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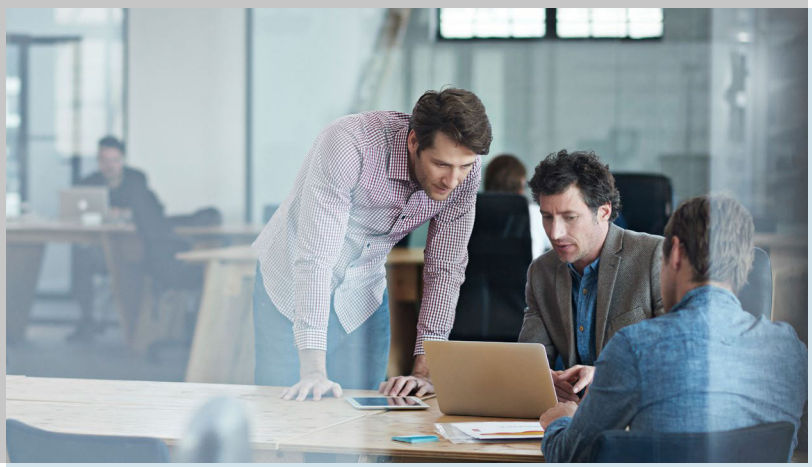
Do Index Funds Monitor?



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ABSTRACT

Passively managed index funds now hold over 25% of U.S. mutual fund and ETF assets. The rise of index investing raises fundamental questions about monitoring and corporate governance. We examine the voice and exit mechanisms and find that compared to active funds, index funds rarely vote against firm management on contentious corporate governance issues, and do not use exit to express dissatisfaction with firm management. Moreover, across a variety of tests, we find no evidence that index funds engage with firm management. Our results suggest that the rise of index investing is shifting control from investors to firm managers.

Keywords: Corporate Governance, Passive Investing, Index Investing, Exit, Monitoring, Voting

JEL Classification Numbers: G12, G14

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I. Introduction

The separation of ownership and control generates an agency conflict between a firm's managers and its shareholders. This well-known problem has been studied since at least the time of Adam Smith (1776).[1] Yet recently there has been a fundamental shift in equity investing, potentially altering this classic agency conflict. Over the last 25 years public corporations have experienced a dramatic increase in ownership by passively managed index funds (see Figure 1), and index funds are now the largest shareholders of many U.S. corporations (Azar, Tecu, and Schmalz (2018)). Although the increasingly large positions held by index funds should motivate them to monitor their portfolio firms (Grossman and Hart (1980), Shleifer and Vishny (1986), Admati, Pfleiderer, and Zechner (1994)), these new intermediaries have different incentives than traditional active funds (Bebchuk, Cohen, and Hirst (2017)). As a consequence, the rise of index investing raises fundamental questions about monitoring and corporate governance. Specifically, to what extent do index funds monitor their portfolio companies?

In this paper, we study the monitoring behavior of index funds by examining the two main monitoring mechanisms predicted by theory: voice and exit. We find that index funds are 12.5 percentage points less likely to vote against firm management compared to active funds. We also find that while index funds exit some of the firms in their benchmark index, they do so significantly less than active funds. Moreover, we find that active funds exit a position after losing a vote, while index funds do not. We also find no evidence that index funds engage directly or indirectly with firm management. Consistent with the theoretical predictions in Bebchuk et al. (2017) and Edmans, Levit, and Reilly (2018), our results

[1] Smith wrote, "The directors of such [joint stock] companies, however, being the managers rather of other people's money than of their own, it cannot well be expected that they should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own."

uniformly indicate that, relative to active funds, index funds are more likely to cede power to firm managers.

Given the increasingly large positions held by passively managed index funds, principal-agent theory would argue that these funds have strong incentives to monitor (Jensen and Meckling (1976), Grossman and Hart (1980), Shleifer and Vishny (1986), Admati et al. (1994)). Moreover, since the need to minimize tracking error makes it costly for index funds to exit a position, index funds should have strong incentives to enforce good governance through the voice mechanism (e.g., Fisch, Hamdani, and Davidoff Solomon (2018)). Consistent with this view, a number of recent studies argue that passively managed index funds are "closet activists" who improve a variety of corporate policies, from dividends and disclosure to competitive strategy.[2]

However, the business model of passively managed index funds suggests that these funds have weaker incentives to monitor compared to traditional active funds, since they typically have a large number of firms in their portfolio and limited resources to invest in monitoring due to their low-cost structure.[3] Moreover, index investing creates a free-rider problem because improvements to firm value are shared with all funds that follow the same index, but the costs are borne only by the fund that exerts monitoring effort (Bebchuk and Hirst (2019a)). Empirically, it remains unclear which of these effects prevail. Our results uniformly indicate that, compared to active funds, index funds cede power to firm management across all the monitoring mechanisms predicted by theory.

The main challenge in studying fund monitoring behavior is that fund holdings are en-

[2]Mullins (2014), Boone and White (2015), Appel, Gormley, and Keim (2016), Crane, Michenaud, and Weston (2016), Azar et al. (2018), Appel, Gormley, and Keim (2018). Yet, see also Schmidt and Fahlenbrach (2017) who find that index fund ownership leads to worse corporate governance.

[3]In our data, the average index fund holds 371 stocks while the average active fund holds 116 stocks. We discuss this point further in Sections II and IV. Furthermore, the top three index funds have, on average, 21 investment stewardship personnel employed on 17,849 firms (Bebchuk et al. (2017)).

dogenous. First, firm characteristics such as size and liquidity jointly affect ownership and governance. Second, different firm policies attract different types of investors.[4] Thus, there is the potential for endogeneity due to omitted variables and reverse causality. To address this concern, we use a fixed effect structure that absorbs both unobserved firm heterogeneity and time-varying aggregate shocks. Moreover, because our analyses of voting and exit are conducted at the fund-firm-agenda item level, we can include firm-by-year fixed effects in this analysis. Thus, we are even able to sweep out time-varying firm-level variation. Across all these specifications, our estimates remain highly stable, suggesting our results are not sensitive to influence by omitted confounders (Oster (2019)).

Of course, there is also the potential for selection bias: If a fund chooses not to hold a firm, we do not observe how that fund would have voted. To correct for selection bias, we develop a new research design that uses Russell index reconstitutions post-2006 to generate exogenous variation in fund holdings, and we use this to estimate a Heckman (1979) model. Our research design generates exogenous variation in index ownership in a difference-in-differences panel setting with firm fixed effects. Importantly, our difference-in-differences specification does not suffer from bias due to noise in the forcing variable (Pei & Shen, 2017) or selection bias, which are problems documented in existing studies that use Russell Index reconstitutions in a regression discontinuity design (RDD) (Wei and Young (2017), Gloßner (2018)).[5] Moreover, our setting allows us to examine the effect of index investing in recent years, when index investing is most prevalent.

[4]Grinstein and Michaely (2005) find that higher firm payouts attract institutional holdings, while Brav, Jiang, Partnoy, and Thomas (2008), Aghion, Van Reenen, and Zingales (2013), and Michaely, Popadak, and Vincent (2015) find that active investors target firms with weak governance and high leverage.

[5]In the attached Appendix on Russell Methodologies, we provide extensive evidence that our specification is unbiased. We also provide evidence supporting the findings in Wei and Young (2017) and Gloßner (2018) (i.e., we show that the results in several existing studies that examine Russell index reconstitutions using RDDs are biased.)

We start our analysis by examining the voting behavior of funds across all agenda items. On consensus votes (i.e., when there is agreement between firm management and ISS–a third party proxy advisor) we find that index funds and active funds vote identically. By contrast, on contentious items (i.e., when ISS and firm management disagree), index funds are 12.5 percentage points more likely than active funds to vote with management.[6] In a recent paper, Bebchuk et al. (2017) argue that index funds lack the incentives and resources to actively monitor their portfolio firms; our findings confirm their prediction. We find that index funds with low expense ratios are more likely to vote with management than index funds with high expense ratios. In other words, index funds with lower resources tend to invest less in costly monitoring (Lewellen and Lewellen (2018)); as a result, these funds are more likely to cede power to a firm's management.

Arguably, not all votes are equally important. To shed further light on index funds' monitoring behavior, we examine voting on important governance issues: board of directors elections, executive compensation, corporate disclosure, and managerial entrenchment. We find that index funds are more likely than active funds to vote with firm management on *all* categories of votes that affect corporate governance. Results on managerial entrenchment are particularly relevant, since some of the largest index funds publicly claim to be against certain governance practices such as poison pills and golden parachutes.[7] Yet, when it comes to voting on these issues, we find that index funds are likely to vote in a manner that increases managerial entrenchment.

Our voting results suggest that index funds cede power to firm management. However, two alternative hypotheses could allow for index funds to vote with firm management while

[6]In a further analysis, we examine voting at the fund family level, rather than at the individual fund level. Consistent with our main results, we find that fund families that have more assets under management (AUM) by index funds are more likely to side with firm management.

[7]See Bebchuk, Cohen, and Ferrell (2008) and the ISG framework at https://isgframework.org.

still monitoring to ensure good corporate governance. First, the exit hypothesis states that instead of voting against firm management, index funds could sell or threaten to sell their shares. Put differently, they could "vote with their feet" to express their dissatisfaction with firm management. Second, the engagement hypothesis states that index funds could engage with firms' managers either publicly or privately, and then vote in support of management proposals that they pre-negotiated.[8]

We start by investigating the exit hypothesis. In practice, some index funds are "fully replicating" while others use a "sampling" strategy. While fully replicating index funds do hold each stock in their benchmark index, sampling index funds choose to omit certain stocks, often small and illiquid firms that would otherwise increase the transaction costs of rebalancing the portfolio.[9] Therefore, index fund managers that use a sampling strategy have flexibility to selectively exit firms for discretionary purposes, including for corporate governance reasons. Consistent with this, we find that index funds voluntarily exit 4% of their holdings each year. Yet, we find no evidence that index funds exit to enforce good governance. Relative to active funds, index funds are much less likely to exit, and while active funds do strategically substitute between voting and exit, index funds do not. In other words, when active funds lose a vote, they are more likely to exit the position, as predicted by theory (Edmans et al. (2018)). In contrast, when index funds lose a vote, we find no evidence of exit.

Next, we investigate the engagement hypothesis in two ways. First, we split agenda items

[8]In a recent survey, McCahery, Sautner, and Starks (2016) find evidence of behind the scenes intervention by institutional investors. However, they do not distinguish between active funds and index funds.

[9]For example, the Vanguard Russell 2000 ETF (ticker: VTWO) is fully replicating, while the iShares Russell 2000 ETF (ticker: IWM) uses a sampling strategy. The 2018 Summary Prospectus for IWM states, *"BFA uses a representative sampling indexing strategy to manage the Fund...The Fund generally invests at least 90% of its assets in securities of the Underlying Index and in depositary receipts representing securities of the Underlying Index. The Fund may invest the remainder of its assets in certain futures, options and swap contracts, cash and cash equivalents..."*

into shareholder proposals and management proposals (Gillan and Starks (2000)). Behind the scenes engagement could explain index funds' voting behavior on management proposals since index funds could support management proposals that they negotiated beforehand. Yet the same reasoning does not apply on shareholder proposals. In other words, if index funds affect firm governance through private engagement, their tendency to vote with management should be mostly (or entirely) on management proposals and not on shareholder proposals. Yet we find that relative to active funds, index funds are more likely to vote with firm management on both management and shareholder proposals. Our results are echoed in a contemporaneous working paper by Brav, Jiang, and Li (2018). They document that in proxy contests, an important and contentious subset of shareholder proposals, index funds do not support activist shareholders but instead side with firm management. Second, if index funds engage with the managers of their portfolio firms to implement governance changes, then we would expect to see a change in the number and/or type of agenda items proposed at the annual meeting after an (exogenous) increase in index funds' holdings. Yet we find zero evidence of a change. Moreover, we do not find a change in the number of either management proposals or shareholder proposals, or in the fraction of contentious proposals. These results are inconsistent with the hypothesis that index funds privately engage with the management of their portfolio firms.

Finally, we examine publicly observable evidence of engagement by funds. Shareholders are required to disclose a holding above 5% of the firm's market capitalization via either Schedule 13D, which allows the fund to engage with the firm, or Schedule 13G, which does not. Because these filings occur at the fund family level, we examine whether fund families with more AUM by index funds are more likely to file a 13D or a 13G. We find they are significantly less likely to file Schedule 13D. Moreover, when we examine a subset of fund

families that are 100% passive, there is not one single instance of an index fund filing a Schedule 13D. The results provide clear evidence that index funds do not intend to affect firm policies. This finding echoes the evidence in Bebchuk and Hirst (2019a) that index funds do not meet with the majority of their portfolio firms. It also accords with a recent working paper by Iliev, Kalodimos, and Lowry (2018) who document that, relative to active funds, index funds conduct significantly less research about their portfolio firms.

Taken together, these findings all point to the same conclusion: Index funds have limited resources and limited incentives to invest in costly monitoring. As a result, they behave differently than active funds. They are more likely to vote with firm management, less likely to exit, and there is no evidence that they engage with the managers of the firms in their portfolio. Overall, across a wide variety of tests and specifications, our results uniformly indicate that index funds cede power to firm management. Accordingly, our paper makes important contributions to the literature on agency conflicts and monitoring incentives arising from dispersed ownership (e.g., Berle and Means (1932); Jensen and Meckling (1976); Demsetz (1983); Shleifer and Vishny (1986); Admati et al. (1994); Burkart, Gromb, and Panunzi (1997)).[10] Given the dramatic increase in ownership by passively managed index funds, and since index funds are now the largest blockholders of many U.S. corporations (Azar et al. (2018)), studying their monitoring behavior is of fundamental importance (Edmans (2014), Bebchuk and Hirst (2019a)). Our results provide the first empirical evidence that the fundamental shift in equity investing, from active to passive index investing, is shifting power from investors to firm managers.

[10]There is also a sizable literature on the monitoring behavior of active investors (see, e.g., DeMarzo and Urošević (2006); Gillan and Starks (2007); Cvijanović, Dasgupta, and Zachariadis (2016); Back, Collin-Dufresne, Fos, Li, and Ljungqvist (2018)).

II. Data and Summary Statistics

To examine the monitoring behavior of index funds, we combine data from the Center for Research in Security Prices (CRSP), Compustat, Institutional Shareholder Services (ISS), and the Frank Russell Company (Russell), as discussed in detail below, for the years from 2004 to 2017.

A. Data

We use the ISS Fund Voting data to measure mutual funds voting behavior. Starting from 2003, ISS records the votes cast by individual mutual funds and exchange traded funds (ETFs) at shareholder meetings for the majority of publicly traded U.S. firms.[11] We link the ISS data by fund-year to the CRSP mutual fund database, requiring that all sample funds be U.S. equity funds with at least $10 million in assets under management. In Table I, we report summary statistics for all investment funds in our sample from 2004 to 2017. Relative to active funds, index mutual funds are less numerous, more diversified on average, have more assets under management and lower expense ratios.

We use Russell Index membership lists provided directly by Russell, and we match this data to firm and stock-level data from CRSP and Compustat.[12] We measure fund holdings by combining the CRSP mutual fund holdings database with the Thomson Reuters S12 database. We find that both databases omit some holdings of certain mutual funds in certain

[11] One potential challenge for studies of fund voting is that funds incorporated as a trust, such as SPY and QQQ, are not subject to NP-X reporting requirements. As such, their voting data is not publicly reported anywhere. None of the Russell 2000 index funds are incorporated as trusts, so our voting results for Russell funds are not affected by the omission of this data. We thank Tara Bhandari and Amy Edwards at the Securities and Exchange Commission for helpful conversations on this topic.

[12] We do not impose any filters on firm or stock characteristics, because our identification strategy requires all firms that are in the Russell 1000 or Russell 2000 in cohort year t and year $t-1$.

years, but the omissions are largely orthogonal across the two databases.[13] Combining the two databases yields good coverage of funds in all sample years. Formally, we take the union of the two databases; if a fund-firm-year holding is in one databases but not the other, we include it; if it is in both databases, we take the larger of the two positions. In unreported analyses, we find that all our results are similar when we use only S12 or only CRSP holdings data.

Table II Panel A reports summary statistics for the firm-years in our overall matched sample, which consists of all Russell 3000 firms (essentially all U.S. public stocks excluding extremely small microcap stocks) from 2004 to 2017. Panel B reports summary statistics for the Russell cohort sample, which consists of firm-years for firms that were nearby the yearly upper and lower Russell bands from 2007 to 2015 (see Section III for more details). We see that the Russell cohort sample consists of a subset of mid-size firms that are otherwise similar to the population of all firms. The average Russell cohort firm has a market capitalization of 2.5 billion dollars, total ownership by mutual funds of 9.56% of the firm's market capitalization, and an entrenchment ("E")-index of 3.2. The average ownership by index funds is 3.86% of market capitalization (0.93% of which is by Russell 2000 index funds, and 0.09% of which is by Russell 1000 index funds), and the average ownership by active funds is 5.70% of market capitalization.

B. Summary Statistics

We begin our analysis by examining the cross-sectional variation of voting outcomes between active and index funds using univariate summary statistics. Consistent with the literature, we define a passively managed index fund as a fund with fund flag "D" in the

[13]For example, S12 omits some data on the Vanguard Russell 2000 fund, which is well covered in CRSP. Conversely, prior to 2008 CRSP omits some data on the iShares Russell 2000 fund.

CRSP Mutual Fund Database, and we classify all other mutual funds as active funds (all variables are defined in Appendix A).[14] Row 1 of Table III shows the distribution of fund votes across the entire set of agenda items (i.e., the full sample). Unconditionally, index funds vote Yes 90.4% of the time compared to 89.4% of the time for active funds.

Many agenda items are largely procedural, such as voting to adjourn the meeting. Accordingly, in the next four rows of Table III we split agenda items into two categories: (i) consensus items – items for which firm management and ISS made the same recommendation (rows 2-3), and (ii) contentious items – items for which firm management and ISS made opposing recommendations (rows 4-5). For items that firm management and ISS both approve, index funds vote Yes 95.6% of the time while active funds vote Yes 96.0% of the time. Similarly, for items that firm management and ISS both oppose, index funds vote Yes 4.2% of the time while active funds vote Yes 5.1% of the time. The rates at which active and index funds vote no, abstain, or fail to record a vote are also similar. Thus, on consensus votes, index funds and active funds vote identically.

On contentious items the results are very different. For items that firm management supports but ISS opposes, index funds vote Yes 54.3% of the time compared to 41.9% for active funds. For items that firm management opposes but ISS supports, index funds vote No 53.5% of the time compared to 46.0% for active funds. Thus, in both cases index funds are significantly more likely to side with firm management. Summing across all contentious items and coding abstentions as "no" votes (consistent with Del Guercio, Seery, and Woidtke (2008)), index funds voted with firm management 55.5% of the time while active funds voted with firm management 46.2% of the time.

[14]In CRSP, a fund with flag D is a "pure index fund" whose "objective is to match the total investment performance of a publicly recognized securities market index." In unreported tests, we classify funds according to their fund name or their active shares (Petajisto (2009)) and our results are similar.

Interestingly, index funds are *less* likely than active funds to abstain on contentious items, especially items that were supported by firm management but opposed by ISS. If a fund wishes to maintain its relationship with firm management, voting "abstain" may be preferred to voting against management's recommendation (Bebchuk et al. (2017)). Openly voting against firm management carries a higher cost because it may damage the relationship between the investor and firm management. Since most items require a majority of all votes cast to approve a measure, abstention can have the same effect as voting against a proposal but be perceived as a "*soft* no" (Del Guercio et al. (2008)). Hence, finding that active funds abstain more often than index funds on contentious items again suggests that active funds are more likely to oppose firm management than index funds are.

These results provide broad descriptive evidence that, on contentious issues, index funds cede power to firm management. From a principal-agent perspective (e.g., Berle and Means (1932), Jensen and Meckling (1976)), voting with firm management transfers power from the principals (from investors) to the agents (the firm's managers). Of course, it remains possible that index funds use other mechanisms to monitor their portfolio companies and express their dissatisfaction with firm management. For example, they could exit (e.g., Edmans et al. (2018)).

Using the fund holdings data, we observe if a fund exits a given stock in a given year. As previously discussed, some funds are fully replicating while others use a sampling strategy. Fund managers that use a sampling strategy have flexibility to voluntarily exit a position. In our analysis, we distinguish between voluntary and involuntary exit: All funds must exit a position if a firm is acquired or delisted, so we code these as involuntary exits. In untabulated results, we find that on average an active fund voluntary exits 36 (or 31%) of its 116 positions each year. By comparison, each year on average an index fund exits 61

(16%) of its 371 positions. However, this measure of exit does not take into account stocks that switch out of the fund's benchmark index. When we focus on the Russell 2000 sample and take index switching into account, we find that on average a Russell 2000 index fund holds 1789 of the Russell 2000 stocks each year and exits 290 (17%) of its positions each year: 223 (13%) because the stock delisted or left the index and 67 (4%) voluntarily. In other words, while index funds may voluntarily exit a position, they do so rarely and much less frequently than active funds. Overall, the summary statistics on both exit and voting provide preliminary evidence that index funds, relative to active funds, are more likely to cede power to firm management.

III. Research Design

A. Fixed Effects Structure

The voting statistics clearly show that on contentious items – agenda items on which firm management and ISS issued opposing recommendations – index funds were significantly more likely to side with firm management. However, a limitation of the results presented so far is that fund holdings are potentially endogenous with unobservable firm characteristics as well as time-varying aggregate shocks. For example, differences in firm characteristics (e.g., governance, entrenchment, managerial quality, etc.) may drive fund voting behavior. To address this concern, we use firm fixed effects which absorb time invariant differences across firms. We also include time fixed effects to absorb time-varying aggregate shocks.

However, it remains possible that corporate policies may change over time, which may change fund voting behavior. To address this concern, we exploit the richness of the voting data which contains multiple observations per firm-date. As a result, we can estimate

specifications that use firm-by-year fixed effects (and in robustness checks, fixed effects by individual agenda item), which compare voting by active and index funds at the same annual meeting. Put differently, these specifications absorb even time-varying firm characteristics. As a result, they address any possibility of confounding variables that could bias our comparisons. We also stress that our analyses compare the behavior of index funds *relative* to active funds, which also helps mitigate the potential impact of confounding variables.

Of course, since funds choose which firms to hold, there is still the potential for selection bias. If a fund chooses not to hold a firm, then we do not observe how the fund would have voted. Thus, if index funds' holdings differ systematically from active funds' holdings that could bias any comparisons. To address this concern, we also implement a new research design that exploits post-2006 Russell index assignments in a Heckman (1979) correction model. In the next subsections we describe the post-2006 Russell assignment regime and the features of our research design.

B. Background on Russell Indexes

In June of each year Russell Investments reconstitutes their popular Russell 1000 (large-cap) and Russell 2000 (small-cap) indexes. To determine index assignment, Russell ranks all qualifying U.S. common stocks by their market capitalization as of the last business day in May.[15] Before June 2007, index assignment followed a simple threshold rule: Stocks ranked from 1-1000 were assigned to the Russell 1000 while stocks ranked from 1001-3000 were

[15]Russell reports the index weights on the component stocks, which are based on their proprietary calculation of *float-adjusted* market capitalization. However, Russell does not disclose the initial rankings that determine index assignment, which are based on *unadjusted* market capitalization. We compute our own proxy market capitalizations and rankings at the end of May each year using CRSP and Compustat data following Chang, Hong, and Liskovich (2015). Our imputed Russell rankings recover the actual Russell index membership for 99.5% of firm-years, and all results are similar when we use alternative methods of imputing the Russell rankings.

assigned to the Russell 2000.

Starting in June 2007, Russell implemented a new assignment regime ("banding"). After sorting stocks by their market capitalization, Russell computes an upper and lower band around the rank-1000 cutoff; the bands are calculated as +/- 2.5% of the total market capitalization of the Russell 3000E.[16] Stocks within the bands do not switch indexes. That is, if a stock that was in the Russell 2000 last year is above the rank-1000 cutoff but below the upper band, it will stay in the Russell 2000 the following year, and vice versa.

Figure 2 plots index assignments in 2007, the first year of the banding regime. We observe that banding entirely eliminated the discontinuity across the rank-1000 cutoff; hence, an RDD across the cutoff is no longer feasible. However, Figure 2 also shows there are two new discontinuities at the upper and lower bands (dashed vertical lines). These discontinuities correspond to whether stocks *switched* indexes or stayed in their previous index. For example, consider a stock in the Russell 2000 that is nearby the upper band when the indexes are reconstituted. The stock's index assignment depends on four parameters as calculated by Russell: 1) The stock's ranking in the Russell 3000; 2) The market capitalization of the rank-1000 stock; 3) The total market capitalization of the Russell 3000E; 4) The cumulative market cap of the stocks ranked below the focal stock but above the rank-1000 stock. All four parameters are difficult to predict ex ante – indeed, Russell does not make their unadjusted market capitalizations or rankings available *ex post*. All four parameters are difficult or impossible to manipulate. This line of reasoning suggests that within a sufficiently narrow window around each band in each year, whether a stock ranks above or below the band – and therefore switches or stays – is as good as randomly assigned.

[16]The 3000E is an "extended" version of the Russell 3000 that includes microcap stocks.

C. Heckman Correction

For each Russell index reconstitution since June 2007, we select a *cohort* that consists of two sets of treated and control stocks. Specifically, we select all stocks that were potential switchers (based on their lagged index membership) in windows of +/-100 ranks around the upper and lower band. Consider for example two stocks A and B that are similar in every way, including that both are in the Russell 1000 index in the year prior to treatment. Both stocks experience negative returns in the year prior to treatment and fall in the rankings. Firm A's market capitalization falls by 10% while Firm B's market capitalization falls by 10% plus epsilon. As a result, stock A stays in the Russell 1000 (and serves as a control), whereas stock B crosses the lower band and switches to the Russell 2000 (and is treated). Importantly, our identification strategy compares stocks that started in the same index and are similar in every dimension, including their lagged returns, except that they barely landed on different sides of the same band. Figure 3 shows the treated and control stocks around both bands in the 2007 cohort.

The fact that Russell index membership generates a discontinuity in treatment status suggests a regression discontinuity design (RDD). However, there are features of the setting that make an RDD undesirable. The main feature is that we do not observe the true rankings that determines index assignment; instead, we must impute them using the CRSP and Compustat data. This is a concern because errors in measuring the forcing variable bias the RDD control function to be too flat, and produce spurious or biased estimates of treatment effects (Pei & Shen, 2017).[17] To deal with this issue, we estimate a cohort difference-in-differences specification with firm-by-cohort fixed effects. For each stock in

[17]Note that a fuzzy RDD, which adjusts for non-compliance with treatment assignment, does not address this issue.

each cohort, we include firm-years from three years prior to the cohort year (pretreatment years -3, -2, -1) and three years after the cohort year (post-treatment years 0, 1, 2) in the sample. Formal balance tests show that the treated and control firms are indistinguishable *ex ante* across both bands on every dimension.[18] We measure the effects of switching indexes using the following difference-in-differences specification:

$$\begin{aligned} Y_{jt} = {} & \beta_1 \, I\{R1000 \rightarrow R2000_{jc}\} \times PostAssignment_{ct} \\ & + \beta_2 \, I\{R2000 \rightarrow R1000_{jc}\} \times PostAssignment_{ct} \\ & + \phi_{jc} + \lambda_t + \epsilon_{jct}, \end{aligned} \tag{1}$$

where ϕ_{jc} and λ_t are, respectively, firm-by-cohort and year fixed effects, *PostAssignment* is an indicator variable that takes the value one after index assignment, *R1000 → R2000* is an indicator variable equal to 1 if a firm switched from the Russell 1000 to the Russell 2000, whereas *R2000 → R1000* is an indicator variable equal to 1 if a firm switched from the Russell 2000 to the Russell 1000.[19] We compare firm outcomes before treatment versus after treatment, with a fixed effect applied to each firm in each cohort. Because each firm had a single, fixed ranking within a cohort, the fixed effects ϕ_{jc} absorb any correlation of the outcome variable with both the true ranking *and* the error in the proxy ranking for each firm. Thus, the specification (1) estimates the effects of switching indexes, as would a perfectly measured RDD, but in a way that is not sensitive to measurement error in the forcing variable. Our difference-in-differences approach with firm-by-cohort fixed effects addresses

[18] See the Appendix on Russell Methodologies for further details.

[19] Importantly, this means that β_1 and β_2 – the effects of switching from the R1000 to the R2000 and vice versa – are identified from disjoint sets of treated and control stocks. The firm-by-cohort fixed effects sweep out any time invariant differences between treated and control stocks, while the year fixed effects remove aggregate trends in firm behavior or ownership.

error in the forcing variable because it eliminates the need for a control function. Indeed, any control function would be subsumed by the firm-by-cohort fixed effects.

Our methodology differs from previous papers that use Russell index reconstitutions in three main ways. First, we are the first to develop a research design that explicitly uses Russell index reconstitutions in the post-2006 period. Thus, our results reflect this more recent period, during which index investing is at all-time highs. Second, unlike previous RDD approaches, our difference-in-differences approach uses high dimensional fixed effects to sweep out observed and unobserved heterogeneity among firms. Among other advantages, this means that our estimates are not biased by noise in the measurement of the forcing variable, which can be an issue in RDD estimates (Pei & Shen, 2017). Third, we then use our cohort difference-in-differences specification as the first stage in a Heckman (1979) correction model, to address potential selection bias. Specifically, we estimate the following two-stage model:

$$\begin{aligned} Observed_{ijt} = Probit(&\tau IndexFund_i \\ &+ \xi_1 R1000 \to R2000_{jc} \times PostAssignment_{ct} \times IndexFund_i \\ &+ \xi_2 R2000 \to R1000_{jc} \times PostAssignment_{ct} \times IndexFund_i \\ &+ \mu_1 R1000 \to R2000_{jc} \times PostAssignment_{ct} \\ &+ \mu_2 R2000 \to R1000_{jc} \times PostAssignment_{ct} \\ &+ \phi_{jc} + \chi_t + \nu_{ijct}) \end{aligned} \tag{2}$$

$$Y_{ijt} = \beta IndexFund_i + \alpha InverseMillsRatio_{ijt} + \lambda_j + \kappa_t + \epsilon_{ijt} \tag{3}$$

Equation (2) uses our cohort difference-in-differences specification to generate exogenous variation in fund ownership. *Observed* is an indicator variable equal to 1 if a fund j holds a stock i on date t, and zero otherwise; *IndexFund* is an indicator variable equal to 1 if the fund is an index fund, and 0 otherwise; *R1000* $\rightarrow$ *R2000* is an indicator variable equal to 1 if a firm switched from the Russell 1000 to the Russell 2000, whereas *R2000* $\rightarrow$ *R1000* is an indicator variable equal to 1 if a firm switched from the Russell 2000 to the Russell 1000. *PostAssignment* is an indicator variable equal to 1 if the firm-year is post index assignment, and 0 if it is pre-Russell assignment. ϕ_{jc} and χ_t are, respectively, firm-by-cohort and year fixed effects. The results for the first stage (Equation (2)) are reported in Appendix B, Table A1.

Equation (3) shows the second stage, which examines outcome variables as a function of index fund ownership, after including the *InverseMillsRatio* (i.e., the Heckman correction term from Equation (2)). λ_j are firm fixed effects and κ_t are year fixed effects.

D. Effects of Index Switching on Fund Ownership

We next examine whether Russell index assignment changes fund ownership. This is a necessary condition for our Heckman (1979) model. In Column 1 of Table IV, we present estimates of the effects of index switching on ownership by Russell 2000 index funds using our cohort difference-in-differences specification (equation (1)). We find that ownership by Russell 2000 index funds rises by an average 1.45% of market capitalization for stocks that switch into the Russell 2000 relative to similar stocks just above the lower band that stay in the Russell 1000. At the same time, we find that ownership falls by 1.34% of market capitalization for stocks that switch into the Russell 1000 relative to similar stocks just below the upper band that stay in the Russell 2000. The two coefficient estimates are similar in

magnitude, even though they are estimated from two *disjoint* sets of stocks.

In Column 2 of Table IV, we report the effects of index switching on ownership by Russell 1000 funds. As expected, we find the opposite effect (relative to the change in ownership by Russell 2000 funds shown in Column 1). However, the coefficient is smaller for Russell 1000 fund holdings, falling by 0.18% of market capitalization in the lower band treatment group and rising by 0.17% of market capitalization in the upper band treatment group. This is as expected, because the index weights of stocks at the bottom of the Russell 1000 are significantly smaller than the index weights of stocks at the top of the Russell 2000. Similar to Column 1, the two coefficient estimates are similar in magnitude, even though they are estimated from two *disjoint* sets of stocks.

The net effect on holdings by all index funds in the data (Table IV Column 3) is similar to the net effect on holdings by Russell 1000 and 2000 index funds. By contrast, in Column 4 we examine the effects of index switching on ownership by active mutual funds. The changes in ownership by active funds are small and not statistically significant. As a result, total holdings by all mutual funds (Table IV Column 5) are entirely driven by changes in holdings by index funds.

Figure 4 plots Russell 2000 fund ownership for the four groups (switchers vs. stayers near the upper band; switchers vs. stayers near the lower band) in event time, that is, the observation year minus the cohort year. The results clearly show that: (i) Switchers and stayers in both groups have the same pre-treatment levels *and* trends, and (ii) switching into the Russell 2000 leads to higher index fund ownership and vice versa. Because firms in any group may also switch indexes in the post-treatment years, the treated and control groups converge toward each other after the treatment year.

In sum, the evidence shows that index switching is plausibly random among sample firms

near the yearly Russell bands, and is followed by symmetric shifts in ownership by index funds. Accordingly, in our later tests, we use this variation to implement a Heckman (1979) model to address selection concerns.

IV. Voting

In this and the next section, we examine the monitoring behavior of index funds, moving from broad cross-sectional comparisons with fixed effects to the estimates in our Russell cohort setting using a Heckman (1979) model. Our findings are the same across all specifications and samples.

In Table V, Columns 1 through 4, we estimate the difference in fund voting, on all contentious items, across the universe of all funds and firms. The dependent variable *VotedWithMgmt* is an indicator equal to 1 if a fund votes with management's recommendation, and 0 otherwise.[20] The independent variable *IndexFund* is an indicator equal to 1 if the fund is an index fund, and 0 if the fund is an active fund. The estimates in Columns 1 and 2 include firm fixed effects, which remove time invariant differences across firms, and year fixed effects which remove aggregate trends. In Column 1 we find that, compared to active funds, index funds are 12.5 percentage points more likely to side with firm management on contentious items. This is a larger difference than that in the summary statistics (Table III) and is due to the addition of firm fixed effects, so that we now compare voting by index funds to active funds within each firm.

Lewellen and Lewellen (2018) argue that there is a direct effect of a fund's expense ratio on their incentive to monitor. Thus, in Column 2 we add as an explanatory variable each

[20]Following management's recommendation is defined as voting Yes on a recommendation of Yes, and No or Abstain on a recommendation of No or Withhold.

fund's yearly expense ratio. We estimate the coefficient on the expense ratio separately for index and active funds because of the different incentives and expense ratios that the two types of funds have. We find that active funds' voting behavior does not vary significantly with their expense ratio. This could indicate that active fund expense ratios are always high enough to provide monitoring incentives. By contrast, index funds with higher expense ratios are *less* likely to side with firm management on contentious items. The coefficient of -0.238 means that an index fund with an expense ratio that is 25 basis points higher (about one standard deviation) is 6.1 percentage points less likely to side with firm management, which is half of the overall difference in voting between index and active funds. This result is strikingly consistent with the prediction of Bebchuk et al. (2017): The economics of index investing restrict the resources that a fund has to employ in monitoring, since index funds compete on providing a standardized product at the lowest price. In other words, when index funds have more resources to employ in monitoring, they behave more like active funds (i.e., they side less with firm management on contentious items).

The firm and year fixed effects in Columns 1 and 2 mitigate concerns of an omitted variable bias due to a time-invariant characteristic or an omitted aggregate shock. However, an additional concern is that corporate policies change over time, which may be related to fund voting behavior. Hence, in Columns 3 and 4, we compare fund voting using firm-by-year fixed effects. This approach sweeps out *time-varying* firm characteristics. We find that the difference in voting between index funds and active funds, and the relation with fund expense ratios, is nearly identical. These results suggest that firm and year fixed effects, as in Columns 1 and 2, account for most or all of the unobserved heterogeneity that could bias our treatment effect. In other words, voting-relevant characteristics such as firm governance, managerial quality, or shareholder engagement vary widely between firms but vary little

within firms over time.[21]

For a variety of estimates that cover the universe of funds and firms in our data, we find that index funds are more likely to vote with firm management on contentious items. However, there is still the potential for selection bias, because funds choose which firms they hold. If index funds tend to hold better-run firms, or vice versa, then the gap in fund voting behavior might be explained by their holdings and not by their monitoring. To explicitly correct for selection bias in fund holdings, we implement a Heckman (1979) approach in our Russell setting. First, for comparison, in Columns 5 and 6 of Table V we present results for the Russell subsample without the Heckman correction. We find similar results to those in the entire sample. Next, in Columns 7 and 8 of Table V we report the second-stage estimates according to the Heckman (1979) model described in equation (3).

The gap in voting behavior between index and active funds is still present: Index funds are 8.4 percentage points more likely than active funds to side with firm management, and again index funds with higher expense ratios are significantly less likely to side with firm management. These results suggest that part of the gap in voting behavior is due to selection: Active funds may choose to hold firms whose management they are more likely to disagree with relative to index funds. But, even after correcting for selection bias, we again find there is a statistically and economically significant difference in the voting behavior between active and index funds.[22]

[21] Appendix C presents alternate specifications including estimates with fixed effects for each individual agenda item, that is, comparing how funds voted on the same agenda item. The results are again similar to the specifications with firm and year fixed effects.

[22] In many cases, funds belong to fund families such as Fidelity or Vanguard, and voting might be decided at least partly at the fund-family level. Such coordination is clear in the data: We find that the fund-family identity explains 26% of the variation in fund voting, while fund identity (which is nested within fund-family identity) explains 33%. Appendix C presents results when we examine voting policy at the fund-family level. Again, the conclusion is the same: Funds in families with more AUM in index funds are more likely to vote with firm management.

In sum, across a wide range of specifications and samples, we consistently find the same result: Index funds are more likely than active funds to vote with firm management on contentious agenda items. Moreover, index funds with higher expense ratios are less likely to vote with firm management – that is, they vote more like active funds do. The results suggest that index funds lack the incentives and resources to regularly monitor their portfolio firms, consistent with the predictions in Bebchuk et al. (2017). More generally, these findings shed light on a related question: If index funds exert little monitoring effort, why don't they let ISS decide their votes 100% of the time? As noted in Del Guercio et al. (2008) and Bebchuk et al. (2017), it is costly for shareholders to oppose firm management. If index funds always vote with ISS on contentious issues (and thus vote against a firm's management) it may have long-term implications for their relationship with the firm management team. While index funds have little incentive to monitor, it is also costly to damage their relationship with firms' managers. Taking all the evidence together, the implications are clear: (i) For index funds, the benefit of monitoring is low, (ii) the cost of monitoring is positive, (iii) disagreeing with a firm's management adds additional costs. Accordingly, unless the benefit for voting against management is incredibly large, index funds choose to vote in accordance with managerial preferences.[23] In other words, owing to their incentives, index funds cede power to firm management.

A. Voting on Agenda Items by Category

The results in Table V indicate that, on average, index funds are more likely than active funds to vote with firm management on contentious issues. A relevant subsequent ques-

[23]Consistent with this, in the prospectus for Vanguard Index Funds dated April 25, 2018 Vanguard states: "We will give substantial weight to the recommendations of the company's board, absent guidelines or other specic facts that would support a vote against management."

tion is whether the gap in voting behavior between active and index funds varies across different corporate governance policies. Accordingly, we examine how fund voting differs across categories of agenda items related to corporate governance where management and ISS disagree.[24] We examine the following vote categories:

1. Board of Directors: Items whose description includes "director" or "board";
2. Compensation: Items whose description includes "compensation" or "incentive". This category is mostly (83%) made up of say-on-pay votes;
3. Disclosure: Items whose description includes "disclosure" or "reporting";
4. Entrenchment: Items whose description includes "staggered", "bylaw", "poison pill" or "parachute".

We report results in Table VI. In Column 1, we find that index funds are 13.2 percentage points more likely to side with firm management on contentious items relating to the board of directors. A small subset of these items relate to formal proxy battles between the incumbent board and an activist shareholder. That is, our results in Column 1 are consistent with those of Brav et al. (2018), who focus on fund voting in proxy battles, and again consistent with the idea that index funds cede power to firm management on contentious governance issues.

Next, in Columns 2 to 4 we find that the gap in fund voting between index and active funds is positive and of similar magnitude for items related to compensation, disclosure, and managerial entrenchment. The results on managerial entrenchment are particularly relevant since some of the largest index funds publicly claim to be against certain governance practices such as poison pills and golden parachutes.[25] Yet, voting in agreement with firm management

[24]Prior studies examine institutional investors voting on directors elections and compensation (e.g., Ertimur, Ferri, and Oesch (2013); Larcker, McCall, and Ormazabal (2015); Ertimur, Ferri, and Oesch (2017)).

[25]See Bebchuk et al. (2008) and the ISG framework at https://isgframework.org.

on contentious items related to managerial entrenchment clearly indicates that index funds cede power to managers. More broadly, these findings suggest that the rise of index investing has consequences for (at least) board structure, managerial compensation, disclosure, and managerial entrenchment. In sum, relative to active funds, index funds cede power to firm management on decisions related to corporate governance across the board.

V. Other Monitoring Mechanisms

Two alternative hypotheses could allow for index funds to vote with firm management while still monitoring to ensure good corporate governance. First, index funds could use exit instead of voting as a monitoring mechanism to enforce good governance. We test the exit hypothesis in Section V.A. Second, index funds could engage with the managers of their portfolio firms either publicly or privately (McCahery et al. (2016)), and then vote in support of management proposals that they negotiated beforehand. We examine the engagement hypothesis in Section V.B.

A. Exit

According to Edmans (2009), Dasgupta and Piacentino (2015) and others, in addition to voting, shareholders can influence a firm's actions by selling the stock or threatening to sell the stock. While some index funds fully replicate their benchmark index, and therefore have no option to exit, other index funds use statistical sampling to replicate their benchmark index and therefore have the flexibility to selectively exit firms.

In Table VII, we examine fund exit behavior. The dependent variable *VoluntaryExit* is equal to one if a fund exits a stock voluntarily as described in Section II.B, and zero otherwise.

The independent variables of interest are *IndexFund* (as previously defined), *ActiveFund*, an indicator equal to one if a fund is an active fund, and zero if a fund is an index fund, and *LostVote*, an indicator equal to one if a fund voted Yes on an item that failed (did not pass) or No on an item that passed. First, in Columns 1, 3, 5, and 7 we examine the probability of exit, whereas in Columns 2, 4, 6, and 8 (see next subsection A.1) we examine the probability of exit conditional on a voting outcome.

In Table VII Column 1, we examine the full universe of firms and include firm and year fixed effects. We find that index funds are approximately 18 percentage points less likely to voluntarily exit a position relative to active funds. Next, in Column 3 we compare fund exit behavior using firm-by-year fixed effects. This approach sweeps out *time-varying* differences between firms and addresses concerns that corporate policies change over time, which may change fund exit behavior. We find that the difference in exit between index funds and active funds are nearly identical (18 percentage points). Again, the stability of the effect supports our identifying assumptions (e.g., Oster (2019)). The findings are in line with the summary statistics in Section II.B, and suggest that although some index funds could use the exit channel as a monitoring mechanism, they do so significantly less than active funds.

Next, to address any selection bias concerns, in Table VII Column 5, we estimate the probability of exit within our Russell cohort sample, and in Column 7 we add the Heckman correction term (*InverseMillsRatio*). The coefficient on the *InverseMillsRatio* is negative and statistically significant, which is consistent with significant selection bias in studies of fund exit behavior.[26] However, the selection effect appears to be uncorrelated with the gap in exit behavior between index and active funds, which is similar before and after the correction.

[26]See Bhide (1993), and Edmans, Fang, and Zur (2013) that discuss the implications of liquidity for governance due to investors' choice to exit.

A.1. Voting and Exit as Strategic Substitutes

We next examine fund exit behavior after a lost vote to provide an empirical test of theoretical models that predict strategic substitution between *voting* and *exit* (e.g., Edmans et al. (2018)). Specifically, when a fund loses a vote (i.e.,, the fund voted "Yes" on an item that failed or "No" on an item that passed), theory predicts that the fund will be more likely to exit the position.

The results are presented in Columns 2, 4, 6, and 8 of Table VII. Across the full cross-section (with firm and year fixed effects in Column 2, and firm-by-year fixed effects in Column 4), we find that after a lost vote an active fund is approximately 1 percentage point *more* likely to exit that position the following year. By contrast, an index fund that loses a vote is no more or less likely to exit. In Column 6, we estimate the probability of exit conditional on a lost vote within our Russell cohort sample. Due to the smaller number of firms of the Russell cohort sample, the tests have lower power, but the point estimates are consistent with those in Columns 2 and 4. Finally, applying the Heckman correction model (Column 8), we continue to find that subsequent to a vote that went against their wishes, active funds are more likely to exit that position, while index funds are not.

Overall, we do not find any evidence in any of our specifications that index funds use exit to enforce governance. Our results are consistent with strategic substitution between the voting and exit mechanisms, but only by active funds. Active funds – who are more likely to vote against firm management *a priori* – are also more likely to exit a position after a vote goes against them (Dasgupta and Piacentino (2015)). Thus, the difference in exit behavior conditional on previous voting outcomes is consistent with the prediction that index funds do not use exit to express their dissatisfaction to firm management – given that voting and exit are strategic substitutes for funds to affect firm policy (e.g., Admati and

Pfleiderer (2009); Edmans et al. (2018)). Overall, in light of these empirical findings we reject the exit hypothesis and conclude that for both the voting and exit channels, index funds cede power to the managers of the firms in their portfolios.

B. Engagement

Finally, we examine the engagement hypothesis which predicts that index funds – rather than voting against firm management or exiting when they disagree with a firm's policy – may prefer to engage with a firm's management either publicly or privately. We test the engagement hypothesis in three ways. First, we split our estimates of fund voting behavior between agenda items that were proposed by management and those that were proposed by shareholders. Proposals by management could be affected by engagement, but proposals by shareholders should not. Thus, if index funds affect firm governance through private engagement, their tendency to vote with management should be mostly or entirely on management proposals and not on shareholder proposals. Second, if index funds engage with the managers of their portfolio firms to implement governance changes, then we would expect to see a change in the number and type of agenda items proposed at the annual meeting after an (exogenous) change in index fund holdings. Third, we study funds' propensity to engage with the management of their portfolio firms by examining index funds' propensity to file a Schedule 13D, which indicates that the fund intends to engage with the firm.

B.1. Voting on Management and Shareholder Proposals

A key test of the engagement hypothesis is whether the gap in voting between active funds and index funds depends on whether shareholders or management proposed the contentious agenda item. Proposals by management could be affected by engagement, but proposals by

shareholders should not. Thus, if index funds affect firm governance through engagement, their tendency to vote with management should be mostly or entirely on management proposals and not on shareholder proposals. In Table VIII, we split all contentious items in the sample accordingly. We find that the pattern that index funds are more likely to side with firm management holds true, regardless of who proposed the agenda item. On management proposals opposed by ISS, index funds are 14.4 percentage points more likely to vote "Yes." Similarly, on shareholder proposals opposed by firm management, index funds are still 10.3 percentage points more likely to vote "No."

The results in Table VIII address the concern that index funds might be voting in agreement with firm management after they engage with managers privately. Private engagement could apply to index funds' voting on proposals by management, but it cannot apply to index funds' voting on proposals by shareholders. Yet on contentious shareholder proposals, index funds again cede authority to firm management. These results are consistent with a contemporaneous paper by Brav et al. (2018). They show that in proxy contests, an important and contentious category of shareholder proposals, index funds do not support activist shareholders but instead side with firm management.

Table VIII presents another interesting observation: Index funds are significantly less likely than active funds to abstain on management proposals that were opposed by ISS. This finding is consistent with the argument of Del Guercio et al. (2008) and Bebchuk et al. (2017) that it is costly for shareholders to oppose firm management. It suggests again that index funds cede power to firm management, whereas active funds prefer to either directly oppose firm management (vote No) or to abstain (soft No).

B.2. Changes in the Supply of Agenda Items

We further investigate funds' propensity to privately engage with the management of their portfolio firms by examining the effect of changes in index fund holdings on the number and types of agenda items that appear at the firm's annual meeting. For this analysis we use the firm-year panel and estimate the difference-in-differences specification as in equation (1). This specification allows us to estimate the changes in the number and type of agenda items, and the proportion of agenda items supported by management and/or ISS, that are caused by exogenous changes in index fund ownership.

Table IX presents the results. Neither set of treated firms (i.e. firms that switched indexes in either direction) significantly changed the number of agenda items at their annual meetings in the post-treatment period (Column 1); there was no change in the number of proposals by shareholders (Column 2) or by firm management (Column 3). Moreover, we observe no change in the fraction of agenda items that were opposed by ISS (Column 4) or opposed by management (Column 5). Finally, if index funds privately engage with firm management, we would expect to see an increase in the fraction of agenda items that were approved by both ISS and management. We see no such change (Column 6). It is important to note that the absence of statistically significant result is unlikely to be due to power issues since the standard errors are small enough to rule out that there is any effect up to a fraction of one standard deviation.

In sum, the results in Table IX are inconsistent with the the private engagement hypothesis.[27] Rather, once again they are consistent with the idea that index funds cede power to

[27]This finding echoes the evidence in Bebchuk and Hirst (2019a) that index funds do not meet with the majority of their portfolio firms. It also accords with a recent working paper by Iliev et al. (2018) who document that, relative to active funds, index funds conduct significantly less research about their portfolio firms.

the managers of their portfolio companies.

B.3. Disclosure: Schedule 13D vs Schedule 13G

Finally, we examine a public signal of the engagement hypothesis: The funds' propensity to file a 13D schedule. The SEC requires shareholders to disclose a holding above 5% of any public company via either Schedule 13D or Schedule 13G. Schedule 13D is required if the shareholder has *"the purpose or the effect"* of influencing the control of the firm. This category includes actions such as *"proposing governance changes... or engaging with the portfolio company to propose or facilitate the appointment of particular individuals as directors"* (Bebchuk and Hirst (2019a)). The short-form Schedule 13G, by contrast, requires that the shareholder has no such purpose or effect.[28]

Table X presents probit estimates of 13D filing behavior at the fund-family level.[29] The dependent variable is an indicator variable for whether each filing was under the "activist" Schedule 13D (*Filed 13D*=1) or the short-form and passive Schedule 13G (*Filed 13D*=0). The independent variable $FracAUMPassive_{jt}$ is the fraction of fund family j's AUM that was managed by index funds in year t. Thus it ranges from zero for a fund family entirely populated by active funds, to one for a fund family entirely populated by index funds. Column 1 shows that fund families with more index fund AUM are significantly less likely to file Schedule 13D. The marginal effect (which corresponds to moving from 100% active to 100% index) is -27 percentage points, which is more than 100% of the base rate probability. The same conclusion holds when we control for the fund family's total AUM (Column 2)

[28] A blockholder who files Schedule 13G and then engages with firm management opens themselves up to SEC investigations or class action lawsuits (e.g. Levie v Sears Roebuck & Co, 2009).

[29] Because the Schedules 13D and G are filed at the level of the fund family, we match disclosure filings to fund families and not to the individual funds. In all, we match 30,864 disclosure filings since 2004 to a fund family in our data.

and for the number of blockholding disclosures the family filed in that year (Column 3).

Thus, fund families with more index fund AUM are less likely to file Schedule 13D and more likely to file Schedule 13G. However, because this analysis is at the fund-family level, these results do not directly measure the individual funds' propensity to publicly engage. In a further step, we match blockholdings by individual funds, as revealed in the merged S12 and CRSP holdings data, to SEC disclosure filings by that fund's parent family. We keep only matches that are unambiguous at the fund-firm-year level. In all, we match 4,475 disclosure filings to individual funds. For active mutual funds, 64 of 4085 filings were under Schedule 13D. For index funds, 0 of 390 filings were under Schedule 13D. In other words, for the sub-sample of filings that are 100% by index funds, not one single fund filed form 13D.

Thus, both at the fund-family level and at the individual fund level, index funds are less likely to file the activist Schedule 13D and more likely to file the passive Schedule 13G. These findings again are inconsistent with the hypothesis that index funds affect governance through engagement with their portfolio firms, but are instead consistent with the idea that, owing to their incentives, index funds ceding power to firm management.

VI. Conclusion

Theoretically, the increasingly large positions held by index funds should motivate them to monitor their portfolio firms and not to cede decision making power to firm management. Yet, these new intermediaries have different incentives than traditional active funds. To date, a large literature has examined the effect of index fund ownership on corporate outcomes without checking the direct relations between investors and firm management. We provide the first evidence on this fundamental question. Specifically, we examine the monitoring

behavior of index funds relative to active funds. We examine a wide variety of samples and tests, ranging from the universe of funds and firms in the data to smaller and precisely identified subsamples. The results uniformly indicate that, relative to active funds, index funds cede power to firm management.

Our findings are consistent with the theoretical predictions in Bebchuk et al. (2017) and Edmans et al. (2018). Specifically, we find that relative to active funds, index funds are significantly more likely to side with firm management on contentious corporate governance votes. Low-fee index funds are even more likely to vote with firm management, which indicates that the low-cost structure of index funds directly affects their capacity to monitor. Index funds are also less likely to use exit to enforce governance, and we find no evidence that index funds engage with firm management either publicly or privately.

Our findings all point to the same conclusion: The rise of index investing is shifting power from investors to corporate managers. Bebchuk and Hirst (2019b) point out that in 2018, the three largest index fund families – Blackrock, Vanguard and State Street – cast an average of 25% of all votes in S&P 500 firms. That fraction is still increasing. This trend, along with index funds' tendency to cede power to firm management, systematically weakens corporate governance economy-wide.

The appropriate regulatory response is a complex question. For example, some have argued for special non-voting shares issued to index investors, or for index funds to voluntarily commit not to vote their shares. These solutions address the issue at a cost of disproportionately empowering minority shareholders. On the other end of the spectrum, Edelman, Jiang, and Thomas (2019) evaluate tenure voting systems, in which voting rights increase with the length of time that the investor holds their shares. Since index funds exit much less frequently than active funds do, such a system would tilt voting power even more toward

index funds. A third option in which index funds pay a 'monitoring fee' as a function of their AUM with the proceeds funding an independent monitoring body, might reduce the extent of the problem. Further research into index funds' voting and monitoring behavior will be vital.

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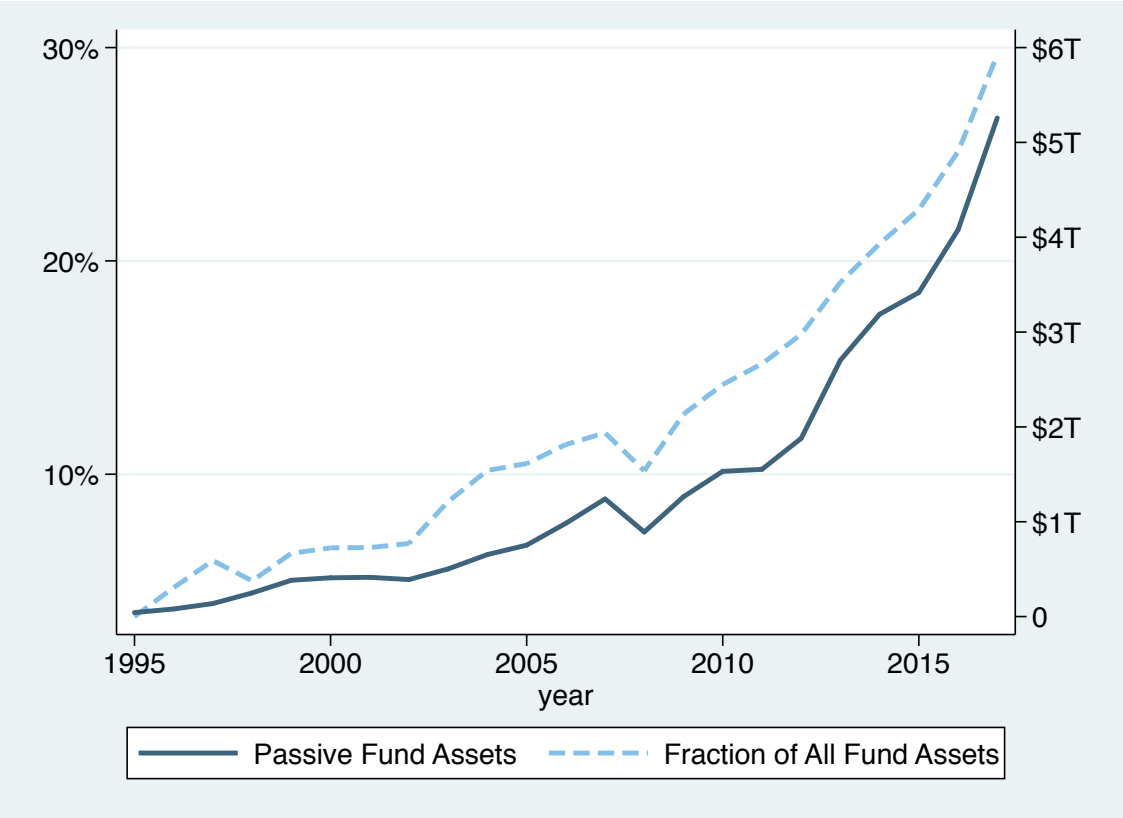

Figure 1. Yearly Assets Under Management for Index Funds

The figure plots the total assets under management (AUM) for passively managed index funds in the CRSP Mutual Fund database, by year, in total dollars (solid line) and as a fraction of AUM (dashed line) across all funds.

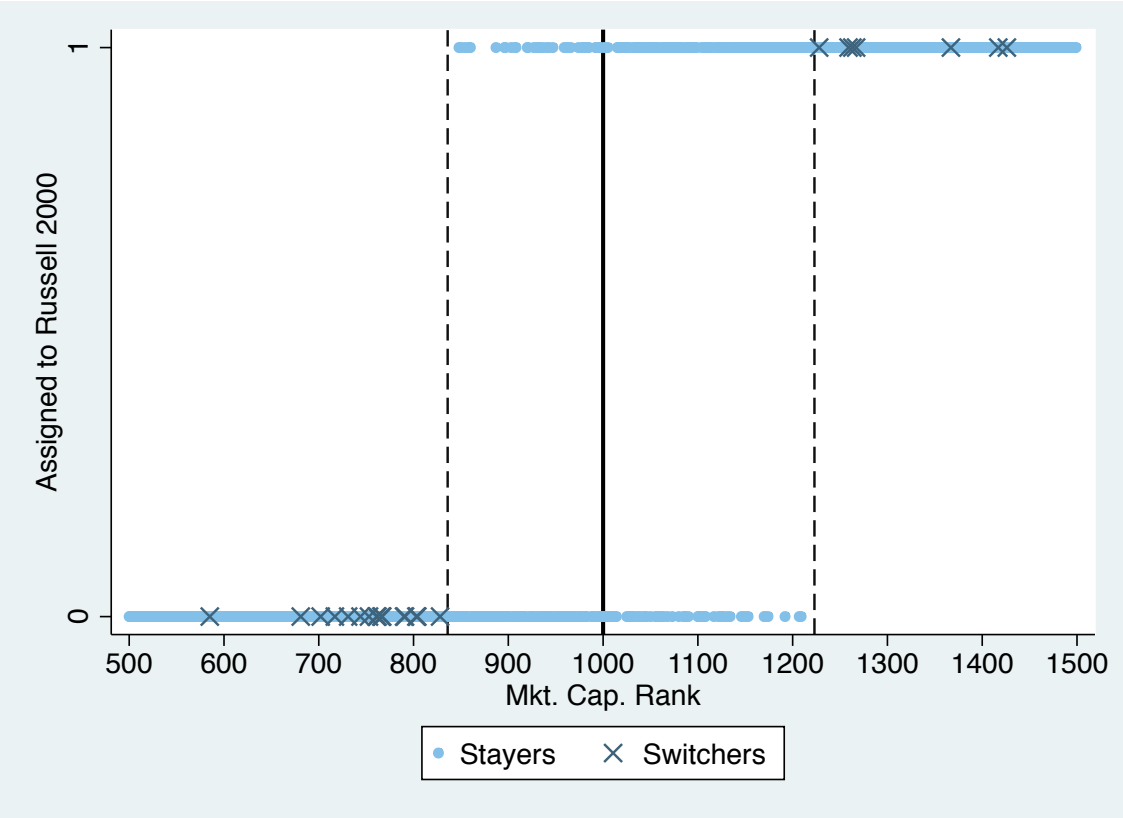

Figure 2. Index Assignment Post-2006

The figure plots assignments to the Russell 1000 and 2000 indexes in June of 2007 (vertical axis) against our proxy for Russell's proprietary market capitalization rankings (horizontal axis). In 2007, the first year of the banding regime, stocks near the threshold all stayed in their previous years' index, breaking the discontinuity in index assignment at rank 1000. Close to the estimated upper and lower bands (dashed lines), however, there are clear discontinuities in index switching.

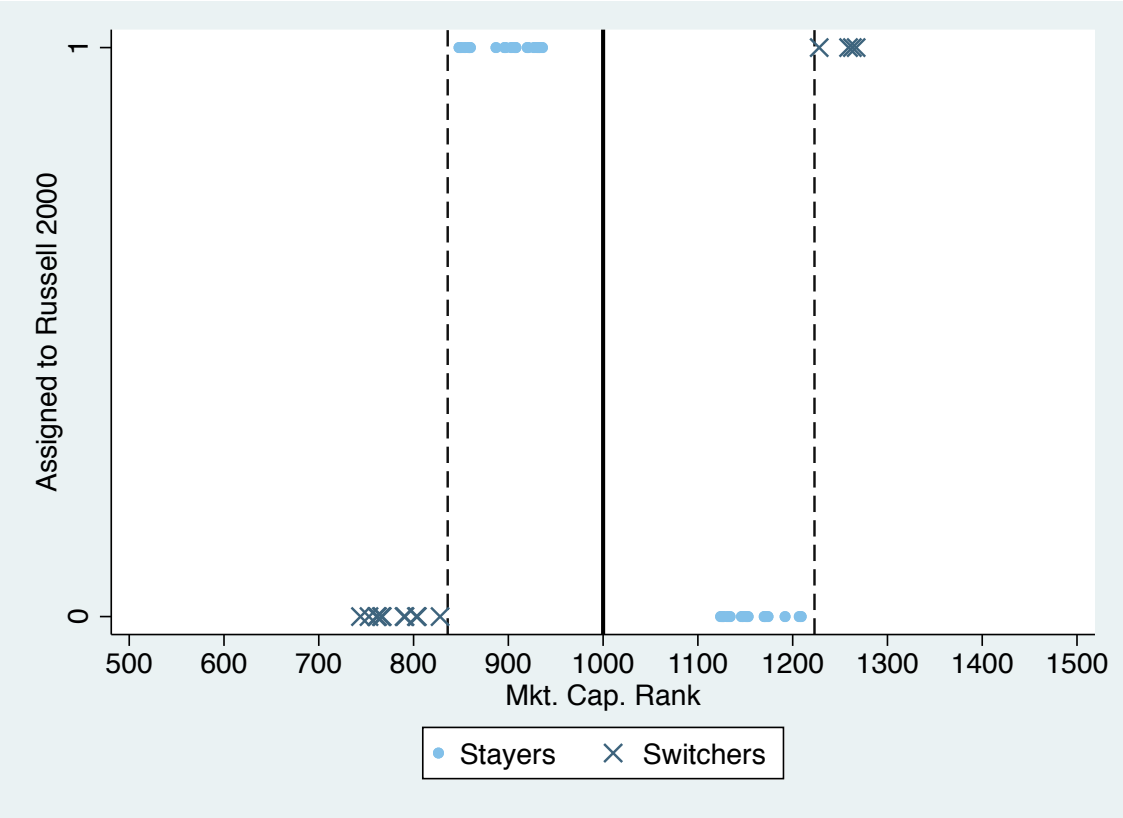

Figure 3. Selection of Cohort Samples

The figure plots the sample for the 2007 cohort consisting of all Russell stocks that lay within a +/-100 rank window of the upper and lower bands, and are potential switchers, i.e. were in the Russell 2000 in 2006 for those near the upper band or were in the Russell 1000 in 2006 for those near the lower band.

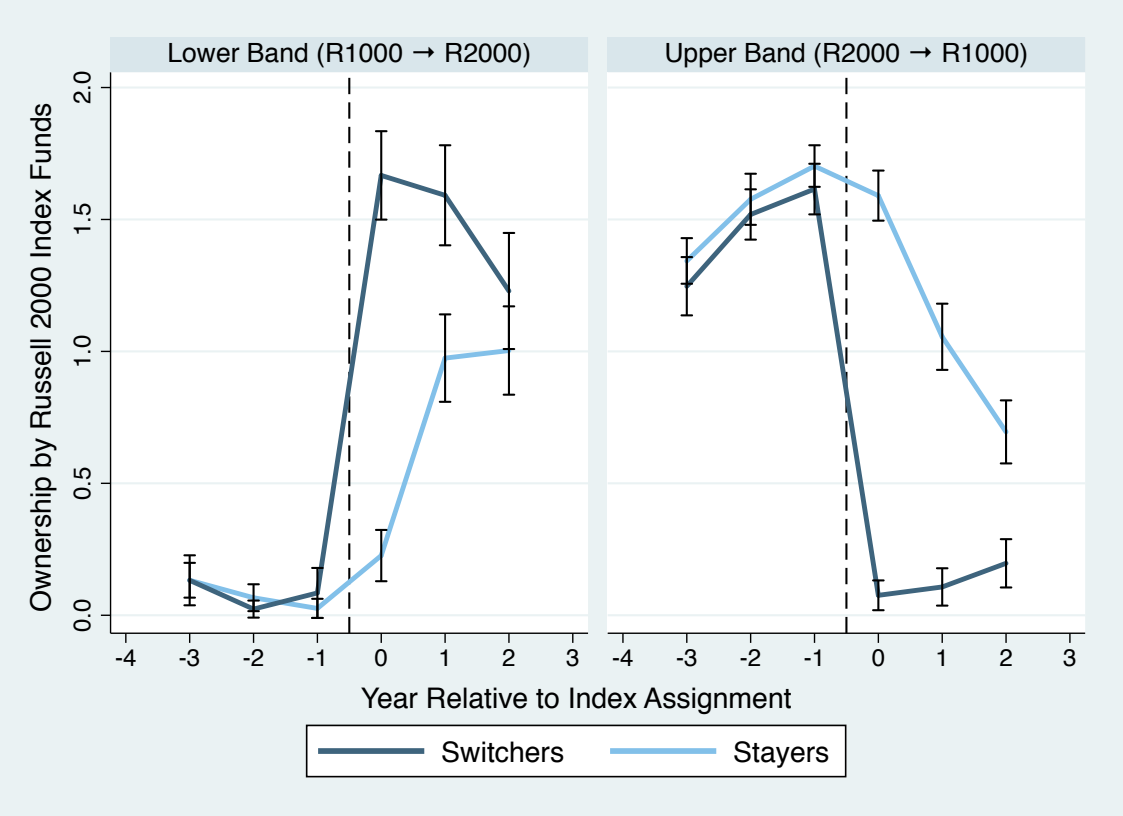

Figure 4. Index Switching and Index Fund Ownership

The figure plots the evolution of index fund ownership in event time relative to index assignment. The left figure displays average ownership by Russell 2000 index funds, in event time, for firms near the lower band that were in the Russell 1000 prior to index assignment. The right figure displays average ownership by Russell 1000 index funds, in event time, for firms near the upper band that were in the Russell 2000 prior to index assignment. The vertical bars represent 95% confidence intervals.

Table I
Summary Statistics of Funds

The table presents summary statistics for all investment funds in our sample from 2004 to 2017. *AUM* is assets under management, in millions of USD, *Expense Ratio* is from the CRSP mutual fund database, and # *Stocks Held* is the number of stocks held in each fund on a given date.

	Mean	Std. Dev.	10th Pctile	Median	90th Pctile	Fund-Years
			Index Funds			
AUM ($M)	3,335	16,769	31	344	4,924	5,698
Expense Ratio	0.47%	0.33%	0.15%	0.43%	0.74%	5,698
# Stocks Held	370.6	593.8	14	109	971	4,763
			Active Funds			
AUM ($M)	2,246	7,826	35	391	4,391	25,807
Expense Ratio	1.16%	0.41%	0.68%	1.12%	1.72%	25,807
# Stocks Held	115.9	228.1	12	62	230	20,940

Table II
Summary Statistics of Firms

The table presents summary statistics for all Russell 3000 firms in Panel A and the Russell cohort sample in Panel B. Both samples run from 2004 to 2017. Firms in the Russell cohort sample are selected on the basis of lagged index membership and proximity to the upper and lower Russell bands, in each June cohort from 2007 to 2015. Each selected firm is included for three years before and after its cohort year. *Market Cap* is market capitalization, in millions of USD, calculated from CRSP data. $IndexOwn^{R2000}$ ($IndexOwn^{R1000}$) is ownership by index funds benchmarked to the Russell 2000 (1000). *IndexOwn* is all ownership by passive index funds. *ActiveOwn* is all ownership by active funds. $TotalFundOwn$ is the sum of passive and active ownership. $E-Index$ is the entrenchment index and ranges from 0 to 6.

Panel A: All Sample Firms

	Mean	Std. Dev.	10th Pctile	Median	90th Pctile	Firm-Years
Market Cap ($M)	6,493	22,732	236	1,233	12,660	26,919
$IndexOwn^{R2000}$	1.13%	1.00%	0.00%	1.34%	2.37%	26,919
$IndexOwn^{R1000}$	0.09%	0.13%	0.00%	0.00%	0.28%	26,919
IndexOwn	4.00%	2.56%	1.23%	3.49%	7.50%	26,919
ActiveOwn	5.03%	4.23%	0.60%	4.06%	10.77%	26,919
TotalFundOwn	9.03%	5.38%	2.94%	8.32%	16.07%	26,919
E-Index	3.1	1.3	1	3	5	13,468

Panel B: Russell Cohort Firms

	Mean	Std. Dev.	10th Pctile	Median	90th Pctile	Firm-Years
Market Cap ($M)	2,456	920	1,354	2,394	3,815	4,392
$IndexOwn^{R2000}$	0.93%	1.00%	0.00%	0.63%	2.29%	4,392
$IndexOwn^{R1000}$	0.09%	0.12%	0.00%	0.00%	0.27%	4,392
IndexOwn	3.86%	2.60%	0.46%	3.72%	7.26%	4,392
ActiveOwn	5.70%	4.71%	0.39%	4.78%	11.66%	4,392
TotalFundOwn	9.56%	5.93%	1.58%	9.25%	16.70%	4,392
E-Index	3.2	1.2	2	3	5	2,036

Table III
Summary Statistics of Fund Voting

The table summarizes the ISS voting data and presents comparisons of fund voting between active and index funds. The table shows the fraction of each type of fund that voted Yes, No, Abstain or that failed to vote ("did not vote", DNV) on each agenda item across all shareholder meetings of U.S. firms recorded by ISS from 2004-2017. N is the number of individual fund-vote observations.

Management	ISS	Index funds				Active Funds				Difference	
Recommend	Recommend	Yes	No	Abstain	DNV	Yes	No	Abstain	DNV	PctYes	N
All		90.4%	6.2%	3.2%	0.2%	89.4%	7.1%	3.1%	0.4%	1.0%	23,221,799
Consensus											
Yes	Yes	95.6%	2.8%	1.4%	0.1%	96.0%	2.6%	1.1%	0.3%	-0.4%	20,669,238
No	No	4.2%	84.6%	8.8%	2.4%	5.1%	82.7%	10.7%	1.5%	-0.9%	362,447
Contentious											
Yes	No	54.3%	19.0%	24.9%	1.8%	41.9%	25.1%	30.4%	2.6%	12.4%	1,426,904
No	Yes	41.5%	53.5%	4.9%	0.1%	47.7%	46.0%	6.0%	0.3%	-6.2%	763,210

Table IV
Differences-in-differences regression of Fund Ownership and Index Switching

The table presents differences-in-differences estimates of the effects of Russell index switching on investment fund ownership expressed as a percentage (1=1%) of stocks' market capitalization. The sample consists of stocks that were "potential switchers" within a +/- 100-rank window of the yearly Russell upper and lower bands from 2007 to 2015, three years before and after index assignment for each firm in each cohort. *R1000 → R2000* is an indicator variable equal to 1 if a firm switches from the Russell 1000 to the Russell 2000, whereas *R2000 → R1000* is an indicator variable equal to 1 if a firm switches from the Russell 2000 to the Russell 1000. $PostAssignment_t$ is an indicator variable that takes the value one after index re-balancing. The dependent variables are ownership by: (1) Russell 2000 index funds, (2) Russell 1000 index funds, (3) Index funds, (4) Active funds and (5) All mutual funds. Robust standard errors clustered by firm are shown below the estimates in parentheses. *, **, *** indicates statistical significance at the 10%, 5%, and 1% levels, respectively.

	$IndexOwn_{jt}^{R2000}$	$IndexOwn_{jt}^{R1000}$	$IndexOwn_{jt}$	$ActiveOwn_{jt}$	$TotalFundOwn_{jt}$
	(1)	(2)	(3)	(4)	(5)
$R1000 \rightarrow R2000_j \times$	1.45***	-0.18***	1.03***	-0.06	0.97*
$PostAssignment_t$	(0.10)	(0.01)	(0.24)	(0.36)	(0.48)
$R2000 \rightarrow R1000_j \times$	-1.34***	0.17***	-0.86***	-0.06	-0.93**
$PostAssignment_t$	(0.08)	(0.02)	(0.14)	(0.27)	(0.34)
Observations	4,392	4,392	4,392	4,392	4,392
Adjusted R^2	0.468	0.474	0.674	0.569	0.582
Years	2004-2017	2004-2017	2004-2017	2004-2017	2004-2017
Cohorts	2007-2015	2007-2015	2007-2015	2007-2015	2007-2015
Year FE	Yes	Yes	Yes	Yes	Yes
Firm × Cohort FE	Yes	Yes	Yes	Yes	Yes

Table V
Fund Voting

The table presents OLS and Heckman corrected panel regression estimates examining fund voting for index funds versus active funds. Columns 1-4 show estimates for all firms in the sample. Columns 5-8 show estimates for firms that were potential switchers near the yearly Russell bands from 2007-2015. Columns 1-6 show OLS estimates, while columns 7 and 8 show estimates from a Heckman model. The dependent variable, $VotedWithMgmt$, is an indicator equal to 1 if a fund votes with management's recommendation and 0 otherwise. $IndexFund$ is an indicator equal to 1 if the fund is an index fund, and 0 if the fund is an active fund. $ExpenseRatio$ is the fund's total expense ratio in that year expressed in percentage points (so 25 basis points = 0.25), demeaned for ease of interpretation. The sample consists of votes on contentious items (i.e. items on which ISS and firm management were opposed). Robust standard errors clustered by fund are shown below the estimates in parentheses. *, **, *** indicates statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable = $VotedWithMgmt$							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$IndexFund_i$	0.125***	0.126***	0.124***	0.126***	0.150***	0.150***	0.084***	0.117**
	(0.025)	(0.024)	(0.024)	(0.024)	(0.030)	(0.030)	(0.032)	(0.059)
$ExpenseRatio_{it}\times$		-0.238***		-0.238***		-0.209**		-0.228*
$IndexFund_i$		(0.073)		(0.073)		(0.085)		(0.137)
$ExpenseRatio_{it}\times$		0.021		0.017		0.071		0.065
$ActiveFund_i$		(0.046)		(0.045)		(0.060)		(0.064)
$InverseMillsRatio_{ijt}$							-0.114***	0.0168
							(0.040)	(0.103)
Model	OLS	OLS	OLS	OLS	OLS	OLS	Heckman	Heckman
Sample Firms	All	All	All	All	Russell	Russell	Russell	Russell
Observations	2,187,598	2,187,598	2,187,433	2,187,433	189,319	189,319	189,319	189,319
Adjusted R^2	0.074	0.083	0.118	0.127	0.076	0.084	0.076	0.084
Firm FE	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Firm × Year FE	No	No	Yes	Yes	No	No	No	No

Table VI
Fund Voting – Split on Vote Type

The table presents OLS panel regression estimates examining fund voting for index funds versus active funds broken out by vote type. Vote type is *Board of Directors* in model (1), *Compensation* in model (2), *Disclosure* in model (3), and *Entrenchment* in model (4). The dependent variable, $VotedWithMgmt$, is an indicator equal to 1 if a fund votes with management's recommendation and 0 otherwise. $IndexFund$ is an indicator equal to 1 if the fund is an index fund, and 0 if the fund is an active fund. The sample contains the full sample of firms for votes on contentious items only (i.e. items on which ISS and firm management were opposed). Robust standard errors clustered by fund are shown below the estimates in parentheses. *, **, *** indicates statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable = $VotedWithMgmt$			
Vote Type =	Board of Directors	Compensation	Disclosure	Entrenchment
	(1)	(2)	(3)	(4)
$IndexFund_i$	0.132***	0.135***	0.095***	0.116***
	(0.029)	(0.028)	(0.029)	(0.026)
Observations	1,173,740	32,576	106,314	77,189
Adjusted R^2	0.086	0.055	0.021	0.101
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Table VII
Fund Exit

The table presents OLS and Heckman corrected panel regression estimates examining comparisons of voluntary exit between index funds versus active funds. Columns 1-4 show estimates for all firms in the sample. Columns 5-8 show estimates for firms that were potential switchers near the yearly Russell bands from 2007-2015. Columns 1-6 show OLS estimates, while columns 7 and 8 show estimates from a Heckman model. The dependent variable, $VoluntaryExit$, is an indicator equal to 1 if a fund exits a stock voluntarily and 0 otherwise. $IndexFund$ is an indicator equal to 1 if the fund is an index fund, and 0 if the fund is an active fund. $LostVote$ is an indicator equal to 1 if a fund voted Yes on an item that failed or No on an item that passed. Robust standard errors clustered by fund are shown below the estimates in parentheses. *, **, *** indicates statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable = $VoluntaryExit$							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$IndexFund_i$	-0.179***	-0.138***	-0.178***	-0.138***	-0.174***	-0.136***	-0.185***	-0.141***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.015)	(0.014)	(0.015)	(0.014)
$ActiveFund_i \times LostVote_{ijt-1}$		0.009**		0.011**		0.005		0.005
		(0.004)		(0.005)		(0.008)		(0.006)
$IndexFund_i \times LostVote_{ijt-1}$		-0.004		-0.001		-0.007		-0.007
		(0.004)		(0.005)		(0.007)		(0.007)
$InverseMillsRatio_{ijt}$							-0.021***	-0.008**
							(0.005)	(0.004)
Model	OLS	OLS	OLS	OLS	OLS	OLS	Heckman	Heckman
Sample Firms	All	All	All	All	Russell	Russell	Russell	Russell
Observations	4,192,281	2,211,016	4,186,615	2,209,686	452,902	282,738	452,902	282,738
Adjusted R^2	0.093	0.074	0.161	0.136	0.072	0.058	0.072	0.058
Firm FE	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Firm × Year FE	No	No	Yes	Yes	No	No	No	No

Table VIII
Fund Voting on Proposals by Management versus Shareholders

The table presents OLS panel regression estimates examining fund voting for index funds versus active funds splitting agenda items into items proposed by firm management (models (1) through (3)) and items proposed by shareholders (models (4) through (6)). The dependent variable is either $VotedYes$ in models (1) and (4), $VotedNo$ in models (2) and (5), or *Abstained* in models (3) and 6). $VotedYes$ ($VotedNo$) is an indicator equal to 1 if a fund votes Yes (No) and 0 otherwise. *Abstained* is an indicator equal to 1 if a fund abstains on a vote and 0 otherwise. $IndexFund$ is an indicator equal to 1 if the fund is an index fund, and 0 if the fund is an active fund. The sample contains the full sample of firms for votes on contentious items only (i.e. items on which ISS and firm management were opposed). Robust standard errors clustered by fund are shown below the estimates in parentheses. *, **, *** indicates statistical significance at the 10%, 5%, and 1% levels, respectively.

	Management Proposals			Shareholder Proposals		
	$VotedYes$	$VotedNo$	*Abstained*	$VotedYes$	$VotedNo$	*Abstained*
	(1)	(2)	(3)	(4)	(5)	(6)
$IndexFund_i$	0.144***	-0.050***	-0.085***	-0.092***	0.103***	-0.009
	(0.031)	(0.011)	(0.020)	(0.023)	(0.022)	(0.008)
Observations	1,408,736	1,408,736	1,408,736	778,846	778,846	778,846
Adjusted R^2	0.079	0.232	0.218	0.089	0.071	0.055
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table IX
Differences-in-differences regression of Index Switching and Changes in Agenda Items

The table presents differences-in-differences estimates of the effects of Russell index switching on the number and type of agenda items at shareholder meetings. The sample consists of stocks that were "potential switchers" within a +/- 100-rank window of the yearly Russell upper and lower bands from 2007 to 2015, three years before and after index assignment for each firm in each cohort. *R1000 → R2000* is an indicator variable equal to 1 if a firm switches from the Russell 1000 to the Russell 2000, whereas *R2000 → R1000* is an indicator variable equal to 1 if a firm switches from the Russell 2000 to the Russell 1000. $PostAssignment_t$ is an indicator variable that takes the value one after index re-balancing. $NumItems$ is the number of agenda items voted on in a given year. $NumShrProp$ and $NumMgmtProp$ is the number of items tabled by shareholders and management, respectively. $FracISSAgainst$ and $FracISSMgmtAgainst$ are the fraction of agenda items that were opposed by ISS and firm management respectively. $FracConsensus$ is the fraction of agenda items for which ISS and management made the same recommendation. Robust standard errors clustered by firm are shown below the estimates in parentheses. *, **, *** indicates statistical significance at the 10%, 5%, and 1% levels, respectively.

	$NumItems_{jt}$ (1)	$NumShrProp_{jt}$ (2)	$NumMgmtProp_{jt}$ (3)	$FracISSAgainst_{jt}$ (4)	$FracMgmtAgainst_{jt}$ (5)	$FracConsensus_{jt}$ (6)
$R1000 \rightarrow R2000_j \times$	0.02	-0.02	0.05	-0.01	0.00	0.01
$PostAssignment_t$	(0.34)	(0.07)	(0.32)	(0.02)	(0.01)	(0.02)
$R2000 \rightarrow R1000_j \times$	-0.28	0.00	-0.29	-0.00	-0.00	0.00
$PostAssignment_t$	(0.37)	(0.03)	(0.37)	(0.01)	(0.01)	(0.01)
Observations	3,726	3,726	3,726	3,726	3,726	3,726
Adjusted R^2	0.614	0.119	0.623	0.430	0.031	0.431
Firm × Cohort FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table X

Probit regression of Blockholding Disclosures: Schedule 13D versus 13G

The table presents comparisons of fund families' blockholding disclosure filings using a probit regression. The dependent variable is "Filed 13D" which is an indicator variable for whether each filing was under the activist Schedule 13D (dependent variable = 1) versus the passive Schedule 13G (dependent variable = 0). $FracAUMPassive$ is the fraction of fund family j's assets under management (AUM) that was managed by index funds in year t. $logAUM$ is the logarithm of the fund family's total AUM. $numFilings$ is the number of blockholding disclosures the family filed in that year. Marginal effects are displayed in square brackets. Robust standard errors clustered by fund family are shown below the estimates in parentheses. *, **, *** indicates statistical significance at the 10%, 5%, and 1% levels respectively.

	Dependent Variable = Filed 13D		
	(1)	(2)	(3)
$FracAUMPassive_{jt}$	-1.13**	-1.05**	-1.15**
	(0.48)	(0.46)	(0.49)
	[-27%]	[-25%]	[-28%]
$logAUM_{jt}$		-0.052	
		(0.042)	
$numFilings_{jt}$			0.00028
			(0.00032)
Model	Probit	Probit	Probit
Observations	920	920	921
Pseudo R^2	0.018	0.018	0.018

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Swiss Finance Institute (SFI) is the national center for fundamental research, doctoral training, knowledge exchange, and continuing education in the fields of banking and finance. SFI's mission is to grow knowledge capital for the Swiss financial marketplace. Created in 2006 as a public–private partnership, SFI is a common initiative of the Swiss finance industry, leading Swiss universities, and the Swiss Confederation.

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