakhbod et al., 2023)

firm value. Instead, it is useful to know what implicit assumptions drive the engagement decisions of large institutional investors – that they act "as if" they expect engagement to produce small but non trivial increases in firm value.

Perhaps institutions engage for reasons other than firm value, such as improving governance. First, funds' fiduciary duty largely rules this out. In survey responses even dedicated ESG funds say that they would not be willing to sacrifice a *single basis point* of expected returns for socially beneficial aims (Edmans, Gosling, & Jenter, 2024), and (Lowry, Wang, & Wei, 2024) find strong support for the hypothesis that ESG engagement is value-driven. As an additional check, the Internet Appendix presents panel difference-in-differences estimates of the association of engagement with changes in firm governance. The results suggest zero overall effects of engagement on governance. For two of the seven governance outcomes we examine, the association is statistically significant, but the economic significance is tiny. The probability of a supermajority requirement to amend the firm's charter falls by 0.002 relative to a sample standard deviation of 0.453, and the probability of a classified board rises by 0.009 relative to the sample standard deviation of 0.302. Thus, the data suggest that engagement is not followed, on average, by any changes to corporate governance over the following two years.

Taken together, Table III shows substantial variation in the costs and benefits of engagement across institutions. However, this variation is likely to be strongly determined by the institutions' holdings, such as the holding sizes and the characteristics of their portfolio firms. Accordingly, in the following two analyses, we examine the determinants of engagement across institutions and across firms.

B. Firm Characteristics and Costs and Benefits of Engagement

Next, we examine how the costs and benefits of engagement vary with firm characteristics. We focus on three firm fundamentals: Firm size (market capitalization), profitability measured by the return on assets (ROA), and corporate governance quality measured by the E-Index of Bebchuk, Cohen, and Ferrell (2008). We report the results in Table IV.

Our analysis reveals that, on average across all institutions, the cost of engagement is substantially higher for small firms compared to large firms ($12,237 compared to $7,502, respectively). However, engaging with small firms yields expected benefits of 5.5 bps, whereas engaging with large firms results in a benefit of only 0.38 bps. Thus, while engaging with smaller firms is more costly, the benefits of engaging with small firms are more than an order of magnitude larger. But even though the benefits are significantly higher, the small dollar value of positions in these firms make them less likely to be engaged. As a result, for small companies, the social benefit of engagement is likely much larger than the private benefit.

We also explore the interaction between corporate governance, firm performance, and the costs and benefits of engagement. The marginal effects in Table IV highlight that poorly governed firms with a higher E-index incur significantly higher engagement costs, without a significant increase in benefits. In other words, engagement is less effective when dealing with management that is entrenched. Additionally, we find that engaging with more profitable firms yields significantly lower expected benefits compared to engaging with less profitable firms, suggesting profitable firms have limited room for improvement.

C. Economies of Scale and Scope in Investor Engagement

In this Section, we examine how the costs and benefits of engagement vary with characteristics of the investing institution. We focus on institutional investor attributes that

capture the scale and the scope of their portfolio. Specifically, we examine the effects of the total AUM of the institution (scale), as well as the number of firms in the institution's portfolio (scope). We estimate the model parameters separately for passive and active investors, and report the results in Table V.

In Panel A, we report the estimate for the four passive institutions in our sample. We find that a one standard deviation increase in the number of firms held (corresponding to an additional 80 firms) is associated with a $471 lower cost and zero change in the benefit of engagement. Conversely, a one standard deviation increase in total assets under management (corresponding to an additional $349B) is associated with a $20 higher cost and a 0.06 bps higher benefit of engagement. These marginal effects are all small and the marginal changes in benefits are not statistically different from zero. We conclude that for passive institutions, both the number of firms held and the total amount of assets under management is not highly relevant to the economics of engagement. Put differently, passive institutions do not show significant economies or diseconomies of scale or scope.

In Panel B, we report the estimate for the seven active institutions in our sample. We find that a one standard deviation increase in the number of firms held (corresponding to an additional 451 firms) is associated with a $15 lower cost and a 19 bps higher benefit of engagement. Further, a one standard deviation increase in total assets under management (corresponding to an additional $156B) is associated with a $1,486 lower cost and a 0.32 bps lower benefit of engagement. These findings suggest that as these institutions grow in assets under management and firms held, their marginal engagement decision becomes significantly less valuable. That is, for active institutions there are diseconomies of both scale and scope. This finding is intuitive, as there is a finite supply of positive NPV investments for active funds to take (Berk & Green, 2004). As a result, a larger fund will struggle to generate the

same value as a smaller fund.[19]

V. Counterfactual Simulations

Finally, we use our model estimates to examine how institutional size affects engagement and value creation for the mutual fund industry. A prevailing concern is that the Big Three passive institutions wield too much power in corporate boardrooms, by virtue of the fact that they control more than 20% of voting shares at nearly every U.S. public firm (Coates, 2024). The rise of passive is ongoing: as of 2024 passive funds held just over 50% of all mutual fund assets, according to Morningstar.[20]

Our model speaks to this debate. We analyze a counterfactual scenario in which the rise of passive investing continues. We take the holdings of each of our eleven sample families as of 2022 (the last year in which we have engagement data for all families). We then remove 80% of each holding by each active family, and split those shares equally among the four passive families.[21] This simulates the effect of a continued rise of passive investing to the point where 90% of mutual fund assets are held by passive institutions.

These changes have multiple effects on the economics of engagement with portfolio firms. First, the holding sizes of active funds decrease, which decreases their incentive to engage. Meanwhile, the holding sizes of passive funds increase, which increases their incentive to engage (Figure 2). Second, the benefits and costs of engaging at each institution change, especially for active funds because the benefits and costs vary with institutional characteristics,

[19] "Anyone who says that size does not hurt investment performance is selling. The highest rates of return I've ever achieved were in the 1950s. I killed the Dow. You ought to see the numbers. But I was investing peanuts then. It's a huge structural advantage not to have a lot of money." -Warren Buffett

[20] `https://www.cnbc.com/2024/01/18/passive-investing-rules-wall-street-now-topping-actively-managed-assets-in-stock-bond-and-other-funds.html`

[21] Note: because we find that passive funds have little to no diseconomies or economies of scale or scope, equally allocating this capital to the four passive fund families should not substantially impact our estimates.

in particular scale (total assets under management) as shown in Table V.

Table VI displays the results of the counterfactual simulation. The table shows the actual engagement frequency for each institution across all their portfolio holdings. On average, the passive families effectively hold all U.S. public stocks. BlackRock engages most frequently, with 20.2% of its portfolio firms on average compared to 16.1% for Vanguard, 9.6% for State Street and 2.1% for Northern Trust, the smallest of the four. With the exception of Wellington, the seven active families engage less overall than the passive families do. Wellington engages with 47% of its portfolio firms, possibly because Wellington acts as a sub-advisor to other large asset managers.

Table VI Column 4 shows that our baseline model matches the actual engagement frequencies closely for each institution. Column 5, "Simulated", shows the predicted propensity to engage when we move 80% of active families' assets into the passive families. We see that the passive families are more likely to engage with their portfolio firms. This is for two reasons: First, because they have larger dollar holdings of every firm, therefore a larger incentive to engage. Second, because passive families have a flat or improving economy of scale. In other words, passive families have slightly higher benefits of engaging when their total AUM is larger, as shown in Table V. Both of these effects increase passive families' tendency to engage with their portfolio firms as their holdings grow.

By contrast, active families experience large outflows in our simulation and their dollar holdings shrink. As a result, the active families all become less prone to engage with their portfolio firms. There is an opposing effect because active families have significant diseconomies of scale, as shown in Table V. Thus, shrinking their holdings increases their expected benefits to engagement and their incentive to engage. However, we see that this effect is dominated by the direct incentive effect from shrinking their holding size. As a result, as

their holdings shrink, all seven active families become less prone to engage.

Our model and data allow us for the first time to estimate the costs and benefits of fund engagement, and therefore the net value creation, for the mutual fund industry. We assume that the institutions in our sample have rational expectations – that is, the expected costs and benefits are correct on average. In the counterfactual scenario, as passive investing increases to 90% of the industry, what happens to value creation both for fund investors and for society as a whole?

Table VII presents the implied costs and benefits of engagement in dollar terms across our sample. Overall, our estimates imply that the mutual fund industry spent $28.8 million on engagement activities in 2022. This engagement activity was estimated to produce $9.0 billion in additional firm value in total. Since each family holds a fraction of each firm, the value created for the investors of those families was $366 million.

In the counterfactual simulation, the total value created by passive families' engagement increases from $4.7 billion to $5.3 billion. The increase is for two reasons. First, because those families' holdings increase, making them more prone to engage. Second, as passive families grow, the expected benefit to firm value from engaging also increases (positive economy of scale). As a result, total value creation increases.

At the same time, the total value created by active families' engagement also increases from $4.3 billion to $7.4 billion. This surprising prediction is because, although their holdings and their engagement probability both fall, the expected benefits of their engagement rise by more. Due to active families' diseconomy of scale, shrinking their size increases their expected value creation across all firms and investors. Thus, the spillovers generated by shrinking active funds are larger than if the funds themselves were larger, and from a social standpoint, shrinking the active fund industry is a good thing.

However, the value generated to fund investors by active funds' engagement actually goes down. This suggests that it is not in active fund investors' interests, or in their management's interests (since management collects a fixed fraction of that value creation), for active funds to shrink.

As a result, our simulations suggest that the rise of passive is good for passive funds and their investors, as well as society as a whole, consistent with the theoretical predictions in Kakhbod et al. (2023) who show that the rise of passive investing can lead to improved information sharing between investors and managers leading to better corporate decision making. However, in our setting the rise of passive is still a negative for the active fund industry, both for active investors and active fund managers. As passive holdings increase, passive funds benefit from their economies of scale and collect a larger fraction of the value created. Active funds create more value in total as they shrink, due to their diseconomy of scale. However, they capture a smaller fraction of that value created. Thus, it is still not in the interests of active funds to limit their size voluntarily, either from the point of view of their investors or their managers. Overall, our counterfactual results suggest that the continued rise of passive investing is beneficial for passive funds and societal value, at least as far as engagement is concerned. But this rise in passive investing poses challenges for the active fund industry, highlighting a potential misalignment between the socially optimal and privately optimal engagement decision for active funds.

VI. Conclusion

Theoretically, institutional investors are supposed to monitor and influence the behavior of corporate managers at their portfolio firms. This influence can take many forms: voting,

exiting the position, and engaging with managers. We provide the first estimate of the costs and benefits of engaging across a large number of funds and firms. To do this, we hand-collect data on the engagement activities of 11 large institutional fund families including BlackRock, Vanguard, and T. Rowe Price. We then estimate a discrete choice model that flexibly recovers the costs and benefits of engaging for different funds and firms.

We document a number of novel results. First, we show that position size is the most important determinant of engagement activities. In our sample, institutional investors engage with less than 5% of the companies in which they hold $10 million or less, but they engage with almost 90% of those companies in which they hold $10 billion or more. Second, we show that ceteris paribus, passive institutions engage less than active funds although they also tend to hold larger positions. Third, across all institutions and firms in our sample, we find that these institutions act as if each $10,000 spent on engagement is expected to increase firm value by approximately one-third of one basis point.

There is also substantial heterogeneity across firms in the costs and benefits of engagement. Engaging has significantly larger returns for smaller firms. Yet, because funds tend to hold small positions in small firms, they are significantly less likely to engage with them. Perhaps surprisingly, we also find that engagement is less effective for firms with entrenched managers. For such firms, the benefits of engagement are unchanged but the costs of engagement are significantly higher. We also find that passive funds engage less than active funds, holding fixed their position size, because they capture less of the value they create.

We use a counterfactual simulation to study the role of engagement in light of the recent rise of passive investing. We imagine a scenario in which passive funds hold 90% of all mutual fund and ETF assets under management. We then examine whether, and how, this shift impacts engagement. We find that the continued rise of passive investing is beneficial for

passive funds and societal value, at least on the dimension of engagement. But our results pose challenges for the active fund industry and highlight a potential misalignment between value creation and capture for active funds.

Overall, our results shed new light on the economics of investor engagement. We show engagement is a commonly used action connecting large institutional investors to the firms they invest in. Funds behave as if they expect engagement to have a very modest impact on firm value. Passive institutions are less prone to engage – not because they expect less value creation, but because they internalize a smaller fraction of the benefits due to their low fees. Future research should continue to explore how the costs and benefits of engagement vary across different scenarios, and how changes in the investing landscape are leading to changes in engagement between firms and their largest and most influential investors.

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DIMENSIONAL FUND ADVISORS

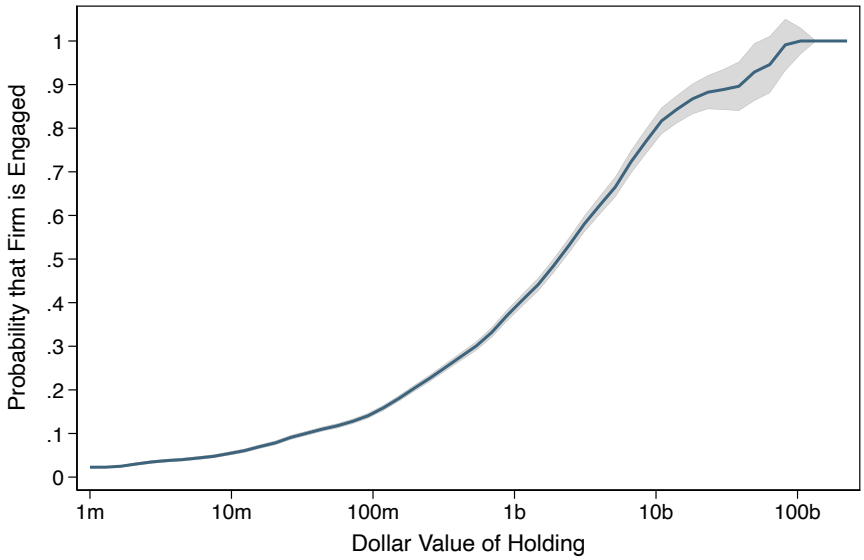
Appendix: Portfolio Companies Engaged in 2023

Dimensional conducted at least one engagement[11] with each of the following global portfolio companies during proxy year 2023.

Company Name

2U Inc.
888 Holdings plc
A.G. BARR plc
AAR Corp.
Aareal Bank Group
Abbott Laboratories
ABM Industries Inc.
Acciona SA
Accor SA
Acer Inc.
Acerinox SA
Activision Blizzard Inc.
Alkermes plc
Allegiant Travel Co.
Alliance Pharma plc
Alphabet Inc.
Alto Ingredients Inc.
Altria Group Inc.
Amazon.com Inc.
Ambac Financial Group Inc.
Ambarella Inc.
AMC Networks Inc.
Amcor plc
Amerant Bancorp Inc.
APA Group
Apartment Investment and Management Co. (Maryland Incorporation)
Apogee Enterprises Inc.
Apple Inc.
Applied Materials Inc.
ARATA Corp.
ArcBest Corp.
Arcosa Inc.
Argan Inc.
Argo Group International Holdings Ltd.

Figure 1. Engagement Reporting. The figure shows a sample from the 2023 Stewardship Report for Dimensional Fund Advisors.



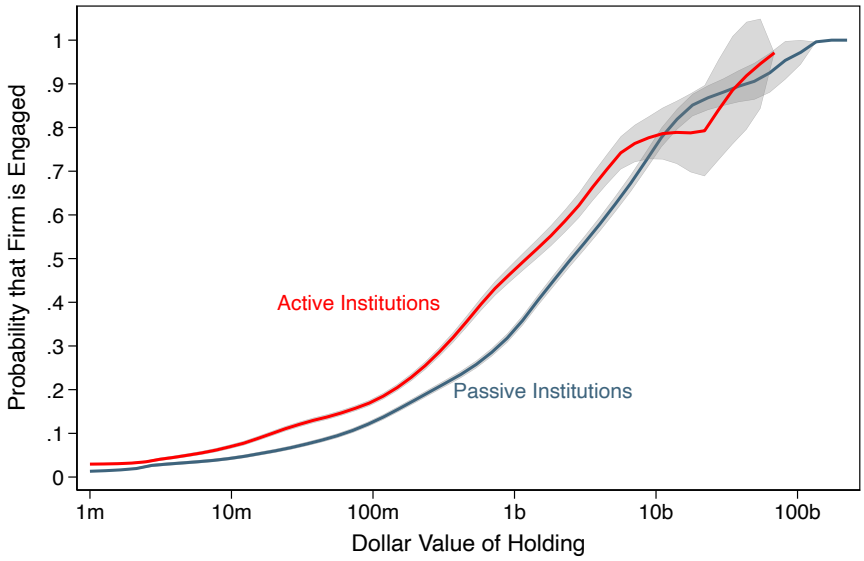


Figure 2. Engagement and Dollar Value Held. The figure plots the relationship between the dollar value of an institutional investor's holding of a given firm and the probability that the firm is engaged by the institutional investor. Grey areas represent 95% confidence intervals.

Table I
Summary Statistics

The table displays summary statistics of our sample. Panel A displays the average holding and engagement statistics for each institution. Panel B provides statistics for each institutions' AUM, fraction of passive AUM, the average annual management fee, weighted by the AUM for each fund offered by the institution, as well as the average κ, which represents the present value to the institution of increasing a portfolio firm's value by one dollar.

a) Holdings and Engagement

	# Firms held	Holding size ($m)	# Firms engaged	Fraction Engaged	Sample period
BlackRock	3761.2	703.1	759.8	0.20	2019-2023
Vanguard	3776.0	847.0	614.8	0.16	2019-2023
State Street	3740.0	483.3	360.5	0.10	2022-2023
Northern Trust	3493.0	131.6	70.3	0.02	2020-2022
Axa	2583.2	79.5	63.6	0.02	2019-2023
Allianz	1387.0	54.2	55.3	0.04	2021-2023
Robeco	1145.0	91.8	71.3	0.06	2021-2023
Dimensional	2972.3	88.8	326.5	0.11	2020-2023
T Rowe Price	2803.7	309.2	313.0	0.11	2021-2023
UBS	2330.7	88.1	95.7	0.04	2021-2023
Wellington	1679.3	291.0	794.0	0.47	2020-2023
Average - All	2697.4	288.0	320.4	0.12	
Average - Passive	3692.6	541.2	451.4	0.12	
Average - Active	2128.7	143.2	245.6	0.12	

b) AUM, Passive Fraction, Fees and Net Benefits of Engagement

	13F AUM ($B)	Fraction Passive	Weighted Fee (bps)	κ
Blackrock	2,792	0.87	16.9	0.076
Vanguard	3,120	0.78	5.1	0.023
State Street	1,516	0.96	8.9	0.040
Northern Trust	456	0.58	28.1	0.122
Axa	214	0.00	31.7	0.140
Allianz	77	0.00	75.7	0.329
Robeco	107	0.00	102.1	0.445
Dimensional	266	0.02	22.5	0.097
T Rowe Price	759	0.03	48.1	0.214
UBS	180	0.04	50.5	0.219
Wellington	482	0.00	20.5	0.089
Average - All	907	0.33	37.3	0.163
Average - Passive	1,972	0.80	14.8	0.065
Average - Active	298	0.02	50.2	0.219

Table II
Dollar Value Holdings and Institutional Engagement

The table displays OLS estimates of the relationship between engagement by institutional investors and measures of the importance of the stock holding. *log($ Holding)* is the dollar value of the holding, *FractionFirmEquity* is the fraction of the firm's equity that is held by the institutional investor. *FractionInstAUM* is the weight in the institutional investor's portfolio that the holding represents. All independent variables have been standardized to have a standard deviation equal to 1. Robust standard errors clustered by firm are shown in parentheses.

	(1) Engaged	(2) Engaged	(3) Engaged
log($ Holding)	0.106***	0.076***	0.042***
	(0.004)	(0.004)	(0.006)
FractionFirmEquity	0.009***	0.041***	0.023***
	(0.003)	(0.003)	(0.006)
FractionInstAUM	0.030***	0.004	0.003
	(0.006)	(0.004)	(0.006)
Observations	110,166	109,641	103,488
Adjusted R-squared	0.256	0.319	0.382
Institution × Year FE	Yes	Yes	Yes
Firm × Year FE	No	Yes	Yes
Firm × Institution FE	No	No	Yes

Table III
Costs and Benefits of Engagement

The table displays estimates of the expected costs and benefits of engagement for institutional investors based on the discrete choice model:

$$PrEngage_{ijt} = 1 - \Phi(b \cdot \kappa \cdot DV_{ijt} - c_{ijt})$$

The fixed cost per engagement is expressed in dollars. The expected change in firm value and net benefit to the institution are expressed in basis points per dollar invested. Robust standard errors clustered by firm are shown in parentheses.

Institution	Fixed Cost ($) c	Benefit to Firm Value (bp) b	Benefit to Fund Mgmt (bp) $b\kappa$
BlackRock	$6,521 ($534)	0.15 (0.02)	0.01
Vanguard	$8,159 ($256)	0.72 (0.07)	0.02
State Street	$9,547 ($321)	0.38 (0.08)	0.01
Northern Trust	$14,593 ($384)	0.12 (0.04)	0.03
Axa	$13,907 ($375)	0.18 (0.06)	0.07
Allianz	$12,708 ($450)	0.19 (0.04)	0.09
Robeco	$12,328 ($534)	0.25 (0.03)	0.03
Dimensional	$9,147 ($287)	0.68 (0.10)	0.18
T. Rowe Price	$9,286 ($353)	0.10 (0.02)	0.03
UBS	$12,396 ($402)	0.13 (0.04)	0.01
Wellington	$1,410 ($331)	0.53 (0.10)	0.07
Average - All	$10,000 ($384)	0.31 (0.05)	0.05
Average - Passive	$9,705 ($374)	0.34 (0.05)	0.02
Average - Active	$10,148 ($390)	0.30 (0.05)	0.06
# Obs.	110,166		
Pseudo R^2	0.192		

Table IV
Firm Characteristics and Engagement Costs and Benefits

The table displays estimates when the costs and benefits of engagement are allowed to depend on firm characteristics. Both accounting profit (ROA) and entrenchment (E-Index) have been standardized to have a zero mean and unit standard deviation. The fixed cost per engagement is expressed in dollars. The expected change in firm valueis expressed in basis points per dollar invested. Robust standard errors clustered by firm are shown in parentheses.

	Fixed Cost ($) c	Benefit to Firm Value (bp) b
Baseline:		
Small Cap	\$12,237 (\$2,247)	5.48 (2.23)
Mid Cap	\$11,299 (\$2,236)	1.41 (0.14)
Large Cap	\$7,502 (\$2,247)	0.38 (0.07)
Marginal Effects:		
ROA	\$-215 (\$235)	-0.07 (0.02)
E-Index	\$+728 (\$109)	+0.01 (0.01)
#Obs.	49,388	
Pseudo R^2	0.231	

Table V
Institutional Characteristics and Engagement Costs & Benefits

The table displays estimates when the costs and benefits of engagement are allowed to depend on institutional characteristics. Both the number of stocks held and total assets under management (AUM) have been standardized to have a zero mean and unit standard deviation. The fixed cost per engagement is expressed in dollars. The expected change in firm valueis expressed in basis points per dollar invested. Robust standard errors clustered by firm are shown in parentheses.

Panel A: Passive Institutions

	Fixed Cost ($) c	Benefit to Firm Value (bp) b
Baseline - Passive	$8,190 ($323)	0.39 (0.05)
Marginal Effects:		
# Stocks Held	$-471 ($112)	-0.00 (0.01)
Total AUM	$+20 ($210)	+0.06 (0.04)
# Obs	55,645	
Pseudo R^2	0.144	

Panel B: Active Institutions

	Fixed Cost ($) c	Benefit to Firm Value (bp) b
Baseline - Active	$10,172 ($771)	0.37 (0.07)
Marginal Effects:		
# Stocks Held	$-15 ($299)	+0.19 (0.03)
Total AUM	$-1,486 ($225)	-0.32 (0.05)
#Obs.	54,521	
Pseudo R^2	0.254	

Table VI
Counterfactual Simulation – Probability of Engagement

The table displays the results of a counterfactual simulation based on the estimated model. This analysis simulates the further "rise of passive investing" until passive funds represent 90% of total assets under management in the mutual fund industry.

	Actual Data			Baseline		
	Held	Engaged		Model	Simulated	
Institution	#	#	%	%	%	Δ
BlackRock	3761.2	759.8	20.2%	20.0%	20.7%	+0.7%
Vanguard	3776.0	614.8	16.1%	15.9%	16.5%	+0.5%
State Street	3740.0	360.5	9.6%	9.5%	9.9%	+0.4%
Northern Trust	3493.0	70.3	2.1%	2.0%	2.4%	+0.5%
Axa	2583.2	63.6	2.4%	2.5%	1.6%	-0.9%
Allianz	1387.0	55.3	4.0%	3.9%	3.0%	-0.9%
Robeco	1145.0	71.3	6.2%	6.2%	3.5%	-2.7%
Dimensional	2972.3	326.5	11.0%	10.9%	6.9%	-4.0%
T. Rowe Price	2803.7	313.0	11.3%	10.7%	5.4%	-5.3%
UBS	2330.7	95.7	4.1%	4.0%	2.8%	-1.2%
Wellington	1679.3	794.0	47.0%	47.9%	32.8%	-15.0%

Table VII
Counterfactual Simulation – Value Creation

The table displays the results of a counterfactual simulation based on the estimated model. This analysis simulates the further rise of passive investing until passive funds represent 90% of total assets under management in the mutual fund industry.

	Fixed Costs ($M)		Value Created ($M)		Value to Fund Investors ($M)	
Institution	Baseline	Simulated	Baseline	Simulated	Baseline	Simulated
BlackRock	6.0	6.3	723	864	49	68
Vanguard	6.0	6.3	2,813	3,007	233	280
State Street	3.9	4.2	1,034	1,207	43	62
Northern Trust	1.3	1.5	140	241	1.6	5.0
Axa	1.0	0.7	440	409	2.8	0.5
Allianz	0.8	0.6	222	110	0.5	0.0
Robeco	1.0	0.5	322	131	0.8	0.1
Dimensional	3.1	2.2	1,308	900	5.8	0.8
T.Rowe Price	3.4	2.5	259	2,663	7.1	15.5
UBS	1.3	0.9	149	315	0.7	0.3
Wellington	0.9	2.2	1,609	2,910	22	7.7
Total – Passive	17.2	18.3	4,709	5,319	327	415
Total – Active	11.6	9.8	4,308	7,439	39.2	25.0
Total – All	28.8	28.1	9,018	12,759	366	440