Institutional Ownership, Blockholders, and Attention to the Future*

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Abstract

We study how institutional ownership affects managers' attention to the future, which we measure using the temporal references in managers' forward-looking statements on U.S. corporate earnings calls. Firms whose managers pay more attention to the future invest more, spend more on R&D, and file more valuable patents in the following year, and their attention to the future falls when financial conditions deteriorate. Our central finding is that attention to the future rises with the share of institutional ownership and the number of institutional owners but falls with the stake of the largest institutional owner, the blockholder. We interpret these patterns by building a model of managerial attention. Informed trading by institutions rewards managers for looking ahead, whereas intervention by the blockholder discourages managerial initiative. Consistent with the model, we find empirically that the negative effect of the blockholder's stake is weaker when insiders hold more equity in the firm.

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1 Introduction

Institutional investors hold more than 80% of S&P 500 equity, placing them at the center of a long-standing debate over corporate short-termism. Their share of U.S. public equity has risen steadily over the past four decades [Gompers and Metrick, 2001, Backus et al., 2021], and individual institutions often hold large blocks [Holderness, 2009, Edmans and Holderness, 2017]. Whether institutional investors and blockholders worsen or reduce short-termism is debated. On one side, they may press managers for near-term earnings or deter managerial initiative [Bushee, 1998, Burkart et al., 1997]. On the other, they may make the stock price reflect long-run value and monitor management [Edmans, 2009, Shleifer and Vishny, 1986, Aghion et al., 2013].

At the heart of this debate is how much attention managers pay to the future, which has been difficult to measure. Before a firm can invest or innovate for the long run, its managers must look ahead to identify and evaluate distant opportunities. Looking ahead is costly for managers, while its benefits arrive later and accrue mostly to shareholders, so managers may look less far ahead than shareholders would want [Stein, 1989, Graham et al., 2005, Asker et al., 2015, Terry, 2023]. The concern is therefore not that managers work too little, but that they do not look far enough ahead. Without a direct measure of this attention, testing whether institutional owners and blockholders worsen or reduce short-termism is difficult. Empirical work has inferred how far ahead managers look indirectly, from investment and innovation [Aghion et al., 2013, Derrien et al., 2013], yet short-termism can lead to overinvestment as well as underinvestment [Bebchuk and Stole, 1993].

In this paper, we bring direct evidence to this debate by measuring managers' *attention to the future* from the dates and durations they mention on earnings calls and relating it to the ownership of their firms. The measure reveals that firms whose managers look further ahead invest more, spend more on R&D, and produce more valuable patents. Attention to the future also falls when firms are in financial distress. Our main finding is that attention to the future depends not only on how much of the firm institutional investors own, but also on how many institutions own it and how much of it the largest institutional owner, the blockholder, holds. Within firms, it rises with the share of institutional ownership and the number of institutional owners and falls with the stake of the blockholder. To rationalize these patterns, we build a model of managerial attention in which informed trading by institutions rewards the manager for looking ahead through the stock price, while intervention by the blockholder threatens her private benefits of control. Consistent with the model, we find that the negative effect of the blockholder's stake weakens as managers hold more equity.

We begin by constructing a firm-year measure of attention to the future from the earnings

calls of more than 5,500 listed U.S. firms over two decades. A companion paper [Olivari and Schwedeler, 2026] develops a rule-based algorithm that identifies temporal references in managers' statements, such as "over the next five years" or "by fiscal 2028," and translates them into distances from the call date. Its aim is to measure how far firms' plans extend, so it uses the upper tail of these distances. Because we want to capture instead where managers' discussion with investors is centered, we use the *median* of these distances within each firm-year, which is more sensitive to shifts toward the current or the next quarter.

We document three facts that support this interpretation of the measure. First, the discussion of the typical firm is centered one to two quarters ahead, consistent with the quarterly frequency of the calls, and attention to the future varies substantially both across firms and within firms over time. Second, the measure predicts real decisions. Firms whose managers' attention to the future is one standard deviation higher invest about 6% more, spend about 9% more on R&D, and file patents that are about 6% more valuable in the following year [Kogan et al., 2017]. This higher investment is not explained by Tobin's Q or the firm's cost of capital [Gormsen and Huber, 2025]. Third, attention to the future falls with financial distress, consistent with the underinvestment that debt overhang predicts for distressed firms [Myers, 1977]. It falls after earnings misses and operating losses and rises with cash holdings and distance to default.

We then relate attention to the future to institutional ownership and blockholders, combining the measure with ownership data on U.S. public firms from the Ownership Project [Amel-Zadeh et al., 2022]. The resulting sample covers about 3,600 firms over fiscal years 2002 to 2020. We measure the share of institutional ownership by the fraction of the firm held by institutions that file Form 13F, the number of institutional owners by the number of these institutions, and the blockholder's stake by the share held by the largest of them. We regress attention to the future on all three measures jointly, with firm and sector-by-year fixed effects. Identification relies on within-firm changes in each ownership measure, relative to industry peers in the same year, holding the other two measures fixed.

Our central finding is that institutional ownership moves attention to the future in opposite directions, depending on how holdings are distributed across institutions. Attention to the future rises with the share of institutional ownership and with the number of institutional owners, by about 5.5% and 11% of a within-firm standard deviation for each one-standard-deviation increase. It falls with the blockholder's stake, by about 3.7% for the same increase. This negative association holds across alternative measures of blockholding, such as a Herfindahl index of institutional ownership and the presence of a large blockholder. The association is strongest for owners who file Schedule 13D, who disclose an active intent to influence the firm.

We show that these results are robust to reverse causality using an instrumental-variable design based on the annual reconstitution of the Russell 1000 and 2000 indexes [Appel et al., 2016]. A natural concern is that institutional investors are drawn to firms whose managers already look further ahead. We address this concern by instrumenting passive ownership with assignment to the Russell 2000. Because the indexes are weighted by market capitalization, firms just inside the Russell 2000 receive much larger index weights than similar firms just inside the Russell 1000, so index funds hold more of their shares. Attention to the future rises in the year after reconstitution, with no change beforehand.[1] This result suggests that the relation between ownership and attention to the future runs, at least in part, from ownership to attention.

To interpret these patterns, we develop a model of managerial attention. In the model, the manager chooses how far ahead to look, reflecting how far into the future she searches for opportunities and plans for them. Looking further ahead imposes on her a private cost that rises more than proportionally with the distance. Looking ahead creates value for shareholders only when it serves the plan that maximizes firm value. With an exogenous probability, however, the manager and shareholders disagree on which plan to pursue. The manager benefits from looking ahead in two ways. First, she holds equity in the firm, so she gains from the value that looking ahead creates to the extent that the stock price reflects it. Second, she receives a private benefit of control whenever a plan she prepared is carried out under her own authority, whether or not it maximizes firm value [Grossman and Hart, 1988].

The model rationalizes the effects of institutional investors and blockholders through two channels, informed trading and intervention. Institutional investors collect information about the firm's long-run value and trade on it, so the stock price reflects value that is not yet visible in current earnings [Holmström and Tirole, 1993]. The price reflects this value more when the share of institutional ownership is higher, and also when the number of institutional owners is higher, because more institutions then trade on independent information. A more informative price raises the manager's equity gain from looking ahead, which explains why attention to the future rises with both the share and the number of institutional owners. When the manager and shareholders disagree, the blockholder can intervene and impose the plan that maximizes firm value. Because it bears the cost of intervention alone but shares the

[1] Index assignment moves passive ownership, which we use as a source of variation in institutional ownership more broadly, in the absence of credible instruments for institutional ownership as a whole [Edmans and Holderness, 2017]. We read this as evidence that institutional ownership raises attention to the future, not as evidence on a single channel. Index investors also affect managers through voice and monitoring [Appel et al., 2016, 2019] and through the information production that institutional ownership encourages [Boone and White, 2015], and the estimate does not depend on which channel operates.

gain with all shareholders, it intervenes more often the larger its stake [Shleifer and Vishny, 1986]. The prospect of being overruled reduces the manager's incentive to take initiative [Burkart et al., 1997]. Intervention deprives her of her private benefit of control, although it also raises the value of her equity. A larger blockholder stake therefore lowers attention to the future when the private benefit she loses exceeds her equity gain, as we find in the data. Because more equity raises her gain from intervention, the model also predicts that this negative effect weakens as the manager holds more equity.

Finally, we find that the negative effect of the blockholder's stake weakens as managers hold more equity, as the model predicts. We measure managers' equity with insider holdings reported on SEC Forms 3, 4, and 5. A one-standard-deviation increase in insider equity reduces the negative effect of the blockholder's stake by about 30 percent. This result supports intervention as the mechanism behind the negative effect of the blockholder's stake. The main alternative explanation is the threat of exit, since a blockholder can also discipline the manager by threatening to sell its stake, and this threat is also more costly to a manager who holds more equity [Admati and Pfleiderer, 2009, Edmans, 2009]. Two features of the data favor intervention. Exit requires a liquid stock, yet the moderating role of managerial equity is not stronger in more liquid stocks. And because exit acts only through the stock price, the effect of the blockholder's stake and its interaction with managerial equity should have the same sign, whereas the effect we estimate is negative and weakens with managerial equity.

Institutional ownership can therefore both increase and decrease managers' attention to the future, depending on how holdings are distributed across institutions and not only on how much of the firm they own.

1.1 Related literature

This paper contributes to three literatures: the measurement of how far ahead firms look, the effect of institutional ownership on managerial horizons, and blockholder governance.

Measuring attention to the future. A growing literature uses corporate text to measure firm-level information, such as firms' exposure to political, epidemic, and country risk from earnings calls [Gentzkow et al., 2019, Hassan et al., 2019, 2023, 2024, 2025] and the attention firms devote to macroeconomic news in their filings [Song and Stern, 2024]. Closer to our object, existing measures of corporate horizons compare the incidence of short- and long-horizon language in conference calls [Brochet et al., 2015], code the forward reach of calls in a small sample of firms [DesJardine and Bansal, 2019], or collect the stated duration of investment projects from regulatory filings [Dessaint et al., 2023]. A companion paper uses

the upper tail of the temporal references in earnings calls to measure how far firms' plans extend [Olivari and Schwedeler, 2026]. We add a firm-year measure, in months, of where managers' discussion with investors is centered, available for thousands of firms, and show that it is related to investment, innovation, and financial distress.

Institutional ownership and managerial horizons. Theory links institutional ownership to managers' horizons through the stock price. A price that aggregates information about long-run value rewards a manager who holds equity for actions whose payoffs lie ahead [Holmström and Tirole, 1993], informed blockholder trading can encourage long-run investment [Edmans, 2009], and competition among informed owners makes the number of owners matter for how much information the price contains [Edmans and Manso, 2011]. Empirical work relates firms' investment and innovation to the horizons of their institutional investors, finding more myopic policies when transient institutions own the firm [Bushee, 1998, 2001, Hotchkiss and Strickland, 2003, Gaspar et al., 2005, Yan and Zhang, 2009] and more innovation and investment when long-horizon institutions do [Wahal and McConnell, 2000, Aghion et al., 2013, Derrien et al., 2013, Bena et al., 2017, Harford et al., 2018]. Index reconstitutions have been used to study how passive ownership affects governance and disclosure [Boone and White, 2015, Appel et al., 2016, Crane et al., 2016, Schmidt and Fahlenbrach, 2017]. We place managers' attention to the future, rather than its outcomes, on the left-hand side, and estimate the effects of the share of institutional ownership and the number of institutional owners jointly.

Blockholder governance: intervention and exit. The theory of concentrated ownership emphasizes that the power to intervene has both a benefit and a cost. A large shareholder captures enough of the gains from monitoring to bear its cost [Shleifer and Vishny, 1986], but the prospect of being overruled reduces an agent's incentive to acquire information and propose projects [Aghion and Tirole, 1997], so a larger block can deter the initiative that only the manager can supply [Burkart et al., 1997]. A second literature studies how trading and voice interact in blockholder governance [Maug, 1998, Kahn and Winton, 1998, Faure-Grimaud and Gromb, 2004, Admati and Pfleiderer, 2009, Edmans, 2009, Edmans and Manso, 2011, Edmans and Holderness, 2017, Fos and Kahn, 2018], and empirical work shows that the threat of exit operates through managers' sensitivity to the stock price [Bharath et al., 2013, Chen et al., 2015, Dou et al., 2018]. Blockholders are pervasive and heterogeneous, with documented effects on monitoring, activism, firm value, and disclosure [Holderness, 2001, 2009, Brav et al., 2008, Cronqvist and Fahlenbrach, 2009, Konijn et al., 2011, Clifford and Lindsey, 2016, Ge et al., 2021], and related work links longer executive pay horizons to

long-term investment [Gopalan et al., 2014, Edmans et al., 2017, Flammer and Bansal, 2017, Marinovic and Varas, 2019]. We bring intervention and exit to managers' attention to the future. The sign of the concentration effect reveals which consequence of intervention dominates, and its interaction with managerial equity, together with tests against liquidity-based exit, distinguishes intervention from exit.

The rest of the paper proceeds as follows. Section 2 constructs the measure and studies its properties. Section 3 relates it to institutional ownership and blockholders. Section 4 develops the model, and Section 5 tests its prediction on managerial equity. Section 6 concludes.

2 Measuring Attention to the Future

Earnings calls are used by managers to explain their investment decisions in terms of expected demand, costs, and financing conditions. A manager may explain that the firm needs more capacity to meet the demand it expects over the next five years, or that margins should recover by the next quarter. We take the dates and durations in such explanations as indications of where managers' attention lies, and we summarize them in a firm-year measure of attention to the future.

2.1 Data and measurement

We build on the transparent, rule-based algorithm of Olivari and Schwedeler [2026], which extracts future dates and durations from earnings-call transcripts. These references can be classified into three main groups. First, calendar-anchored references name a date or calendar period, such as October 20, 2027, Q4 2027, or early 2028. Second, speech-relative references express timing relative to the call date, as in coming quarter or the next 18 months. Third, bare durations state a length of time without naming a date, as in a 3-year investment program. The rules cover days, weeks, months, quarters, years, and decades, as well as calendar qualifiers such as early, mid, and late. Expressions such as in the future and long term provide neither a specific date nor a measurable duration, so we exclude them. Each remaining reference is converted into the number of months between the call and the date it points to. Olivari and Schwedeler [2026] describe extraction and conversion in more detail.

Olivari and Schwedeler [2026] summarize the more distant part of managers' discussions with the 95th percentile of these distances, which they use to infer how far ahead firms plan. We are instead interested in where managers' discussion is centered. In our baseline, a firm's attention to the future in a given year is the median number of months ahead referred to in

its dated statements, pooled across the firm's calls during that year:

$$FutureAttention_{i,t} = \text{median}\big(\, horizon_{i,t,1}, \ldots, horizon_{i,t,n_{i,t}} \,\big). \tag{1}$$

A value of five means that half of the dated statements point to dates less than five months after the call. Firm-years without dated statements are excluded.[2] The main sample covers fiscal years 2002 to 2020, and Appendix A describes the construction of the panel.

Repeated scrutiny gives managers the incentive to communicate credibly. Managers can choose strategically which plans to disclose, so the dates implied by their statements may differ from the ones they use internally. However, analysts and investors can compare earlier statements with subsequent investment and performance, limiting managers' incentives to misrepresent their plans [Hassan et al., 2025, Gormsen and Huber, 2025]. Differences in disclosure could still affect the measure, since forward-looking statements reflect litigation exposure and investor-relations effort [Li, 2010] and institutional ownership increases voluntary disclosure [Boone and White, 2015]. The median, however, does not increase with the number of statements. Additional statements at the firm's usual distance leave it unchanged, and additional near-term guidance lowers it. Disclosure volume therefore cannot mechanically lengthen measured attention.

2.2 Three facts about attention to the future

We document three facts about the measure. First, managers' discussion with investors is centered one to two quarters ahead, and the measure varies substantially both across firms and within firms over time. Second, firms whose managers pay more attention to the future subsequently invest more, spend more on R&D, and produce more valuable patents. Third, attention to the future falls when firms are in financial distress. Together, these facts indicate that the measure reflects how far ahead managers look when they make decisions.

Managers' discussion is centered one to two quarters ahead. Table 1 reports the distribution of attention to the future across 50,375 firm-years and 5,705 firms, and Figure 1 in Appendix A plots it. The median firm-year is five months, about two quarters ahead. Attention to the future nonetheless differs substantially across firm-years: the 10th and 90th percentiles are 2.6 and 7.5 months, and the standard deviation is 2.3 months.

Fifty-five percent of the variance is within firm, and the first-order autocorrelation is 0.44. Attention to the future is therefore persistent, but it also moves considerably from one

[2] We reserve *horizon* for the distance of an individual statement. The upper tail of the same distribution is what the companion paper studies as the firm's planning horizon.

Table 1: Coverage, distribution, and structure of attention to the future.

Coverage	
Firm-years	50,375
Distinct firms	5,705
Distribution (months)	
Median	5.0
10th–90th percentile	2.6–7.5
Standard deviation	2.3
Structure	
Within-firm share of variance	55%
Persistence, AR(1)	0.44

year to the next within the same firm.

Attention to the future predicts investment and innovation. We validate the economic interpretation of the measure using subsequent investment and innovation. A manager who looks further ahead should also do more of what takes time to pay off, such as investing, doing R&D, and filing patents. Each outcome is measured one year after the calls and regressed on the standardized measure for fiscal years 2002 to 2024.[3] The regressions include sector-by-year fixed effects and log lagged assets, plus Tobin's Q for investment. We winsorize outcomes and the measure at 1% and 99% and cluster standard errors by firm. The outcomes run from spending to realized innovation: capital expenditure and R&D from Compustat, each scaled by lagged assets, the growth of the firm's patent output, and the market value and citations of its patents, which we take from Kogan et al. [2017].

Table 2 shows that attention to the future is positively and significantly associated with all five outcomes. A one-standard-deviation increase in attention to the future is followed a year later by capital expenditure higher by about 0.25 percentage points of assets and R&D higher by about 0.8 percentage points, or roughly 6 and 9 percent of their sample means, and by faster patent growth and more valuable and more cited patents. For comparison, a one-standard-deviation increase in firm-level political risk, a measure built from the same earnings calls, moves the investment rate by 0.16 percentage points in a similar specification, or about 1.4% of its mean [Hassan et al., 2019].

Adding firm fixed effects (Appendix Table 9) leaves the coefficients on capital expenditure, R&D, patent value, and patent citations positive and significant; only patent-count growth loses significance. The investment result is also robust to controlling for the firm's cost of capital and perceived discount rate [Gormsen and Huber, 2025]. Appendix A describes the

[3]Table 1 and the ownership analysis end in fiscal 2020 to match the ownership data; the validation needs no ownership variables and uses the full transcript span.

Table 2: Attention to the future predicts real forward-looking activity at t+1.

Dependent variable	asinh(CAPX / lag assets)	asinh(R&D / lag assets)	IHS patent growth	asinh(KPSS issue value, mean)	KPSS filing high-cite share
	(1)	(2)	(3)	(4)	(5)
Attention to the future	0.256***	0.840***	0.0071**	0.0575***	0.0040***
	(0.035)	(0.123)	(0.0030)	(0.0117)	(0.0014)
Log lag assets control	Yes	Yes	Yes	Yes	Yes
Tobin's Q control	Yes	No	No	No	No
SIC2 × year fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	44,749	27,708	26,441	16,137	44,794
Firms	5,245	3,388	4,215	2,374	5,372

Notes: Regressions of one-year-ahead (t+1) outcomes on standardized attention to the future (F_{it}, `horizon_p50y`), with SIC2×year fixed effects. Outcomes and F_{it} are winsorized at the 1st and 99th percentiles inside each estimation sample; all columns control for log lag assets, and the investment column additionally for Tobin's Q. CAPX and R&D coefficients and standard errors are multiplied by 100 (percentage points of the outcome ratio). Standard errors clustered by firm in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

outcome variables and their sources.

Attention to the future falls with financial distress. Attention to the future also falls with financial distress. Distress forces managers to deal with immediate problems and leaves less money for distant projects. Table 3 relates the year-on-year change in a firm's attention to the future to a set of lagged stressors, one per regression, with firm and sector-by-year fixed effects and standard errors clustered by firm. Because the dependent variable is a change, the firm fixed effects absorb firm-specific trends. So the estimates compare a firm with its industry peers in the same year. The stressors are an operating loss, net leverage, the cash ratio, a stock-price crash, and distance to default, all from Compustat and CRSP, an earnings miss relative to the I/B/E/S consensus, and the overall-risk index of Hassan et al. [2019], which NL Analytics computes from the same calls. All stressors are lagged one year, so the risk index does not overlap mechanically with the measure.

The response has the same direction across all stressors. In the year after an increase in overall risk, an earnings miss, a stock-price crash, an operating loss, or an increase in net leverage, attention to the future falls, and it rises after the firm accumulates cash or moves further from default. The largest response is to a stock-price crash, which lowers attention to the future by about 0.12 months.

3 Ownership Structure and Attention to the Future

We now relate attention to the future to the ownership structure of firms. We first study the relation between attention to the future and the ownership structure of firms. We examine

Table 3: Within-firm response of attention to the future to prior-year financial stress.

	Dependent variable: Δ attention to the future (months)	
Stressor_{t-1}	Estimate (SE)	Obs.
Overall risk	-0.045^{***} (0.012)	41,846
Earnings miss	-0.053^{**} (0.018)	34,492
Stock-price crash ($<-30\%$)	-0.116^{***} (0.026)	40,667
Operating loss (EBIT<0)	-0.101^{***} (0.032)	41,846
Net leverage	-0.079^{***} (0.017)	41,651
Cash ratio	$+0.045^{***}$ (0.016)	35,328
Distance-to-default	$+0.058^{***}$ (0.012)	34,450

Notes: Each row is a separate regression of the first difference of the firm-year median attention to the future (months) on one lagged stressor. Earnings miss, stock-price crash, and operating loss are indicators (per event); the remaining regressors are standardized (per SD). All include firm and sector×year fixed effects; SE (in parentheses) clustered by firm; 2002–2020. $^{**}p < 0.05$, $^{***}p < 0.01$.

the impact of the share of institutional ownership, the number of institutional owners, and the share of the largest institutional owner within firms. We then use the annual reconstitution of the Russell indexes to address the possibility that institutional investors are drawn to firms whose managers already look further ahead.

3.1 Data and specification

Ownership data. We measure ownership structure using the data from the Ownership Project [Amel-Zadeh et al., 2022], which reconstructs owner-level holdings in U.S. public firms from Forms 13F, Schedules 13D and 13G, and insider Forms 3, 4, and 5. Form 13F is filed quarterly by institutional investment managers with at least $100 million in assets under management, and it reports the number of shares held in each firm. Forms 13D and 13G are filed by owners of more than 5 percent of a firm's shares at the time of acquisition. Forms 3, 4, and 5 are instead filed by insiders, who are officers, directors, or owners of more than 10 percent of a firm's shares. Given that this dataset covers institutions, blockholders, and insiders, it allows us to study them jointly for the same firm and period. The data report both shares and votes at the owner–firm–quarter level, and the raw file contains about 58 million positions from 2000Q4 to 2020Q4. For each firm-quarter, we average the ownership measures over the calendar year and we construct the 13F institutional share, the number of distinct institutional owners (breadth), the largest institutional owner's share (concentration), and indicators for blockholder stakes above 5, 10, and 20 percent. We remove positions flagged as outliers, keep records supported by a 13F, 13D, or 13G filing, and consolidate multiple

positions filed by the same owner in a firm-quarter. The institutional share uses only 13F positions, while the block and concentration measures use the broader 13F, 13D, and 13G universe. Holdings reported on Forms 3, 4, and 5 measure insider equity. They cover officers, who choose and communicate firm policy, as well as directors and owners of more than 10 percent. Appendix C defines the variables and the additional ownership measures used in the robustness analysis.

Sample. We merge the firm-year ownership measures with the attention measure of Section 2 and with Compustat, which provides the size control (lagged book assets), the SIC classification used for the sector-by-year fixed effects, and the balance-sheet variables (sales, leverage, cash flow, cash holdings, and Tobin's Q). The measure of attention to the future is matched to Compustat by GVKEY, and to the ownership data by PERMCO and fiscal year through the CRSP/Compustat Merged link at the fiscal-year end. Given that ownership is a calendar-year average, we assign it to the fiscal year it most nearly spans. The final sample used in the estimation contains the firm-years with an attention value, an ownership record, and the size control: 35,416 firm-years from 3,593 firms and 1,207 sector-years over fiscal years 2002 to 2020. Table 4 reports summary statistics.

Specification. We estimate

$$FutureAttention_{i,t} = \alpha_i + \gamma_{j,t} + \beta_1 \,\text{13F-Share}_{i,t} + \beta_2 \,\text{Breadth}_{i,t} + \beta_3 \,\text{Blockholder}_{i,t} + X'_{i,t-1}\theta + \varepsilon_{i,t}, \tag{2}$$

where $\text{13F-Share}_{i,t}$ is the 13F institutional ownership share, $\text{Breadth}_{i,t}$ is the log number of distinct institutional owners, $\text{Blockholder}_{i,t}$ is the largest institutional owner's share, α_i is a firm fixed effect, $\gamma_{j,t}$ is a sector-by-year fixed effect, and $X_{i,t-1}$ contains log lagged assets as a control. We standardize our ownership regressors within the estimation sample and express the dependent variable in units of its within-firm standard deviation, which is 1.35 months (Table 4). A coefficient of 0.07 therefore means that a one standard deviation increase in the regressor raises attention by roughly 7 percent of a within-firm standard deviation, and we report effects in these percentages in the text. Standard errors are clustered at the firm level.

Identifying variation. The firm fixed effects absorb permanent differences in business model, governance, and managerial style , while the sector-by-year fixed effects absorb shocks common to an industry in a given year. The coefficients therefore describe how a firm's attention changes when its own ownership changes, relative to its industry peers. We complement

Table 4: Summary statistics for the ownership estimation sample.

	N	Mean	SD	Within SD	p10	Median	p90
Dependent variable							
Attention to the future (months)	35,416	4.93	1.83	1.35	2.73	5.05	7.37
Ownership structure							
13F institutional ownership share	35,416	0.842	0.272	0.138	0.456	0.882	1.154
Breadth (no. of institutional owners)	35,416	306.5	326.1	114.1	59	202	668
Largest institutional-owner share	35,416	0.136	0.095	0.058	0.067	0.108	0.233
Control							
Log lagged book assets	35,416	7.11	2.06	0.52	4.56	6.98	9.85

Notes: The estimation sample is the intersection of firms with a transcript-based attention-to-the-future value, an ownership record, and a non-missing size control: 35,416 firm-years, 3,593 firms, and 1,207 sector-years over fiscal years 2002–2020—the sample of the three-fact regression (Table 5). Attention to the future is the firm-year median forward-looking horizon in months. The 13F share is summed reported 13F holdings relative to shares outstanding and is not top-coded; it can exceed one when filing dates and the shares-outstanding denominator do not align. The largest institutional-owner share is also expressed relative to shares outstanding. Breadth is the number of distinct institutional owners and enters the regressions in logs. The Within SD column reports the within-firm standard deviation: the standard deviation of each variable after subtracting its firm-specific mean, the dispersion the firm fixed effects leave available for identification. The ownership regressors are standardized within the sample in the regressions; the statistics reported here are in these natural units. The regression tables that follow report coefficients in units of the dependent variable's within-firm standard deviation; this column gives the conversion, as one within-firm SD of attention is 1.35 months.

these results with index-induced passive ownership and ask whether a change in ownership that is not selected on the firm's prior attention precedes a change in attention. This division of labor is common in ownership research, where credible instruments for block ownership are rare and clean designs usually isolate a single margin of ownership [Edmans and Holderness, 2017].

3.2 Baseline ownership evidence

Table 5 reports the estimates of equation (2). Column (1) includes only the institutional ownership share, and columns (2) and (3) add the number of institutional owners and the largest owner's share.

Attention to the future rises with the share of institutional ownership. A one standard deviation increase in the 13F share raises attention by about 7 percent of a within-firm standard deviation, or roughly a tenth of a month, in column (1), and by about 5.5 percent holding breadth and concentration fixed in column (3). This is similar in size to the response of attention to a one-standard-deviation change in overall leverage, risk, or distance to default (Table 3). Earlier work suggests that investor horizons matter for corporate language and

Table 5: Ownership structure and attention to the future.

	Dependent variable: attention to the future (within SD)		
	(1) Level	(2) +Breadth	(3) +Block
Institutional ownership (13F)	0.071***	0.047***	0.055***
	(0.015)	(0.016)	(0.016)
Breadth (log # owners)		0.145***	0.111***
		(0.036)	(0.038)
Blockholder (largest institutional-owner share)			−0.037***
			(0.012)
Firm FE	Yes	Yes	Yes
Sector × year FE	Yes	Yes	Yes
Observations	35,416	35,416	35,416
Firms	3,593	3,593	3,593
Within R^2	0.003	0.004	0.004

Notes: Institutional ownership is the 13F share; breadth is the log number of institutional owners; blockholder is the largest institutional owner's share. Firm and sector×year fixed effects; ownership standardized within sample. Coefficients are expressed in within-firm standard deviations ("within SD") of attention to the future per one-SD increase in the regressor (one within-firm SD ≈ 1.35 months; see Table 4); SE clustered by firm. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

policy [Bushee, 1998, Brochet et al., 2012]; here the relation holds within firms and holding the number of owners and the largest owner's share fixed.

Attention also rises with the number of institutional owners. Given the institutional share, a one-standard-deviation increase in breadth raises attention by 11 to 15 percent of a within-firm standard deviation (columns 2 and 3), the largest of the three effects. Adding breadth lowers the coefficient on the institutional share, a result consistent with the number of informed owners mattering beyond their combined stake.

Concentration instead has the opposite effect. A one-standard-deviation increase in the largest institutional owner's share lowers attention by about 3.7 percent of a within-firm standard deviation (column 3), similar to the decline after an earnings miss. The result is consistent with prior work showing that the identity and activism of blockholders shape corporate policy and disclosure [Brav et al., 2008, Clifford and Lindsey, 2016, Guo et al., 2024, Ge et al., 2021].

Prior work separates transient from long-horizon institutions [Bushee, 2001, Gaspar et al., 2005, Yan and Zhang, 2009] and links patient ownership to investment, innovation, and monitoring [Derrien et al., 2013, Bena et al., 2017, Aghion et al., 2013, Harford et al., 2018]. Our regressions instead separate the level, breadth, and concentration of institutional ownership within the same firm.

The results are precisely estimated, even though the dependent variable is measured with error. Attention is a median over a finite number of statements in each firm-year. If this sampling error is unrelated to ownership, it adds to the residual variance but does not bias the coefficients, and it works against finding significant effects.

The results are robust to a variety of specifications. Tables 12 and 13 show that the coefficient on the institutional share remains positive with and without firm fixed effects,

when the gap between voting and cash-flow rights is added, when current and lagged ownership enter together (the current share carries the effect and the lag is flat), and when lagged sales, leverage, cash flow, and cash holdings replace the size control. Splitting ownership by filing source places the positive effect in 13F investment-manager ownership, while 13D activist ownership enters negatively, in line with the concentration result. Table 14 shows that the concentration result does not depend on the measure. Holding total institutional ownership fixed, attention falls with the largest institutional owner's share, the gap to the second-largest owner, a Herfindahl index of owners, an indicator for a blockholder above 20 percent, the share held by owners above 10 or 20 percent, and the combined 13D and 13G blockholder share, each negative and significant at the 1 percent level.

3.3 Russell index reconstitution as an instrument for ownership

Here, we use the annual reconstitution of the Russell 1000 and 2000 indexes as an instrument for passive ownership, following Appel et al. [2016]. This instrument has been widely used in the literature [Boone and White, 2015, Crane et al., 2016, Schmidt and Fahlenbrach, 2017] given that it generates a large, quasi-random change in passive ownership for firms near the cutoff between the two indexes. Each May, Russell ranks firms by market capitalization and assigns the largest 1,000 to the Russell 1000 and the next 2,000 to the Russell 2000. Because the indexes are weighted by market capitalization, a firm near the cutoff receives a much larger weight at the top of the Russell 2000 than at the bottom of the Russell 1000, and index funds must hold it in proportion to that weight. Firms on both sides of the cutoff are therefore similar in size but differ sharply in how much passive ownership they attract. Conditional on market-capitalization rank and firm size, index assignment therefore generates quasi-random variation in demand from index funds.

We instrument passive ownership with assignment to the Russell 2000, controlling for market-capitalization rank and firm size.[4] We use the reconstitutions from 2007 onward,[5] compare firms within 500 ranks of the cutoff, and include firm and sector-by-year fixed effects. Table 6 reports the results. The first stage is strong: assignment to the Russell 2000 raises passive ownership by about 1.1 percentage points, with an F-statistic of 103, in the range reported by the literature on index reconstitution. It is not driven by a few large index

[4]The ownership interpretation assumes that, conditional on these controls, index assignment affects attention through the induced change in institutional holdings.

[5]From 2007, FTSE Russell applies a *banding* rule: a firm near the cutoff keeps its prior-year index unless its market capitalization moves beyond a band of ±2.5% of the cumulative market capitalization of the Russell 3000E around the breakpoint. Membership near the cutoff therefore depends on the prior-year assignment as well as the current rank, and we construct the instrument to reflect these rules [Appel et al., 2019].

Table 6: Russell index-assignment IV: passive ownership and attention to the future.

	First stage	Second stage (2SLS)				
	passive own. (pp)	attention to the future (months)				
		event time			robustness $t+1$	
		$t-1$ *(pre)*	t	$t+1$	+size	±250
Russell 2000 assignment	+1.060***					
	(0.104)					
Passive ownership		−0.002	+0.040	+0.171***	+0.167***	+0.265**
		(0.056)	(0.057)	(0.057)	(0.053)	(0.110)
First-stage F	103					
Observations	10,090	10,069	10,564	10,090	10,040	4,793

Notes: Col. 1 is the first stage (Russell 2000 assignment → S12 passive ownership, pp, $t+1$ cell); cols. 2–6 are 2SLS (months of attention to the future per +1pp). Firm + SIC2×year FE, quad. ln(cap), ±500 ranks, 2007–2020, firm clusters. Robustness adds firm-size controls (+size) or narrows to ±250 ranks. The instrument moves only the index/passive margin, not total institutional ownership. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

funds, since excluding the largest trackers leaves it intact (Appendix Table 15).

The timing of the second-stage estimates is consistent with passive ownership affecting attention rather than the reverse. The estimates for the year before reassignment and for the year of reassignment are close to zero and insignificant. At $t+1$, a one-percentage-point increase in passive ownership raises attention by 0.17 months, and the effect is statistically significant. Because the regressor is an unstandardized share, we report this effect in months per percentage point rather than in standard-deviation units. The absence of an effect in the year of reassignment is partly mechanical because reconstitution takes place at the end of June. This means that about half of the year-t calls happen before the change in ownership, and $t+1$ is the first year fully exposed to it. The $t+1$ estimate barely changes when firm-size controls are added, and it remains positive and significant, though larger, in a window of 250 ranks.

When passive ownership changes for reasons external to what managers have done, attention to the future therefore moves in the direction predicted by the baseline ownership results. Appendix Table 15 reports the full instrumental-variables and reduced-form estimates, with first-stage diagnostics, other windows, and other fixed effects, and Appendix Table 16 adds the usual reconstitution diagnostics: the density of the running variable and the sensitivity of the estimate to the window, fixed effects, and clustering.

4 A Model of Managerial Attention

Section 3 shows that attention to the future rises with the share of institutional ownership and the number of institutional owners and falls with the blockholder's stake. This section develops a model of managerial attention that rationalizes these patterns. The model brings together two mechanisms from the governance literature. Informed trading makes

the stock price reflect value that is not yet visible in earnings hence it rewards a manager who holds equity for looking ahead [Holmström and Tirole, 1993, Edmans and Manso, 2011]. Intervention by a large shareholder can replace a poor plan but discourages the manager's initiative [Burkart et al., 1997]. The model separates three features of ownership: the share of institutional ownership (its *level*) and the number of institutional owners (its *breadth*), and the stake of the largest owner, which determines intervention. Earlier models study trading and intervention from the blockholder's side [Maug, 1998, Kahn and Winton, 1998, Faure-Grimaud and Gromb, 2004]. We use the same ingredients to study a choice of the manager about how far ahead she looks.

4.1 Environment

The manager chooses how far ahead to look, $x \geq 0$ with larger x corresponding to a longer horizon. Looking ahead has a private convex and increasing cost $x^2/2$; In the data, x corresponds to attention to the future as measured in Section 2.

The firm has one unit of equity. The manager owns a share $\mu \in (0,1)$, $I \geq 1$ institutions hold stakes $s_1, \ldots, s_I$, and other investors hold the remaining share f. Total institutional ownership is represented by β and the largest institutional stake is m:

$$\beta = \sum_{i=1}^{I} s_i, \qquad m = \max_i s_i, \qquad \mu + \beta + f = 1. \tag{3}$$

Stakes need not be equal, so for given β and I, m can take any value between β/I and β. This allows for a rich variation in the ownership structure that can be exploited in the empirical analysis by studying level, breadth, and concentration jointly.

Each unit of attention to the future creates value $P > 0$ if it is directed to the right plan. With probability $\lambda \in (0,1)$, the manager's plan is the one that maximizes firm value. With probability $1 - \lambda$, the manager prefers a different plan from shareholders, and the value is generated only when the manager is overruled. The manager also receives a private benefit of control $b \geq 0$ for each unit of attention to the future carried out under the manager's own plan [Grossman and Hart, 1988].

4.2 Informed trading and the number of institutional owners

Following the trading channel in Edmans and Manso [2011], we summarize how much of the firm's value the stock price reflects with an index of price informativeness. Each of the I institutions is informed and observes an independent signal of precision $q(\beta) > 0$. We

assume that q rises with β reflecting the fact that more institutional capital supports more information production. Appendix B.1 derives the index from signal aggregation.

Lemma 1 (Price informativeness)**.** *Define the fraction of fundamental value reflected in the stock price*

$$\Pi(\beta, I) = \frac{Iq(\beta)}{1 + Iq(\beta)} \in (0, 1) \tag{4}$$

of the value created by the manager's action. Hence $\partial\Pi/\partial\beta > 0$ *and* $\partial\Pi/\partial I > 0$*. When signal precision is* $q \equiv 1$*, the expression reduces to* $\Pi = I/(I+1)$ *isolating the breadth channel emphasized by Edmans and Manso [2011].*

Π is the share of the value created by the manager's action that is reflected in the stock price, and therefore in her wealth when she holds equity. The manager's wealth is directly tied to the stock price, which reflects the value created by her actions. A larger institutional share makes each signal more precise, and more institutional investors add independent signals. Both raise Π and therefore the manager's return to looking further ahead. Increasing the largest stake m while holding β and I fixed does not raise Π, because moving shares to an owner who is already informed adds no new signal.

4.3 Control and managerial initiative

In the case where the manager and shareholders disagree, the largest owner can intervene and impose the plan that maximizes firm value. Intervention benefits all shareholders, but a fixed cost $K > 0$ falls entirely on the owner who intervenes. An owner has two options: they can stay inactive and earn zero, or pay K and choose a probability of intervention E. If it intervenes, the owner captures a fraction s of the gain $P(1-\lambda)x$ from replacing the manager's plan with the one that maximizes firm value. The owner therefore solves

$$\max_{0<E<1} \; sP(1-\lambda)xE - \frac{E^2}{2} - K. \tag{5}$$

The interior choice is $E = sP(1-\lambda)x$. Its value rises with the stake s. Given the fixed cost, only the largest owner may find intervention worthwhile.

Proposition 1 (The controlling blockholder)**.** *On the region in which the intervention cap is slack, at most one owner intervenes, and that owner is the largest,* m*. It enters if and only if*

$$mP(1-\lambda)x \geq \sqrt{2K}, \tag{6}$$

in which case $E = mP(1-\lambda)x$*; otherwise* $E = 0$*.*

Proposition 1 shows that the largest owner intervenes only if the gain from intervention exceeds the fixed cost. The threshold in (6) rises with the fixed cost and falls with the stake m and the value of looking ahead x. Similar to Shleifer and Vishny [1986], only an owner with a large enough stake captures enough of the gain to justify the fixed cost. The model therefore distinguishes an active block from an institution that holds shares but does not intervene, without assuming that all firm has one. Appendix B.2 contains the proof, and Appendix B.3 derives the equilibrium in the case in which the cap $E \leq 1$ binds.

The manager receives the private benefit only when her own plan is carried out, instead she receives only her equity share of firm value whether her plan survives or a better one is imposed. For a given Π and E, she solves

$$\max_{x \geq 0} \; bx[1-(1-\lambda)E] + \mu\Pi P x[\lambda + (1-\lambda)E] - \frac{x^2}{2}. \tag{7}$$

Her first-order condition is

$$x = (\mu\Pi P\lambda + b) + (1-\lambda)(\mu\Pi P - b)E, \qquad \frac{\partial x}{\partial E} = (1-\lambda)(\mu\Pi P - b). \tag{8}$$

Equation (8) makes the manager's tradeoff explicit. Intervention eliminates the private benefit of carrying out her own plan, but it raises the value of her equity when it replaces a worse plan. It therefore lowers how far ahead she looks when $\mu\Pi P < b$ and raises it when $\mu\Pi P > b$. This is the tradeoff between control and initiative in Burkart et al. [1997], applied to the manager's choice of how far ahead to look. In the data, insider ownership is measured by μ.

4.4 Equilibrium and comparative statics

We assume that ownership is fixed when the manager acts. Trading first determines $\Pi(\beta, I)$; the manager then chooses x and an active block chooses E, each taking the other's choice as given. We focus on an interior equilibrium with features an active block.

Assumption 1 (Interior active-block equilibrium)**.** $\mu > 0$, $\Pi > 0$, the block clears the threshold in (6) strictly, the probability cap is slack in equilibrium ($mP(1-\lambda)x^* < 1$), and $1 - mP(1-\lambda)^2(\mu\Pi P - b) > 0$.

Proposition 2 (Equilibrium)**.** *Under Assumption 1, equilibrium attention to the future and intervention are*

$$x^* = \frac{\mu\Pi P\lambda + b}{1 - mP(1-\lambda)^2(\mu\Pi P - b)}, \qquad E^* = mP(1-\lambda)x^*. \tag{9}$$

If $b = 0$, the equilibrium reduces to $x^*_{\text{price}} = \mu\Pi P\lambda/[1 - mP(1-\lambda)^2\mu\Pi P]$. When $\Pi = 0$ or $\mu = 0$, it reduces to $x^*_{\text{control}} = b/[1 + mP(1-\lambda)^2 b]$.

With $b = 0$, only the equity reward remains, and intervention and looking ahead are complements. If $\Pi = 0$ or $\mu = 0$, only the private benefit remains, and they are substitutes. The interior equilibrium lies between these two cases. The cap on E prevents x^* from diverging when the equity channel is strong; Appendix B.3 provides the derivations and shows the corner solution.

Proposition 3 (Ownership and attention to the future)**.** *In the interior equilibrium of Proposition 2:*

(i) x^* rises with the level and breadth of institutional ownership:

$$\frac{\partial x^*}{\partial \beta} > 0, \qquad \frac{\partial x^*}{\partial I} > 0.$$

(ii) The sign of the effect of the largest stake is

$$\operatorname{sign}\left(\frac{\partial x^*}{\partial m}\right) = \operatorname{sign}(\mu\Pi P - b). \tag{10}$$

A larger block lowers how far ahead the manager looks when the private benefit dominates while it raises it when the equity gain dominates.

(iii) A larger equity stake raises $\mu\Pi P - b$. At the threshold $\mu\Pi P = b$, $\partial^2 x^*/(\partial m\, \partial \mu) > 0$. Away from this threshold the cross-partial can take either sign.

Appendix B.4 proves the proposition. Parts (i) and (ii) rationalize the patterns in Section 3. Attention to the future rises with the share of institutional ownership and the number of institutional owners because both make the price more informative, and the negative effect of the blockholder's stake indicates that the private benefit lost under intervention exceeds the manager's equity gain. Part (iii) yields a further prediction. Near the point where the two are equal, the effect of the blockholder's stake increases with managerial equity. Because we cannot observe where a firm lies relative to this point, the test is a consistency check rather than an estimate of the cross-partial.

In the data, the 13F institutional share measures β, the number of institutional owners measures I, the largest institutional owner's share measures m, and insider ownership measures μ. Appendix B.5 extends the model to productive engagement and derives the ownership structure that maximizes firm value; neither extension is needed for these results.

The implications concern how far ahead managers look, not firm value. A larger block can correct a poor plan even as it discourages initiative, so the ownership structure under which managers look furthest ahead need not maximize firm value.

5 Concentration, Insider Ownership, and Exit

Section 3 shows that attention to the future falls as ownership becomes more concentrated in the largest institutional owner. In this section we test the model's prediction that this negative effect weakens as managers hold more equity, and we ask whether the threat of exit can explain the same pattern.

5.1 Concentration and insider ownership

We measure the largest stake m with the largest institutional owner's share and managerial equity μ with the insider ownership reported on Forms 3, 4, and 5. These filings cover officers, the managers who choose and communicate firm policy, as well as directors and owners of more than 10 percent, and give a consistent firm-level measure of the equity held by insiders. This measure lets us test the model's mechanism. The model predicts that managerial equity weakens the cost that intervention imposes on initiative, so that the interaction between m and μ is positive when the private benefit lost under intervention exceeds the manager's equity gain. Table 7 reports the estimates. Column (1) includes the block, insider ownership, and their interaction, and columns (2) to (4) add the 13F institutional share, the number of institutional owners, and firm size.

The interaction is positive and significant in every column and changes little as the controls enter. Its coefficient moves from 1.7% to 1.4% of a within-firm standard deviation of attention per unit of the product of the standardized block and insider ownership, while the average effect of the block remains negative, between -4.6% and -5.7% per standard deviation of the block. In the fully controlled specification, a one-standard-deviation increase in the block lowers attention by 4.8% of a within-firm standard deviation at the mean of insider ownership. A one-standard-deviation increase in insider ownership reduces this effect by about 30 percent, and moving from one standard deviation below the mean of insider ownership to one standard deviation above it nearly halves the effect, from -6.1% to -3.4%. The effect of the block weakens but does not change sign, and it remains negative and significant over the observed range of insider ownership. The interaction is robust to controlling flexibly for block size and to residualizing insider ownership on block size (Appendix B.6).

Table 7: Blockholder concentration and insider ownership.

	Dependent variable: attention to the future (within SD)			
	(1) Raw	(2) $+\beta$	(3) $+N$	(4) +Size
Blockholder m	-0.057^{***}	-0.054^{***}	-0.046^{***}	-0.048^{***}
	(0.013)	(0.013)	(0.014)	(0.014)
Insider ownership μ	-0.025	-0.032^{*}	-0.022	-0.023
	(0.017)	(0.017)	(0.017)	(0.017)
$m \times \mu$	0.017^{***}	0.015^{**}	0.014^{**}	0.014^{**}
	(0.006)	(0.006)	(0.006)	(0.006)
Institutional ownership β	–	Yes	Yes	Yes
Breadth N	–	–	Yes	Yes
Size (log market cap)	–	–	–	Yes
Firm FE	Yes	Yes	Yes	Yes
Sector × year FE	Yes	Yes	Yes	Yes
Observations	35,416	35,416	35,416	35,399
Firms	3,593	3,593	3,593	3,592

Notes: Build-up of the block–equity interaction. Column (1) is the raw interaction; columns (2)–(4) add 13F institutional ownership β, breadth N (log number of owners), and firm size (log market cap) one at a time. m largest single institutional owner's share; μ insider ownership (Forms 3/4/5: officers, directors, 10%+ owners); $m \times \mu$ their interaction (product of standardized components). Firm and sector×year fixed effects and a lagged-book-assets control throughout; ownership standardized within sample. Coefficients are expressed in within-firm standard deviations ("within SD") of attention to the future (one within-firm SD ≈ 1.35 months; see Table 4): main-effect coefficients per one-SD increase in the regressor, interaction coefficients per one-unit increase in the product of standardized components. SE clustered by firm. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

This weakening is the effect of insider ownership that the model predicts. The test uses within-firm changes in equilibrium ownership, and, as we show next, the main alternative based on exit does not explain it.

5.2 The threat of exit

A positive interaction between the block and insider ownership does not by itself show that the block matters through intervention. In theories of exit, a blockholder disciplines the manager by threatening to sell on private information, which lowers the price, and this threat matters more when more of the manager's wealth depends on the price. Bharath et al. [2013] find that the relation between blockholdings and firm value responds to exogenous shocks to liquidity, especially when managerial wealth is sensitive to the stock price, and Dou et al. [2018] find the corresponding result for earnings management. The same argument could produce the interaction in Table 7 without any role for intervention.

Exit and intervention differ in how they depend on liquidity. A threat to sell on private information is more credible when the stock is liquid [Admati and Pfleiderer, 2009, Edmans, 2009], and Bharath et al. [2013] identify the exit channel from the interaction of blockholdings with liquidity. Intervention requires no trade. If exit explained our estimate, the interaction between the block and insider ownership should weaken once we control for liquidity interacted with insider ownership, or with both the block and insider ownership. Intervention does not imply either pattern.

Table 8: The block–insider ownership interaction and the threat of exit.

	Dependent variable: attention to the future (within SD)					
	(1) Baseline	(2) +Liquidity	(3) +Turnover	(4) Both	(5) Liq. full	(6) Turn. full
Blockholder m	-0.045^{***}	-0.044^{***}	-0.043^{***}	-0.043^{***}	-0.042^{***}	-0.041^{***}
	(0.014)	(0.014)	(0.014)	(0.014)	(0.016)	(0.015)
Insider ownership μ	-0.026	-0.029	-0.029^{*}	-0.026	-0.030	-0.033^{*}
	(0.017)	(0.019)	(0.017)	(0.019)	(0.019)	(0.018)
$m \times \mu$	0.015^{**}	0.015^{**}	0.012^{*}	0.013^{*}	0.014^{*}	0.017^{**}
	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Liquidity L		0.010		0.012	0.010	
		(0.037)		(0.041)	(0.037)	
$L \times \mu$		-0.007		0.007	-0.007	
		(0.011)		(0.013)	(0.015)	
$L \times m$					0.007	
					(0.013)	
$L \times m \times \mu$					-0.002	
					(0.006)	
Turnover T			0.003	0.001		0.001
			(0.014)	(0.015)		(0.014)
$T \times \mu$			-0.017^{**}	-0.020^{**}		-0.028^{***}
			(0.008)	(0.009)		(0.010)
$T \times m$						0.003
						(0.009)
$T \times m \times \mu$						0.007
						(0.004)
β, breadth N, size, lagged assets	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector × year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	35,030	35,030	35,030	35,030	35,030	35,030
Firms	3,555	3,555	3,555	3,555	3,555	3,555

Notes: Estimates of the block–equity interaction alongside the exit-threat channel of Bharath, Jayaraman, and Nagar (2013), which operates through stock liquidity interacted with the manager's price-linked wealth. L is liquidity, the negative log of the Amihud (2002) illiquidity ratio (monthly |return| per dollar volume from CRSP, averaged over the year); T is log share turnover (monthly volume over shares outstanding, averaged over the year). Column (1) repeats the baseline interaction specification on the CRSP-merged sample; (2)–(4) add each liquidity measure and its interaction with the managerial-equity proxy μ; (5)–(6) add the interactions with the block m and with $m \times \mu$. All columns include 13F institutional ownership β, breadth N, size (log market cap), a lagged-book-assets control, and firm and sector×year fixed effects; ownership and liquidity standardized within sample. Coefficients are expressed in within-firm standard deviations ("within SD") of attention to the future (one within-firm SD ≈ 1.35 months; see Table 4): main-effect coefficients per one-SD increase in the regressor, interaction coefficients per one-unit increase in the relevant product of standardized components. SE clustered by firm. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 8 reports the estimates. Column (1) repeats the specification of Table 7 in the subsample covered by CRSP. The remaining columns add two measures of liquidity: L, minus the log of the Amihud [2002] illiquidity ratio, and T, the log of share turnover. Columns (2) to (4) interact these measures with insider ownership, and columns (5) and (6) add their interactions with the block and with the product of the block and insider ownership.

Controlling for the threat of exit leaves the interaction between the block and insider ownership nearly unchanged. Across the six columns its coefficient ranges from 1.2% to 1.7% of a within-firm standard deviation, against 1.5% in column (1), and it remains significant in every column.

The terms that capture exit are either close to zero or have the opposite sign to the one exit predicts. Liquidity interacted with insider ownership is -0.7% (standard error 1.1%), and turnover interacted with insider ownership is between -1.7% and -2.8% and significant. Attention to the future is therefore lower, not higher, when insiders hold more equity and the stock trades heavily. This pattern is inconsistent with discipline through exit and is in line

with evidence that firms with high-turnover investors use more short-term language [Brochet et al., 2012]. The triple interactions $L \times m \times \mu$ and $T \times m \times \mu$ are small and insignificant. Insider ownership weakens the effect of the block as much in illiquid stocks as in liquid ones, whereas under exit it should do so more in liquid stocks.

A second argument uses only the signs of the estimates. Any effect of the block that reaches the manager only through the price enters her marginal return through $\mu\Pi$. Its average effect and its interaction with insider ownership must then have the same sign as $\partial\Pi/\partial m$. A block that makes the price more informative raises how far ahead the manager looks, more so when she holds more equity, and a block that reduces competition in trading lowers both. Our estimates instead combine a negative average effect with a positive interaction. A mechanism that works only through the price cannot easily produce this combination, whereas a cost to the manager outside the price, the loss of initiative under intervention that more equity partly offsets, can. Together, these tests support reading the interaction between the block and insider ownership as the cost of intervention.

6 Conclusion

This paper measures managers' attention to the future directly, as the median distance into the future of the temporal references that managers make in earnings calls. The measure moves with the decisions that require looking ahead: firms whose managers look further ahead subsequently invest more, spend more on R&D, and produce more valuable patents, and managers look less far ahead when their firm is in financial distress.

We then show that institutional ownership shapes attention to the future in opposite directions. Consistent with our agency model, attention to the future rises with the share of institutional ownership and the number of institutional owners, including when ownership changes through index assignment at the Russell reconstitution, and falls as ownership becomes more concentrated in the largest institutional owner. This negative effect weakens as managers hold more equity and is not explained by the threat of exit, which indicates that the loss of private benefits under intervention dominates.

Whether institutional ownership increases managers' attention to the future therefore depends on how holdings are distributed across institutions, and not only on how much of the firm they own. More broadly, a direct measure of how far ahead managers look makes it possible to study questions beyond ownership, such as how executive incentives, product-market competition, and economic uncertainty shape managerial horizons, and how these horizons affect investment and the allocation of capital across firms.

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A Data and Measure Construction

This appendix documents the estimation panel behind Section 2: how the attention-to-the-future measure is merged to firm fundamentals, how the validation outcomes (Table 2) and financial-stress variables (Table 3) are constructed, and where each comes from. The measure itself—the transcript corpus and the horizon-extraction algorithm—is described in Section 2.1; the ownership data are described in Section 3.1 and Appendix C.

Sample construction and merge. We take Compustat annual as the master panel and merge the firm-year attention measure to it on GVKEY, matching a firm's calendar-year calls to the fiscal year of the same label; the merge is one-to-one and preserves the Compustat row count, and a firm-year enters the estimation samples only when it has a non-missing attention value and the size control. Over 2002–2020 the measure is available for roughly 50,000 firm-years and 5,700 firms. Firm identifiers are linked across sources with the CRSP/Compustat Merged (CCM) fiscal-year bridge, which attaches a PERMCO to each GVKEY–fiscal-year; this link is what allows the PERMCO-keyed patent-value and ownership files to be joined to the Compustat master. Because same-year Compustat items are not predetermined with respect to same-year attention, the validation and ownership specifications lag the controls and date outcomes at $t+1$.

Validation outcomes. The outcomes in Table 2 come from two kinds of source. Capital expenditure and R&D are from Compustat, each scaled by lagged book assets, as are the size control (log lagged assets) and Tobin's Q. The innovation outcomes combine two patent datasets: patent counts, and their growth, are drawn from a firm-year patent panel keyed by GVKEY, while the value and citation quality of patents are taken from the stock-market-based patent valuations of Kogan et al. [2017], linked to firms by PERMCO. From the latter we use the mean real value of the patents a firm is issued in a year and the share of its filings that are highly cited. All outcomes and the measure are winsorized at the 1st and 99th percentiles within each estimation sample; the capital-expenditure and R&D coefficients are reported in percentage points of the outcome ratio.

Table 9: Validation of attention to the future with firm fixed effects.

Dependent variable	asinh(CAPX / lag assets)	asinh(R&D / lag assets)	IHS patent growth	asinh(KPSS issue value, mean)	KPSS filing high-cite share
	(1)	(2)	(3)	(4)	(5)
Attention to the future	0.137***	0.166**	0.0069	0.0170**	0.0010
	(0.024)	(0.066)	(0.0047)	(0.0085)	(0.0009)
Log lag assets control	Yes	Yes	Yes	Yes	Yes
Tobin's Q control	Yes	No	No	No	No
Firm fixed effects	Yes	Yes	Yes	Yes	Yes
SIC2 × year fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	44,197	27,332	25,915	15,663	44,210
Firms	4,694	3,016	3,689	1,926	4,788
Within R^2	0.0522	0.0525	0.0004	0.0324	0.0004
Mean dependent variable	0.0420	0.0929	-0.0078	14.62	0.0573

Notes: One-year-ahead (t+1) outcomes on standardized attention to the future (F_{it}, `horizon_p50y`). All columns include firm and SIC2×year fixed effects. Outcomes and F_{it} are winsorized at the 1st and 99th percentiles; all columns control for log lag assets, and the investment column additionally for Tobin's Q. CAPX and R&D coefficients and standard errors are multiplied by 100 (percentage points of the outcome ratio). Standard errors clustered by firm in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 10: Investment robustness to cost-of-capital and discount-rate controls.

Specification	Baseline full	Baseline CoC/DR sample	+ CoC	+ DR	Obs. full	Obs. matched
Panel A. Attention-to-the-future coefficient						
Yearly						
SIC2-year FE	0.294***	0.279***	0.278***	0.284***	61,457	29,966
	(0.035)	(0.040)	(0.040)	(0.040)		
Yearly						
Firm + SIC2-year FE	0.221***	0.199***	0.198***	0.194***	60,852	29,572
	(0.024)	(0.030)	(0.030)	(0.030)		
Quarterly						
SIC2-quarter FE	0.040***	0.036***	0.037***	0.037***	229,066	113,164
	(0.005)	(0.006)	(0.006)	(0.006)		
Quarterly						
Firm + SIC2-quarter FE	0.022***	0.023***	0.023***	0.022***	228,810	113,033
	(0.003)	(0.004)	(0.004)	(0.004)		
Panel B. Added control coefficients						
Yearly						
SIC2-year FE			-0.494***	-0.257***		
			(0.066)	(0.043)		
Yearly						
Firm + SIC2-year FE			-0.140**	-0.343***		
			(0.062)	(0.033)		
Quarterly						
SIC2-quarter FE			-0.099***	-0.046***		
			(0.016)	(0.010)		
Quarterly						
Firm + SIC2-quarter FE			0.014	-0.038***		
			(0.014)	(0.007)		
Firm fixed effects	No for SIC2-time rows; yes for Firm + SIC2-time rows					
SIC2 × time fixed effects	Yes in all rows					
Log lag assets and Tobin's Q controls	Yes in all columns					

Notes: The table reports investment regressions corresponding to the selected size-only yearly and quarterly tables. The dependent variable is asinh(CAPX/lag assets). Attention to the future is standardized within each estimation sample and both investment and attention to the future are winsorized at the 1st and 99th percentiles. All columns control for log lag assets and Tobin's Q and cluster standard errors by firm. The yearly CoC/DR sample matches Gormsen-Huber data to the fiscal-year-end quarter; the quarterly sample matches exact quarters. Duplicate GVKEY-quarter CoC rows from multiple exchanges are averaged. Panel A coefficients and standard errors are multiplied by 100 and reported in percentage points of the investment ratio. Panel B reports the added control coefficient in percentage points of the investment ratio per 1 percentage point of the rate. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

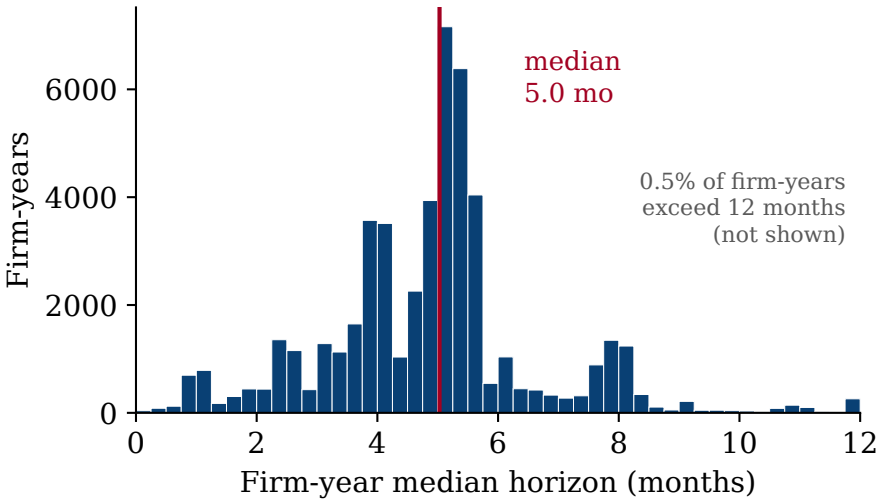


Figure 1: Distribution of firm-year attention to the future (months).

Financial-stress and uncertainty variables. The stress regressions in Table 3 use transparent indicators of distress and slack built from Compustat and market data—an operating loss (EBIT < 0), net leverage, the cash ratio, and a market-based distance-to-default—together with an earnings-miss indicator (reported earnings below the I/B/E/S analyst consensus), a stock-price-crash indicator (an annual return below -30%), and an overall-risk measure. The risk measure is a firm-level uncertainty index constructed from the same earnings-call transcripts following the text-based approach of Hassan et al. [2019] and provided by NL Analytics; because it shares its source with the attention measure, we enter it lagged one year to avoid mechanical overlap with the contemporaneous measure. Continuous stressors are standardized within the estimation sample (indicators enter per event), and the dependent variable is the year-on-year change in firm-year attention to the future.

B The Model: Derivations and Extensions

This appendix collects the derivations behind Section 4: the trading stage that underlies Lemma 1 (Appendix B.1), and the proofs of Propositions 1–3 (Appendices B.2–B.4). It then develops the ancillary engagement channel and the value-maximizing ownership structure that the main text states but does not derive (Appendix B.5). Notation is as in Section 4.

B.1 The trading stage and price informativeness

We use a signal-aggregation representation motivated by Edmans and Manso [2011], enriched so that the level of institutional ownership, and not only the number of owners, moves

informativeness. Let v denote the innovation to the value the manager's action will create, Gaussian with prior precision normalized to one. Each institutional owner $i = 1, \dots, I$ is informed and observes a private signal

$$\sigma_i = v + \varepsilon_i, \qquad \varepsilon_i \sim \mathcal{N}\big(0,\, 1/q(\beta)\big), \quad q'(\beta) > 0, \tag{11}$$

with ε_i independent across owners and of v. Signal precision $q(\beta) > 0$ is the intensive margin: we assume that a larger stock of institutional capital supports more information production, so each owner's signal is sharper. We use the share of posterior precision supplied by these signals as a reduced- form index of fundamental information passed into the price; we do not derive a noisy-order-flow trading equilibrium.

Proof of Lemma 1. The I conditionally independent signals carry total precision $I\,q(\beta)$ about v, which has prior precision one, so the posterior precision of v given the aggregate informed signal is $1 + I\,q(\beta)$. We summarize price informativeness by the share of that posterior precision contributed by informed trading,

$$\Pi(\beta, I) = \frac{I\,q(\beta)}{1 + I\,q(\beta)} \in (0, 1). \tag{12}$$

We take Π to be the fidelity with which fundamentals pass into the price. A well-directed increment of looking ahead shifts fundamental value by P, so the price moves by ΠP per unit and a manager holding μ of the equity captures $\mu\Pi P$ of the value her action creates. Differentiating,

$$\frac{\partial \Pi}{\partial \beta} = \frac{I\,q'(\beta)}{[1 + I\,q(\beta)]^2} > 0, \qquad \frac{\partial \Pi}{\partial I} = \frac{q(\beta)}{[1 + I\,q(\beta)]^2} > 0, \tag{13}$$

so the index rises with both the level and the breadth of institutional ownership. Setting $q \equiv 1$ collapses (12) to $\Pi = I/(I+1)$, the Edmans and Manso [2011] benchmark in which only the number of owners moves informativeness. The microfoundation differs from theirs: in Edmans and Manso a single blockholder is already perfectly informed and the number of owners matters through competition in trading rather than through the arrival of additional signals. We adopt their reduced form for Π and obtain it by aggregation, which is what allows the level of institutional ownership to enter alongside the number of owners. □

B.2 Control and the endogenous blockholder

Proof of Proposition 1. Conditional on paying K and with the cap slack, the block's problem (5) is strictly concave in E, with interior solution $E(s) = s\,P(1-\lambda)\,x$. Substituting

back, the net value of controlling is

$$\Psi(s) = \tfrac{1}{2}\, s^2 P^2 (1-\lambda)^2 x^2 - K, \tag{14}$$

strictly increasing in s for $x > 0$. Because overruling the manager once implements the value-maximizing action, a second intervening owner would duplicate the fixed cost K without creating additional value; control is therefore a single-owner activity, and the owner who undertakes it is the one with the highest net value Ψ. By monotonicity that is the largest block, m, and every smaller owner free-rides—the Shleifer and Vishny [1986] logic. Comparing entry with the zero-payoff outside option, the block participates iff $\Psi(m) \geq 0$, i.e. $\frac{1}{2} m^2 P^2 (1-\lambda)^2 x^2 \geq K$, which rearranges to the threshold $m\,P(1-\lambda)\,x \geq \sqrt{2K}$. When it holds the equilibrium threat is $E = m\,P(1-\lambda)\,x$; when it fails no owner controls and $E = 0$. □

B.3 The manager's problem and equilibrium

Proof of Proposition 2. The manager's objective (7) is strictly concave in x, with first-order condition

$$x = \mu\Pi P\,[\lambda + (1-\lambda)E] + b\,[1 - (1-\lambda)E] = (\mu\Pi P\lambda + b) + (1-\lambda)(\mu\Pi P - b)\,E.$$

Substituting the block's interior rule $E = mP(1-\lambda)x$ from Proposition 1 gives

$$x = (\mu\Pi P\lambda + b) + mP(1-\lambda)^2(\mu\Pi P - b)\,x,$$

and solving for x, with the denominator positive by Assumption 1,

$$x^* = \frac{\mu\Pi P\lambda + b}{1 - mP(1-\lambda)^2(\mu\Pi P - b)}, \qquad E^* = mP(1-\lambda)\,x^*. \tag{15}$$

Setting $b = 0$ and, separately, $\Pi = 0$ (or $\mu = 0$) yields the two special cases in the statement. Finally, intervention is a probability, so $E \leq 1$. The unconstrained threat reaches the cap when $E^* = mP(1-\lambda)x^* \geq 1$, i.e. when $mP(1-\lambda)(\mu\Pi P + \lambda b) \geq 1$; control then saturates at $E^* = 1$, and evaluating the manager's first-order condition at $E = 1$ gives the finite corner action

$$x^* = \mu\Pi P + b\lambda \qquad (\text{corner},\ E^* = 1). \tag{16}$$

This condition can hold in either regime; its role differs across them. In the equity-dominant region $\mu\Pi P > b$, where the denominator of (15) could otherwise fall to zero, the cap is

reached strictly before it does so—$E^* = 1$ at $m = [P(1-\lambda)(\mu\Pi P + \lambda b)]^{-1}$, whereas $D = 0$ only at the larger $m = [P(1-\lambda)^2(\mu\Pi P - b)]^{-1}$, since $\mu\Pi P + \lambda b > (1-\lambda)(\mu\Pi P - b)$—so x^* never diverges. In the private-benefit region $b > \mu\Pi P$ the denominator already exceeds one and x^* is finite regardless; the cap, if it binds, merely truncates a large intervention threat. □

B.4 Comparative statics

Proof of Proposition 3. Write $A = \mu\Pi P\lambda + b > 0$ and $D = 1 - mP(1-\lambda)^2(\mu\Pi P - b) > 0$, so $x^* = A/D$.

(i) Level and breadth. Both A and D depend on Π, with $\partial A/\partial\Pi = \mu P\lambda$ and $\partial D/\partial\Pi = -\mu m P^2(1-\lambda)^2$. Hence

$$\frac{\partial x^*}{\partial \Pi} = \frac{\mu P\left[\lambda D + A\, mP(1-\lambda)^2\right]}{D^2} > 0, \tag{17}$$

every term being positive under $D > 0$. By the chain rule and Lemma 1, $\partial x^*/\partial\beta = (\partial x^*/\partial\Pi)(\partial\Pi/\partial\beta) > 0$ and $\partial x^*/\partial I = (\partial x^*/\partial\Pi)(\partial\Pi/\partial I) > 0$.

(ii) The block. A is independent of m, and $\partial D/\partial m = -P(1-\lambda)^2(\mu\Pi P - b)$, so

$$\frac{\partial x^*}{\partial m} = -\frac{A}{D^2}\frac{\partial D}{\partial m} = \frac{A\, P(1-\lambda)^2(\mu\Pi P - b)}{D^2}. \tag{18}$$

Since $A > 0$, $D^2 > 0$, and $P(1-\lambda)^2 > 0$, the sign is that of $\mu\Pi P - b$: the block deters the action when $b > \mu\Pi P$ and encourages it when $\mu\Pi P > b$.

(iii) The interaction. The factor $\mu\Pi P - b$ in (18) is strictly increasing in μ (at rate ΠP), so raising μ moves $\partial x^*/\partial m$ from the deterrence region toward the encouragement region, crossing zero at $\mu\Pi P = b$. Evaluating the cross-partial at that boundary, where $D = 1$ and $A = (1+\lambda)b$,

$$\left.\frac{\partial^2 x^*}{\partial m\, \partial \mu}\right|_{\mu\Pi P = b} = (1+\lambda)(1-\lambda)^2\, b\, \Pi P^2 > 0. \tag{19}$$

The interaction is thus strictly signed at the sign-change boundary. The prediction is local in this sense: far inside the private-benefit region the magnitude of the interaction can shrink or change sign, so the tested claim is that a blockholder's deterrent weakens as managerial equity rises toward the boundary, not that the cross-partial is signed globally. □

B.5 Engagement, firm value, and the optimal ownership structure

Engagement. Informed owners possess a second governance lever, the productive engagement (voice) of Edmans and Manso [2011]. Owner i chooses engagement effort $z_i \geq 0$ to maximize $s_i\,\phi\,\log(1+Z) - z_i^2/(2s_i)$, where $Z = \sum_j z_j$ is aggregate engagement and $\phi > 0$ scales its productivity: the benefit is the owner's pro rata share of a concave firm-value gain, and the cost is convex and stake-scaled, so a larger owner both values engagement more and spreads its cost over a larger governance apparatus. The first-order condition is $z_i = s_i^2\phi/(1+Z)$; summing over owners and using $\Omega = \sum_i s_i^2$ gives $Z(1+Z) = \phi\,\Omega$, hence

$$Z^*(\Omega) = \frac{-1+\sqrt{1+4\phi\,\Omega}}{2}, \tag{20}$$

which is strictly increasing in the voice-concentration index Ω. Unlike control, engagement is interior for any $\Omega > 0$: it carries no fixed cost and is not monopolized. Holding total institutional ownership β fixed, dispersing ownership lowers Ω and hence Z^*; in the symmetric benchmark $s_i = \beta/I$ we have $\Omega = \beta^2/I$, so more owners weaken engagement even as they sharpen the price.

Firm value. Expected firm value sums the value created by the managerial action, net of whether the manager's project is implemented or overruled, and the value created by engagement:

$$V = P\,x\,[\lambda + (1-\lambda)E] + \phi\,\log(1+Z). \tag{21}$$

Engagement enters V additively and does not appear in the manager's problem (7); this is why it moves firm value but yields no prediction for attention to the future, and why the main text can characterize x^* without it.

The optimal ownership structure. The value-maximizing structure trades off three levers. Dispersing the informed fringe raises Π (improving price discipline and x^*) but lowers Ω (worsening engagement), the Edmans and Manso [2011] trading-versus-voice tension. Under parameters for which the two marginal effects cross, the optimal number of institutional owners is interior; otherwise the optimum is a boundary. The block size carries the intervention tension. Holding Π and Ω fixed and working in the empirically relevant private-benefit region $b > \mu\Pi P$, write $A = \mu\Pi P\lambda + b$ and $D = 1 + mP(1-\lambda)^2(b - \mu\Pi P) > 1$, so $x^* = A/D$ and $E^* = mP(1-\lambda)x^*$. The managerial-action component of firm value is

$$V_x \equiv P\,x^*[\lambda + (1-\lambda)E^*] = \frac{P\lambda A}{D} + \frac{mP^2(1-\lambda)^2A^2}{D^2}. \tag{22}$$

The first term is the value of the manager's own initiative, which the block deters ($x^* = A/D$ falls in m); the second is the value the block creates by overriding low-value projects, which the block raises. Differentiating, $\partial V_x/\partial m > 0$ at $m = 0$ (the override gain, $\propto P^2(1-\lambda)^2A^2$, dominates the deterrence loss, $\propto P\lambda A \cdot P(1-\lambda)^2(b-\mu\Pi P)$, because $A > \lambda(b-\mu\Pi P)$) while $\partial V_x/\partial m < 0$ for m large; the numerator of $\partial V_x/\partial m$ is linear in m with a unique root, so V_x is single-peaked. The value-maximizing block is interior, $m^* > 0$, when that root falls within the feasible range of block sizes (recall $m \leq \beta$), and a corner otherwise. Combined with the control threshold of Proposition 1, an interior peak yields an extensive margin: a blockholder is active only where the value-maximizing block clears the fixed cost of control, $m^*P(1-\lambda)x^* \geq \sqrt{2K}$; otherwise the firm is dispersed and blockholder-free.

Two implications follow. First, the block is distinct from total institutional ownership β and from the voice-concentration index Ω: β (with I) sets price precision, Ω sets the free-rider strength of engagement, and m sets control—a separation the symmetric benchmark $m = \beta/I$ cannot deliver. Second, the attention-maximizing and value-maximizing structures differ: attention to the future falls monotonically with the block throughout the private-benefit region, whereas firm value is single-peaked in it, so the ownership structure that maximizes value need not be the one that maximizes attention to the future.

B.6 Robustness of the block–equity interaction

The $m \times \mu$ interaction of Table 7 is robust to absorbing nonlinearity in the block and to residualizing insider ownership with respect to block size. Table 11 adds the squared block m^2 (column 2), adds m^2 and μ^2 (column 3), and replaces μ with its component orthogonal to m (column 4). The interaction is stable throughout, ranging from 1.1% to 1.6% of a within-firm standard deviation per unit of the product of standardized components and remaining significant.

C Ownership Structure: Variable Definitions and Robustness

The robustness tables—Tables 12 and 13 (institutional ownership) and Table 14 (ownership concentration)—examine a broader set of ownership-structure measures than the three used in the main text. All are constructed from the owner–firm–quarter positions in the Ownership Project data and averaged over the calendar year, and all holdings are expressed as a fraction of shares outstanding. The baseline 13F share is not top-coded and can exceed one when filing dates and the shares-outstanding denominator do not align. The broader total institutional

Table 11: Robustness of the conditional blockholder effect ($m \times \mu$).

	Dependent variable: attention to the future (within SD)			
	(1) Baseline	(2) $+m^2$	(3) $+m^2, \mu^2$	(4) $\mu \perp m$
Blockholder m	-0.046^{***}	-0.035^{*}	-0.035^{*}	-0.036^{***}
	(0.014)	(0.019)	(0.019)	(0.012)
Insider ownership μ	-0.022	-0.025	-0.029	-0.020
	(0.017)	(0.018)	(0.023)	(0.015)
$m \times \mu$	0.014^{**}	0.016^{**}	0.015^{**}	0.011^{**}
	(0.006)	(0.007)	(0.008)	(0.006)
m^2		-0.004	-0.004	
		(0.005)	(0.005)	
μ^2			0.002	
			(0.008)	
β, breadth N, lagged assets	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Sector × year FE	Yes	Yes	Yes	Yes
Observations	35,416	35,416	35,416	35,416
Firms	3,593	3,593	3,593	3,593

Notes: Robustness of the block–equity interaction of Table 7. Column (1) repeats the interaction specification; (2) adds the squared block m^2; (3) adds m^2 and μ^2; (4) replaces μ with its component orthogonal to m ($\mu \perp m$). All columns include β, breadth N, a lagged-book-assets control, and firm and sector×year fixed effects; ownership standardized within sample. Coefficients are expressed in within-firm standard deviations ("within SD") of attention to the future (one within-firm SD ≈ 1.35 months; see Table 4): main-effect coefficients per one-SD increase in the regressor, interaction coefficients per one-unit increase in the product of standardized components. SE clustered by firm. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

ownership measure used in the robustness tables is top-coded at one. That cap creates a mass point: the broader measure has a 90th percentile of 1.000 (mean 0.85, median 0.93), so the most heavily held firm-years are collapsed onto a single value—if anything attenuating its level coefficient toward zero. The names below match the row and column labels in the tables. The baseline level measure in Table 5 is *13F institutional ownership*, the summed reported holdings of 13F investment managers relative to shares outstanding. The broader robustness measure, *total institutional share ownership*, is the summed share of all 13F, 13D, and 13G filers, and *lagged total institutional share ownership* is its one-year lag. The filing-source rows split holdings into mutually exclusive components: *13F institutional ownership* (institutional investment managers), *13D active blockholder ownership* (control-intent 5% holders), *13G passive/exempt blockholder ownership* (passive or exempt 5% holders), and *F345 insider ownership* (officers, directors, and 10% owners filing Forms 3/4/5); positions are assigned first to 13D, then 13G, then 13F. *Vote ownership minus share ownership* is total votes controlled minus total shares held, capturing divergence between voting and cash-flow rights. *Largest institutional-owner share* is the holding of the single largest institutional owner in the 13F/13D/13G universe; *top owner minus second owner* is the gap between the largest and second-largest owners; and *owner HHI* is the Herfindahl index of ownership shares (the sum of squared owner shares). *Any owner above 20 percent* is the fraction of the year's quarters in which at least one owner holds more than 20% of shares outstanding (defined analogously at the 5% and 10% thresholds), and *ownership held by owners above 10 (20) percent* is the summed share of owners above that threshold. The *13D-or-13G*

blockholder share of institutional ownership is the fraction of total institutional ownership reported through a 13D or 13G (>5%) blockholder disclosure. Full construction details, including the exact normalization, are given in the notes to Tables 12–14.

C.1 Robustness tables

Table 12: Alternative measures and dynamics of institutional ownership.

	Dependent variable: attention to the future (within SD)					
Panel A. Alternative ownership measures and dynamics						
	Total		Voting		Current + lagged	
	(1) SIC2-year FE	(2) Firm + SIC2-year FE	(3) SIC2-year FE	(4) Firm + SIC2-year FE	(5) SIC2-year FE	(6) Firm + SIC2-year FE
Total institutional share ownership	0.090***	0.039***	0.089***	0.039***	0.098***	0.030*
	(0.018)	(0.015)	(0.018)	(0.015)	(0.019)	(0.018)
Vote ownership minus share ownership			0.028*	-0.009		
			(0.017)	(0.021)		
Lagged total institutional share ownership					-0.005	0.001
					(0.020)	(0.017)
Log lag assets control	Yes	Yes	Yes	Yes	Yes	Yes
Controls excluding Tobin's Q	No	No	No	No	No	No
Firm fixed effects	No	Yes	No	Yes	No	Yes
SIC2 × year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	35,739	35,416	35,739	35,416	34,209	33,862
Firms	3,916	3,593	3,916	3,593	3,800	3,453
Within R^2	0.0219	0.0021	0.0222	0.0021	0.0237	0.0023
Mean dependent variable (months)	4.93	4.93	4.93	4.93	4.95	4.94

Notes: The table reports OLS regressions of attention to the future on institutional ownership. Coefficients and standard errors are expressed in within-firm standard deviations ("within SD") of the dependent variable (one within-firm SD ≈ 1.35 months; see Table 4). Listed ownership variables are standardized within the estimation sample, so coefficients correspond to a one-standard-deviation increase. Standard errors are clustered by firm and reported in parentheses. The Total columns include total institutional share ownership. The Voting columns add the total vote-share ownership wedge. The Current + lagged columns include current and lagged total institutional share ownership jointly. Total institutional ownership is computed from 13F, 13D, and 13G rows; F345-only rows are excluded. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 13: Institutional-ownership controls and filing-source decomposition.

	Dependent variable: attention to the future (within SD)			
Panel B. Controls and filing-source decomposition				
	Controls		Filing source	
	(7) SIC2-year FE	(8) Firm + SIC2-year FE	(9) SIC2-year FE	(10) Firm + SIC2-year FE
Total institutional share ownership	0.074***	0.036**		
	(0.020)	(0.016)		
13F institutional ownership			0.117***	0.085***
			(0.015)	(0.015)
13D active blockholder ownership			-0.027*	-0.030**
			(0.014)	(0.014)
13G passive/exempt blockholder ownership			-0.007	-0.021
			(0.015)	(0.013)
F345 insider ownership			-0.003	-0.003
			(0.017)	(0.017)
Log lag assets control	Yes	Yes	Yes	Yes
Controls excluding Tobin's Q	Yes	Yes	No	No
Firm fixed effects	No	Yes	No	Yes
SIC2 × year fixed effects	Yes	Yes	Yes	Yes
Observations	30,994	30,700	35,739	35,416
Firms	3,425	3,133	3,916	3,593
Within R^2	0.0328	0.0041	0.0243	0.0036
Mean dependent variable (months)	5.01	5.01	4.93	4.93

Notes: The table reports OLS regressions of attention to the future on institutional ownership. Coefficients and standard errors are expressed in within-firm standard deviations ("within SD") of the dependent variable (one within-firm SD ≈ 1.35 months; see Table 4). Listed ownership variables are standardized within the estimation sample, so coefficients correspond to a one-standard-deviation increase. Standard errors are clustered by firm and reported in parentheses. The Controls columns add lagged log sales, book leverage, operating cash flow/assets, and the cash ratio to the log lag assets control, excluding Tobin's Q. The Filing source columns enter 13F, F345, 13D, and 13G ownership shares jointly. 13D identifies active/control-intent blockholders, 13G identifies passive or exempt blockholder reporting, and F345 identifies insider Forms 3/4/5. Total institutional ownership is computed from 13F, 13D, and 13G rows; F345-only rows are excluded from that measure. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 14: Ownership concentration and blockholders.

	Dependent variable: attention to the future (within SD)						
Panel B. Ownership concentration and blockholders							
	Concentration			Blockholders			
	(1) Largest owner	(2) Top-owner gap	(3) Owner HHI	(4) Any owner >20%	(5) Ownership by >10% owners	(6) Ownership by >20% owners	(7) By filing status
Total institutional ownership	0.067*** (0.016)	0.050*** (0.015)	0.071*** (0.016)	0.052*** (0.015)	0.063*** (0.016)	0.059*** (0.016)	0.058*** (0.015)
Largest-owner share	-0.066*** (0.012)						
Top owner minus second owner		-0.048*** (0.011)					
Owner HHI			-0.067*** (0.012)				
Any owner above 20 percent				-0.038*** (0.011)			
Ownership held by owners above 10 percent					-0.047*** (0.012)		
Ownership held by owners above 20 percent						-0.054*** (0.012)	
13D-or-13G blockholder share of institutional ownership							-0.074*** (0.014)
Log lag assets control	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls excluding Tobin's Q	No	No	No	No	No	No	No
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SIC2 × year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	35,416	35,416	35,416	35,416	35,416	35,416	35,416
Firms	3,593	3,593	3,593	3,593	3,593	3,593	3,593
Within R^2	0.0035	0.0029	0.0035	0.0027	0.0028	0.0030	0.0035
Mean dependent variable (months)	4.93	4.93	4.93	4.93	4.93	4.93	4.93

Notes: The table reports OLS regressions of attention to the future on institutional ownership structure. Coefficients and standard errors are expressed in within-firm standard deviations ("within SD") of the dependent variable (one within-firm SD ≈ 1.35 months; see Table 4). Listed ownership variables are standardized within the estimation sample, so coefficients correspond to a one-standard-deviation increase. Columns (1)–(6) include total institutional share ownership and one concentration or blockholder measure; these coefficients therefore compare firms with similar total institutional ownership but different ownership concentration. All columns include log lag assets, firm fixed effects, and SIC2 × year fixed effects. Blockholder indicators are annual shares of quarters in which at least one institutional owner holds more than the listed share of shares outstanding. Ownership by blockholders is the annual mean normalized share held by institutional owners above the listed threshold. Column (7) splits blockholders by filing status: it includes total institutional share ownership and a single combined 13D-or-13G blockholder share of total institutional ownership. Ownership is assigned first to 13D, then to 13G, then to 13F, so 13F is the omitted filing-source category. Total institutional ownership is computed from 13F, 13D, and 13G rows; F345-only rows are excluded. Standard errors are clustered by firm and reported in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 15: Russell index-assignment IV: Passive ownership and attention to the future.

Panel A: event-time profile (instrument dated t; months per +1pp of passive ownership)	$t-1$ *(pre)*	t	$t+1$	$t+2$	
Passive ownership (2SLS)	-0.002	+0.040	+0.171***	+0.080	
	(0.056)	(0.057)	(0.057)	(0.053)	
AR 95% set	[-0.111, +0.109]	[-0.071, +0.155]	[+0.065, +0.292]	[-0.022, +0.189]	
Reduced form	-0.002	+0.042	+0.181***	+0.090	
First-stage F	99	100	103	115	
Observations	10,069	10,564	10,090	9,602	
Panel B: the $t+1$ estimate across specifications (2SLS b, p house/reghdfe, AR, F, N)					
Baseline: broad passive, ±500, firm+SIC2×yr	+0.171*** (0.057)	0.003 / 0.004	[+0.065, +0.292]	103	10,090
FE: firm + year	+0.179*** (0.064)	0.005 / 0.005	[+0.062, +0.317]	86	10,195
Window ±250	+0.265** (0.110)	0.016 / 0.025	[+0.070, +0.529]	35	4,793
Margin: Russell-benchmarked passive	+0.238*** (0.076)	0.002 / 0.003	[+0.092, +0.389]	545	10,090
Margin: ex-iShares passive (no same-source)	+0.454** (0.183)	0.013 / 0.017	[+0.164, +1.013]	17	10,090
+ size controls (assets, sales)	+0.167*** (0.053)	0.002 / 0.003	[+0.068, +0.278]	116	10,040
Cluster by gvkey	+0.171*** (0.057)	0.003 / 0.009	[+0.065, +0.292]	103	10,090
Years 2002–2020 (full FL sample)	+0.129** (0.054)	0.018 / 0.023	[+0.026, +0.241]	114	13,010

Notes: 2SLS of attention to the future (months, winsorized 1/99) on the broad S12 index/passive ownership share (percentage points, winsorized 1/99), instrumented by banding-aware predicted Russell 2000 assignment. Baseline: firm and SIC2×year fixed effects, quadratic ln(company cap), ±500-rank window around the Russell 1000/2000 cutoff, banding era 2007–2020, standard errors clustered by firm (permco). p is reported under the house dof convention and (rg) the reghdfe convention; AR is the weak-instrument-robust Anderson–Rubin 95% set. The estimand is the index/passive-ownership margin: the instrument does not move total institutional ownership ($F \approx 3$–5) and reduces the number of institutional owners, so the table is not evidence about total institutional ownership. The sample ends in fiscal 2020 to match the corporate-ownership data coverage used throughout the ownership tables. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

D Russell IV: Full Specification

Table 16 collects two reconstitution diagnostics. *Panel A* reports density diagnostics. The mechanical instrument panel is symmetric; in the headline estimation sample, pooled counts differ modestly across sides, but the estimated discontinuity at the cutoff is statistically insignificant. *Panel B* shows that the $t+1$ estimate remains positive across windows, fixed-effect menus, size controls, and cluster levels. Together with the statistically null pre-period estimate reported in Section 3.3, these results reinforce the temporal ordering behind the direction-of-causality test.

Table 16: Russell index-assignment IV: Reconstitution diagnostics.

Panel A: density of the running variable (counts per 50-rank bin, pooled 2007–2020)

Sample	N	Below/above	Symmetry z (p)	McCrary jump (SE)	t (p)
Instrument panel (mechanical)	14,014	0.500/0.500	+0.12 (0.906)	-2.4 (2.5)	-0.95 (0.356)
Headline estimation sample	10,090	0.518/0.482	+3.70 (0.000)	-11.1 (12.8)	-0.87 (0.399)

Panel B: sensitivity of the headline $t+1$ 2SLS estimate (months per +1pp of passive ownership)

Specification	2SLS b	(SE)	AR 95%	F	N
Baseline: ±500, firm+SIC2×yr, permco cluster	+0.171***	(0.057)	[+0.065, +0.292]	103	10,090
Window ±250	+0.265**	(0.110)	[+0.070, +0.529]	35	4,793
FE: firm + year	+0.179***	(0.064)	[+0.062, +0.317]	86	10,195
+ size controls (assets, sales)	+0.167***	(0.053)	[+0.068, +0.278]	116	10,040
Cluster by gvkey	+0.171***	(0.057)	[+0.065, +0.292]	103	10,090

Notes: Diagnostics for the banding-era Russell 1000/2000 IV (broad S12 passive share instrumented by banding-aware predicted R2000 assignment), ±500 cap-rank window, 2007–2020, attention-to-the-future sample, SEs clustered by firm (permco). Panel A: the running variable is the reconstructed end-of-May cap rank, assigned mechanically by Russell (one firm per rank per year), so the density check is pro forma and diagnoses sample coverage; the McCrary-style statistic is the jump in binned counts at the cutoff allowing separate linear trends on each side. Panel B re-estimates the headline $t+1$ 2SLS across windows, fixed-effect menus, size controls, and cluster levels; AR is the weak-instrument-robust Anderson–Rubin 95% set. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.