Essays on shareholder activism and corporate governance

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Essays on shareholder activism and corporate governance

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Thesis Title

Essays on shareholder activism and corporate governance

Thesis Abstract

This dissertation consists of three essays on shareholder activism and corporate governance. The first essay develops and validates a method to identify shareholder activism campaigns using a data-driven approach based on investor characteristics. The proposed identification can replace or complement the current method used in finance research that identifies shareholder activism campaigns based on a subjective evaluation of regulatory filings. It overcomes the ambiguity associated with the current approach and allows for a more accurate and consistent examination of activism that is also replicable. I show that professional investment manager status, investment portfolio size, and track record of proxy solicitations are important determinants of board turnover, which is the most common channel for influencing control by activist investors. The second essay provides evidence that activist investors improve the operation of the director labor market and profit from its imperfections through their superior ability to match directors to firms based on the director's specific expertise. I show that long-term returns are higher when a director is appointed to the target, especially when their prior experience makes them a good fit. Understanding that complex turnaround campaigns are only launched when a matched director is available provides insights into the collective action problem of disengaged investors, which is inherent in the regular director nomination process. I also highlight that takeovers are a similar reallocation of human capital because the firm is matched to new managers and directors. This is an overlooked point in activism research that frames takeovers as an efficient reallocation of financial capital only. The third essay examines insider trading activity by blockholders and compares their performance to executives and directors. Blockholders are expected to be important monitors, yet the findings reveal that they are less informed because their trades earn significantly lower abnormal returns compared to other insiders that purchase their company's stock. Using insider trading data extracted directly from regulatory disclosure allows for a classification of investor types and the examination of heterogeneity in trading patterns for different blockholder groups. I show that active blockholder trades are significantly more informative compared to other financial blockholders, indicating that they are considered active monitors by the market.

Originality Statement

☑ I hereby declare that this submission is my own work and to the best of my knowledge it contains no materials previously published or written by another person, or substantial proportions of material which have been accepted for the award of any other degree or diploma at UNSW or any other educational institution, except where due acknowledgement is made in the thesis. Any contribution made to the research by others, with whom I have worked at UNSW or elsewhere, is explicitly acknowledged in the thesis. I also declare that the intellectual content of this thesis is the product of my own work, except to the extent that assistance from others in the project's design and conception or in style, presentation and linguistic expression is acknowledged.

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☑ The thesis contains no publications, either published or submitted for publication.

To my parents

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Introduction

This dissertation aims to provide insight into how the actions of firm owners can influence corporate governance to achieve improved resource allocation and optimal corporate policies. This is important because the dominant strategies of individual managers can be detrimental to many of the firm's stakeholders, including its shareholders, employees, and the environment. While it is commonly accepted that the board monitors management to minimize this agency cost, the firm's owners are ultimately responsible for determining the structure of the board.

Activist investors are of special interest in studying the ownership of firms because they build meaningful minority stakes in the firms they invest in and they limit their portfolios to a small number of firms at any given time. This allows them to commit resources to an active involvement at the targeted firm and work towards improving firm performance. The common approach taken in the literature to identify activism events is the evaluation of regulatory disclosure that investors file with the Securities and Exchange Commission (SEC) when they acquire 5% of the targeted firm's equity. However, these regulatory filings often contain boilerplate language only and they can be ambiguous in their wording, which may lead to misclassification of activism events.

The first chapter of my dissertation develops and validates a new method to identify shareholder activism campaigns based on data from investors' other regulatory filings. I download and analyze an array of SEC filings to identify investors that are professional investment managers or have a track record of engaging with fellow shareholders through the proxy solicitation process. If the investor is a professional investment manager, I examine their investment portfolios in the quarterly holding reports they file with the SEC. I classify the investor as an activist if they hold fewer than 500 stocks in their portfolio or have submitted a non-management proxy filing to the SEC in relation to a prior investment. I show that these investor characteristics are strongly associated with the appointment of new directors after the investor's involvement, which is the most common observable activist tactic. I also validate this proxy by comparing it to the most commonly used activism dataset developed in Brav, Wei, Partnoy, and Thomas (2008) and find that my results are consistent for the overlapping time period.

The second chapter in my dissertation, "Finding the right fit: Activism and the director labor market", examines the role of activists in the director labor market. I point to frictions in this labor market that are likely to yield sub-optimal director-firm matches due to costly information, adverse selection and the collective action problem. I propose that activist investors improve the operation of the director labor market through their superior ability to match directors to firms based on the specific skills and expertise of the director. This chapter provides evidence that the appointment of directors is the only approach that yields a marginally higher long-term return to activism campaigns compared to other observable tactics. I also show that the human capital of newly appointed directors influences these results, which I proxy through their experience as directors on other listed boards and across multiple industries.

This is an important finding because we often think of directors as monitors that discipline management and even remove the CEO when it becomes necessary. But if they have suitable skills and expertise they are just as likely to provide more substantive input and steer the firm's operations and strategy. However, they may not be matched to the firm that would benefit from their human capital and overall fit because of frictions in the director labor market. This chapter's results contribute to developing a deeper understanding of what activist investors do and how they create value. They are influential shareholders and a key mechanism in corporate governance because they mitigate the potential negative impact when managers fail to pursue strategies that deliver value to shareholders. Observing how they resolve frictions in the labor market for directors can guide policy makers, shareholders and other stakeholders in removing barriers that keep the most suitable directors out of the boardroom where their contributions could be most valuable.

The work presented in the second chapter also highlights how takeovers are a similar reallocation of human capital because the firm is matched to new managers and a new board. This is an overlooked point in activism research that examines takeovers as an efficient reallocation of financial capital only. This new finding resolves the question of how activist investors create value when the target firm is not taken over or sold through asset divestitures.

My third chapter "Active blockholders: Monitoring without monitors" looks more broadly at different types of owners by examining the insider trading activity of shareholders that own more than 10% of the firm's equity. Often referred to as blockholders, these large shareholders are expected to be important monitors because their substantial ownership stake makes it feasible to commit resources to understanding the firm's operations. Yet my findings reveal that they earn lower abnormal returns for insider trades compared to executives and directors, which points to information asymmetries between different types of insiders.

In this work, I aim to shed light on the sources of this variation by classifying owners in categories such as passive investors, venture capital funds, or confrontational activists, by exploiting regulatory disclosures about insider trading activity directly from SEC's EDGAR filing system. Much of this data is not available from standard commercial data providers. In this paper, I show that while blockholders as a group are not as well-informed as other firm insiders, some blockholders do stand out. Empirical evidence suggests that active blockholders and private investment firms are at least as informed as independent directors, even when they do not have a board seat. By contrast, institutional investors only seem to be as informed as independent directors when they also have a board seat.

There are two current themes in corporate governance that motivate me to re-examine the traditional view on owners and ownership in this dissertation. I also believe that these questions will remain policy-relevant into the foreseeable future.

First, the nature of ownership has changed over the past decade in important ways. Passive index funds have grown significantly, which has resulted in increased ownership concentration, especially across the largest listed firms. At the same time, pension funds that were traditionally passive investors have become more engaged owners, as evidenced by the growth of shareholder proposals submitted at annual meetings. A parallel phenomenon that emerged over this period is shareholder activism. Activist investors, often hedge funds, take significant minority stakes in firms that are typically underperforming and advocate for changes across a wide range of corporate policies. These structural shifts in ownership concentration, previously unseen engagement by passive investors, and intensifying shareholder activism all call for a renewed examination of the role and responsibility of owners of corporations.

Secondly, there is growing disagreement on the core purpose of the corporation. This is evidenced by recent debates organized at the University of Oxford on "Stakeholder versus shareholder capitalism" and the European Corporate Governance Institute's seminar, "For Whom is the Corporation Managed in 2020?: The Debate over Corporate Purpose". While this question has always been fundamental in corporate governance, it has received renewed academic and applied interest because of increasing societal concerns over inclusion, income inequality and climate change. To motivate this dissertation and my broader research agenda, I argue that the choice between the shareholder-centered and stakeholder-centered views will not be driven by managerial or board decisions, but ultimately determined by regulation and the owners of the firm. My aim is to shed light on the role of owners in this context through this dissertation.

I believe that the fundamental issues I examine in this dissertation and with my overall research agenda will continue to be of academic and applied relevance. As the ownership landscape of corporations evolves, new policy responses will continue to emerge. This, in turn, provides the opportunity to continue advancing ideas that challenge traditional views of corporate governance and agency theories of the firm.

Chapter 1

Activist shareholders

Abstract

This study develops and validates a new method for identifying activism campaigns based on investor characteristics revealed in regulatory filings. Only a subset of blockholders that signal an intent to influence the firm's control are activist investors. Misclassification may lead to inconsistencies in studying activism if identification relies on a subjective evaluation of often ambiguous disclosures. I show that professional investment manager status, portfolio size and a track record of proxy solicitations are important determinants of board turnover, the most common channel for influencing control. Learning about blockholders and activist investors provides an insight into their important role as owners.

JEL classification: G34

Keywords: Board of directors, Shareholder activism

1.1. Introduction

Shareholder activism is an important corporate governance mechanism because it mitigates agency cost by keeping the firm's managers accountable. Activist investors are often responsible for replacing management either by nominating new directors for stronger monitoring or by facilitating the takeover of the entire firm. As many of the precise mechanisms for creating value through activism remain poorly understood, it is important to offer a common frame of reference for future studies. I propose such a frame of reference by developing and validating a proxy for identifying shareholder activism events.

The most common approach taken in prior literature is to evaluate the content of the regulatory filings that mark the launch of a campaign. Because many of the filings include only boilerplate language for even well-known activist investors, this identification method could be subjective. This, in turn, may lead to misclassification and measurement error. In this paper, I introduce a new method for identifying activism campaigns that is purely data-driven and is based on investor characteristics revealed from regulatory disclosures.

My starting point is to obtain all Schedule 13D filings from the Securities and Exchange Commission's (SEC) EDGAR filing system that all investors need to submit when they reach a 5% holding in the target firm's equity and intend to influence or control the management of the firm. In the subsequent set of analyses, I proceed by examining whether investor characteristics observed for these active blockholders lead to the appointment of new directors, which is one of the most common activist investor tactics. I test the hypothesis that investors that own fewer stocks are more likely to be activist investors because they are more focused on the few firms they invest in. I download all Schedule 13(f) filings from EDGAR that contains the quarterly investment holdings of all professional investment managers with at least $100m under management. The analysis in this paper provides evidence of the strong inverse relationship between investor portfolio size and new director appointments. A contingent valuation analysis also reveals a portfolio size threshold of approximately 220 stocks that is likely to lead to new director appointments at target firms.

The paper also examines investors' track record of engaging with fellow shareholders through the proxy solicitation process. It is proposed that prior investments that include

proxy filings by the investor are important determinants of whether the active blockholder is an activist because it reveals the investor's propensity for adversarial tactics. All non-management proxy filings are downloaded from EDGAR and linked to active blockholders if they were submitted to any target firm before becoming an active blockholder. The empirical analysis shows that these past proxy filings at other firms are strongly associated with new director appointments at the new target firm.

Building on these findings I propose and validate a combined measure that identifies a new blockholder filing as an activism event if the new blockholder is a professional investor with 500 or fewer stocks in their portfolio or if they have a track record of proxy non-management filings. I also classify filings as an activism event if the investor files a non-management proxy for the new target firm. This paper provides evidence that this measure is strongly associated with new director appointments, departures, board tenure and board size at targeted firms. Additional analysis also shows that this new measure of shareholder activism is consistent with the commonly used dataset developed in Brav et al. (2008) when the measures are compared for the overlapping sample period.

I also examine long-term outcomes at activism targets by studying the evolution of return on assets and Tobin's Q over the five-year horizon after the activism event. I show that these long-term outcomes improve and confirm that my findings are consistent with Bebchuk, Brav, and Wei Jiang (2015).

My paper makes a contribution to the literature by developing and validating a new method to identify shareholder activism. The current classification of activism events requires subjective judgment and relies on examining the content of new active blockholder filings submitted when an investor accumulates a 5% shareholding in a target firm. A section in these filings is dedicated to discussing the purpose of the transaction, but it often uses boilerplate language, such as monitoring developments at the company and potentially engaging in discussions with management. Even hedge funds with a well-known activist mandate may not reveal the true purpose of their investment in these new active blockholder reports. This may introduce measurement error if the activist intent is not clearly articulated and look-ahead bias, if the event is classified as an activism campaign based on later developments.

I introduce a new method that relies on investor characteristics revealed from various SEC disclosures. It can be consistently replicated because it does not require the qualitative evaluation of filings and it is made available for researchers upon request. I classify new active blockholders as activist investors if they are professional investors with discretion over $100m or more in assets and historically hold less than 500 stocks in their portfolio. Alternatively, other investors also qualify based on engagement with fellow shareholders through the proxy solicitation process. I include them based on either a past track record or a proxy contest at the new target firm. This new measure is validated by examining whether it strongly signals activist intent. Results are consistent when examining firm characteristics or predicting board turnover events and comparing my proxy with the widely-used hedge fund activism dataset described in Brav et al. (2008).

Identifying fund families based on quarterly holding reports is a key innovation of the paper, because Schedule 13(f) holding reports and Schedule 13(d) beneficial ownership reports are commonly filed by different entities within a fund group. My dataset includes the average number of stocks held by institutional investment management families in the year prior to filing the beneficial ownership report; in all prior periods; and across the available time horizon. It also includes the number of prior non-management proxies by the investor, and an indicator if one was filed for the current target firm. It allows researchers to select a definition that is most appropriate for their research question. For instance, a more restrictive approach could require that the investor holds less than 100 stocks and to have engaged in at least 10 proxy contests prior to investing in the target firm. Some researchers may wish to limit their analysis to professional investment managers only and exclude other investors even if they engaged in contested proxy solicitations prior to the new investment.

1.2. Institutional background and data

My main sample contains the common equity of U.S. CRSP / Compustat firms listed on the NYSE, NASDAQ, NYSE American (formerly known as the American Stock Exchange). I remove firms with missing total assets or sales. I match this sample to BoardEx on the historical CRSP CUSIP and the current Compustat CUSIP and Central Index Key

(CIK) identifiers. The sample period starts in 2005 because BoardEx misses nearly 11% of the main Compustat/CRSP sample in 2003 and approximately 6% of the sample in 2004. By contrast, almost 98% of firms are successfully matched to BoardEx for the 2005 to 2018 period.

1.2.1. Regulatory filings

The analysis in this paper relies on obtaining a range of regulatory filings from the Securities and Exchange Commission's EDGAR filing system. The first step is downloading all Schedule 13D filings that investors are required to submit when they accumulate 5% of the firm's equity with the intention of influencing the management and control of the firm. I also download Schedule 13G filings that identify investors reaching the same shareholding, but who intend to remain passive investors. Additional regulatory filings are downloaded in order to classify investors, including Schedule 13F quarterly portfolio statements by professional investors, non-management proxy filings, annual reports, and mutual fund registrations. A comprehensive description of filing types is included in the appendix.

Datasets are created from the metadata of these regulatory disclosures and include filing dates and the CIK identifiers for both the reporting entity and the targeted firm. An additional dataset captures the list of CUSIP identifiers included in Schedule 13F quarterly holding reports. All nine-digit CUSIPs are collected from each report that identify a unique security: firms often have multiple equity and debt instruments with a unique CUSIP code that share the same first six digits, which identifies the firm. The first six digits of each entry and all unique issuer-level values from each report are retained, which provides a close proxy of the number of firms that comprise the investor's portfolio. Some of this data is available in commercial databases, such as the Thomson Reuters Institutional Holdings dataset, but they do not include the CIK identifier for the reporting entity, which I use to link fund managers to activist filings. Commercial datasets also exclude fund managers that do not report directly and instead nominate another manager reporting on their behalf using a Schedule 13F-NT notice. This is important because many activist investments are made using such dedicated fund entities.

1.2.2. Targeted firm characteristics

Table 1.1 provides a descriptive overview of the sample and compares the Compustat / CRSP universe to firms that experienced a new active blockholder investment identified from a Schedule 13D filing. The table shows that targeted firms are significantly smaller on all conventional measures of firm size: total assets, turnover, or operating income. The market capitalization of targeted firms is almost $3.8bn lower than the rest of the sample and on average their firm age as a listed company is five years lower. Potentially as a result, these firms have smaller boards, but the differences between directors in terms of listed board experience, concurrent appointments, qualifications and age are not economically significant. Operating performance at targeted firms as measured by return on assets (ROA) is significantly lower and negative, and these firms are also more highly leveraged.

1.3. Identifying activism

Studies on hedge find activism commonly rely on the subjective evaluation of Schedule 13D filings, submitted when investors acquire a 5% stake in a target firm. Item 4 of these submissions is dedicated to describing the purpose of the transaction, but it is often limited to boilerplate language only. Even investors with an activist track record frequently state their purpose as merely monitoring developments at the company. The common approach of examining the content of these filings to identify shareholder activism may lead to inconsistent samples across studies, misclassification and ultimately, measurement error.

I propose an alternative method for identifying informed and motivated investors with a likely activist agenda based on data from publicly available regulatory filings. This method is motivated by a number of testable hypotheses developed in this section. My starting point is to obtain all Schedule 13D filings that reveals when an investor accumulates a 5% equity holding and intends to change or influence the control of the target firm. Because the identification focuses on active professional investors that are beneficial owners of the target firm, I exclude filings that are submitted by corporations and mutual funds following Klein and Zur (2009). These owners can be identified from regulatory filings because corporations are required to file annual reports and mutual funds file registration notices and proxy voting records.

Table 1.1: Firm descriptive statistics and differences

This table reports firm characteristics, financial ratios and board characteristics for all Compustat / CRSP sample firms and separately for firms without and with a new 5% blockholder identified by a Schedule 13D filing during the firm's fiscal year. Firm characteristic values are in $millions. Differences in means tests allowing for unequal variances and t-statistics are reported in the last two columns.

	All firms	No blockholder	New blockholder	Differences	
	Means	Means	Means	Means	t-statistic
Firm characteristics					
Total assets	9,367.850	10,203.101	3,044.270	-7158.831^{***}	(-13.971)
Net turnover	3,402.121	3,682.212	1,281.584	-2400.628^{***}	(-21.596)
Market capitalization	4,705.136	5,155.370	1,280.972	-3874.398^{***}	(-28.796)
Operating income	611.098	670.341	161.815	-508.526^{***}	(-21.411)
Long-term debt	1,754.462	1,889.477	731.964	-1157.512^{***}	(-9.875)
R&D expense	138.908	152.286	43.898	-108.388^{***}	(-15.489)
Capital expenditure	203.387	217.506	96.467	-121.038^{***}	(-12.660)
Common dividends	89.280	98.325	20.631	-77.693^{***}	(-20.387)
Cash	431.555	466.106	170.766	-295.340^{***}	(-12.799)
Short-term investments	715.730	789.269	161.898	-627.371^{***}	(-9.078)
EBITDA	611.098	670.341	161.815	-508.526^{***}	(-21.411)
Firm age	21.815	22.423	17.211	-5.212^{***}	(-27.713)
Segments	4.835	4.921	4.214	-0.706^{***}	(-15.639)
Financial ratios					
Return on assets	0.024	0.033	-0.045	-0.078^{***}	(-16.062)
ΔROA $_{[t-3,t-1]}$	0.037	0.032	0.084	0.052	(0.796)
Return on sales	-5.875	-5.946	-5.333	0.612	(0.322)
Tobin's Q	2.493	2.375	3.384	1.009	(0.679)
Leverage	0.221	0.217	0.246	0.029^{***}	(4.782)
Dividend yield	0.540	0.444	1.266	0.822	(0.665)
Payout ratio	5.455	5.979	1.424	-4.555	(-0.846)
R&D/assets	0.117	0.113	0.145	0.031^{***}	(7.474)
CAPEX/assets	0.042	0.041	0.044	0.003^{***}	(2.608)
Sales per employee	0.014	0.014	0.014	-0.001	(-0.330)
Inventory turnover	44.574	45.859	34.018	-11.842^{*}	(-1.950)
Board characteristics					
Board size	10.013	10.144	8.830	-1.313^{***}	(-24.507)
Tenure in years	8.068	8.145	7.368	-0.777^{***}	(-10.938)
Prior listed boards	1.654	1.659	1.613	-0.047^{**}	(-2.325)
Concurrent boards	1.610	1.615	1.572	-0.042^{***}	(-5.272)
Qualifications	1.984	1.986	1.963	-0.024^{***}	(-2.756)
Age	59.388	59.463	58.712	-0.752^{***}	(-9.610)
Female director	0.096	0.097	0.081	-0.016^{***}	(-10.473)
Number of observations	52,908	46,735	6,173		

I propose two primary ways that investors can signal active involvement regardless of their openly stated objectives. First, investors that hold fewer stocks are expected to be more actively involved in monitoring and influencing firm-level decisions than funds with large and diversified portfolios. Second, an investor can build a reputation as an activist by engaging with other shareholders through the proxy solicitation process. The SEC created a class of proxy statements specifically designed to be submitted by non-management, including campaigns where they propose their own slate of directors to be elected at the firm's annual meeting. In order to test whether concentrated portfolios or a track record of non-management proxies are associated with observed and documented activist tactics, I create a new dataset from regulatory filings.

The research question calls for estimating the number of stocks held by investment managers to identify investors with concentrated portfolios that are likely to be active shareholders. Managers report their direct investments and stocks they hold on behalf of other investors in Schedule 13F-HR filings ("holdings report"). Some investors, however, file a Schedule 13F-NT ("notice") to nominate the entity or entities that report on their behalf. In other cases, investors may report stocks they hold directly and also nominate multiple other investment managers that hold stocks on their behalf ("combination report"). This reporting structure requires that fund families are identified and groups are constructed for each reporting quarter. This step is relevant because investors that report reaching the 5% ownership threshold in a Schedule 13D filing may not be reporting their investment holdings directly. For example, acquisitions by Elliott Management are commonly structured as an investment by Elliott Associates, L.P., but quarterly holding reports are filed by Elliott Management Corp. In order to create the holding size measure, I analyze the content of all Schedule 13F holding reports to identify fund families and count the number of entries that reflect valid CUSIP codes.

In order to examine the relationship between activism and a track record of proxy engagements, I also obtain the list of all non-management proxies filed by investors that report reaching the 5% ownership threshold. This includes filings such as the "Definitive proxy statement filed by non-management" (DEFN14A) often used to propose or demand nominees for election as directors. The number of non-management proxies the investor filed prior to its disclosed investment in the target firm is counted. I also create an indicator

variable, noting whether the investor filed a non-management proxy for the target firm specifically. Because a non-management proxy is expected to be submitted after the Schedule 13D filing, this indicator variable introduces look-ahead bias. It is suitable for my ex-post classification task, but it may not be appropriate for future extensions of this work that call for a predictive model.

In summary, my final dataset extends the Schedule 13D metadata with indicator variables if the filer is a corporation, mutual fund, or professional fund manager. The remaining unclassified investors comprise of individuals and investment managers that manage less than $100m in listed stocks. The dataset includes a dummy variable indicating if the investor filed a non-management proxy for the target firm, and the total number of non-management proxies filed by the investor prior to the event. In addition, I provide estimates of the average number of stocks held by the investor's fund family in the year prior to the Schedule 13D event, in all prior periods and across all periods. Selecting one of the three portfolio size estimates involves a trade-off. The most relevant is the prior year average, but it has the most missing observations. Estimating the average across all time periods yields the most number of non-missing observations, but it introduces look ahead bias because it including holding reports after the event. The portfolio size estimate that is based on all prior periods provides a good balance that I use in constructing my proxy.

1.4. Empirical analysis

1.4.1. Portfolio size and contingent valuation analysis

Brav et al. (2008) assert that activist hedge funds are more engaged because they focus on investing in a smaller number of companies. The first testable hypothesis in this paper is that investors with concentrated investment portfolios are more actively involved in the firms they invest in. My proxy for active involvement is the appointment of new directors in the fiscal year after an investor reaches a 5% shareholding in the target firm. It is motivated by empirical evidence provided by Brav et al. (2008) that director appointments are one of the most common activist tactics beyond communicating with management and the board. The main dependent variable is the number of stocks held in

the investor's portfolio prior to the date of this event. Because portfolio holding reports are limited to investors with at least $100m under management, this test is limited to the subset of professional investment managers.

Assume that Equation (1.1) appropriately describes the probability of a new director's appointment as a probit equation where a firm is observed to appoint a new director $(A = 1)$ when A^*, an underlying response variable, exceeds zero:

$$P(A = 1) = P(A^* > 0) \tag{1.1a}$$

$$A^* = \gamma_0 + \gamma_1 \cdot PS + \varepsilon \tag{1.1b}$$

$$P(A^* > 0) = P(-\varepsilon < \gamma_0 + \gamma_1 \cdot PS) \tag{1.1c}$$

where $P(\cdot)$ is the probability of $(\cdot)$, $A = 1$ if there's an appointment and 0 otherwise, PS is the number of firms in the portfolio, and ε is a normally distributed error term. Probit assessment parameters are estimated for Equation (1.1) by maximizing the log-likelihood function (L^*) shown in Equation (1.2)

$$L^* = \sum_j \ (A) \cdot ln\big[\Phi(H)\big] + \sum_j \ (1 - A) \cdot ln\big[1 - \Phi(H)\big] \tag{1.2}$$

where Φ is the cumulative density function for a standard normal variable, H is $\gamma_0 + \gamma_1 \cdot PS$ and other variables are defined in Equation (1.1). I model the holding size threshold for individual firms as $\theta_i = \overline{\theta} + \mu_j + \omega_i$, where $\overline{\theta}$ is an average holding size threshold for all investors and $\mu_j \sim IN(0, \sigma_\mu^2)$ is a cluster effect. I allow appointments to be clustered by investor (j), with a firm effect represented by $\omega_i \sim IN(0, \sigma_\omega^2)$. Accordingly,

$$A_i = 1 \leftrightarrow PS_i > \overline{\theta} + \mu_j + \omega_i$$

I use a random effects probit model to estimate the average reserve factor $\overline{\theta}$ and the standard deviation σ_ω across investors. In the case where no firm or time-specific threshold effect is observed $(\mu_j = 0)$, the standard probit model is as follows:

$$P[A_i = 1] = \phi\left(\frac{PS_i \ - \ \overline{\theta}}{\sigma_\omega}\right) \tag{1.3}$$

where ϕ is the standard normal distribution function. The full model estimated is set out in Equation (1.4) below:

$$P(\text{Appointment}_{i(t+1)}) = \gamma_0 + \gamma_1 \cdot \text{Holding size}_i + \delta_t + \delta_n + \varepsilon_i \tag{1.4}$$

where *Appointment* takes the value of one if a director is appointed at firm i in year $(t+1)$; *Holding size* is the average number of stock holdings reported in the Schedule 13F filing in all periods prior to the activism event (in 1,000 stocks), δ_t are year fixed effects, δ_n are industry fixed effects, and ε_i is the random disturbance term.

This section examines director appointments because it is one of the most frequent activist tactics for improving performance. It has been documented in the literature that that recent under-performance is an important determinant of being targeted by an activist investor (Brav et al., 2008). However, well-run and profitable firms may also be targeted if the activist believes that performance can be improved. For example, Pershing Square Capital Management accumulated an 8.3% stake in Automatic Data Processing, Inc. (ADP) and proposed three directors for election to the board on August 7, 2017. It also announced a presentation to be held ten days later, where "Pershing Square will describe the results of its extensive research on ADP, which reveals an enormous opportunity to improve ADP's operations, profitability and competitive position." During the presentation, Pershing Square asserted that ADP's Employer Services business was not performing its potential and that ADP can significantly improve its performance and competitive position with improved operational efficiency and greater technology leadership.[1] At the same time, ADP's investor presentation provided evidence that ADP outperformed its peers and the S&P 500 by delivering a 203% total shareholder return during the CEO's six-year tenure.[2]

I present probit estimates in column 1 of Table 1.2. The impact of holding size on new director appointments is estimated for both the entire sample period between 2005 and 2018 and the period after the 2008 global financial crisis. All specifications offer strong evidence on the negative relationship between portfolio holding size and director appointments subsequent to reaching a 5% holding in the target firm. Investors with fewer

[1] `https://adpascending.com/presentations/`

[2] `https://www.sec.gov/Archives/edgar/data/0000008670/000120677417002747/`

firms in their portfolio are more likely to be associated with new director appointments at the firms they invest in. Additional specifications with year and industry fixed effects confirm support for the first hypothesis and show that the results are not driven by industry or time trends. Following Cameron and James (1987), I also estimate a mean holding threshold for appointments in a contingent valuation framework. The tabulated point estimate suggests that investors with an average of 223 or fewer stocks in their portfolio are likely to be associated with a new director appointment at the target firm during the fiscal year after their investment.

In a complementary specification, I provide a graphical representation of the relationship between director appointment probabilities and holding size, measured as the number of distinct firms held in the blockholder's portfolio. Figure 1.1 indicates that there is a negative relationship between the marginal probability of a new director appointment and the number of firms owned by the investor. The 500 stock holding threshold seems to be of interest because the marginal probability monotonically decreases from this point as holding size increases. While the average holding size across all investors is 187 in the sample, the distribution is skewed with a median value of 39 stocks. The 25th and 75th percentiles are 17 and 112 stocks across the sample and hence the 500-stock cut-off only eliminates a small percentage of large institutional investors.

1.4.2. Proxy track record

The second set of hypotheses tested are related to additional investor characteristics. It builds on the tests for portfolio size and examines whether the investor reputation for perceived hostility is related to new board appointments. Investors with a track record of engaging with fellow shareholders through the proxy solicitation process are expected to be engaged shareholders. A history of these non-management proxy filings can be the manifestation of a latent propensity of the investor to engage in adversarial tactics. The target firm's management and incumbent board may also interpret it as a reputational signal while deliberating whether to agree to demands proposed by the investor, including a board nomination. I test this relationship by estimating the following linear probability model:

Table 1.2: Director appointments and portfolio holding size

This table reports the association between holding sizes and board changes based on pooled probit regressions. Specifically, I estimate:

$$P(\text{Appointment}_{i(t+1)}) = \gamma_0 + \gamma_1 \cdot \text{Holding size}_i + \delta_t + \delta_n + \varepsilon_i$$

where *Appointment* takes the value of one if a director is appointed at firm i in year $(t+1)$; *Holding size* is the average number of stock holdings reported in the Schedule 13F filing in all periods prior to the activism event (in 1,000 stocks), δ_t are year fixed effects, δ_n are industry fixed effects, and ε_i is the random disturbance term. The estimations of the implied mean holding threshold is shown below following Cameron and James (1987). Pr denotes probability, and $\Phi(\cdot)$ is the standard normal cdf.

$$\begin{gathered} \widehat{Pr}(Change_i = 1) = \Phi\left(\widehat{\gamma_0^*} + \widehat{\gamma_1^*}\ Holding\ size_i\right) \\ \widehat{\gamma_0^*} = \frac{\hat{\beta}}{\hat{\sigma}} \ \longrightarrow\ \hat{\beta} = \hat{\sigma}\ \widehat{\gamma_0^*} = -\frac{1}{\widehat{\gamma_1^*}}\ \widehat{\gamma_0^*} = -\frac{\widehat{\gamma_0^*}}{\widehat{\gamma_1^*}} \end{gathered} \tag{1.5}$$

Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics are based on standard errors clustered at the firm level and are shown in parentheses.

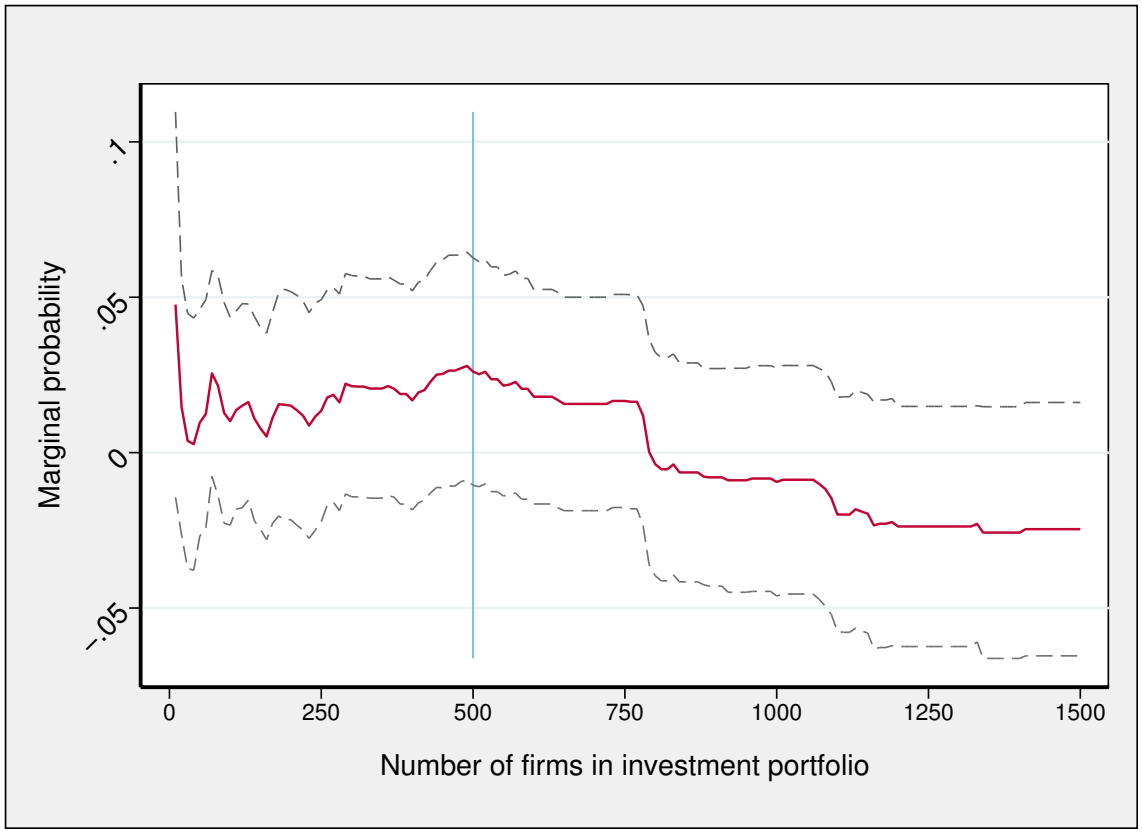
	2005 – 2018			2009 – 2018		
	(1)	(2)	(3)	(4)	(5)	(6)
Holding size	-0.160***	-0.139***	-0.145***	-0.293***	-0.262***	-0.265***
	(-3.229)	(-2.871)	(-2.928)	(-3.359)	(-3.103)	(-3.059)
Intercept	0.036	0.106	0.583	0.091**	-0.184	-0.177
	(1.080)	(0.918)	(0.848)	(2.164)	(-1.401)	(-0.616)
Year fixed effects	No	Yes	Yes	No	Yes	Yes
Industry fixed effects	No	No	Yes	No	No	Yes
Holding threshold	223.209			310.971		
Wald χ^2	10.428	32.613	93.655	11.286	25.734	73.752
$p > \chi^2$	[0.001]	[0.003]	[0.031]	[0.001]	[0.004]	[0.067]
Log likelihood	-1189.738	-1179.169	-1135.936	-747.186	-740.958	-694.749
Observations	1,724	1,724	1,705	1,087	1,087	1,059

Fig. 1.1. Marginal appointment probabilities and holding sizes

This figure depicts marginal probabilities of board appointments determined by the number of stocks held by the institutional investment manager that becomes an active blockholder. A series of OLS regressions are estimated in the form:

$$D(\text{Appointment})_{i(t+1)} = \gamma_0 + \gamma_1 \cdot (\text{Holding size} < \lambda_{jt}) + \delta_t + \delta_i + \varepsilon_{it}$$

where $D(\text{Appointment})$ takes the value of one if a director is appointed for firm i in year $(t+1)$ and *Holding size* is the average number of stocks held by the investment manager in all quarters prior to the filing. In 150 repeated regressions, λ takes the value of 10 to 1,250 in increments of 10 and coefficient values for γ_1 are plotted with 95% confidence intervals. In the model, δ_t are year fixed effects, δ_i are industry fixed effects, and ε_{it} is the random disturbance term. The sample includes all firms with an active blockholder between 2005 and 2018.



$$
\begin{aligned}
P(\text{Appointment}_{i(t+1)}) \;=\; & \gamma_0 + \gamma_1 \cdot D(\text{Blockholder}_{it}) \\
& + \gamma_1 \cdot D(\text{Non-mgmt Proxies} > \lambda_{jt}) \\
& + \delta_t + \delta_n + \varepsilon_{it}
\end{aligned}
\tag{1.6}
$$

where P(Appointment) takes the value of one if a new director is appointed for firm i in year $(t+1)$ and D(Blockholder) is a dummy variable denoting new Schedule 13D beneficial ownership filings. D(Non-mgmt Proxies $> \lambda_{jt}$) is a dummy variable that takes the value of one if the active blockholder j submitted more than λ non-management proxy statements for any other firm prior to becoming a blockholder in the target firm i. The value of λ tested in each specification is indicated in the table. In the model, δ_t are year fixed effects, δ_n are industry fixed effects, and ε_{it} is the random disturbance term.

The results of this analysis are set out in Table 1.3. The coefficient estimates on the number of prior non-management proxies submitted by new blockholders are statistically significant and increase with the number of proxy filings in a non-monotonic manner. Investors with a track record of five or more proxy filings prior to becoming an active blockholder in the target are associated with an approximately 11.20 percentage point increase in the probability of director appointments, compared to blockholders with fewer than five prior proxy filings. The impact is economically significant because the joint probability of director appointments increases to approximately 17.73% on average, which is a nearly 420% increase. Column 6 shows that when a new blockholder has a track record of 100 or more previous proxy filings, the marginal probability of new director appointments increases by approximately 18.80 percentage points, compared to the 4.58 percentage point increase for all other blockholders, a category that includes those with fewer than 100 prior non-management proxies and those with none. These results indicate that a track record of prior proxy filings are strongly associated with the common activist tactic of new director appointments. Proxy filings may capture latent investor characteristics that signal to the target firm the blockholder's willingness to engage in adversarial tactics.

Figure 1.2 provides a graphical representation of the model in Equation 1.6 using a more fine-grained approach of plotting the cumulative number of prior non-management

Table 1.3: Director appointments and non-management proxies

This table reports OLS regressions on the association between board appointments and blockholder characteristics by estimating the following model:

$$D(\text{Appointment})_{i(t+1)} = \gamma_0 + \gamma_1 \cdot D(\text{Blockholder})_{it} + \gamma_1 \cdot D(\text{Non-mgmt Proxies} > \lambda_{jt}) + \delta_t + \delta_n + \varepsilon_{it}$$

where D(Appointment) takes the value of one if a new director is appointed to the board of firm i in year $(t+1)$. *Blockholder* is a dummy variable denoting new Schedule 13D beneficial ownership filings. D(Non-mgmt Proxies $> \lambda_{jt}$) is a dummy variable that takes the value of one if the active blockholder j submitted more than λ non-management proxy statements for any other firm prior to becoming a blockholder in the target firm i. The value of λ is indicated in the table for each specification. In the model, δ_t are year fixed effects, δ_n are industry fixed effects, and ε_{it} is the random disturbance term. The sample period is 2005 to 2018. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the firm level.

	Probability of director appintments					
	(1)	(2)	(3)	(4)	(5)	(6)
Blockholder	3.53***	3.79***	4.09***	4.29***	4.43***	4.58***
	(4.41)	(4.80)	(5.26)	(5.58)	(5.80)	(6.03)
Non-management proxies						
> 5	11.20***					
	(5.11)					
> 10		10.64***				
		(4.42)				
> 25			11.75***			
			(3.88)			
> 50				15.11***		
				(3.84)		
> 75					15.91***	
					(3.50)	
> 100						18.80***
						(3.01)
Constant	49.39***	49.32***	49.26***	49.22***	49.19***	49.17***
	(9.06)	(9.04)	(9.02)	(9.01)	(9.00)	(8.99)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.012	0.012	0.012	0.012	0.012	0.012
Firms	6,447	6,447	6,447	6,447	6,447	6,447
Observations	45,541	45,541	45,541	45,541	45,541	45,541

proxies for up to 175 prior filings. The figure shows that the marginal probability increases throughout the range, but especially for up to 100 prior filings. It is worth noting that this measure could also capture blockholder experience if investors with a longer history have been involved in more adversarial campaigns.

1.4.3. Combined investor characteristics

Motivated by the empirical findings related to the portfolio concentration and non-management proxy track record of new active blockholders, this section develops and validates a new proxy to identify shareholder activism campaigns. In a series of specifications, I test the influence of investor characteristics on new director appointments using the following regression framework:

$$\begin{aligned} P(\text{Appointment}_{i(t+1)}) \;=\; & \alpha + \beta_1 \cdot D(\text{Blockholder}_{it}) \\ & + \beta_2 \cdot D(\text{Investor type}_{it}) \\ & + \eta_i + \delta_t + \varepsilon_{it} \end{aligned} \tag{1.7}$$

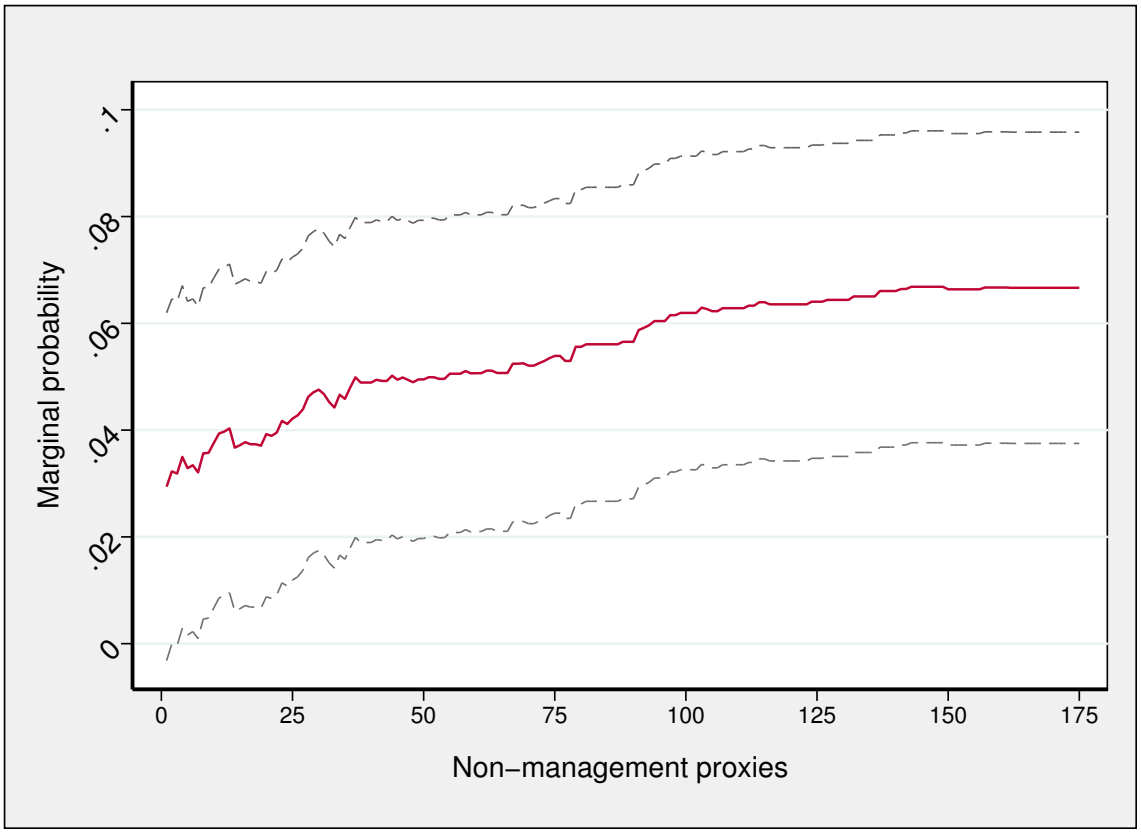
where P(Appointment) takes the value of one if a director is appointed for firm i in year $(t+1)$. D(Blockholder) is a dummy variable denoting new Schedule 13D beneficial ownership filings. D(Investor type) takes on the following values in different specifications: *Investment managers* is a dummy variable that identifies institutional investment managers with discretion over $100m or more. *Holdings < 500* takes the value of 1 if the filer is an institutional investment manager that held less than 500 stocks on average in all quarters prior to the Schedule 13D event, and zero otherwise. *Proxy track record* takes the value of 1 if the filer submitted at least one non-management proxy statement for any target firm prior to the event, and zero otherwise. *Non-management proxy* is a dummy variable indicating if the filer submitted a proxy statement for the target firm after the Schedule 13D event. Finally, *Shareholder activism* takes the value of one if either one of the following three indicators takes the value of one: *Holdings < 500*, *Proxy track record*, and *Non-management proxy*. In Equation (1.7), η_i is the combined effect of all firm-specific unobserved variables that are constant over time, δ_t are year fixed effects, and ε_{it} is the random disturbance term.

Fig. 1.2. Marginal appointment probabilities and non-management proxies

This figure depicts marginal probabilities of board appointments determined by the number of non-management proxy filings submitted by the Schedule 13D investor prior to their first filing of the beneficial ownership form. Specifically, I estimate a series of OLS regressions in the form:

$$D(\text{Appointment})_{i(t+1)} = \gamma_0 + \gamma_1 \cdot D(\text{Blockholder})_{it} + \gamma_2 \cdot D(\text{Non-mgmt proxies} < \lambda_{jt}) + \delta_t + \delta_i + \varepsilon_{it}$$

where $D(\text{Appointment})$ takes the value of one if a director is appointed for firm i in year $(t+1)$ and *Non-mgmt proxies* is the total number non-management proxies submitted by the investment manager for any firm prior to becoming an active blockholder. In 175 repeated regressions, λ takes the value of 1 to 175 in increments of one and coefficient values for γ_2 are plotted with 95% confidence intervals. In the model, δ_t are year fixed effects, δ_i are industry fixed effects, and ε_{it} is the random disturbance term. The sample includes all Compustat / CRSP firms between is 2005 to 2018.



The results of this analysis are set out in Table 1.4. The baseline result in column 1 provides evidence that the probability of new director appointments increases significantly after investors accumulate 5% of the firm's equity and declare their intention to influence the control of the target firm by filing a Schedule 13D form. In untabulated results, I find that the unconditional probability of a new director appointment is approximately 41% in the sample. As shown in column 1, the probability of a new director appointment increases by approximately 7 percentage points after a Schedule 13D filing, controlling for time effects and unobserved time-invariant firm characteristics. This is an almost 16% increase when compared to the intercept in the model.

Columns 2 and 3 show that professional fund managers and especially those with fewer investments are also associated with a significant marginal increase in the probability of new appointments. The $(\beta_1 + \beta_2)$ row provides an estimate for the linear combination of the joint impact of Schedule 13D filings and professional investor status. The column 3 value indicates that the combined probability of a new director's appointment increases by approximately 2.5 percentage points when the new blockholder is an investment manager with fewer than 500 stocks in their portfolio. The next two specifications examine the impact of non-management proxy filings. A track record of proxy engagements at other firms is also associated with a statistically significant increase of almost 8 percentage points in the probability of the appointment of a new director. Column 5 tabulates the coefficient for the indicator variable that takes the value of one if the new blockholder files a non-management proxy for the target firm. This specification introduces look-ahead bias because this information is not known at the time the investment is revealed. Nevertheless, the result shows strong statistical significance and an economic magnitude of 16 percentage points. The probability of new director appointments increases three-fold when compared to all new blockholder announcements. These findings provide support for the hypotheses that investor characteristics of holding size and proxy track record are important determinants of new director appointments, which in turn is an important activist investor tactic to influence decision making at the target firm.

In the next specification, I create a combined proxy designed to capture activist intentions and test its impact on director appointments in column 6. The *Shareholder activism* dummy variable takes the value of one if the new investor is a professional investment

Table 1.4: Director appointments and blockholder characteristics

This table reports OLS regressions on the association between board appointments and blockholder characteristics by estimating the following model:

$$D(\text{Appointment})_{i(t+1)} = \alpha + \beta_1 \cdot D(\text{Blockholder})_{it} + \beta_2 \cdot D(\text{Investor type})_{it} + \eta_i + \delta_t + \varepsilon_{it}$$

where D(Appointment) takes the value of one if a new director is appointed for firm i in year $(t+1)$. D(Blockholder) is a dummy variable denoting new Schedule 13D beneficial ownership filings. D(Investor type) takes on the following values in different specifications: *Investment managers* is a dummy variable that identifies institutional investment managers with discretion over $100m or more. *Holdings < 500* takes the value of 1 if the filer is an institutional investment manager that held less than 500 stocks on average in all quarters prior to the Schedule 13D event, and zero otherwise. *Proxy track record* takes the value of 1 if the filer submitted at least one non-management proxy statement for any target firm prior to the event, and zero otherwise. *Non-management proxy* is a dummy variable indicating if the filer submitted a proxy statement for the target firm after the Schedule 13D event. Finally, *Shareholder activism* takes the value of one if either one of the following three indicators takes the value of one: *Holdings < 500*, *Proxy track record*, and *Non-management proxy*. In the model, η_i is the combined effect of all firm-specific unobserved variables that are constant over time, δ_t are year fixed effects, and ε_{it} is the random disturbance term. The sample period is 2005 to 2018. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the firm level.

		Investor Characteristics				
	(1)	(2)	(3)	(4)	(5)	(6)
Blockholder	7.04***	5.63***	5.66***	6.03***	5.96***	4.69***
	(8.36)	(5.45)	(5.71)	(6.64)	(6.91)	(4.49)
Investment managers		3.90**				
		(2.38)				
Holdings < 500			4.58***			
			(2.66)			
Proxy track record				7.66***		
				(3.36)		
Non-management proxy					16.07***	
					(5.19)	
Shareholder activism						5.97***
						(3.74)
Intercept	44.87***	44.92***	44.91***	44.94***	44.96***	44.98***
	(56.14)	(56.21)	(56.20)	(56.19)	(56.27)	(56.27)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
$\beta_1 + \beta_2$	7.04***	9.53***	10.24***	13.69***	22.03***	10.67***
	(8.36)	(7.14)	(6.99)	(6.49)	(7.32)	(8.30)
Adjusted R^2	0.062	0.062	0.062	0.063	0.063	0.063
Firms	6,447	6,447	6,447	6,447	6,447	6,447
Observations	45,541	45,541	45,541	45,541	45,541	45,541

manager that holds fewer than 500 stocks in their portfolio. Alternatively, if they are not a professional investor or hold more than 500 stocks, it also takes the value of one if the investor has a track record of proxy filings at other firms preceding the investment, or files a non-management proxy for the target firm. I propose that this combination of investor characteristics captures activist intent and identifies shareholder activism events. The tabulated result provides empirical evidence that this proxy is strongly associated with new director appointments. The marginal probability of a new appointment increases by almost 6 percentage points and the economic significance of the main *Blockholder* variable is lower compared to other specifications. This indicates that more of the variation in new director appointments is captured by the *Shareholder activism* variable than the *Blockholder* indicator. I also estimate a model for director departures that is analogous to this specification. The results are consistent with the main analysis and are included in the Appendix.

1.4.4. Non-linear modeling

In using the ordinary least squares method, I acknowledge that the dependent variable is clearly not normal, disturbances are heteroskedastic and the model specification lacks internal consistency because predicted values may not lie between 0 and 1. This model still produces unbiased estimates that have the smallest variance of all possible linear estimators, but the model is unlikely to be literally true (Wooldridge, 2010) and may produce a marginal effect with the wrong sign (Lewbel, Dong, and Yang, 2012). Motivated by these concerns, I also estimate the Equation 1.7 model in a nonlinear logistic regression framework for both director appointments and departures.

As a first step, I test whether it is appropriate to use the more efficient random effects model over the unbiased but less efficient fixed effects. The identifying assumption for random effects models is that firm-specific effects are uncorrelated with the independent variables. Coefficient estimates may suffer from omitted variable bias if this assumption is not valid because time-invariant unobserved firm heterogeneity is omitted, even though firm effects are modeled in the error structure. If Equation (1.7) yields the estimator $\beta_{2\,RE}$ for a random effects specification and $\beta_{2\,FE}$ in a fixed effects specification, both of these estimators are consistent under the null hypothesis. However, $\beta_{2\,RE}$ has

the smaller asymptotic variance and so the random effects model is more efficient. The Durbin–Wu–Hausman test (Durbin, 1954; Hausman, 1978; Wu, 1973) evaluates whether the more efficient estimators are consistent with the less efficient estimator, which we know is consistent. The Hausman statistic set out below is asymptotically χ^2 distributed with $(Var(\beta_{2\,FE}) - Var(\beta_{2\,RE}))$ degrees of freedom.

$$H = (\beta_{2\,FE} - \beta_{2\,RE})' \ (Var(\beta_{2\,FE}) - Var(\beta_{2\,RE}))^{-1} \ (\beta_{2\,FE} - \beta_{2\,RE})$$

A small and insignificant χ^2 value for the Hausman test leads to the conclusion that the null hypothesis that the random effects model is consistent cannot be rejected. Thus, I have a random effects logistic regression model with estimates tabulated in Table 1.5. The results are consistent with the linear model and the main coefficients of interest remain statistically significant at the 1% level in all specifications. The intra-firm correlation (rho) across all models is approximately 0.064 with a standard error of 0.004. Thus, in column 6, approximately 6.5% of the variance is attributable to the same firm within the sample. The estimates for the standard deviation of the time-invariant individual-specific term α_i from Equation (1.7) is tabulated in the "RE: firm SD" row. It suggests that a substantial part of the variance in director appointments is due to unobserved heterogeneity of firms, as expected. I also estimate marginal probabilities in order to facilitate comparison with the linear model and include the tabulated results in Table 1.6. These result in column 1 suggests that new active blockholders are associated with a marginal increase of approximately 5.5 percentage points in the probability of new director appointments. The proposed measure of shareholder activism in column 6 is associated with a 7.6 percentage point increase, while only a 2.5 percentage point increase is associated with the variation in new active blockholder status.

1.5. Hedge fund activism and shareholder activism

In order to provide a frame of comparison, I test the relationship between director appointments and both the newly proposed measure of shareholder activism and the commonly used identification for hedge fund activism campaigns. The sample period for this empirical test is limited to 2005 to 2014, because consistent BoardEx data is only available

Table 1.5: Director appointments and blockholder characteristics: nonlinear model

This table reports logistic regressions on the relationship between board appointments and activism, estimating:

$$P(\text{Appointment})_{i(t+1)} = \mu_t + \beta_1 \cdot D(\text{Blockholder})_{it} + \beta_2 \cdot D(\text{Investor type})_{it} + \delta_t + \delta_n + \varepsilon_{it}$$

where P(Appointment) takes the value of one if a director is appointed for firm i in year $(t+1)$. *Firm SD* is firm-level standard deviation in the random effects model and *rho* is intra-firm correlation with standard errors in brackets for both estimates underneath. In the model, δ_t are year fixed effects, δ_n are industry fixed effects, and ε_{it} is the random disturbance term. *LRI* is the McFadden (1973) likelihood ratio index. All other variables are defined in Table 1.4. The sample period is from 2005 to 2018. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the firm level. A small and insignificant χ^2 value in an untabulated Hausman test suggests that the random effects model is consistent.

		Investor Characteristics				
	(1)	(2)	(3)	(4)	(5)	(6)
Blockholder	0.241***	0.152***	0.155***	0.191***	0.191***	0.112***
	(7.411)	(3.771)	(4.030)	(5.433)	(5.697)	(2.726)
Investment managers		0.250***				
		(3.947)				
Holdings < 500			0.286***			
			(4.285)			
Proxy track record				0.393***		
				(4.356)		
Non-management proxy					0.798***	
					(6.231)	
Shareholder activism						0.334***
						(5.367)
Intercept	-0.073	-0.061	-0.062	-0.062	-0.064	-0.054
	(-0.311)	(-0.258)	(-0.264)	(-0.264)	(-0.272)	(-0.231)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
RE: firm SD	0.476	0.473	0.473	0.474	0.474	0.473
Standard error	[0.017]	[0.017]	[0.017]	[0.017]	[0.017]	[0.017]
rho	0.064	0.064	0.064	0.064	0.064	0.064
Standard error	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
LRI	0.006	0.006	0.006	0.006	0.006	0.006
Firms	6,447	6,447	6,447	6,447	6,447	6,447
Observations	45,540	45,540	45,540	45,540	45,540	45,540

Table 1.6: Director appointments and blockholder characteristics: marginal effects

This table reports marginal effects from the logit regressions in Table 1.5.

		Investor Characteristics				
	(1)	(2)	(3)	(4)	(5)	(6)
Blockholder	0.055***	0.034***	0.035***	0.043***	0.043***	0.025***
	(7.449)	(3.779)	(4.039)	(5.451)	(5.718)	(2.730)
Investment managers		0.057***				
		(3.948)				
Holdings < 500			0.065***			
			(4.287)			
Proxy track record				0.089***		
				(4.358)		
Non-management proxy					0.181***	
					(6.240)	
Shareholder activism						0.076***
						(5.372)
Observations	45,540	45,540	45,540	45,540	45,540	45,540

from 2005 and the Brav et al. (2008) dataset ends in 2014. This specification is estimated using a linear probability model that can accommodate fixed effects more readily compared to a probit model. Table 1.7 shows that the economic magnitude and statistical significance of the two measures are similar across all specifications. The coefficients are also comparable and consistent after controlling for time effects, industry dynamics and time-invariant unobserved firm characteristics.

For a more in-depth comparison, I further examine both firm and investor characteristics and compare differences between the new shareholder activism measure and the Brav et al. (2008) sample. Table 1.8 provides the first set of insights, showing that the differences in key firm characteristics and financial ratios are indistinguishable from zero. Firms are similar in size in terms of market capitalization at approximately $1.2bn. Target firms in the shareholder activism sample appear larger in terms of total assets and turnover, but the differences are not statistically significant. There is some evidence that shareholder activism sample firms carry more long-term debt by approximately $260m, but this difference is only significant at the 10% level.

Table 1.7: Director appointments, hedge fund activism and shareholder activism

This table reports OLS regressions on the association between board appointments, hedge fund activism and shareholder activism by estimating the following model:

$$D(\text{Appointment})_{i(t+1)} = \mu_t + \beta \cdot D(\text{Activism})_{it} + \delta_t + \delta_i + \alpha_i + \varepsilon_{it}$$

where D(Appointment) takes the value of one if a director is appointed for firm i in year $(t+1)$. *Hedge fund activism* is a dummy variable that identifies activism targets following Brav et al. (2008), and *Shareholder activism* is a dummy variable that takes the value of one for firms with new blockholders described in Section 1.4.3. In the model, δ_t are year fixed effects, δ_i are firm or industry fixed effects as indicated in the table, α_i is the combined effect of all firm-specific unobserved variables that are constant over time in columns (3) and (6), and ε_{it} is the random disturbance term. The sample period is 2005 to 2014 to provide an overlapping sample between the two identification methods. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the firm level.

	(1)	(2)	(3)	(4)	(5)	(6)
Hedge fund activism	9.80***	10.00***	10.79***			
	(7.03)	(7.21)	(7.05)			
Shareholder activism				10.32***	10.54***	11.29***
				(7.67)	(7.83)	(7.61)
Intercept	39.42***	52.04***	45.33***	39.37***	52.31***	45.34***
	(127.62)	(7.76)	(58.22)	(127.36)	(7.88)	(58.25)
Year fixed effects	No	Yes	Yes	No	Yes	Yes
Industry fixed effects	No	Yes	No	No	Yes	No
Firm fixed effects	No	No	Yes	No	No	Yes
Adjusted R^2	0.001	0.010	0.062	0.002	0.010	0.062
Firms	5,823	5,823	5,823	5,823	5,823	5,823
Observations	35,901	35,901	35,901	35,901	35,901	35,901

Table 1.8: Target firm descriptive statistics and differences

This table reports descriptive statistics for key financial indicators for the Brav et al. (2008) hedge fund activism sample and shareholder activism sample described in Section 1.4.3. Both samples are limited to the firm-year observations between 2005 and 2014 to ensure an overlapping sample period. The last two columns report differences in means between the samples with statistical significance based on t-tests that allow for unequal variances.

	Hedge fund activism			Shareholder activism			Differences	
	Mean	Median	SD	Mean	Median	SD	Mean	t-stat
Market capitalization	1,187.51	211.32	3,555.63	1,279.63	248.62	3,641.29	92.12	0.74
Total assets	2,474.41	372.94	19,349.58	3,194.58	449.89	23,377.82	720.17	0.98
Net turnover	1,296.99	239.13	4,129.52	1,631.30	266.10	7,398.99	334.31	1.64
Operating income	169.21	18.17	675.20	203.49	20.86	933.26	34.28	1.23
Long-term debt	532.83	23.24	2,627.37	794.50	39.88	6,058.32	261.67*	1.65
R&D Expense	51.29	8.73	196.05	69.73	9.66	388.22	18.44	1.30
Capital expenditure	106.96	7.60	673.76	130.54	8.44	886.36	23.57	0.87
Tobin's Q	1.55	1.24	1.03	1.62	1.24	1.30	0.07*	1.84
Return on assets	0.03	0.07	0.21	0.02	0.07	0.22	-0.01	-0.71
Leverage	0.22	0.14	0.26	0.23	0.16	0.27	0.01	1.51
Target firms	1,613			1,757			3,370	

Table 1.9 examines investor characteristics, where the differences between the two groups are more significant. The shareholder activism sample excludes corporations, with the likely result that more of the investors are professional investment managers. Examining the number of stocks held by investors, Table 1.9 shows that investors in the Brav et al. (2008) hedge fund activism sample hold more stocks in their portfolio: 234 on average compared to 176 for the other group. The distribution appears skewed because the median number of stocks held is approximately 42 for both groups of investors. The average number of proxy filings is under 14 for both groups, but 46% of the shareholder activist group filed at least one proxy before becoming an active blockholder in the target firm, compared to 40% in the hedge fund activist group. Approximately 3% more of the shareholder activist group filed at least one proxy.

These empirical tests and descriptive statistics provide an insight into the similarities and differences between the two identification methods. The overall correlation between the two methods is approximately 71%. While the Brav et al. (2008) measure is specific to hedge fund activism campaigns, I propose that the shareholder activism measure is

complementary and well-suited to studying shareholder activism in a broader setting.

In additional robustness checks, I examine whether the association between the two activism measures and other board characteristics are consistent with expectations. In Tables 1.10 and 1.11, I show that both board tenure and size are strongly associated with shareholder activism. As expected, average board tenure significantly decreases in the event year, but it decreases more in both the first and second year after the event compared to all other listed firms. This finding provides additional support that changes at the board level are an important channel for effecting change at target firms. Table 1.11 provides an interesting insight suggesting that on average, new directors are appointed without any of the incumbent directors leaving the board. Board size increase by 11 percentage points on average in the year of the event at target firms and by over 16 percentage points in the following year. While the sign of the coefficients is consistent for the hedge fund activism sample, the results are not statistically significant.

1.6. Target firm characteristics

In this section, I provide an overview of firms targeted by activist investors identified through the methodology developed in Section 1.4. This analysis is distinctly different from the analysis that provided a comparison to the hedge fund activism sample because the sample period is no longer restricted by the availability of the Brav et al. (2008) dataset. Table 1.12 provides a sample breakdown showing that only a little over one third of new blockholders are classified as activist investor in the sample. Almost 6,200 investors declared an active blockholding stake in Compustat/CRSP target firms during the 2005 to 2018 sample period, and approximately 500 of those investors were other corporations. It is likely that some of those investments signified toehold stakes that acquirers built prior to taking over the target firm. While the sample selection method excludes all mutual funds following Klein and Zur (2009), none are identified as a new blockholder during the sample period. In general, mutual funds are not considered to be beneficial owners of the firms they invest in, even when they exceed the 5% reporting threshold. Similarly, they are also not required to file insider trading reports with the SEC even when they own more than 10% of the firm's equity.

Table 1.9: Activist investor descriptive statistics and differences

This table reports differences in means tests for investor characteristics comparing the activist hedge fund sample from Brav et al. (2008) and the shareholder activism sample described in Section 1.4.3. The sample period is 2005 to 2014. A comprehensive description of all Specific SEC filing types is included in the appendix. *Investment managers* takes the value of one if the filer has also filed an institutional manager holding report, and zero otherwise. *Corporations* is a dummy variable if the filer also files a corporate filing. *Holding size* for the fund family is estimated based on quarterly institutional manager holding reports filed in the year prior to the event, all periods prior to the event, and for all available periods. Dummy variables indicating holding sizes of under 250, 500, and 1000 are based on all periods prior to the activism event. *Proxy track record* is the number of investor filings that signal engagement with other shareholders for any target firm, prior to the event. *Non-management proxy* takes the value of one for filer-target pairs with a filing that signals engagement with other shareholders. The last two columns report differences in means between the samples with statistical significance based on t-tests that allow for unequal variances.

	Hedge fund activism			Shareholder activism			Differences	
	Mean	Median	SD	Mean	Median	SD	Mean	t-stat
Investment managers	0.69	1.00	0.46	0.81	1.00	0.39	0.12***	8.23
Corporations	0.01	0.00	0.08	0.00	0.00	0.00	-0.01***	-3.01
Holding size (year)	263.13	42.65	539.42	183.93	40.25	423.85	-79.20***	-3.81
Holding size (all prior)	234.27	42.58	492.12	176.43	41.58	432.77	-57.84***	-3.05
Holding size (all)	246.31	41.58	503.23	208.51	43.37	462.81	-37.80**	-2.02
Holdings $<$ 250	0.54	1.00	0.50	0.70	1.00	0.46	0.16***	9.93
Holdings $<$ 500	0.57	1.00	0.50	0.75	1.00	0.44	0.18***	10.86
Holdings $<$ 1000	0.63	1.00	0.48	0.78	1.00	0.41	0.15***	9.79
Proxy track record	13.53	0.00	40.02	13.91	0.00	39.07	0.38	0.28
% At least 1 proxy	0.40	0.00	0.49	0.46	0.00	0.50	0.06***	3.33
% At least 5 proxies	0.30	0.00	0.46	0.34	0.00	0.48	0.04**	2.51
% At least 10 proxies	0.23	0.00	0.42	0.26	0.00	0.44	0.02	1.58
% Non-management proxy	0.14	0.00	0.34	0.17	0.00	0.37	0.03**	2.47
Group size	2.82	1.00	3.29	2.96	1.00	3.71	0.14	1.15
Previously passive	0.25	0.00	0.43	0.28	0.00	0.45	0.03*	1.85
Prior passive filings	3.00	2.00	2.57	3.14	2.00	2.62	0.15	0.82
Target firms	1,613			1,757			3,370	

Table 1.10: Board tenure and shareholder activism

This table reports OLS regressions and shows the association between shareholder activism and board tenure. Specifically, I estimate:

$$Time\ at\ firm_{it} = \beta_1 \cdot Event\ window_{it} + \gamma \cdot X'_{it} + \delta_t + \delta_i + \varepsilon_{it}$$

where $Time\ at\ firm$ is the average tenure of directors at firm i in year t, X' is a vector of firm controls including the intercept, δ_t are year fixed effects and δ_i are firm fixed effects. Odd-numbered models use Alon Brav's data and even-numbered models identify activism events introduced in this paper. The sample period is 2005 to 2014. In Models (1) and (2), *Event window* takes the value of one in the first year of the activism event, and zero otherwise. In subsequent models, the *Event window* is extended to two years in Models (3) and (4); three years in Models (5) and (6). All other variables are defined in Appendix 1.9. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics are based on standard errors clustered at the firm level and are shown in parentheses.

	Time at firm					
	(1)	(2)	(3)	(4)	(5)	(6)
Event year	-0.244***	-0.067				
	(-3.476)	(-0.937)				
Event year +1			-0.443***	-0.294***		
			(-6.003)	(-3.892)		
Event year +2					-0.522***	-0.394***
					(-6.452)	(-4.831)
Board size	0.028*	0.027*	0.029*	0.028*	0.029**	0.028*
	(1.872)	(1.853)	(1.947)	(1.886)	(1.968)	(1.923)
Size	0.049	0.050	0.043	0.046	0.040	0.042
	(1.411)	(1.450)	(1.261)	(1.343)	(1.164)	(1.216)
BM	1.498***	1.487***	1.207**	1.518***	1.289**	1.528***
	(2.686)	(2.689)	(2.248)	(2.690)	(2.418)	(2.779)
Intercept	-2.837	-2.765	-0.795	-2.954	-1.343	-2.988
	(-0.736)	(-0.724)	(-0.214)	(-0.757)	(-0.365)	(-0.787)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.113	0.113	0.115	0.114	0.117	0.115
Firms	5,924	5,924	5,924	5,924	5,924	5,924
Observations	36,376	36,376	36,376	36,376	36,376	36,376

Table 1.11: Board size and shareholder activism

This table report OLS regressions and shows the association between activism and board size. Specifically, I estimate:

$$Board\ size_{it} = \beta_1 \cdot Event\ window_{it} + \gamma \cdot X'_{it} + \delta_t + \delta_i + \varepsilon_{it}$$

where *Board size* is the average tenure of directors at firm i in year t, X' is a vector of firm controls including the intercept, δ_t are year fixed effects and δ_i are firm fixed effects. Odd-numbered models use Alon Brav's data and even-numbered models identify activism events introduced in this paper. The sample period is 2005 to 2014. In Models (1) and (2), *Event window* takes the value of one in the first year of the activism event, and zero otherwise. In subsequent models, the *Event window* is extended to two years in Models (3) and (4); three years in Models (5) and (6). All other variables are defined in Appendix 1.9. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics are based on standard errors clustered at the firm level and are shown in parentheses.

	Board Size					
	(1)	(2)	(3)	(4)	(5)	(6)
Event year	0.109**	0.005				
	(2.024)	(0.082)				
Event year +1			0.162***	0.063		
			(2.965)	(1.124)		
Event year +2					0.125**	0.077
					(2.201)	(1.393)
Size	16.551***	16.544***	16.562***	16.552***	16.562***	16.558***
	(3.740)	(3.741)	(3.739)	(3.740)	(3.739)	(3.740)
BM	-0.103***	-0.104***	-0.102***	-0.103***	-0.102***	-0.103***
	(-3.497)	(-3.542)	(-3.452)	(-3.512)	(-3.473)	(-3.491)
Intercept	10.836***	10.840***	10.833***	10.837***	10.835***	10.834***
	(254.554)	(254.677)	(254.525)	(254.346)	(254.373)	(253.583)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.172	0.172	0.172	0.172	0.172	0.172
Firms	5,805	5,805	5,805	5,805	5,805	5,805
Observations	35,114	35,114	35,114	35,114	35,114	35,114

Table 1.12: Sample selection steps

This table reports the initial sample selection process. I obtain all Schedule 13D "General statement of acquisition of beneficial ownership" filings between 2005 and 2018. First, I remove all observations if the filer is required to file under the the 1934 Securities Exchange Act (corporations) or the Investment Company Act of 1940 (mutual funds). Next, I require that filers are classified as professional investment managers and submit institutional manager holding reports, or that they have filed a non-management proxy either prior to the Schedule 13D filing, or later for the target firm. Finally, I exclude investment managers that held more than 500 stocks on average prior to filing a Schedule 13D, across their fund family. A comprehensive description of all Specific SEC filing types is included in the appendix.

	Filings
All Form SC 13D acquisition of beneficial ownership filings	6,173
Filers: Excluding corporations and mutual funds	5,683
Filers: Limit to investment managers or proxy credentials	2,574
Filers: Under 500 stocks or proxy credentials	2,417

The next sample selection step eliminates all new blockholders if they are not a professional investment manager with $100m or more under management, or alternatively if they have no track record of non-management proxies filed for other firms or the target. Approximately 3,000 new blockholder events are excluded in this sample selection step because those investors are mostly individuals or unlisted and unregulated holding companies. The final sample selection step removes approximately 160 investors that hold more than 500 stocks in their investment portfolio.

Table 1.13 shows that over 20% of the target of firms are in the Business Equipment sector, based on their Fama-French 12 industry classification. Finance firms are the second most prominent group and together with Healthcare firms, the three industries make up half of the sample. The annual breakdown of activism campaigns in Table 1.14 shows that events are evenly distributed across the sample period. Heightened activism activity between 2006 and 2008 is consistent with prior studies, including Boyson, Gantchev, and Shivdasani (2017). The stock exchange breakdown provided in Table 1.15 confirms that there is no systematic difference between targeted firms and the universe of listed firms in terms of listing venue.

Table 1.13: Sample Breakdown by Fama-French Industries

This table reports the industry breakdown of target firms based on the Fama-French 12 industry classification in the first year they enter the sample.

	Target firms	Percent
Consumer Non Durables	92	3.81
Consumer Durables	70	2.90
Manufacturing	187	7.74
Energy	116	4.80
Chemicals and Allied Products	53	2.19
Business Equipment	496	20.52
Telecommunications	84	3.48
Utilities	31	1.28
Wholesale and Retail	275	11.38
Healthcare, Medical Equipment, and Drugs	335	13.86
Finance	369	15.27
Others	309	12.78
Full sample	2,417	100.00

Table 1.14: Sample breakdown by year of targeting

This table reports the annual distribution of the sample of target firms.

	Target firms	Percent
2005	155	6.41
2006	202	8.36
2007	275	11.38
2008	211	8.73
2009	138	5.71
2010	138	5.71
2011	151	6.25
2012	140	5.79
2013	167	6.91
2014	180	7.45
2015	171	7.07
2016	178	7.36
2017	153	6.33
2018	158	6.54
Full sample	2,417	100.00

Table 1.15: Sample breakdown by stock exchange

This table reports the stock exchange breakdown of target firms.

	Target firms	Percent
New York Stock Exchange	782	32.35
NYSE American Stock Exchange	149	6.16
NASDAQ	1,486	61.48
Full sample	2,417	100.00

Table 1.16 provides an overview of key firm characteristics, financial ratios and board characteristics for activist targets. Table 1.1 provided evidence that firms with new active blockholders are significantly different from the universe of publicly listed firms. They tend to be smaller, younger and less profitable. This new analysis compares the subset of firms targeted by an activist investor to all firms with a new active blockholder. The test of differences shows that activist targets are of similar size, with a marginally higher average turnover and R%D expense, but lower R%D spending compared to their total assets. Their listing age is two years higher on average and their average operating performance as measured by return on assets is significantly higher. Target firms have larger and more experienced boards, with more female directors. Table A2.9 in the appendix provides additional insight on the distribution of these key firm characteristics for target firms.

Table 1.17 provides an insight into how activist investors are different compared to the sample of all active blockholders. The activist investor sample comprises significantly more professional investment managers with at least $100m under management. Almost 82% of activist investors are professional investment managers, which is only the case for 36% of investors in the larger sample. Comparing investor portfolios across the two samples, the results show that activists hold significantly fewer stocks: they own 157 distinct firms compared to the average of 271 for the blockholder sample. Activists are 43% more likely to have a concentrated portfolio with fewer than 250 stocks. Activist investors have submitted significantly more proxy filings than all blockholders. This finding is primarily driven by the identification method described in Section 1.4.3, but it also provides an insight into how rare it is for investors to engage with fellow shareholders through the proxy solicitation process. Finally, it is also interesting to observe that approximately 20%

Table 1.16: Blockholder and activist target firm characteristics

This table reports summary statistics for listed Compustat / CRSP firms between 2005 and 2018. The *All blockholders* column includes all firms with a new active blockholder filing in the SEC's EDGAR database and the *Activist shareholder* sample is described in Section 1.4.3. The final two columns report differences in means and the statistical significance of the differences allowing for unequal variances. Variable definitions are provided in Appendix 1.9.

	All blockholders			Activist shareholders			Differences	
	Mean	Median	SD	Mean	Median	SD	Mean	*t*-stat
Firm characteristics								
Total assets	3,044.27	289.89	27,783.84	3,122.35	449.89	20,384.07	78.08	0.14
Net turnover	1,281.58	147.05	6,519.29	1,576.03	267.78	6,614.67	294.44*	1.86
Market capitalization	1,280.97	193.17	6,429.28	1,378.64	270.12	4,038.52	97.67	0.84
Operating income	161.81	10.65	1,438.40	197.28	20.84	891.40	35.47	1.37
Long-term debt	731.96	19.25	5,143.58	865.05	48.11	5,629.76	133.09	1.01
R&D expense	43.90	7.30	275.91	65.27	10.68	336.10	21.37**	2.06
Capital expenditure	96.47	4.60	630.29	133.00	8.40	850.56	36.53*	1.91
Common dividends	20.63	0.00	204.85	20.28	0.00	176.22	-0.35	-0.08
Cash	170.77	23.22	1,419.79	202.18	32.53	1,265.00	31.42	1.00
Short-term investments	161.90	0.05	3,071.74	128.69	0.29	2,494.08	-33.21	-0.52
EBITDA	161.81	10.65	1,438.40	197.28	20.84	891.40	35.47	1.37
Firm age	17.21	13.50	13.63	19.14	15.50	14.54	1.93***	5.64
Segments	4.21	4.00	3.12	4.71	4.00	3.37	0.50***	6.00
Financial ratios								
Return on assets	-0.04	0.04	0.37	0.00	0.06	0.27	0.05***	6.39
ΔROA $_{[t-3,t-1]}$	0.08	-0.00	4.76	0.01	-0.00	0.57	-0.07	-1.05
Return on sales	-5.33	0.08	120.71	-5.02	0.09	173.13	0.31	0.08
Tobin's Q	3.38	1.30	114.51	5.43	1.29	182.97	2.05	0.51
Leverage	0.25	0.16	0.44	0.25	0.18	0.30	0.00	0.54
Dividend yield	1.27	0.00	94.17	3.17	0.00	150.48	1.91	0.58
Payout ratio	1.42	0.00	97.71	3.42	0.00	154.79	2.00	0.57
R&D/assets	0.14	0.06	0.23	0.12	0.05	0.20	-0.03***	-3.72
CAPEX/assets	0.04	0.02	0.07	0.04	0.02	0.07	0.00	0.22
Sales per employee	0.01	0.00	0.15	0.01	0.00	0.17	-0.00	-0.59
Inventory turnover	34.02	5.37	216.08	35.11	5.63	201.12	1.09	0.19
Board characteristics								
Board size	8.83	8.00	3.44	9.31	8.00	3.44	0.48***	5.22
Tenure in years	7.37	6.61	4.65	7.15	6.59	4.28	-0.22*	-1.88
Prior listed boards	1.61	1.40	1.31	1.79	1.65	1.29	0.18***	5.14
Concurrent boards	1.57	1.50	0.52	1.64	1.57	0.52	0.07***	4.95
Qualifications	1.96	2.00	0.56	2.00	2.00	0.52	0.04***	2.90
Age	58.71	58.67	5.14	58.88	58.83	4.92	0.17	1.30
Female director	0.08	0.00	0.10	0.10	0.09	0.10	0.02***	5.66
Target firms	6,173			2,417				

of all blockholders reached a 5% holding threshold before becoming an active blockholder, compared to 28% of activist investors. These instances are identified through Schedule 13G filings that investors submit if they have no intention of influencing the management and control of the target firm. Table A2.10 in the appendix provides additional insight into the distribution of these key investor characteristics for target firms.

1.7. Long-term changes at target firms

This section explores long-term changes at targeted firms in order to further validate the proposed identification measure. I adopt the empirical framework of Bebchuk et al. (2015) to examine how return on assets and Tobin's Q evolves at targeted firms by regressing indicator variables for each year following the event on the outcome variable of interest using a sample that includes all publicly listed Compustat firms. In a subsequent step, I compare the coefficient on the $(t+j)$ year dummies against the coefficient on the indicator variable for the event year, and also the year preceding the event.

The results are shown in Tables 1.18 and 1.19. The evidence suggests that both ROA and Tobin's Q are higher in the years following the activism, as shown by the statistical significance of the tests that provide point estimates and standard errors for the linear combination of coefficients. A comparison of this specification with the replication of the Bebchuk et al. (2015) results is provided in the appendix and shows that the results are consistent.

In the final set of empirical tests, I examine operational and financial policy changes at target firms. The first two columns in Table 1.20 show that return on assets (ROA) increases significantly when the year before the event value is compared to the value two years after the event. Return on sales (ROS) does not increase significantly for either of the periods tested. Asset turnover (ATO) is another measure of firm efficiency and the results in columns 5 and 6 of Table 1.20 provide evidence that ATO increases significantly when it is compared two years after the event to either one or two years before the launch of the activism campaign. Regression results in Table 1.21 show that of the three additional policy changes examined, only capital expenditure (CAPEX) changes significantly: it decreases for both periods tested. On the other hand, firm level leverage and payout

Table 1.17: Blockholder and activist shareholder descriptive statistics

This table reports descriptive statistics for investor characteristics. The *All blockholders* column includes all firms with a new active blockholder filing in the SEC's EDGAR database and the *Activist shareholder* sample is described in Section 1.4.3. The sample period is 2005 to 2018. *Investment managers* takes the value of one if the filer has also filed an institutional manager holding report, and zero otherwise. *Corporations* is a dummy variable if the filer also files a corporate filing. *Holding size* for the fund family is estimated based on quarterly institutional manager holding reports filed in the year prior to the event, all periods prior to the event, and for all available periods. Dummy variables indicating holding sizes of under 250, 500, and 1000 are based on all periods prior to the activism event. *Proxy track record* is the number of investor filings that signal engagement with other shareholders for any target firm, prior to the event. *Non-management proxy* takes the value of one for filer-target pairs with a filing that signals engagement with other shareholders. A comprehensive description of SEC filing types is included in the appendix.

	All blockholders			Activist shareholders			Differences	
	Mean	Median	SD	Mean	Median	SD	Mean	*t*-stat
Investment managers	0.36	0.00	0.48	0.82	1.00	0.38	0.46***	46.25
Corporations	0.08	0.00	0.27	0.00	0.00	0.00	-0.08***	-23.07
Holding size (year)	336.48	43.63	803.85	176.43	36.25	424.40	-160.05***	-7.86
Holding size (all prior)	270.93	46.00	621.37	157.34	36.92	388.78	-113.59***	-7.15
Holding size (all)	309.94	42.88	724.94	186.93	39.13	426.23	-123.01***	-7.09
Holdings < 250	0.29	0.00	0.45	0.72	1.00	0.45	0.43***	39.83
Holdings < 500	0.30	0.00	0.46	0.76	1.00	0.43	0.45***	43.18
Holdings < 1000	0.34	0.00	0.47	0.80	1.00	0.40	0.46***	45.40
Proxy track record	5.93	0.00	28.94	14.93	0.00	44.71	9.00***	9.17
% At least 1 proxy	0.19	0.00	0.39	0.46	0.00	0.50	0.27***	23.97
% At least 5 proxies	0.14	0.00	0.35	0.34	0.00	0.48	0.21***	19.44
% At least 10 proxies	0.10	0.00	0.30	0.25	0.00	0.43	0.15***	15.43
% Non-management proxy	0.06	0.00	0.25	0.16	0.00	0.36	0.09***	11.51
Group size	2.81	1.00	4.09	2.88	1.00	3.71	0.07	0.77
Previously passive	0.20	0.00	0.40	0.28	0.00	0.45	0.08***	7.54
Prior passive filings	3.32	2.00	3.12	3.14	2.00	2.62	-0.18	-1.37
Target firms	6,173			2,417				

Table 1.18: Shareholder Activism: the evolution of Tobin's Q and ROA over time

This table sets out the result of OLS regressions using the proposed measure of shareholder activism and the evolution of Tobin's Q and ROA over time. This table reports coefficient estimates of linear regressions where the dependent variables are Return on Assets and Tobin's Q. The sample includes all Compustat / CRSP firms between 2005 and 2018. The independent variables are indicator variables that take the value of one if the firm was targeted by an engaged investor in the given year ($t : Event\ year$), or j years prior to the current year indicated by the variables $t+j, (j = 1, 2, .., 5)$. Specifications (1) and (3) are pooled OLS regressions, and specifications (2) and (3) include firm fixed effects. Control variables include the natural logarithm of market capitalization at the end of the firm's fiscal year ($ln(MV)$), the natural logarithm of firm age, which is the first date with data for the firm in Compustat ($ln(Age)$), and pre-event dummies $t-j, (j = 1, 2, 3)$ that take the value of one if the firm is targeted by an engaged investor j years going forward. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the firm level.

	Return on Assets		Tobin's Q	
	(1)	(2)	(3)	(4)
t: Event year	-0.0058	-0.0102***	-0.2440***	-0.0606**
	(-1.61)	(-3.15)	(-10.23)	(-2.31)
(t+1)	0.0018	-0.0033	-0.1519***	0.0356
	(0.46)	(-0.96)	(-5.84)	(1.27)
(t+2)	0.0052	0.0004	-0.1104***	0.0750**
	(1.24)	(0.12)	(-3.92)	(2.54)
(t+3)	0.0094**	0.0033	-0.0598*	0.1061***
	(2.05)	(0.86)	(-1.85)	(3.26)
(t+4)	0.0175***	0.0109***	-0.0366	0.1193***
	(3.45)	(2.97)	(-0.89)	(3.15)
(t+5)	0.0149***	0.0061	-0.0402	0.0787**
	(2.58)	(1.39)	(-1.06)	(2.41)
Size	0.0357***	0.0413***	0.1748***	0.5033***
	(41.28)	(32.73)	(30.53)	(38.81)
Firm age	0.0322***	0.0316***	-0.3013***	-0.3070***
	(13.55)	(8.15)	(-19.22)	(-8.39)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	No	Yes	No
Firm fixed effects	No	Yes	No	Yes
Pre-event dummies	Yes	Yes	Yes	Yes
Adjusted R^2	0.366	0.785	0.263	0.628
Firms	10,582	10,582	10,609	10,609
Observations	84,352	84,352	84,677	84,677

Table 1.19: F-tests: Shareholder Activism: the evolution of Tobin's Q and ROA over time

This table sets out test results of the differences between the t : *Event year* coefficient and the $(t+x)$: $x \in \{3,4,5\}$ year coefficient set out in Table 1.18. It also sets out differences between the $t-1$ coefficient (one of the pre-event dummies in Table 1.18) and the $t+j, (j = 1,2,..,5)$ coefficients from the linear regression models set out in Table 1.18. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics are shown in parentheses.

	Return on Assets		Tobin's Q	
	(1)	(2)	(3)	(4)
Relative to (t)				
(t + 1) vs. (t)	0.0069**	0.0076**	0.0962***	0.0921***
	(2.29)	(2.23)	(4.29)	(3.92)
(t + 2) vs. (t)	0.0106***	0.0109**	0.1356***	0.1336***
	(2.92)	(2.56)	(4.89)	(4.63)
(t + 3) vs. (t)	0.0135***	0.0151***	0.1667***	0.1842***
	(3.24)	(3.03)	(5.25)	(5.32)
(t + 4) vs. (t)	0.0211***	0.0233***	0.1798***	0.2074***
	(4.88)	(4.27)	(4.50)	(4.80)
(t + 5) vs. (t)	0.0163***	0.0206***	0.1392***	0.2038***
	(3.30)	(3.34)	(3.93)	(5.02)
Relative to (t - 1)				
(t + 1) vs. (t - 1)	0.0049	0.0039	0.1329***	0.0728***
	(1.36)	(0.95)	(5.21)	(2.64)
(t + 2) vs. (t - 1)	0.0086**	0.0073	0.1724***	0.1143***
	(2.13)	(1.54)	(5.79)	(3.65)
(t + 3) vs. (t - 1)	0.0115***	0.0114**	0.2035***	0.1650***
	(2.60)	(2.16)	(6.12)	(4.55)
(t + 4) vs. (t - 1)	0.0191***	0.0196***	0.2166***	0.1881***
	(4.17)	(3.40)	(5.28)	(4.20)
(t + 5) vs. (t - 1)	0.0142***	0.0170***	0.1760***	0.1845***
	(2.79)	(2.70)	(4.75)	(4.35)
Firms	10,582	10,582	10,609	10,609
Observations	84,352	84,352	84,677	84,677

Table 1.20: Policy changes at shareholder activism targets (ROA, ROS, ATO)

This table reports pooled regressions of operational and financial policy changes on the indicator of shareholder activism as described in Section 1.4.3. Variable definitions are provided in Appendix 1.9.

	Δ ROA		Δ ROS		Δ ATO	
	(t-1) - (t+2)	(t-2) - (t+2)	(t-1) - (t+2)	(t-2) - (t+2)	(t-1) - (t+2)	(t-2) - (t+2)
	(1)	(2)	(3)	(4)	(5)	(6)
Shareholder activism	0.021**	0.010	-0.213	3.434	0.042***	0.054***
	(2.340)	(1.305)	(-0.099)	(0.868)	(2.748)	(3.353)
Tobin's Q	0.017***	0.024***	-1.967	-0.005	-0.002	-0.002
	(3.699)	(4.390)	(-1.133)	(-0.004)	(-1.159)	(-0.869)
Size	0.004*	-0.002	0.673	0.215	-0.014***	-0.013***
	(1.860)	(-0.668)	(0.434)	(0.560)	(-8.184)	(-5.772)
Leverage/assets	-1.619	-1.991	-1.7e+03	-42.801	0.173	0.125
	(-0.969)	(-1.028)	(-0.748)	(-0.149)	(0.753)	(0.374)
R&D/assets	-0.012	-0.019	-4.933	16.771	0.052	0.165***
	(-0.165)	(-0.250)	(-0.119)	(0.864)	(1.505)	(3.863)
Return on assets	-0.068**	0.078***				
	(-2.137)	(2.592)				
Return on sales			-0.930	-0.011		
			(-1.621)	(-0.160)		
ATO					-0.072***	-0.020
					(-6.678)	(-1.591)
Constant	-0.100*	-0.018	-7.373	-5.898	0.247***	0.218***
	(-1.845)	(-0.715)	(-0.415)	(-1.639)	(12.983)	(7.762)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.030	0.038	0.406	-0.003	0.033	0.028
Observations	18,585	17,521	18,002	17,045	18,611	17,547

policy do not seem to change. A comparison of this specification with the replication of the Bebchuk et al. (2015) results is provided in the appendix and shows that the results are consistent.

1.8. Conclusion

It is important to develop a better understanding of shareholder activism because strong owners are meant to be well-positioned to mitigate the principal-agent problem. When a firm's manager engages in self-enriching conduct, detrimental outcomes can affect many of the firm's stakeholders, including its shareholders, employees and the environment.

Table 1.21: Policy changes at shareholder activism targets (Leverage, CAPEX, Payout)

This table reports pooled regressions of operational and financial policy changes on the indicator of shareholder activism as described in Section 1.4.3. Variable definitions are provided in Appendix 1.9.

	Δ Leverage		Δ CAPEX		Δ Payout	
	(t-1) - (t+2)	(t-2) - (t+2)	(t-1) - (t+2)	(t-2) - (t+2)	(t-1) - (t+2)	(t-2) - (t+2)
	(1)	(2)	(3)	(4)	(5)	(6)
Shareholder activism	-0.011	-0.016	-0.004***	-0.005***	0.000	-0.000
	(-0.619)	(-0.856)	(-2.663)	(-2.608)	(0.057)	(-0.029)
Tobin's Q	-0.037**	-0.044**	0.001***	0.001***	-0.000**	-0.000
	(-1.971)	(-1.986)	(4.207)	(3.507)	(-2.571)	(-1.593)
Size	0.025**	0.026**	0.000	-0.000	0.000	0.000
	(2.037)	(2.121)	(1.030)	(-0.206)	(1.325)	(0.600)
Leverage/assets	18.734*	20.023**	-0.023	-0.051	0.005	-0.002
	(1.896)	(2.028)	(-0.885)	(-1.182)	(0.394)	(-0.184)
R&D/assets	0.277*	0.302*	-0.009***	-0.005*	0.004	0.001
	(1.897)	(1.762)	(-3.624)	(-1.746)	(1.108)	(0.418)
Leverage	-0.249*	-0.117				
	(-1.896)	(-0.878)				
CAPEX/assets			-0.245***	-0.060**		
			(-8.798)	(-2.388)		
Dividend yield					0.063	0.105
					(1.538)	(1.487)
Constant	-0.029	-0.026	0.007	0.008	0.002	0.003
	(-0.352)	(-0.307)	(0.762)	(0.764)	(0.848)	(1.293)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.261	0.330	0.084	0.040	0.002	0.006
Observations	18,493	17,420	18,573	17,512	18,551	17,484

Prior activism literature relies on identifying activism events based on the subjective evaluation of regulatory filings that investors submit when they become a new 5% blockholder with the stated intention of influencing the management and control of the targeted firm. Because many of these filings contain generic and boilerplate language only, this identification method can lead to measurement error due to misclassification. In the paper, I introduce and validate a new measure that is based on observed investor characteristics only. I classify investors as an activist if they are a professional investor with fewer than 500 stocks in their portfolio because focused investors are more likely to be actively engaged with the affairs of the firms they invest in. When the new blockholder is not a professional investor, I classify them as an activist if they have a track record of engaging with fellow shareholders through the proxy solicitation process. I examine whether they filed non-management proxies in relation to any target prior to becoming an active blockholder in the target firm or at the target after their investment.

The analysis in this paper demonstrates that these indicators are individually important determinants of director appointments at the target firm, which is the most common observable activist tactic. The analysis also shows that my combined proxy is strongly associated with this measure and that it is consistent with the common identification method described in Brav et al. (2008). An overview of the sample in this paper aims to provide an insight into both targeted firms and their investors in order to encourage and motivate further research in activism.

Another future pathway for this work is to examine event returns around the announcement of a new active blockholder and study whether differences across the introduced blockholder characteristics are considered relevant by the market. Building on this empirical framework, long-term calendar portfolio returns can also be examined. As an additional extension, future work could also study portfolio holdings of investors in more detail. The SEC introduced a requirement for investment managers to report their quarterly holdings in a structured XML format starting in 2013. This reporting structure facilitates a deeper understanding of investor portfolios beyond just the number of stocks owned. Future work could examine actual portfolio concentration across stocks held and classify investors with non-equity instruments in their portfolio, especially for the firms they invest in as an active blockholder.

1.9. Variable definitions

Capitalized text in brackets refer to Compustat variable names.

Variable	Definition and description
Average assets	Total assets (TA) averaged over (t - 1) and t
BHAR [x, y]	Percentage buy-and-hold abnormal return for firm i
	$$BHAR_{it} = \left(\left[\prod_{t=x}^{Y}(1 + r_{it}) - 1 \right] - \left[\prod_{t=x}^{Y}(1 + r_{mt}) - 1 \right] \right) \times 100\%$$
	where x is the number of trading days before the event and y is the number of trading days after the event set out in the table, r_{it} is the return for firm i on trading day t, and r_{mt} is the return on the CRSP value-weighted index on trading day t.
BM	Natural logarithm of the firm's book-to-market ratio, calculated as in Daniel and Titman (1997): book equity scaled by market capitalization. Book equity is calculated as stockholders equity plus deferred taxes (TXDB) plus investment tax credit (ITCB) minus post-retirement benefit asset (PRBA) minus preferred stock. Stockholders equity is either total stockholders equity (SEQ), or if missing then total common equity (CEQ) plus preferred stock par value (PSTK), or if missing then total assets (AT) minus total liabilities (LT) plus minority interest (MIB). Preferred stock is either preferred stock redemption value (PSTKRV), or if missing then preferred stock liquidating value (PSTKL), or if missing the preferred stock carrying value (PSTK).
Business segments	The number of industry segments or product lines ('BUSSEG' in STYPE)
Buyback	Purchase of common and preferred stock (PRSTKC)
Cash	Cash and short-term investments (CHE)
Capital expenditure	This item represents the funds used for additions to property, plant, and equipment, excluding amounts arising from acquisitions (for example, fixed assets of purchased companies). This item includes property & equipment expenditures (CAPX)
Common dividends	Total amount of dividends declared on common equity (DVC)
Dividend yield	Common dividends (DVC) scaled by market capitalization.
EBITDA	Earnings before interest: the sum of net sales (SALE) minus cost of goods sold (COGS) minus selling, general & administrative expense (XSGA)
Firm age	The difference between the firm's first and relevant reporting dates (DATADATE) measured in years.
Inventory turnover	Cost of goods sold (COGS) scaled by inventories (INVT) averaged over (t - 1) and t
Leverage	The sum of long-term debt (DLTT) and debt in current liabilities (DLC) scaled by assets (AT)
Long-term debt	Total balance sheet long-term debt (DLTT)
Market capitalization	Common shares outstanding multiplied by year-end share price
Net turnover	Sales / Turnover (Net) (SALE)
Operating income	Operating income before depreciation (OIBDP)
Payout ratio	Common dividends (DVC) and purchase of common and preferred stock (PRSTKC) scaled by market capitalization.
R&D	Research and development expense (XRD)

Variable	Definition and description
R&D/assets	Research and development expense (XRD) scaled by average assets
Return on assets	Operating income before depreciation (OIBDP) scaled by average assets
Return on sales	Operating income before depreciation (OIBDP) scaled by net sales
Sales	Net turnover (SALE)
Size	Natural logarithm of the firm's market capitalization: common shares outstanding (CSHO) multiplied by the annual fiscal year end stock price (PRCC_F)
Tobin's Q	Total assets plus market capitalization minus book equity, scaled by total assets.
Total assets	Total assets (TA)

Chapter 2

Finding the right fit:
Activism and the director labor market

Abstract

I provide evidence that activist investors improve the operation of the director labor market and profit from its imperfections. It is proposed that effective activists can match directors to targeted firms where they can improve performance because of their experience. I show that long-term returns are significantly higher when a director is appointed to the target, especially when they have prior experience that makes them a good fit. Understanding that complex turnaround campaigns are only launched when a matched director is available provides insights into the collective action problem of disengaged investors, inherent in the regular director nomination process.

JEL classification: G34

Keywords: Board of directors, Shareholder activism

2.1. Introduction

Company directors are meant to monitor and evaluate management on behalf of shareholders yet it's often the CEO and incumbent directors that propose new nominees to the board. Once nominated, candidates can be elected with a single vote in their favor. This selection process may not be optimal if it places a constraint on identifying the most suitable candidate for the board. I propose that activist investors mitigate this problem by acting as labor market intermediaries and nominating directors that are a better match to the firm.

Directors proposed by an activist are expected to be a better match to the firm compared to nominations by management or the existing board because the optimization strategy of an activist is less constrained. The starting point for an activist investor is their existing network of experts that are potential board candidates. The investor identifies firms that are not performing to their potential and where their candidate can improve shareholder returns. The activist would then invest only in firms where they can add value through a director and disregard other firms with no matched directors or where nomination seems infeasible. By contrast, an incumbent board is constrained by having to maintain growth or manage the turnaround of the given firm. In recruiting new directors, they are typically constrained by having to rely on candidates from within their own network. Director nominees may also be proposed by third party search firms, however that outcome too is expected to be suboptimal due to the introduction of additional agency and adverse selection problems.

In this paper, I find support for the hypothesis that activists are effective labor market intermediaries by showing that long-term market returns at firms targeted by activist investors improve significantly more when at least one director is appointed to the board. Returns are higher when the new activist-nominated director has board experience even when they have no direct experience in the firm's industry. This result is particularly interesting, as a lack of prior industry experience typically disqualifies candidates in a regular search process. I show that activist investors profit from existing imperfections in the director labor market, but all shareholders benefit from improved long-term firm outcomes.

Costly information, adverse selection and failures of collective action result in deviations from the neoclassical benchmark of frictionless labor markets (Autor, 2009). Both firms and aspiring directors would benefit from access to comprehensive information on all board vacancies and the list of interested candidates, but job boards rarely list board positions. Even if this information was easily accessible, it is not obvious that this would help, as finding someone who is a good fit is important. The director labor market may also be populated by adversely selected pools of candidates since almost 70% are nominated by management or the board (Akyol and Cohen, 2013). These nominees are potentially less independent in monitoring management and less likely to offer a perspective that is different from the views of the incumbent board. Perhaps most importantly, there is also a collective action market failure because the rational action of small individual shareholders is to not get involved in the director nomination process, even if the outcome is strictly suboptimal for all shareholders.

In this paper, I propose that activist investors act as labor market intermediaries by matching potential directors to the firm they intend to target. I argue that they can assess what skills a new director should have in order to be effective, influence decision making, and improve firm performance once they join the target firm's board.

Given the universe of underperforming firms, activist investors can choose to target only those firms where they have the right tools to create value. The targeted firm may not even be underperforming in absolute terms, as the activist just needs to see scope for improvement through the contribution of a new director. They can operate without the common constraints of management and the board because they are not burdened by the predicament of having to manage a turnaround or engineer growth. I argue that activists have the unfettered ability to research the entire universe of potential target firms and only make an investment where they can add value by nominating the most suitable director.

This paper proposes that the activist business model is predicated on exploiting the three main frictions in the director labor market. I suggest that activists are information intermediaries that hold information on the pool of available expert directors and can match them to firms that would benefit most from the director's skills and expertise.[1]

[1]When it targeted Canadian Pacific Railway Limited (CP Rail) in 2012, Pershing Square held public investor meetings to build support for its proposed directors. The slate included CN Rail executive Hunter Harrison, Tony Ingram and Edmond Harris, all with railway backgrounds, providing evidence that Pershing

They also mitigate the adverse selection and asymmetric information problems inherent in the nomination process. They are different from executive search firms that commonly bridge this gap because they are not merely recommending keen candidates for the role or providing consulting services to the nomination committee. I provide evidence that unlike executive search firms, activists actually know and presumably trust the directors they nominate. My analysis shows that almost 20% of activist nominees come from firms that the activist previously targeted and 50% are mentioned by name in the activist's regulatory filings. Finally, perhaps an activist's sharpest incentive is their meaningful minority stake in the targeted firm. It mitigates the collective action problem that often plagues the nomination process at firms with predominantly atomic shareholders.

Selection is also important to understanding activism because activist investors do not target firms randomly. Their rational strategy is to only invest in firms where they see a feasible path to creating value. Once they objectively assess the resources the potential target would benefit from, they can freely decide whether to deploy their capital. This, in turn, is likely contingent on their ability to recruit the individuals with the skills and expertise required to improve firm value.

In this paper, I provide evidence that returns to activism are driven by the skills and expertise of these directors. I first show that market performance improves significantly for all firms during the five-year period after the activism event compared to the five years before the firm is targeted. I then provide new evidence that returns are approximately 60% higher for activism campaigns where at least one director is appointed to the board. Returns are again higher when the director has prior experience on listed boards, across multiple industries and it is almost 75% higher when they bring experience from an industry different from the target firm. Experience in multiple and different industries highlights that activist investors can match directors to firms based on fit and other latent skills rather than the new director's connections to incumbent board members, which is common in the regular nomination process.

could successfully identify appropriate directors and match them to the target firm. Support for Pershing's proposal to add new directors grew over the months prior to CP Rail's annual meeting, including support from proxy advisory firms ISS and Glass Lewis, as well as as the Canada Pension Plan Investment Board and the Ontario Teachers' Pension Plan Board. It became clear that Pershing Capital's nominees would be elected prior to the shareholder meeting, which led to the resignation of the CEO and five other directors. Shareholders elected seven Pershing Capital nominees and nine continuing directors. On of the continuing directors was appointed as acting chair and a Pershing nominee was appointed as interim CEO.

My study highlights how activist investors redress and exploit deviations in the labor market for the directors who are tasked with the responsibility for monitoring and evaluating management. It also provides an insight into how activists improve firm value over a five-year horizon when the targeted firm is not necessarily sold through a takeover or divestment process. Activist investors often identify potential buyers for the entire firm and influence the deal to improve the outcome for the target's shareholders (Boyson et al., 2017). I highlight that those takeovers are a similar reallocation of human capital because the firm is matched to new managers and a new board. This is an overlooked point in activism research that frames takeovers as an efficient reallocation of financial capital only.

The role that activists play in the director labor market is examined by using data from regulatory filings that investors submit to the Securities and Exchange Commission's EDGAR system. I exploit filing metadata and content to conduct named entity recognition machine learning analysis and obtain the names of individuals from these filings that I link to director data from BoardEx. As a starting point, all Schedule 13D filings are obtained because they identify investors that aim to influence or change the control of the firm when first accumulating 5% of the target firm's equity. Literature commonly identifies activism campaigns by evaluating the content of these filings, which may lead to misclassification because they often contain boilerplate language and ambiguous wording. I propose an alternative approach to identifying whether reaching the 5% threshold signifies the launch of an activist campaign by linking data in other regulatory filings by the same investor. Because activist investors, especially hedge funds, typically hold concentrated portfolios, I require that the new 5% investor holds less than 500 stocks in their portfolios across their fund families if they are a professional investment manager. This entails the identification of hedge fund families, because the entity that makes the investment in the targeted firm is often different from the one reporting quarterly holdings on behalf of the group. Alternatively, if the new investor is not a professional investment manager, I require that they have a track record of engaging with fellow shareholders through the proxy solicitation process. All non-management proxy filings for the investor are obtained to identify whether they initiated proxy fights against either prior targets or the current firm.

The first insight offered in this paper is providing evidence that the successful appointment of directors is the only observable activist tactic that yields a marginal return higher than the average return for all targets. The other tactics identified by Brav et al. (2008) are proxy fights and takeover attempts, but they do not deliver long-term returns that are significantly higher than returns achieved at all targeted firms. Annual market-adjusted buy-and-hold abnormal returns in the second to fifth years after the start of the campaign are higher by over 3 percentage points for firms when a director is appointed in the first year. Returns over the same period are higher again when the newly appointed directors have more breadth of experience because they served on other listed boards and at firms in other industries. Long-terms returns are higher again on average when the newly appointed director has experience in multiple industries. Returns are higher by over 5 percentage points for these firms in the four years compared to returns at other targeted firms, controlling for unobserved firm heterogeneity, size, valuation, and time effects, all else equal.

In order to establish a close link between the activist investor and the appointed director, I also identify closely connected directors as those that served on boards previously targeted by the activist or were mentioned by name in the investor's regulatory filings. Compared to all targeted firms, long-term returns are almost 90% higher when closely connected directors are appointed to the targeted firm's board from outside industries. These results are robust to controlling for unobserved investor heterogeneity, suggesting that it is the human capital of directors rather than the skill of activist investors that influences higher long-term performance. To test whether these results are explained by other unobserved factors, I examine event returns around the activist director's appointment announcement and show a 1% market adjusted cumulative abnormal return (CAR) in the five-day event window. This is economically significant given the magnitude of campaign announcement CARs at 3%. These abnormal returns are compared to non-activist director announcement CARs during the two-year period before the event and show that activist director announcement CARs are significantly higher.

The first set of results focuses on a sample of firms targeted by activist investors, where improved long-term returns may be attributed to mean reversion if activists only target underperforming firms that may have returned to improved performance even without an

external intervention. To show that mean reversion is not influencing these results, further evidence is presented that activist investors are effective intermediaries in the labor market for directors. I identify a matched sample of control firms similar in size, market-to-book ratio and return on assets in the prior year, acknowledging that activists target firms with a track record of underperformance (Brav et al., 2008) and re-estimate the models. The results are consistent with the main findings and show that firm performance improves more when experienced directors are appointed subsequent to the launch of an activist campaign. Announcement CARs are only statistically significant and large for activist directors, but not other director appointments.

More importantly, the difference-in-differences research design in a propensity score matched sample offers a setting to examine stock returns and director appointments in four distinct scenarios. Directors can be appointed to the boards of either control firms or activism targets and they can be appointed either before or after the event, or pseudo-event for control firms. This paper provides empirical evidence that of all four scenarios, long-term returns are only significantly higher for director appointments that follow the involvement of an activist investor. Long-term returns are not significantly different for control firms that see the appointment of an experienced and skilled director either before or after the pseudo-event, when compared to the baseline of control firms that do not appoint directors prior to the pseudo-event. Directors that are appointed to targeted firms before the involvement of the activist are associated with returns that are lower on average. The appointment of directors is only associated with higher returns after the involvement of an activist investor.

This paper makes a number of important contributions to the literature. It provides an insight into what makes activist investors unique compared to other minority shareholders. They are different from other institutional investors because they do not hold diversified portfolios and they can charge substantial management fees contingent on their fund's performance. It explains why they are more informed about their portfolio companies and more motivated to generate positive returns. Yet it has remained largely unclear how they improve shareholder value, other than by facilitating the takeover of the entire firm or by selling key production assets, especially because they typically don't have unique shareholder rights (Boyson et al., 2017; Brav, Jiang, and Kim, 2015).

I propose that activists exploit frictions in the director labor market that arise from costly information gathering, adverse selection and the collective action problem, which may result in suitable directors not getting matched to firms where they can create the most value. Their starting point is the pool of individuals with specific sets of skills and expertise which they aim to match to firms that could derive the most benefit from having these individuals on their board. If the nomination appears feasible, the activist makes an investment in the firm and the individual is appointed to the board. I show that activist investors act as effective labor market intermediaries because performance improves more when directors are appointed in the process just described compared to regular director nominations. Activists do not have special shareholder rights but they can bridge a gap in the director labor market and profit from acting as a labor market intermediary.

Second, my work complements the activism literature's primary focus on the reallocation of financial capital. The traditional view emphasizes that activism creates value to all shareholders when the activist facilitates a takeover or influences the firm to dispose of key assets (Brav et al., 2015; Boyson et al., 2017; Greenwood and Schor, 2009). Highlighting the role of human capital is a novel aspect of activism research. Showing that the experience of directors influences outcomes suggests that less informed investors may implicitly contribute to declining firm performance if they support director nominees that are not a suitable match to the firm. The collective action problem of not getting involved in the process of director elections may be equally problematic because directors can be elected with a single vote in their favor. In this regard, my work also complements Brav, Jiang, Ma, and Tian (2018), who examine the role of expertise and human capital in innovation at targeted firms. They find that innovation activity at activism targets improves when the human capital of innovators is redeployed and the board-level expertise at the firm is realigned.

This paper also extends the literature that identifies the effect of director skill and expertise on firm outcomes. While the boards of activism targets are likely to have specific priorities, the role of directors, in general, is to offer a combination of monitoring and advice (Adams and Ferreira, 2007; Adams, Hermalin, and Weisbach, 2010). Expertise matters because directors can influence corporate policies driven by their prior work experience (Güner, Malmendier, and Tate, 2008). Faleye, Hoitash, and Hoitash (2018) find that

industry experience adds value and Dass, Kini, Nanda, Onal, and Wang (2014) show that firms with directors from related industries manage industry shocks better and improve operations, such as cash conversion cycles. Offering a contrasting view, Wang, Xie, and Zhu (2015) propose that directors from the same industry may be too connected to the CEO to offer effective monitoring. At the cross section, Adams, Akyol, and Verwijmeren (2018) show that firm performance increases when there is more commonality in skill across directors. I suggest that it is not obvious whether skills and expertise, or diversity across directors is important to activism campaigns because newly appointed directors may be tasked with simply executing the activist's agenda. If directors' monitoring and mentoring roles are reduced to carrying out a plan developed by the activist, prior board or industry expertise may be less relevant than softer skills, such as persuasion, or overall fit. Ultimately, this is an empirical question to examine.

Finally, my paper also complements the emerging literature on activism and boards. Gow, Shin, and Srinivasan (2014) provide evidence that shareholder activism is associated with increased accountability of independent directors even in the absence of proxy contests. They show that director turnover and performance-sensitivity of turnover both increase in the two years after the involvement of an activist investor. Coffee, Jackson, Mitts, and Bishop (2018) examine the agency cost of hedge fund activism and show a positive relationship between the appointment of hedge fund nominated directors and informed trading attributed to potential information leakage. My paper complements this field by providing an answer to how long-term value is created at targeted firms when they are not taken over or sold through asset divestitures.

My findings provide an insight into how activism creates value, but also into the role of board level human capital in influencing firm outcomes. Successful activists are different from other minority investors because they have access to a unique resource, a matched director, and they do not face the constrained optimization problem of management and the incumbent board. They target firms and nominate a director that they believe to be the right person at the right time to influence decision-making and improve performance. In this paper, I show that they are unique in providing intermediation in the director labor market that otherwise suffers from frictions that can keep the most suitable directors out of the very boardroom where they can be most effective.

2.2. Data and institutional background

This study is based on a sample of publicly listed firms from the Compustat and CRSP databases with their common equity listed on the NYSE, NASDAQ, or NYSE American (formerly American Stock Exchange). Data on director and the top management of firms is obtained from BoardEx matched on CIK and CUSIP identifiers provided by both Compustat and CRSP. Data from regulatory filings from the SEC's EDGAR system are matched on the CIK code. The sample period for activism events and board appointments starts in 2005 because that is the first year that BoardEx provides a comprehensive coverage of directors and ends in 2018. Unless otherwise noted, firm-year observations start in 2000 to capture five years of prior firm performance for target and control firms.

2.2.1. Identifying shareholder activism

The Securities Exchange Act of 1934 requires investors to file a Schedule 13D statement with the SEC when they acquire more than five percent of a firm's equity with the intention of actively changing or influencing the control of the firm. To identify activist investors, I first limit this sample of Schedule 13D filers to professional investors that hold fewer than 500 stocks in their portfolio based on quarterly Schedule 13F filings, both of which I obtain directly from SEC's EDGAR system. Hedge funds often make investments via dedicated holding companies, which means that the Schedule 13D and Schedule 13F filings can be submitted by different entities. Investors are required to indicate if another entity is reporting holdings on their behalf, or if they also report for any other investor. For example, VA Partners accumulated a 5% equity stake in Advanced Medical Optics in May 2007, but the holdings report was filed by ValueAct Capital Management on behalf of VA Partners for the quarter. Because this information is missing from traditional sources, such as the Thomson Reuters Institutional Holdings database, I identify hedge fund families by directly analyzing Schedule 13F filings, which allows me to estimate portfolio sizes at the group level for each quarter. All nine-digit CUSIP sequences are extracted from these quarterly reports and the number of distinct six-digit issuer-level observations for each investor is counted.

I also classify an event as an activism campaign if the investor does not report quarterly holdings or holds more than 500 stocks, but has a track record of engagement with fellow shareholders through proxy filings at other firms, such as Gamnco Investors, a well-known activist. I download all non-management proxies from EDGAR and link them to the investor if they precede the Schedule 13D filing using EDGAR's CIK identifier. In addition, the event is also classified as an activism campaign if the investor filed a non-management proxy for the same target firm subsequent to the Schedule 13D filing. Consistent with Klein and Zur (2011), I never classify corporations as activist investors if they are regulated by the 1934 Securities Exchange Act because their 5% investment is more likely to be a pre-acquisition toehold stake. These investors are identified based on their corporate SEC filings, such as annual reports. I also exclude mutual funds regulated by the Investment Company Act of 1940 that are similarly identified by analyzing fund registrations, portfolio holding statements and voting records that these investors need to file with the SEC. The comprehensive list of SEC filings obtained from SEC's EDGAR system is described in Appendix E.

This sample selection method is compared to the widely used hedge fund activism sample developed in Brav et al. (2008) in Appendix Table A3.17, which shows that differences in firm characteristics are insignificant along a wide range of variables. An advantage of identifying activism campaigns using this methodology is that it does not require a potentially subjective evaluation of Schedule 13D filings, only investor characteristics as revealed from data. The dataset does not include activism events where no Schedule 13D form is filed, potentially missing large firms where it is not feasible for the activist to acquire 5% or more of the target firm. The methodology described in Brav et al. (2008) identifies 27 such events or approximately 2.5% of their sample, which is unlikely to materially change the findings of this study.

The number of activism events for each year during the sample period is reported in Table 2.1. The trend in the number of events is consistent with prior studies, such as Brav et al. (2018) for the overlapping period, and it has gradually increased since 2009. Table 2.2 provides a breakdown of activism events by the Fama-French 12 industries of the target firms. Business equipment (20%), finance (15%), and the health care, medical equipment and drugs sectors (14%) make up almost 50% of the sample, in line with the

Table 2.1: Shareholder activism events by year

This table reports the annual breakdown of activism events between 2005 and 2018. These events are identified from Schedule 13D filings and selection methodology requires that the investor is a professional investment manager holding less than 500 stocks in their portfolio prior to the event. Alternatively, if the investor is not a professional investment manager or holds more than 500 stocks, a track record of non-management proxy filings is required either prior to the event or subsequently for the target firm.

	Number of Events	Percent
2005	155	6.41
2006	202	8.36
2007	275	11.38
2008	211	8.73
2009	138	5.71
2010	138	5.71
2011	151	6.25
2012	140	5.79
2013	167	6.91
2014	180	7.45
2015	171	7.07
2016	178	7.36
2017	153	6.33
2018	158	6.54
Full sample	2,417	100.00

industry analyses of previous studies.

2.2.2. Firm and investor characteristics

In examining the role of directors at firms targeted by activist investors, ex-ante differences between firms with and without new directors may raise concerns about the channel that actually influences longer term performance. Outcomes could be driven by other factors if differences in firm characteristics are material at the time an activism campaign is announced, or before directors can be expected to effect change.

In order to examine this possibility, Table 2.3 provides univariate statistics for the sample of targeted firms and two sub-samples based on whether a director was appointed within a year after the activist investors reported involvement. Short-term cumulative abnormal returns (CARs) of approximately 3.2% in the three-day window around the

Table 2.2: Sample breakdown by Fama-French industries

This table provides a breakdown of target firms across the Fama-French 12 industries for the sample described in Table 2.1.

	Number of Events	Percent
Consumer Non Durables	92	3.81
Consumer Durables	70	2.90
Manufacturing	187	7.74
Energy	116	4.80
Chemicals and Allied Products	53	2.19
Business Equipment	496	20.52
Telecommunications	84	3.48
Utilities	31	1.28
Wholesale and Retail	275	11.38
Healthcare, Medical Equipment, and Drugs	335	13.86
Finance	369	15.27
Others	309	12.78
Full sample	2,417	100.00

announcement of the activist's involvement confirm findings of prior literature (Brav et al., 2008; Boyson et al., 2017). There does not appear to be a meaningful difference between the CARs of the two groups and the sign of the difference changes between the three-day and 15-day estimates. This mitigates the validity of alternative explanations. It seems that investors do not consider these two group of firms or activism campaigns to be significantly different in terms of future prospects or the activist's ability to engineer a turnaround. The magnitude of the differences in the buy-and-hold returns (BHARs) is larger, but not statistically significant due to large standard deviations. This provides additional motivation to examine within-firm performance changes in a multivariate firm fixed effects framework.

Table 2.3: Campaign, investor and firm characteristics by director appointments

This table presents the means for campaign returns, investor and firm characteristics for the sample of activism campaigns and the two subsamples where either no directors were appointed or at least one director was appointed to the target firm's board within the first year of the campaign. Firm characteristics are measured in the year of the activism event and variable definitions are provided in Appendix 2.8. Variables are not winsorized. The last two columns report differences in means between the subsamples with statistical significance based on t-tests that allow for unequal variances. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels.

	All targets	No director	New director	Differences	
	Mean	Mean	Mean	Mean	t-stat
Returns %					
Activism CAR [-1, +1]	3.153	3.376	3.004	−0.371	(-0.504)
Activism CAR [-7, +7]	5.830	5.395	6.118	0.723	(0.672)
BHAR: 1-year	1.780	0.278	2.720	2.442	(0.724)
BHAR: 2-year	2.426	-0.435	4.217	4.652	(0.927)
BHAR: 3-year	1.880	-3.759	5.408	9.167	(1.471)
Investor characteristics					
% Investment managers	82.127	82.043	82.179	0.136	(0.085)
Holding size (all prior)	157.343	195.324	133.660	−61.664***	(-3.265)
% Holdings < 250	71.618	68.602	73.504	4.902**	(2.573)
% Holdings < 500	75.796	73.333	77.337	4.004**	(2.209)
% Non-management proxy	15.763	9.785	19.502	9.717***	(6.860)
Proxies filed previously	32.460	26.757	36.209	9.451***	(2.750)
Firm characteristics					
Total assets	3,122.349	2,673.530	3,403.050	729.520	(0.878)
Net turnover	1,576.027	1,384.857	1,695.589	310.732	(1.089)
Market capitalization	1,378.639	1,181.921	1,499.144	317.222**	(1.993)
Operating income	197.283	168.267	215.457	47.190	(1.404)
Long-term debt	865.052	686.445	977.119	290.673	(1.141)
R&D expense	65.270	56.324	70.433	14.108	(0.749)
Capital expenditure	132.995	92.217	158.540	66.323*	(1.906)
Tobin's Q	5.429	11.383	1.722	−9.661	(-0.995)
Segments	4.715	4.576	4.798	0.222	(1.541)
Financial ratios					
Return on assets	0.001	0.019	-0.010	−0.029**	(-2.566)
ΔROA $_{[t-3,t-1]}$	0.015	-0.005	0.027	0.032	(1.514)
Return on sales	-5.024	-1.049	-7.548	−6.498	(-1.109)
Leverage	0.251	0.246	0.253	0.007	(0.546)
Dividend yield	3.175	8.002	0.165	−7.837	(-0.981)
R&D/assets	0.119	0.109	0.125	0.016	(1.478)
CAPEX/assets	0.044	0.041	0.046	0.005*	(1.653)
Number of observations	2,417	930	1,487		

Activist investor characteristics show more heterogeneity across the two groups. They are equally likely to be professional investors with at least $100 million under management, but those with a director appointment hold more concentrated portfolios. Based on their prior quarterly Schedule 13F filings, they hold on average 133 stocks, which is 62 fewer than investors without a new director at the target firm. Almost 74% hold fewer than 250 stocks, compared to 69% for the non-director group. Both types of investors have a track record of engaging with fellow shareholders through the proxy solicitation process, even if it is relatively rare. About 16% of activist investors filed a non-management proxy statement for another company prior to the campaign in the sample. Almost 20% of investors at targets with a director appointment had filed one, compared to 10% at other firms. Of investors with at least one non-management proxy, the director group filed ten more than the average of 26 for the non-director group.

Table 2.3 also shows that financial statement variables and key financial ratios for target firms. The differences across firm characteristics and key ratios between target firms with and without new director appointments are mostly indistinguishable. Firms with a director appointment are marginally larger based on market capitalization, spend more on capital expenditure (CAPEX), and their return on assets (ROA) is lower. Based on this analysis, differences in market capitalization are accounted for in all empirical specifications and additional tests in Section 2.4 examine whether differences in CAPEX and ROA influence examined firm outcomes.

2.2.3. Board and director characteristics

Prior to exploring how activist-appointed directors influence firm performance, Table 2.4 provides an overview of boards and director characteristics. Compared to the large heterogenous sample of firms in Adams et al. (2018), the boards of target firms are of similar size with nine directors on average, but the directors seem to be slightly younger at 59 years of age on average and with a lower average tenure of approximately seven years. Incumbent directors have listed company experience, having served on 1.8 other boards on average, with 1.6 concurrent appointments on average. Under 10% of the incumbent board's directors are women.

Approximately 62% of firms targeted by activist investors have a new director appointed to the board within the first year. Of the firms with a new appointment, it is most common that two directors are appointed, with an average of 2.6 directors. On average, the first director is appointed within four months after the activist becomes involved. Figure 2.1 shows the graphical distribution of days taken to appoint a new director over the first year after the activist's campaign launch. Directors that are newly appointed to the board have more listed board experience on average and fewer other concurrent board commitments as shown in Figure 2.2. Their average age is 53 compared to the incumbent board's average age of 59 years. Approximately 23% of new directors have board experience in the target firm's two-digit SIC industry and the subset of directors with prior experience had served on boards across 4.3 industries on average.

About 10% of newly appointed directors are women, but 20% of targets have at least one woman appointed to the board. Based on the machine learning analysis of regulatory filings and linking it to BoardEx data, about half of the newly appointed directors are closely connected to the activist investor. Approximately 46% of them are mentioned in the activist's regulatory filing by name and 18% served on the board of a previously targeted firm. The online appendix provides additional descriptive statistics for campaign, investor and firm characteristics in Tables A3.18 to A3.21.

2.2.4. The return metric

Brav, Jiang, and Kim (2010) established that there are no long-term abnormal returns to activism in the form of an implementable trading strategy. They find that stock prices of activism targets do not revert or increase significantly in the years after the activism. I replicate this finding using the Brav et al. (2010) calendar-time portfolio method in order to benchmark my dataset and provide a grounding for my paper's contribution. Table 2.5 provides evidence consistent with the literature and shows that portfolio-level alphas from the Carhart (1997) four factor model are negative and significant in the year prior to the activism campaign and that they are insignificant in the three years after the campaign.

The motivation in this paper is to provide an insight into the long-term value creation by activist investors as it relates to the investor experience, and so examining anomalies by devising implementable trading strategies is not of first order importance. This long-

Table 2.4: Board and director characteritics for activism targets

This table reports board and director characteristics for the sample of activism targets. Board characteristics are from the year prior to the activism event. Means, standard deviations, 25th, 50th, and 75th percentiles are reported.

	Mean	Std. Dev.	p25	p50	p75
Board characteristics					
Board size	9.310	3.435	7.000	8.000	11.000
Tenure in years	7.147	4.284	4.017	6.586	9.514
Prior listed boards	1.791	1.293	0.826	1.652	2.500
Concurrent boards	1.641	0.521	1.222	1.571	2.000
Qualifications	2.004	0.519	1.667	2.000	2.313
Age	58.885	4.915	55.667	58.833	62.125
Female director	0.097	0.103	0.000	0.091	0.154
Activism appointments					
Director appointed (%)	0.615	0.487	0.000	1.000	1.000
Number of new directors	2.636	2.091	1.000	2.000	3.000
Days to first appointment	121.871	101.180	34.000	99.000	189.000
Days to last appointment	179.589	110.135	85.000	178.000	276.000
New director characteristics					
Previous boards	3.071	3.464	0.000	2.000	5.000
Concurrent boards	0.999	1.263	0.000	1.000	2.000
Qualifications	2.083	0.856	1.586	2.000	2.500
Industry experience	0.227	0.419	0.000	0.000	0.000
Number of industries	4.306	4.295	1.000	3.000	6.000
Age	52.811	7.967	48.000	53.500	58.000
Female director	0.097	0.237	0.000	0.000	0.000
At least one woman	0.204	0.403	0.000	0.000	0.000
Linked directors	0.497	0.500	0.000	0.000	1.000
Mentioned in filing	0.461	0.499	0.000	0.000	1.000
From previous target	0.182	0.386	0.000	0.000	0.000
Number of firms	2,417				

Fig. 2.1. Days between campaign launch and the first director appointment

This figure provides a graphical representation of the number of days between the campaign launch and the first director appointed to the target firm's board.

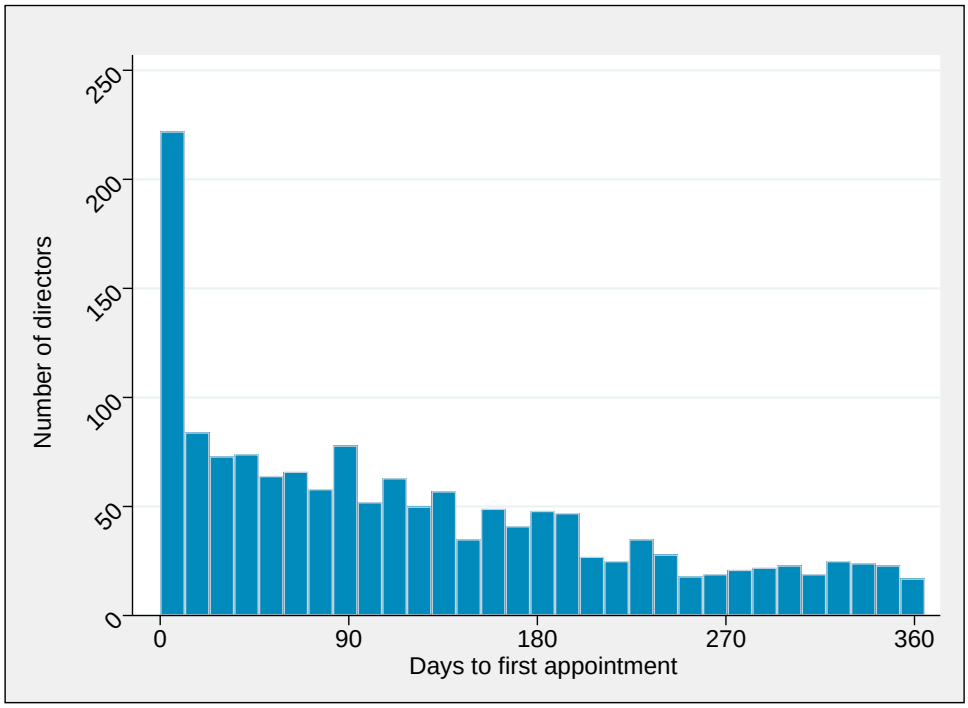
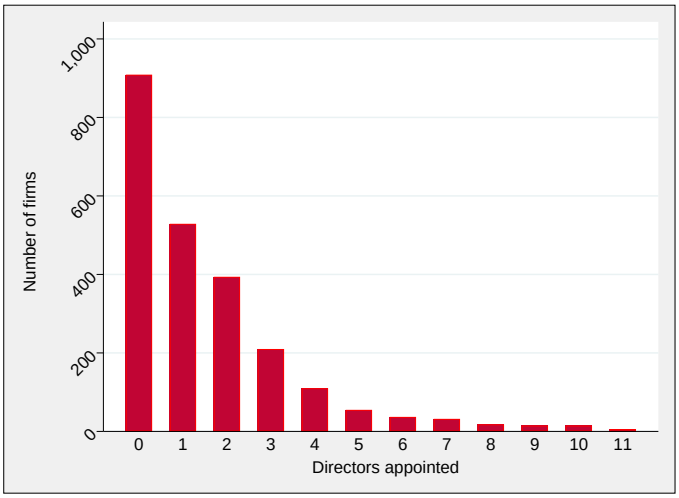
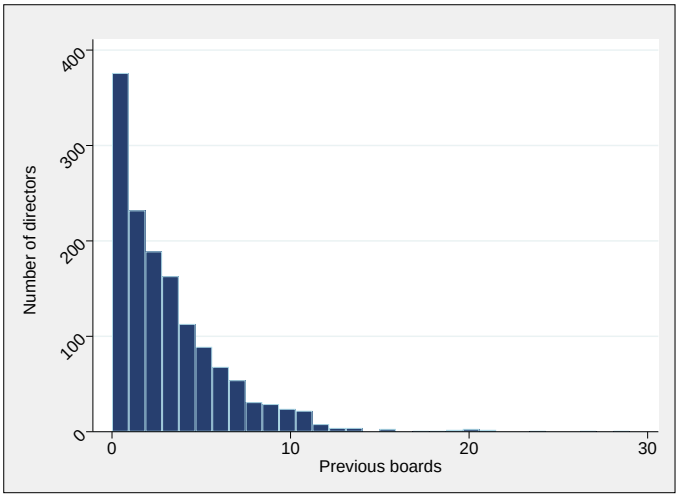


Fig. 2.2. Director appointments, experience and concurrent appointments

These figures provide a graphical representation of the number of directors appointed to boards targeted by activists in the first year of the campaign, their previous board experience and the number of other boards they serve on concurrently.





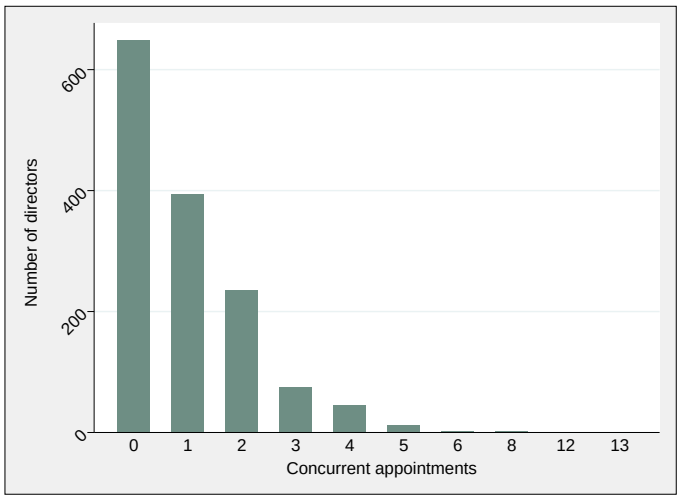


Table 2.5: Long-term abnormal returns for calendar-time activism portfolios

This table reports abnormal returns for firms targeted by activist investors in the form of value-weighted calendar time portfolio returns. Columns group returns into holding periods in months relative to the month of the launch of the activism campaign. For example, the first column with holding period [-36 to -25] adds firms to the portfolio that had an activist event 36 months before the event and holds those firms for the following 12 months. Value-weighting of returns is based on market capitalization 21 days before the start of the campaign. The regression estimated is:

$$r_t - r_f = \alpha + \beta_{RMRF} \cdot RMRF_t + \beta_{SMB} \cdot SMB_t + \beta_{HML} \cdot HML_t + \beta_{MOM} \cdot MOM_t + \varepsilon_t$$

where α is the estimate of the regression intercept from the factor model. $RMRF$ is the loading on the market excess return, SMB, HML and MOM are the estimates of portfolio factor loadings on the Fama-French size and book-to-market factors, and the Carhart momentum factor. Portfolios with less than ten firms are excluded and observations are weighted based on the number of assets in the portfolio. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the month level.

	(1) -36 to -25	(2) -24 to -13	(3) -12 to -1	(4) +1 to +12	(5) +13 to +24	(6) +25 to +36
Alpha	0.258*	0.060	-0.468***	0.130	0.272	0.105
	(1.69)	(0.38)	(-2.78)	(0.78)	(1.25)	(0.47)
β_{RMRF}	1.141***	1.202***	1.120***	1.066***	1.110***	0.996***
	(25.25)	(21.74)	(19.73)	(21.29)	(17.85)	(14.72)
β_{SMB}	0.460***	0.160**	0.402***	0.526***	0.534***	0.424***
	(5.66)	(2.20)	(4.63)	(7.44)	(6.31)	(5.21)
β_{HML}	0.074	-0.074	0.017	-0.015	-0.100	0.180
	(0.81)	(-0.76)	(0.24)	(-0.24)	(-1.08)	(1.65)
β_{MOM}	-0.139**	-0.158***	-0.214***	-0.362***	-0.230***	-0.139***
	(-2.46)	(-2.61)	(-3.20)	(-5.55)	(-4.64)	(-2.92)
Months	178	179	179	179	166	154
Adjusted R^2	0.888	0.863	0.830	0.875	0.855	0.833

term investor experience is better captured by buy-and-hold abnormal returns (BHARs) as discussed in Fama (1998), and I argue that the real measure of interest for this research question is the improvement in returns for investors that held the stock prior to the activist's involvement. My main analysis uses two-year BHARs in a firm fixed effects specification that compares average returns during the five years before the activism event to the same firm's performance over the five-year period after the event. I acknowledge that compounding returns for long-term BHARs may result in extreme skewness (Barber and Lyon, 1996) and that basic OLS assumptions of independence and normal distribution may be violated at long horizons (Brav, 2000). I partially address this issue by limiting BHARs to two-year periods and I also show my results using average monthly returns in order to solve the cross-correlation problem. In addition to alpha and the risk factors, I introduce a *Post* indicator in the calendar-time portfolio specification , which captures the marginal difference in excess returns after the activist's involvement compared to pre-event alphas. Motivated by Loughran and Ritter (2000), these portfolios are equally weighted to ensure that the impact for smaller firms is not obscured. This is especially relevant because targeted firms are often restructured, and asset sales can lead to lower market capitalization and higher dividends. In unreported analysis, I find that value-weighted returns in this sample are sensitive to the date selected for the market capitalization used for weighting returns, but can be shown to generate returns consistent with the equal-weighted approach.

2.3. Activism tactics and returns

Activists are expected to be more informed monitors than other institutional investors, because their concentrated portfolios allow more attention to be devoted to each firm (Brav et al., 2008). In addition, the incentive structure at hedge funds in particular makes activists more motivated to drive improvements at the target firm compared to other fund managers. However, firms are not targeted at random. Brav et al. (2008) show that activism targets are smaller, more undervalued (high book-to-market or low Q), and exhibit lower growth and dividend yield compared to other listed firms. There is general concern that improvement in returns may be explained by mean reversion of these

undervalued or underperforming firms if performance would have improved regardless of the activist's involvement. This study provides an insight into this question by first examining the different tactics employed by activists.

In spite of evidence of long-term operational improvements at targeted firms (Bebchuk et al., 2015), we still know little about how activist investors create value. Brav et al. (2015) show that plant productivity improves after an intervention, but it improves more when the plant is sold to a new owner. In a similar vein, activism also improves shareholder value when the entire firm is taken over, influenced by the activist (Greenwood and Schor, 2009; Boyson et al., 2017). Patents sold after activist involvement receive more citations under a new owner of the patent (Brav et al., 2018). These strategies are commonly framed as optimal reallocation of financial capital, but they are also an example of a reallocation of human capital, since assets are assigned to new entities with different human capital across their managers, directors and shareholders. Since less than a quarter of the firms were taken over during the 12 years in the Boyson et al. (2017) study and activist investors advocate for asset divestitures in only 15% of all activism campaigns (Brav et al., 2015), it remains to be understood how value is created by activists when the firm remains a going concern. The reallocation of human capital is the channel worthy of investigation.

In order to explore channels of value creation, I first examine what activists say they plan to do at target firms, what the data suggests they actually do, and how both of these factors are related to changes in firm value. Activists are required to disclose their plans in the Schedule 13D filing when they reach a 5% shareholding in the firm and they need to provide regular updates in subsequent amendments. Brav et al. (2008) classify tactics employed by activists based on a qualitative analysis of these filings, which provides the first insight into their methods of value creation. Activist tactics include communicating with management, making formal shareholder proposals, seeking board representation, suing the company, or supporting a takeover bid. While these are often overlapping tactics, in the first formal empirical test I examine whether any of these tactics are associated with improved performance in isolation.

In line with Brav et al. (2008), Table 2.6 provides descriptive evidence that formal proxy communication among shareholders is relatively uncommon. Proxy statements are filed in less than 14% of activism events, which is somewhat surprising because activist

Table 2.6: Activist tactic classification

This table provides a breakdown of activist investor tactics based on classification provided in Brav et al. (2008) for the sample of activism targets between 2005 and 2018.

	Filings	Percent
Activist tactic		
Proxy, director appointment or takeover	1,565	64.75
Other non-observable action	852	35.25
Shareholder proxies		
Contested solicitations	210	8.69
Non-contested solicitations	325	13.45
At least one proxy statement filed	330	13.65
Director appointments		
One or more director appointed	1,487	61.52
Director with prior board experience	1,103	45.64
New CEO appointed	130	5.38
Takeovers		
Takeover filing by activist	9	0.37
Targeted firms	2,417	

investors have a reputation for being outspoken. Contested solicitations typically involve proxy statements filed by non-management aimed at nominating directors to the board and it occurs even less frequently, in under 9% of the cases. Non-contested proxy statements include all other communication by non-management, such as open letters to shareholders, presentations, settlement agreements, or even as official records of tweets posted by the investor.

Activist campaigns that involve director appointments are common. Almost 62% of targeted firms see a new director appointed within the first year after an activism campaign is launched and slightly more than 5% of these firms subsequently replace the CEO. Takeovers and activism have been extensively examined in the literature (Greenwood and Schor, 2009; Boyson et al., 2017) and activists are known to facilitate these transactions. However, they are significantly less likely to launch a direct takeover attempt. In the sample, activists investors file a third-party tender offer for the target firm in only 9 cases after reaching a 5% shareholding.

It is more challenging to observe other activist tactics empirically. In 852 of the 2,417 cases, the investor does not file a proxy statement, appoint a director, or launch a takeover attempt. Presumably, they still communicate with management and the board, or potentially sue the firm to achieve their goals. Whether any of the main observable

tactics lead to improved performance in the long term is the empirical question that I examine next.

The outcome of interest is the buy-and-hold abnormal return (BHARs) to the firm's investors, estimated over a two-year period ending at the end of the firm's fiscal year, which produces uniform time periods across firms. The panel dataset of targeted firms includes the event year and all available observations in the five years before and after the event in the regression framework given in Equation 2.1.

$$\begin{aligned} BHAR_{it} = \ & \alpha + \beta_1 \cdot Post_{it} + \beta_2 \cdot (Tactic_{it} \times Post_{it}) \\ & + \gamma \cdot X'_{it} + \eta_i + \delta_t + \varepsilon_{it} \end{aligned} \tag{2.1}$$

In Equation 2.1, *Post* is an indicator variable for firm years that are within $[t+1, t+5]$ years after the activism event year. *Tactic* is a dummy variable that takes the value of one if firm i is targeted by an activist investor in any of the years captured by *Post* during the sample period and the investor employs a specific tactic. Specific tactics examined are filing a proxy statement, a director appointment in the first year of the campaign, or a takeover attempt by the activist. X' is a vector of firm characteristics that may vary over time and capture well-known determinants of stock returns, such as the logarithmic terms of market capitalization and the book-to-market ratio. Finally, η_i is the combined effect of all firm-specific unobserved variables that are constant over time, δ_t denotes year fixed effects, and ε_{it} is the random disturbance term.

Table 2.7 sets out the results of the first empirical analysis. Column 1 provides new evidence on the significant improvement in long-term returns at targeted firms. Two-year BHARs are approximately 13 percentage points higher on average in the five years after the activism event when compared to the prior five-year period for the same firms. Column 2 provides support that this finding is robust to controlling for the firm size and book-to-market risk factors. Acknowledging that BHARs are susceptible to extreme skewness due to compounding, Column 3 estimates the same specification by winsorizing the outcome variable at the 1% level and shows smaller economic significance, as expected, but larger statistical significance.

Columns 4 to 6 examine whether any of the activist's observed tactics are associated with improved returns. While the *Post* term remains consistent and both statistically and economically significant across all specifications, individually only director appointments are associated with a marginal improvement in performance. Proxy filings and takeover attempts are not associated with improved performance and the magnitude and significance of the *Post* coefficient is largely unchanged from the base case in Column 3. By contrast, the *Post* and *New director* coefficients suggest a combined improvement in returns by approximately 21 percentage points on average, 7.5 percentage points of which are attributed to firms where a director was appointed in the first year. In the next section I further explore the role that director appointments play in improving performance at activism targets.

Table 2.7: Stock returns and activist investor tactics

This table sets out the relationship between two-year market-adjusted buy and hold returns and activist investor tactics. The following specification is estimated:

$$BHAR_{it} = \alpha + \beta_1 \cdot Post_{it} + \beta_2 \cdot (Tactic_{it} \times Post_{it}) + \gamma \cdot X'_{it} + \eta_i + \delta_t + \varepsilon_{it}$$

The sample includes activism targets between 2005 and 2018 and all firm-year observations five years before and after the event. *Post* is an indicator variable for firm years that are within $[t+1,\ t+5]$ years after the activism event year. X' is a vector of firm characteristics that may vary over time, η_i is the combined effect of all firm-specific unobserved variables that are constant over time, δ_t are year fixed effects, and ε_{it} is the random disturbance term. The following dummy variables take the value of one in $[t+2,\ t+5]$ years and zero otherwise: *Proxy filing* if the activist investor filed at least one non-management proxy after accumulating an active 5% shareholding in the firm, *New director* if at least one director was appointed to the board within the first year after the campaign is announced, *Takeover attempt* if the activist filed a third party tender offer (Schedule TO-T) for the target firm. All other variables are defined in Appendix 2.8. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the firm level.

				Activism tactics		
	(1)	(2)	(3)	(4)	(5)	(6)
Post	0.129***	0.223***	0.157***	0.153***	0.136***	0.157***
	(4.811)	(5.889)	(6.791)	(6.583)	(5.899)	(6.783)
× Proxy filing				0.056		
				(1.255)		
× New director					0.075***	
					(2.788)	
× Takeover attempt						0.028
						(0.087)
Size		0.502***	0.446***	0.446***	0.445***	0.446***
		(18.686)	(27.077)	(27.045)	(27.013)	(27.081)
BM		1.108***	0.988***	0.988***	0.987***	0.988***
		(5.493)	(5.697)	(5.693)	(5.675)	(5.697)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	Yes	Yes	Yes	Yes	Yes
$BHAR_{i.t}$ winsorized	No	No	Yes	Yes	Yes	Yes
Adjusted R^2	0.042	0.125	0.261	0.261	0.262	0.261
Firms	1,869	1,869	1,869	1,869	1,869	1,869
Observations	14,588	14,588	14,588	14,588	14,588	14,588

2.4. Activist directors and returns

Incomplete contracting theory suggests that it is not feasible for any investor to come to a detailed agreement with management and the board on the corporate policy changes they seek. Even if the board agrees with the activist on the recommended changes, directors may be reluctant to follow the advice of one shareholder to the potential detriment of all others. The appropriate channel to effect change then is for the activist investor to nominate one or more directors to the board that would advocate for change by convincing the majority of incumbent directors.

This leads to the hypothesis that potential returns to activism are related to the human capital of directors. The results discussed in Section 2.3 provided preliminary evidence that activist director appointments are more strongly associated with performance improvements at targeted firms compared to other activist tactics. In this section, I test the hypothesis that returns to activism are driven by directors and examine the variation in long-term performance at targeted firms attributable to the human capital of appointed directors. I build on the model introduced in Equation 2.1 to test this relationship:

$$\begin{aligned} BHAR_{it} \;=\; & \alpha + \beta_1 \cdot Post_{it} + \beta_2 \cdot (Director\ experience_{it} \times Post_{it}) \\ & + \gamma \cdot X'_{it} + \eta_i + \delta_t + \varepsilon_{it} \end{aligned} \tag{2.2}$$

where *Director experience* is a dummy variable that takes the value of one in [t+2, t+5] years if the firm targeted by an activist investor appoints a director with a specific skill or experience within the first year after the campaign is announced. All other variables are as described for Equation 2.1. The main coefficient of interest in Equation 2.2 is β_2 associated with the interaction term that marks observations for activism targets with an activist-appointed director. In the OLS framework, it estimates the average marginal difference in firm performance improvement at target firms with a director appointment, compared to the sample of targeted firms without a new director. I mitigate the concern that the tactic to appoint a new director in Equation 2.1 may capture a latent factor unrelated to directors, by exploiting variations in director's prior experience on listed boards and across industries. Table 2.8 reports the regression results.

Table 2.8: Stock returns and activist directors

This table presents two-year market-adjusted buy and hold returns around different methods of activist investor tactics. The following specification is estimated:

$$BHAR_{it} = \mu_t + \beta_1 \cdot Post_{it} + \beta_2 \cdot (Director\ experience_{it} \times Post_{it}) + \gamma \cdot X'_{it} + \eta_i + \delta_t + \varepsilon_{it}$$

The sample includes activism targets between 2005 and 2018 and all firm-year observations five years before and after the event. *Post* is an indicator variable for firm years that are within $[t+1,\ t+5]$ years after the activism event year. X' is a vector of firm characteristics that may vary over time, η_i is the combined effect of all firm-specific unobserved variables that are constant over time, δ_t are year fixed effects, and ε_{it} is the random disturbance term. The *Director experience* dummy variable is defined in one of the following three ways and takes the value of one in $[t+1,\ t+5]$ years and zero otherwise: *Listed board* if at least one director with prior experience on listed boards was appointed to the board within the first year after the activist announced the campaign, *Other industries* if the director has experience in a two-digit SIC industry different from the target firm's, and *Multiple industries* if the director has prior experience in multiple industries. All other variables are defined in Appendix 2.8. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the firm level.

	(1)	(2)	(3)	(4)	(5)	(6)
Post	0.112***	0.096***	0.122***	0.140***	0.123***	0.142***
	(4.522)	(3.833)	(4.882)	(6.032)	(5.315)	(6.061)
× Listed board	0.124***			0.082***		
	(3.920)			(2.784)		
× Other industries		0.113***			0.089***	
		(4.328)			(3.596)	
× Multiple industries			0.107***			0.105***
			(2.978)			(3.058)
Size				0.445***	0.445***	0.446***
				(27.040)	(27.061)	(27.069)
BM				0.987***	0.988***	0.989***
				(5.681)	(5.756)	(5.683)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
$\beta_1 + \beta_2$	0.237***	0.209***	0.230***	0.222***	0.213***	0.246***
	(6.154)	(6.394)	(5.501)	(6.323)	(7.004)	(6.375)
Adjusted R^2	0.128	0.128	0.128	0.262	0.262	0.262
Firms	1,869	1,869	1,869	1,869	1,869	1,869
Observations	14,588	14,588	14,588	14,588	14,588	14,588

Column 1 in Table 2.8 provides evidence that the appointment of directors with prior experience on listed boards is associated with improvements in long-term returns that are over 12 percentage points higher on average than returns at targeted firms without a director. As reported earlier, newly appointed directors had served on three listed boards on average prior to the appointment, compared to the 1.8 boards of the incumbent directors. The individual coefficients for the *Post* and $Appointment \times Post$ terms are both significant at the 1% level and the linear combination of these coefficients is economically large at almost 21 percentage points.

Additional specifications in columns 2 and 3 examine other human capital aspects of activist-appointed directors. The *Other industries* indicator captures director experience if it comes from a two-digit SIC classification that is different from the targeted firm's industry. Finally, *Multiple industries* captures directors with experience in more than one industry based on two-digit SIC codes. All three variables are statistically significant individually and the associated improvement in stock returns is comparatively large. Columns 4 to 6 control for firm size and book-to-market ratio that are well-known determinants of stock returns and show consistent results. Compared to the average increase in returns of almost 16 percentage points for all targeted firms in column 3 of Table 2.7, the 8 to 10 percentage point impact of appointing experienced directors is economically significant. The variation in long-term performance associated with the human capital of newly-appointed directors highlights that effective activist investors can successfully identify and attract directors that are well-equipped to facilitate a turnaround at underperforming firms. This finding provides support for the paper's main hypothesis that activists profit from intermediation in the director labor market, and offers an insight into the channel for value creation at targeted firms. Not all campaigns require a director to facilitate the activist's agenda, but activist-appointed director contribute to improved returns.

As reported in Table 2.3, target firms with director appointments are larger by market capitalization, spend more on CAPEX and have a lower ROA compared to targeted firms with no director appointments. In order to examine the extent to which CAPEX and ROA influence long-term market performance, they are added to the main regression specification as additional controls. The results are tabulated in the appendix and show that the main findings remain largely unchanged.

I also examine this question in a complementary identification strategy by constructing calendar-time portfolios and show the findings in Table 2.9. The results provide supporting evidence that portfolio alphas are higher during the three- and five-year periods after the activism campaign when compared to the same period prior to the campaign. When the first year of the campaign is excluded, returns are even higher at an average of 40 basis points (bps) per month, which suggests that improvements are higher over a longer time horizon. When the sample of targeted firms is separated to portfolios of firms with and without director appointments, the results show that improved excess returns are only observed for firms with activist-appointed directors for the five year horizon. Alphas over the three-year period are significant for both portfolios but appear higher for the director portfolio at 77 bps compared to the other portfolio's 48.5 bps.

2.4.1. Director announcements

Evidence presented in the previous sections suggests that positive long-term returns to activism are driven by director appointments, extending previous literature. However, other factors that are unobserved or unaccounted for may influence both director appointments and long-term returns, which I investigate in this section.

To mitigate this concern, I examine the parallel trends assumption of the difference-in-differences identification strategy presented in Equation 2.2. Coefficients are estimated separately for each year prior to the event year to capture differences in returns between targets with and without subsequent director appointments. The plot of $Treatment \times Year$ coefficients in Figure 2.3 suggests a minor downward trend prior to the activism year, but none of the estimates are statistically significant at conventional levels. Overall, the graph confirms that that there are no apparent trends across targets with subsequent director appointments when compared to targets without a director appointment.

I revisit announcement returns reported in Table 2.3 showing that the market does not distinguish between campaigns ex ante based on whether a director is later appointed. Both the 5-day and 15-day CARs around the announcement are of similar magnitude and the differences are indistinguishable from zero. These results suggest that there is no incremental information about the firm, the activist investor, or the nature of the campaign at the time of the announcement that would differentiate the two types of campaigns.

Table 2.9: Calendar-time portfolio abnormal returns

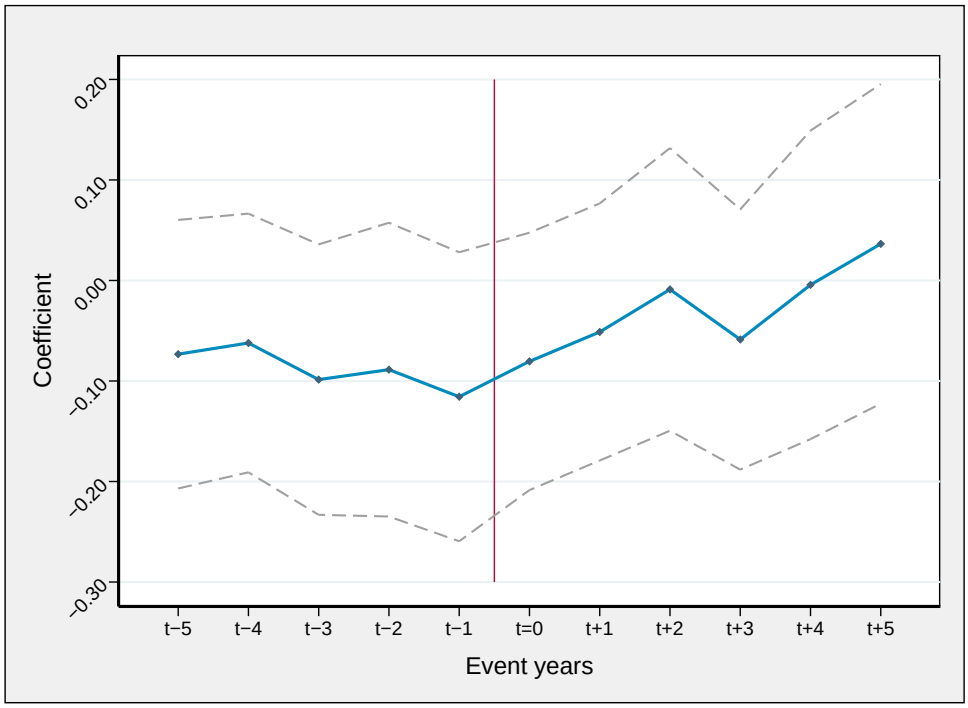
This table reports calendar-time portfolio abnormal returns for activism targets. The "All targets [-5, +5]" portfolio adds firms 60, 48, 36, 24 and 12 months before the event and holds those firms for the following 12 months. It also includes returns to similar 12-month portfolios for firms after the activism event, excluding the month of the event. The "[-5, +5] \ {1}" portfolio excludes return observations in the first year of the campaign. The regression estimated is:

$$r_t - r_f = \mu_{POST} \cdot POST_t + \alpha + \beta_{RMRF} \cdot RMRF_t + \beta_{SMB} \cdot SMB_t + \beta_{HML} \cdot HML_t + \beta_{MOM} \cdot MOM_t + \varepsilon_t$$

where α is the estimate of the regression intercept from the factor model and $POST$ is an indicator variable for portfolios after the event. $RMRF$ is the loading on the market excess return, SMB, HML and MOM are the estimates of portfolio factor loadings on the Fama-French size and book-to-market factors, and the Carhart momentum factor. *All targets* include all firms in the sample, *Directors* includes target firms if a new director was appointed in the first year after the event, and *No directors* includes firms if a new director was not appointed in the first year after the event. The portfolios are equal weighted and are only included when at least ten firms are available. Observations are weighted based on the number of assets in the portfolio. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the month level.

	Post	Alpha	β_{RMRF}	β_{SMB}	β_{HML}	β_{MOM}	Months	R^2
All targets								
[-5, +5]	0.262**	-0.233**	1.038***	0.848***	0.099	-0.249***	1,662	0.872
	(2.21)	(-2.05)	(27.95)	(16.47)	(1.33)	(-6.06)		
[-5, +5] \ {+1}	0.400***	-0.244**	1.042***	0.856***	0.126*	-0.233***	1,483	0.876
	(3.13)	(-2.17)	(30.01)	(17.61)	(1.85)	(-5.96)		
[-3, +3]	0.649***	-0.669***	1.031***	0.834***	0.044	-0.269***	1,035	0.869
	(4.83)	(-5.40)	(25.23)	(13.20)	(0.46)	(-5.38)		
Directors								
[-5, +5]	0.372***	-0.311***	1.058***	0.904***	0.107	-0.288***	1,649	0.845
	(2.75)	(-2.65)	(26.48)	(16.61)	(1.39)	(-5.63)		
[-5, +5] \ {+1}	0.529***	-0.320***	1.058***	0.909***	0.135*	-0.268***	1,472	0.846
	(3.65)	(-2.75)	(28.41)	(17.55)	(1.95)	(-5.63)		
[-3, +3]	0.769***	-0.778***	1.054***	0.884***	0.051	-0.299***	1,028	0.847
	(4.79)	(-6.13)	(24.56)	(13.63)	(0.52)	(-4.93)		
No directors								
[-5, +5]	0.078	-0.087	1.008***	0.764***	0.091	-0.198***	1,620	0.789
	(0.52)	(-0.65)	(26.90)	(13.10)	(1.18)	(-5.23)		
[-5, +5] \ {+1}	0.193	-0.102	1.019***	0.775***	0.115	-0.181***	1,445	0.792
	(1.16)	(-0.78)	(28.14)	(13.69)	(1.54)	(-5.18)		
[-3, +3]	0.485***	-0.488***	0.994***	0.759***	0.046	-0.235***	1,012	0.785
	(2.80)	(-3.36)	(23.40)	(10.79)	(0.45)	(-4.93)		

Fig. 2.3. Targeted firms: stock returns around hedge fund activism



This figure represents the dynamics in stock returns as measured by calendar year buy and hold stock returns in the years around targeting by activist investors. The firm-year observations include targeted firms and the following specification is estimated:

$$BHAR_{it} = \mu_t + \sum_{k=-5}^{+5} \alpha_k \cdot D[t+k]_{it} + \sum_{k=-5}^{+5} \beta_k \cdot (Appointment_{it} \times D[t+k]_{it}) + \gamma \cdot X'_{it} + \eta_i + \delta_t + \varepsilon_{it}$$

The sample includes activism targets between 2005 and 2018 and firm-year observations five years before and after the event. $D[t+k]$ is an indicator variable for firm years that are within $(t-5,\ t+5)$ years around the activism event year. The $Appointment \times D[t+k]$ dummy variable takes the value of one in $(t-5,\ t+5)$ years around the event for the appointment of directors with experience on listed boards and in multiple industries, including one outside the target's industry. The β_k coefficients for the $(t-5,\ t+5)$ year indicators are plotted with 95% confidence intervals, representing buy and hold stock return difference trends between activism targets with director appointments and the other targeted firms with no appointments. X' is a vector of firm characteristics that may vary over time, η_i is the combined effect of all firm-specific unobserved variables that are constant over time, δ_t are year fixed effects, and ε_{it} is the random disturbance term. Standard errors clustered at the two-digit SIC level. The $(t=0)$ mark along the horizontal axis is the end of the firm's fiscal year in which the activism event took place.

Table 2.10: Short-term returns around director announcements

This table reports short-term cumulative abnormal returns associated with the announcement of a new director at firms targeted by activist investors. The rows represent various event windows around the announcement date and the columns set out the mean values for returns adjusted by value-weighted CRSP returns, the CAPM model, the Fama-French (1992) three-factor model, and the Carhart model incorporating the momentum factor. One-sample t-tests examine whether the means are different from zero and t-statistics are reported for each model. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels.

	Market-adjusted		Market model		FF Model		Carhart Model	
	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat
[-1, +1]	0.843***	(4.219)	0.846***	(4.209)	0.765***	(3.854)	0.769***	(3.858)
[-2, +2]	0.971***	(3.783)	1.040***	(3.947)	0.873***	(3.395)	0.828***	(3.211)
[-5, +5]	1.064***	(3.060)	0.984***	(2.648)	0.725*	(1.945)	0.672*	(1.798)
[-7, +7]	1.313***	(3.288)	1.166***	(2.688)	0.902**	(2.111)	0.804*	(1.880)
[-10, +10]	2.250***	(4.799)	2.077***	(3.891)	1.831***	(3.524)	1.698***	(3.303)

If improved long-term returns to activism campaigns are attributed to directors with the right skills and expertise to effect change, it is expected that the announcement of these director appointments will lead to positive short-term abnormal returns. I examine these announcements in an event study framework using announcement dates for newly appointed directors from BoardEx. As shown in Figure 2.1, directors are appointed throughout the year after the campaign is launched, with approximately a quarter of appointments taking place within the first month.

Table 2.10 presents a range of models and event windows for the announcement of new directors after the launch of the activism campaign. All of the 3-day and 5-day cumulative abnormal returns are positive and significantly different from zero at the 1% level. These short-term CARs range from 0.85% for the 3-day market-adjusted model to approximately 1% for the 5-day market model. The longer-term announcement CARs are somewhat higher with a mid-point of approximately 1.7% for the 21-day event window CAR using the Carhart four-factor model. These returns are not only statistically significant but their magnitude is also remarkable in comparison to the 3.5% CAR associated with the first announcement of the campaign.

I further examine these abnormal event returns by comparing them to announcement returns at the same firm prior to the launch of the activism campaign. I include director announcements from two years prior to the campaign because significantly fewer new

Table 2.11: Director announcement event returns before and after activism targeting

This table reports short-term cumulative abnormal returns associated with the announcement of a new director at firms targeted by activist investors starting two years before the launch of the activism campaign and ending on the first anniversary. The rows represent various event windows around the announcement date and returns are adjusted by value-weighted index returns, the Fama-French (1992) three-factor model, and the Carhart four-factor model incorporating the momentum factor. Two-sample t-tests examine differences in means across the two sub-samples accounting for unequal variances and t-statistics are reported for each model. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels.

	All events	Pre-activism	Activism	Differences	
	Mean	Mean	Mean	Mean	t-stat
Market-adjusted					
[-1, +1]	0.424	-0.127	0.843	0.971***	(3.590)
[-2, +2]	0.511	-0.093	0.971	1.064***	(2.994)
[-10, +10]	1.241	-0.086	2.250	2.336***	(3.562)
Three-factor model					
[-1, +1]	0.377	-0.135	0.765	0.900***	(3.328)
[-2, +2]	0.427	-0.158	0.873	1.031***	(2.913)
[-10, +10]	0.927	-0.259	1.831	2.090***	(2.909)
Four-factor model					
[-1, +1]	0.399	-0.087	0.769	0.857***	(3.170)
[-2, +2]	0.433	-0.086	0.828	0.914***	(2.604)
[-10, +10]	0.943	-0.049	1.698	1.747**	(2.455)
Announcements	2,528	1,092	1,436		

directors are announced in a usual year when a firm is not targeted by an activist. The results are presented in Table 2.11 and show that CARs are significantly higher for director announcements after an activism campaign is launched. The results are consistent across event windows and factor models. For example, the difference between the Fama-French three-factor cumulative abnormal returns before and after a campaign launch is a little over 1 percent for the five-day window and over 2 percent in the 21-day window. These differences are both statistically and economically significant.

The comparatively large and significant abnormal returns around director announcements provides additional supportive evidence that activism returns accrue to newly appointed experienced directors. At the time that the campaign is announced, it is unknown whether a new director will be nominated or appointed to the board to influence decision-making. Descriptive statistics show that activist investors with concentrated portfolios and a track record of proxy filings are more likely to be associated with director appointments.

It is plausible that activist investors identify a director that they believe to be uniquely positioned to improve performance at the firm given the director's skills and expertise prior to launching a campaign. However, the evidence suggests that at the time an activism campaign is publicly announced, it is unresolved as to whether the director will be successfully appointed to the board in order to influence decision-making, effect change, and ultimately execute the activist's plan.

2.4.2. Activist investor heterogeneity

This paper argues that activist investors are effective labor market intermediaries as evidenced by improved returns to activism attributable to experienced newly appointed directors. An alternative explanation is that successful or reputable activist investors are more likely to have a director appointed at the target firm and the most successful activists are likely to nominate the most skilled and experienced directors. Simply put, new directors may not be influencing long-term returns, but both director appointments and returns could be the hallmarks of an effective activist. This section explores whether unobserved or omitted activist heterogeneity confounds the main results.

If investor characteristics other than director appointments influence long-term returns to activism, estimating a model with activist fixed effects is expected to reveal a strong individual investor effect and an insignificant effect for director appointments. Estimating the model in Equation 2.3 by ordinary least squares is expected to reveal the role of investor heterogeneity:

$$\begin{aligned} BHAR_{it} &= \alpha + \beta_1 \cdot Post_{it} + \beta_2 \cdot (Director\ appointment_{it} \times Post_{it}) \\ &\quad + \gamma \cdot X'_{it} + \omega_c + \delta_n + \delta_t + \varepsilon_{it} \end{aligned} \tag{2.3}$$

where *Post* marks all firm-year observations $(t+1,\ t+5)$ years after the activism event, and *Director appointment* is a dummy variable that takes the value of one in $(t+2,\ t+5)$ years if the target firm appoints a director within the first year of the campaign's announcement. X' is a vector of firm characteristics that may vary over time, ω_c are activist fixed effects, δ_n are industry fixed effects, δ_t are year fixed effects, and ε is the random disturbance term. Of primary interest is the linear combination of β_1 and β_2 coefficients. These coefficients are expected to be indistinguishable from zero if unobserved activist investor heterogeneity influences returns.

Table 2.12 provides evidence that is consistent with the hypothesis that activism returns are attributable to the human capital of newly appointed directors. The first three columns set out results estimated on the main sample. The coefficients in this cross-sectional analysis are large, statistically significant and comparable to the panel data analysis incorporating firm fixed effects. The coefficient on the *Other industries* variable in column 3 indicates that, conditional on a new director's appointment, directors with experience from other industries are associated with increased returns of approximately 11 percentage points, controlling for investor heterogeneity, time trends, industry dynamics, and other known determinants of stock returns. The economic magnitude of the overall performance improvement is approximately 22 percentage points as shown in the $(\beta_1 + \beta_2)$ row for column 3, which is comparable to the 24.6 percentage point estimate in the main firm fixed effects model tabulated in column 6 of Table 2.8. This finding suggests that activist investor effects play a role, but they are not of first order importance.

For robustness, the same specification is estimated again for the subsample of activists that launch at least two campaigns during the sample period, one with and one without a new director. If unobserved investor characteristics are important in influencing returns, it is expected that this sub-sample would more strongly highlight that within-investor differences dominate the impact of director appointments. Tabulated in columns 4 to 6 of Table 2.12, the results remain consistent in both magnitude and significance, suggesting that it is director appointments and not unobserved activist characteristics that influence improvements in long-term returns.

Table 2.12: Activist tactics, returns and investor heterogeneity

This table sets out the relationship between two-year market-adjusted buy and hold returns and activist investor tactics. The following specification is estimated:

$$BHAR_{it} = \alpha + \beta_1 \cdot Post_{it} + \beta_2 \cdot (Director\ appointment_{it} \times Post_{it}) + \gamma \cdot X'_{it} + \omega_c + \delta_n + \delta_t + \varepsilon_{it}$$

The sample includes activism targets between 2005 and 2018 and all firm-year observations five years before and after the event. *Post* is an indicator variable for firm years that are within $(t+1,\ t+5)$ years after the activism event year. X' is a vector of firm characteristics that may vary over time, ω_c are activist fixed effects, δ_n are industry fixed effects based on two-digit SIC codes, δ_t are year fixed effects, and ε_{it} is the random disturbance term. The following dummy variables take the value of one in $(t+2,\ t+5)$ years and zero otherwise: *Director appointment* if at least one director was appointed to the board within the first year after the activist announced the campaign and *Other industries* if the director has experience in a two-digit SIC industry different from the target firm. All other variables are defined in Appendix 2.8. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the firm level.

	All activists			Diverse tactics		
	(1)	(2)	(3)	(4)	(5)	(6)
Post	0.104***	0.138***	0.103***	0.113***	0.140***	0.088***
	(4.72)	(6.50)	(4.86)	(4.78)	(6.05)	(3.69)
× Director appointment	0.087***	0.056**		0.059**	0.033	
	(3.46)	(2.37)		(2.18)	(1.30)	
× Other industries			0.117***			0.127***
			(5.04)			(4.99)
Size		0.223***	0.223***		0.200***	0.200***
		(24.90)	(25.05)		(21.45)	(21.58)
BM		0.531***	0.528***		0.430***	0.431***
		(9.07)	(9.17)		(6.36)	(6.38)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Activist fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
$\beta_1 + \beta_2$	0.191***	0.194***	0.220***	0.172***	0.173***	0.215***
	(7.275)	(7.582)	(8.879)	(6.082)	(6.252)	(8.136)
Adjusted R^2	0.102	0.183	0.184	0.088	0.163	0.165
Activists	705	705	705	353	353	353
Observations	14,600	14,588	14,588	11,051	11,039	11,039

2.5. Activist directors

Given this new evidence on the importance of newly appointed activist directors, a natural question is whether these directors can be linked to the activist investor directly. It is challenging to positively identify activist directors because less than 5% of the campaigns involve a proxy contest where the activist formally proposes an alternative slate of directors. It is more common that activist investors negotiate the nomination of their preferred candidate with management and the incumbent board, and the outcome is sometimes formalized in a settlement agreement (Bebchuk, Brav, Jiang, and Keusch, 2020). The activist director candidates are then listed on the company's proxy ballot as independents nominated by management, not the activist. Once nominated, the typical approval rate of directors is approximately 95% in annual elections (Cai, Garner, and Walking, 2009; Fischer, Gramlich, Miller, and White, 2009).

It is reasonable to assume that all directors that are appointed after a campaign launch have at least the consent of the activist investor. When these investors obtain a significant minority stake in the target firm, they explicitly announce their intention to change or influence the control of the firm and the appointment of directors is one of the key channels. Because activist directors are central to this paper, the following additional steps are taken to strengthen the link between the activist investor and the newly appointed director and to examine how misclassifying directors may bias the results.

First, I re-estimate the main empirical models using a subset of directors with a direct connection to the activist. Next, I extend the sample to include a group of control firms matched on a propensity score. The findings provide a more generalizable insight into the intermediary role that activist investors play in the director labor market and it also facilitates an examination of directors' influence on performance at firms where an activist is not involved in the nomination process. Finally, I discuss how additional scenarios that lead to a new director's appointment without the activist's consent may bias estimates.

2.5.1. Connected directors

The model in Equation 2.2 is re-estimated using only directors with documented links to the activist. In order to establish this link, I first download all regulatory filings by the

activist investor related to the target firm based on filer and subject firm CIK identifiers. This includes the main Schedule 13D filing that marks the start of the campaign and all its amendments. In addition, it also includes all preliminary, definitive and revised non-management proxy filings, information statements and notices of exempt solicitations. The complete list of these filings is set out in the appendix. I then conduct named entity recognition analysis using natural language processing machine learning tools to extract individual's full names from these filings. The output is then matched to the name of the newly appointed directors from BoardEx. Additional connected directors are identified if they served on a previous board where the same investor had a 5% or higher shareholding based on Schedule 13D and 13G filings, which include both active and passive investments. Table 2.4 shows that almost half of newly appointed directors can be classified as directly connected to the activist using this method. Over 46% are mentioned in a regulatory filing by name, and almost 18% served on the board of a previous firm where the activist was also an investor.

The results of this analysis are tabulated in Table 2.13. The specification is identical to the model set out in Equation 2.2, but the indicator variables only take the value of one if the appointed director is confirmed to be connected to the activist based on their work history and regulatory filings. The results are consistent with the estimates of the main model. Columns 4 and 6 also control for other risk factors and show that the combined marginal effect for connected activist directors shown in the $(\beta_1 + \beta_2)$ row is 22 to 27 percentage points on average. While the *Other industries* coefficient in column 2 is not statistically significant individually, the linear combination of the coefficients of interest are higher across all three models compared to the estimates for all directors in Table 2.8. These results provide evidence that the main results are not driven by directors without a confirmed link to the activist, supporting the main hypothesis that activists are effective intermediaries in the director labor market.

Table 2.13: Stock returns and connected directors

This table reports panel regressions of two-year buy-and-hold abnormal returns on different types of director appointments. The following specification is estimated:

$$BHAR_{it} = \alpha + \beta_1 \cdot Post_{it} + \beta_2 \cdot (Connected\ director\ experience_{it} \times Post_{it}) + \gamma \cdot X'_{it} + \eta_i + \delta_t + \varepsilon_{it}$$

The sample includes activism targets between 2005 and 2018 and all firm-year observations five years before and after the event. *Post* is an indicator variable for firm years that are within $(t+1,\ t+5)$ years after the activism event year. X' is a vector of firm characteristics that may vary over time, η_i is the combined effect of all firm-specific unobserved variables that are constant over time, δ_t are year fixed effects, and ε_{it} is the random disturbance term. In column 1, *Listedboard* × *Post* is an indicator variable in years $(t+1,\ t+5)$ if a director appointed to the firm within the first year after the activism event had listed board experience and the director can be directly connected to the activist based on regulatory filings and employment history. Subsequent specifications examine linked directors with prior listed board experience and track record in two-digit SIC industries different from the target firm and in multiple industries. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the firm level.

	(1)	(2)	(3)	(4)	(5)	(6)
Post	0.127***	0.135***	0.128***	0.147***	0.153***	0.146***
	(5.108)	(5.405)	(5.137)	(6.405)	(6.591)	(6.295)
Connected directors only						
× Listed board	0.107***			0.091**		
	(2.809)			(2.534)		
× Other industries		0.048			0.065	
		(1.038)			(1.484)	
× Multiple industries			0.117***			0.128***
			(2.758)			(3.275)
Size				0.446***	0.446***	0.446***
				(27.032)	(27.044)	(27.070)
BM				0.988***	0.989***	0.989***
				(5.682)	(5.693)	(5.684)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
$\beta_1 + \beta_2$	0.234***	0.183***	0.245***	0.238***	0.218***	0.274***
	(5.243)	(3.566)	(5.148)	(5.725)	(4.499)	(6.333)
Adjusted R^2	0.127	0.127	0.127	0.262	0.261	0.262
Firms	1,869	1,869	1,869	1,869	1,869	1,869
Observations	14,588	14,588	14,588	14,588	14,588	14,588

2.5.2. Turnaround directors

Another potential concern is that the results may be driven by the appointment and human capital of directors that would have joined the board even in the absence of the activist investor. Alternatively, improvements could be attributed to directors that were newly appointed in spite of objection by the activist. To mitigate the validity of these explanations, I extend the main analysis in Section 2.4 to firms that are not targeted by activists and the directors appointed to those boards.

In order to mitigate potential bias due to functional form misspecification, firms that are similar but not targeted by an activist are identified by propensity score matching. Brav et al. (2008) show that firm size, market-to-book ratio, and return on assets (ROA) are important determinants of being targeted by an activist investor. In order to identify a potential set of control firms, these variables are used to estimate a propensity score across exchange-listed Compustat firms between 2005 and 2018. The modeling of various specifications is tabulated in the appendix. Each targeted firm is then matched on the propensity score to a control firm from the same year and two-digit SIC code. Firm-year observations of activism targets are never matched as controls, firms are all on a common support, and they are matched with no replacement.

Table 2.14 reports summary statistics for a range of firm characteristics and sets out means, medians and standard deviations for both groups. The last two columns compare targeted firms with matched control firms and indicate differences and t-statistics that test for equality of the means, allowing for unequal variances. The table provides evidence that the two groups of firms are indistinguishable across a wide range of firm characteristics.

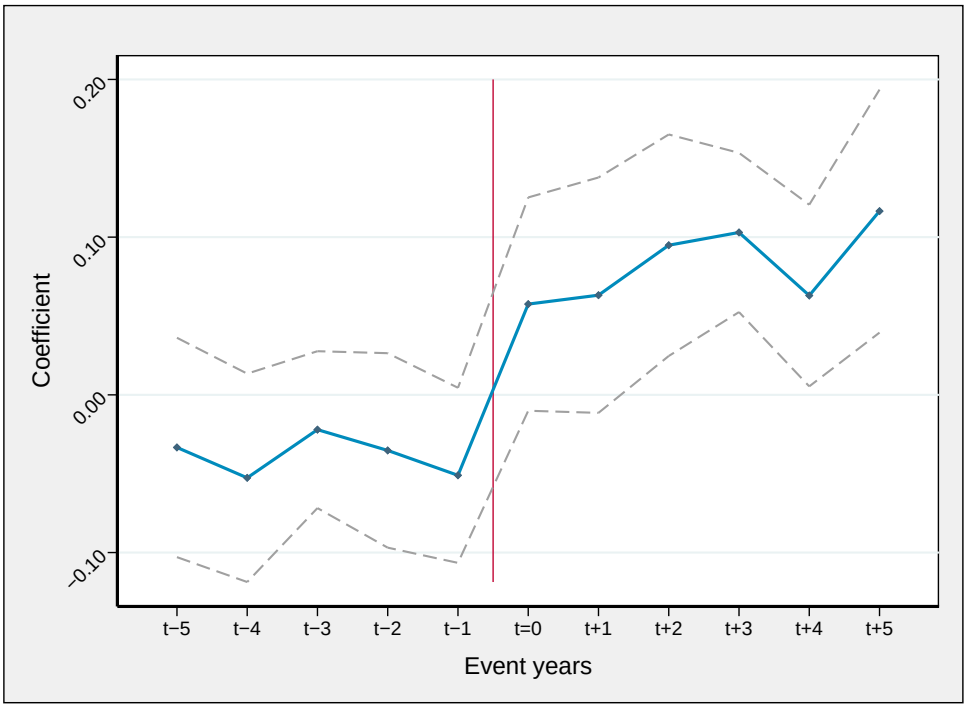
Identification in this framework also relies on satisfying the parallel trends assumption. Figure 2.4 presents the dynamics in stock returns as measured by calendar year buy-and-hold returns in the years around activism campaigns. The firm-year observations include targeted and control firms in a propensity score matched sample and coefficients are estimated in a firm fixed effects regression framework for each indicator variable that marks a specific year in the $[t-5,\ t+5]$ interval around the activism event for targeted firms. The figure confirms the absence of any clear trends in annual buy-and-hold returns prior to targeting.

Table 2.14: Summary statistics for the target firms and the matched control sample

This table reports summary statistics for the sample of activism targets and control firms. The sample of targets is first limited to firms with potential matches to control firms in the same year t and two-digit SIC code. The control sample is then formed by matching each target firm to a non-target firm with the closest propensity score. The propensity score is estimated using log market capitalization, market-to-book ratio, return on assets measured at (t - 1). The table shows means, medians, standard deviations, and differences in mean values between activism targets and control firms measured in the year of the activism event, or pseudo-event in the case of control firms. Variable definitions are provided in Appendix 2.8. The last columns reports the statistical significance of the differences in means between the subsamples based on t-tests that allow for unequal variances.

	Activism Targets			Control Firms			Differences	
	Mean	Median	Std. dev.	Mean	Median	Std. dev.	Difference	t-stat
Firm characteristics								
Total assets	3,078.93	445.12	20,592.00	2,307.86	351.36	16,201.25	-771.07	(-1.42)
Net turnover	1,577.42	268.92	6,701.28	1,488.20	215.20	7,828.10	-89.22	(-0.42)
Market capitalization	1,375.39	265.12	4,049.09	1,564.20	263.84	8,990.96	188.81	(0.92)
Operating income	196.07	20.78	898.18	193.79	22.64	1,261.15	-2.28	(-0.07)
Long-term debt	820.09	46.40	5,443.59	624.43	19.47	5,797.65	-195.66	(-1.18)
Common dividends	17.39	0.00	83.39	24.91	0.00	246.32	7.52	(1.39)
EBITDA	196.07	20.78	898.18	193.79	22.64	1,261.15	-2.28	(-0.07)
Firm age	19.47	15.50	14.54	19.00	15.50	13.22	-0.47	(-1.15)
Financial ratios								
Return on assets	0.00	0.06	0.27	0.01	0.07	0.33	0.00	(0.42)
ΔROA $_{[t-3,t-1]}$	0.01	-0.00	0.57	0.06	-0.00	1.68	0.05	(1.28)
Return on sales	-1.46	0.09	18.20	-3.92	0.10	92.12	-2.46	(-1.25)
Tobin's Q	5.55	1.28	186.17	2.10	1.40	2.49	-3.44	(-0.89)
Dividend yield	3.28	0.00	153.05	0.01	0.00	0.05	-3.27	(-1.03)
Payout ratio	3.53	0.00	157.31	0.03	0.01	0.08	-3.50	(-1.04)
Cash/assets	0.17	0.09	0.24	0.16	0.09	0.21	-0.00	(-0.21)
R&D/assets	0.12	0.05	0.20	0.13	0.05	0.25	0.01	(1.22)
CAPEX/assets	0.04	0.02	0.07	0.05	0.02	0.07	0.00	(0.74)
Sales per employee	0.01	0.00	0.03	0.01	0.00	0.19	0.01	(1.49)
Inventory turnover	33.16	5.62	179.29	54.29	5.67	865.95	21.14	(0.97)
Business segments	2.16	1.00	1.56	2.11	1.00	1.55	-0.05	(-0.93)
Firms	2,330			2,330			4,660	

Fig. 2.4. Propensity score matched sample: stock returns around shareholder activism



This figure represents the dynamics in stock returns as measured by calendar year buy and hold stock returns in the years around targeting by activist investors. The firm-year observations include targeted and control firms in a propensity score matched sample and the following specification is estimated:

$$BHAR_{it} = \mu_t + \sum_{k=-5}^{+5} \alpha_k \cdot D[t+k]_{it} + \sum_{k=-5}^{+5} \beta_k \cdot (Activism_{it} \times D[t+k]_{it}) + \gamma \cdot X'_{it} + \eta_i + \delta_t + \varepsilon_{it}$$

The sample includes activism targets and control firms between 2005 and 2018 and firm-year observations five years before and after the event, or pseudo-event for control firms. $D[t+k]$ is an indicator variable for firm years that are within $[t-5,\ t+5]$ years around the activism event year, or pseudo-event year for control firms. The $Activism \times D[t+k]$ dummy variable takes the value of one for activism targets in $[t-5,\ t+5]$ years around the event. The β_k coefficients for the $[t-5,\ t+5]$ year indicators are plotted with 95% confidence intervals, representing buy and hold stock return difference trends between activism targets and control firms. X' is a vector of firm characteristics that may vary over time, η_i is the combined effect of all firm-specific unobserved variables that are constant over time, δ_t are year fixed effects, and ε_{it} is the random disturbance term. Standard errors clustered at the two-digit SIC level. The $(t=0)$ mark along the horizontal axis is the end of the firm's fiscal year in which the activism event, or pseudo-event for control firms took place.

This empirical framework examines whether directors with the suitable human capital required to improve performance also join firms in the absence of intermediation by an activist. If they do and are successful in influencing firm performance, then this specification would identify a significant director effect regardless of whether the firm is targeted by an activist. As a starting point, I estimate an amended version of the main model using the propensity score matched sample to provide a baseline:

$$\begin{aligned} BHAR_{it} \;=\; \alpha \;&+ \beta_1 \cdot (Activism_{it} \times Post_{it}) \\ &+ \beta_2 \cdot (Appointment_{it} \times Activism_{it} \times Post_{it}) \\ &+ \beta_3 \cdot Post_{it} + \gamma \cdot X'_{it} + \eta_i + \delta_t + \varepsilon_{it} \end{aligned} \tag{2.4}$$

where *Activism* is a dummy variable that takes the value of one in $(t+1,\ t+5)$ years if the firm is targeted by an activist and zero otherwise. All other variables are as described for Equation 2.1.

The results are tabulated in Table 2.15 and show that coefficient estimates are consistent across all specifications when compared to the earlier sample of treated firms only. Compared to a matched sample of control firms, returns improve at target firms by 16 percentage points on average in the five years after the campaign is launched. The appointment of directors to activist targeted boards is also associated with a significant improvement in market performance compared to control firms. The improvement is higher when the new director has listed board experience, experience from multiple industries, or in an outside industry. Compared to the control group, within-firm performance improves by approximately 22 percentage points on average when a new director has experience across multiple industries, controlling for key risk factors and other firm characteristics.

Table 2.15: Director appointments and expertise: matched sample

This table presents two-year market-adjusted buy-and-hold returns associated with different activist investor tactics. The following specification is estimated:

$$BHAR_{it} = \alpha + \beta_1 \cdot (Act_{it} \times Post_{it}) + \beta_2 \cdot (Appt_{it} \times Act_{it} \times Post_{it}) + \beta_3 \cdot Post_{it} + \gamma \cdot X'_{it} + \eta_i + \delta_t + \varepsilon_{it}$$

The sample includes activism targets and control firms between 2005 and 2018 and firm-year observations five years before and after the event, or pseudo-event for control firms. *Post* is an indicator variable for firm years that are within $[t+1,\ t+5]$ years after the activism event year. X' is a vector of firm characteristics that may vary over time, η_i is the combined effect of all firm-specific unobserved variables that are constant over time, δ_t are year fixed effects, and ε_{it} is the random disturbance term. In columns 1 and 2, the $Act \times Post$ dummy variable takes the value of one in $[t+1,\ t+5]$ years after the event. In subsequent columns dummy variables take the value of one if at least one director was appointed to the board within the first year after the activist became involved (3), if the appointed director has any prior experience on listed boards (4), in a two-digit SIC industry different from the target firm (5), or from multiple industries (6). Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the firm level.

	(1)	(2)	(3)	(4)	(5)	(6)
Activism × Post	0.070***	0.160***	0.116***	0.121***	0.135***	0.131***
	(3.121)	(5.803)	(3.315)	(3.760)	(4.470)	(4.227)
× Director appointment			0.070*			
			(1.915)			
× Listed board				0.082**		
				(2.342)		
× Other industries					0.061*	
					(1.684)	
× Multiple industries						0.086**
						(2.240)
Post	0.040*	0.011	0.011	0.011	0.011	0.011
	(1.713)	(0.499)	(0.524)	(0.523)	(0.518)	(0.524)
Size		0.541***	0.541***	0.541***	0.541***	0.541***
		(41.093)	(41.153)	(41.102)	(41.217)	(41.028)
BM		−2.676***	−2.655***	−2.645***	−2.689***	−2.638***
		(−3.423)	(−3.411)	(−3.388)	(−3.462)	(−3.376)
Firm age		0.117**	0.119**	0.120**	0.119**	0.120**
		(1.996)	(2.036)	(2.054)	(2.035)	(2.050)
Board size		−0.455***	−0.455***	−0.454***	−0.455***	−0.454***
		(−11.036)	(−11.019)	(−10.995)	(−11.054)	(−10.982)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
$\beta_1 + \beta_2$	0.070***	0.160***	0.186***	0.204***	0.196***	0.216***
	(3.121)	(5.803)	(5.908)	(6.132)	(5.410)	(5.887)
Adjusted R^2	0.281	0.281	0.281	0.281	0.281	0.281
Firms	0.281	0.281	0.281	0.281	0.281	0.281
Observations	26,158	26,158	26,158	26,158	26,158	26,158

2.5.3. Matched sample director announcements

I extend my analysis of director announcement CARs from Section 2.4.1 to control firms matched on the propensity score. In order to create a balanced sample, I include all director appointment announcements for both targeted and control firms during the two years preceding the activism campaign and the year of the event, or pseudo-event year. The results are tabulated in Table 2.16 and the various specifications and event windows provide consistent evidence. Interpreting the coefficient on the $Activism \times Post$ dummy in column 6, after controlling for announcement returns for control firms, market adjusted CARs are approximately 1.14 percentage points higher on average during the five-day window around the announcement of activist directors, all else equal. The constant term in the specification in column 6 captures CARs for control firms prior to the pseudo-event year. The magnitude of this coefficient is comparatively small and it is statistically indistinguishable from zero. The other announcement window returns for control firms after the event and targeted firms before the event are also small and statistically insignificant. These results offer additional insight to the unique value of activism directors compared to the universe of all other directors. The market expects that only activism directors will contribute to improving the targeted firm's performance, providing suggestive evidence that activist investors are skilled at matching suitable directors to target firms.

Table 2.16: Director announcement abnormal returns for target and control firms

This table reports results from pooled regressions of returns and director announcements over the 2005 to 2018 sample period. Observations include firms in the propensity score matched sample and announcements two years before and after the event year or pseudo-event for control firms. *Activism* is a dummy that takes the value of one for activism targets and *Control* takes the value of one for control firms and zero otherwise. *Post* is a dummy that takes the value of one for announcements after the launch of the activist campaign for target firms and in the pseudo-event year for control firms. Appointments are limited to the first year after the launch of the campaign and announcements within ten days of a campaign's launch are excluded. *Size* and *BM* are natural logarithms of market equity and book-to-market. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the firm level.

	CAR [-1, +1]			CAR [-2, +2]		
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.083	−0.092	0.622	0.080	−0.229	0.065
	(0.491)	(−0.404)	(0.867)	(0.406)	(−0.901)	(0.075)
Activism × *Post*	0.825**	1.000***	0.887**	0.970**	1.279***	1.142***
	(2.518)	(2.783)	(2.476)	(2.455)	(3.007)	(2.716)
Activism × *Pre*		−0.035	0.112		0.136	0.373
		(−0.115)	(0.356)		(0.343)	(0.978)
Control × *Post*		0.519	0.499		0.727	0.575
		(1.139)	(1.131)		(1.457)	(1.156)
Size			−0.065			0.001
			(−0.774)			(0.015)
BM			−0.006			0.186
			(−0.036)			(0.908)
Year fixed effects	No	No	Yes	No	No	Yes
Adjusted R^2	0.003	0.003	0.006	0.002	0.003	0.005
Announcements	4,541	4,541	4,293	4,541	4,541	4,293

2.5.4. Non-activist directors

In a final analysis of returns, I examine the influence of directors by saturating the model with the full set of interactions terms of the dummy variables for treated firms, director appointments and the *Post* indicator. For parsimony, the director appointment dummy takes the value of one if the activist-appointed director has prior experience in multiple industries or in a industry different from the target firm, subsuming the listed experience variable by definition. Results are presented in Table 2.17 and confirm the significant performance improvement for target firms from Section 2.4. Long-term returns are approximately 14 percentage points higher on average for targeted firms and 23 percentage points higher for targeted firms with an activist-appointed director. The omitted interaction term in columns 1 and 2 is the baseline case of no director appointments at control firms prior to the pseudo event, which is subsumed in the constant term. The change in returns for control firms is indistinguishable from zero and appointments at targeted firms before the activist emerges are associated with lower returns. A revealing insight from this model is that the appointment of experienced directors is not a sufficient condition for improved performance because directors are not associated with a change in performance at control firms. This potentially surprising result highlights the importance of matching the right director to the right firm at the right time. I change the omitted term in columns 3 and 4 to explicitly test whether the difference between new directors and no director appointments is significant for target firms, which is confirmed by the significant negative 8.9 percentage point difference in column 4.

The results in Table 2.17 provide additional suggestive evidence that directors appointed to activism boards are different from the population of directors appointed to other boards. They are likely to be a good match for the specific firm's long-term growth or turnaround. Treated and control firms in the sample are not different along observable characteristics except for the presence of an activist investor. However, matching does not address the concern that firms are targeted because of characteristics that are either unobservable or not controlled for in the regression. Activist investors are expected to target firms where they believe they can add value. If the source of value creation is the human capital of the director nominated to the board, there may be firms with a history of

Table 2.17: Activist directors and returns: matched sample interaction terms

This table presents two-year market-adjusted buy-and-hold returns associated with the appointment of skilled directors. *New director* is a dummy variable that takes the value of one in years $[t+2,\ t+5]$ if a director is appointed within a year of the event or the pseudo event and has a track record on listed boards, and experience in multiple industries, and zero otherwise with coefficients shown as *No director appointed*. The *after (pseudo) event* dummy takes the value of one for targeted (control) firms in years $[t+2,\ t+5]$, and zero otherwise with coefficients shown as *before (pseudo) event*. All other variables are defined in Table 2.15. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the firm level.

	(1)	(2)	(3)	(4)
Control firms before pseudo-event				
No director appointed			-0.226^{***}	-0.230^{***}
			(-6.830)	(-7.025)
New director	-0.006	0.003	-0.232^{***}	-0.226^{***}
	(-0.235)	(0.128)	(-6.776)	(-6.732)
Control firms after pseudo-event				
No director appointed	-0.002	0.001	-0.228^{***}	-0.228^{***}
	(-0.095)	(0.050)	(-6.088)	(-6.193)
New director	0.038	0.050	-0.188^{***}	-0.179^{***}
	(1.102)	(1.464)	(-4.407)	(-4.221)
Targeted firms before the event				
No director appointed	0.230	0.184	0.004	-0.045
	(1.014)	(0.783)	(0.018)	(-0.192)
New director	-0.594^{**}	-0.604^{**}	-0.819^{***}	-0.834^{***}
	(-2.403)	(-2.530)	(-3.307)	(-3.478)
Targeted firms after the event				
No director appointed	0.143^{***}	0.141^{***}	-0.082^{**}	-0.089^{***}
	(5.776)	(5.678)	(-2.385)	(-2.595)
New director	0.226^{***}	0.230^{***}		
	(6.830)	(7.025)		
Size	0.524^{***}	0.542^{***}	0.524^{***}	0.542^{***}
	(39.152)	(40.995)	(39.152)	(40.995)
BM	-2.671^{***}	-2.696^{***}	-2.671^{***}	-2.696^{***}
	(-3.205)	(-3.463)	(-3.205)	(-3.463)
Firm age		0.125^{**}		0.125^{**}
		(2.119)		(2.119)
Board size		-0.457^{***}		-0.457^{***}
		(-11.080)		(-11.080)
Year fixed effects	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Adjusted R^2	0.275	0.281	0.275	0.281
Observations	26,158	26,158	26,158	26,158

underperformance that are not targeted because potential activists do not have a director they can match to the target. Alternatively, the activist may conclude that the nomination is not feasible due to resistance by management or the incumbent board. While it cannot be completely ruled out, it is challenging to point to an unobservable factor that leads to a director joining the board after an activist becomes involved, and then successfully contributing to the firm's turnaround, all whilst operating without the activist's implicit or explicit support.

An additional consideration is the stable unit treatment value assumption (SUTVA) that requires no interference or spillover effects from treatment to control firms. There is empirical evidence, however, that even non-targeted peers can make improvements under the threat of activism (Gantchev, Gredil, and Jotikasthira, 2019). An additional SUTVA assumption is consistency, or a single treatment level, which may not hold in some of the specifications that examine the combined impact of various tailored activism strategies employed by the investor. The analysis of director announcement CARs mitigates these concerns.

Overall, the results presented highlight that the directors appointed after the activist investor's involvement are likely to be uniquely matched to the firm because returns improve significantly after their appointment. In all other scenarios, it is likely that management and the incumbent board face a constrained optimization problem in finding directors with the right fit and skillset to improve performance. The findings in Table 2.17 suggest that control firms are unable to successfully attract these directors, perhaps because of frictions in the director labor market. They are either not identified, unavailable, or unwilling to join the board. In contrast, activist investors are unlikely to face similar constraints as they research underperforming firms, but do not target all of them indiscriminately. I propose that they identify a candidate for the board that is uniquely matched to the potential target firm based on their skills, expertise and perhaps even personality. Fit is likely to be important, but it is not obvious how to achieve it, or at least science has yet to identify how it works. When such a suitable match cannot be identified or is not available, the activist can choose to abandon the activism campaign. Investment in the target is only made when all the stars are aligned ex ante, but even in some of those instances the activist may be unsuccessful in securing a board seat.

2.5.5. Low energy directors

An alternative scenario that may bias the interpretation of this paper's results is where a director with no close association to the activist joins the board. This type of director was not originally going to join the board, but agrees to the appointment only upon learning of the activist's involvement. These directors either weren't confident of their skills and expertise to facilitate a turnaround or they were unwilling to challenge the status quo required to improve performance. One may think of these directors as "low energy" individuals if they only decide to accept the appointment because of the activist, even though they would have had the incumbent board's support. I argue that these directors are less likely to contribute to improvements in firm performance, which would bias average returns downward. Alternatively, if they turn out to be valuable directors, it can be argued that their involvement would not have taken place without the involvement of the activist investor, which supports the paper's main argument that activists are effective labor market intermediaries.

2.6. Tailored activism

Given the new insight into the role of directors in activism campaigns, this section explores what activists and directors actually do by examining corporate policy changes during the campaign. Firms underperform for a number of different reasons, which includes being poorly managed with strategic shortcomings or being well-managed but poorly governed. The same approach by the activist may not be suitable in all cases because some demands can be resolved through negotiations, while others may require changing the board or even replacing the CEO in extreme circumstances. This section examines these tailored approaches taken to achieve the activist's objectives.

Previous sections of this paper have provided evidence on significant improvements for stock returns at target firms, but it is yet to be explored how operating performance and corporate policies change when activist directors are appointed to the board. The first analysis in this section employs the same empirical model presented in Equation 2.2 but examines changes to ROA and Tobin's Q, proxies for profitability and the firm's investment opportunity set.

Baseline results in Table 2.18 confirm prior findings of significant improvements in both ROA and Tobin's Q over the five-year period following an activism campaign (Bebchuk et al., 2015). Contributing to this literature, results tabulated in columns 3 and 6 provide evidence on the marginal influence of the appointment and human capital of directors. Both Tobin's Q and ROA increase at targeted firms, but they increase more when a director with outside industry experience is appointed. Compared to the average ROA of 1% for targeted firms in the year that the campaign is launched as shown in Table 2.3, ROA is 0.6 percentage points higher on average across all targeted firms during the five years after the campaign is launched. Column 6 shows that the improvement is 0.9 percentage points higher when a director with other industry experience is involved and not significantly different from zero otherwise.

Next, I examine financial and investment policy changes commonly raised by activist investors: share repurchases, asset sales, debt levels, cash holdings, and investment in research and development. In order to examine changes that take place relatively swiftly once the campaign is launched, the main empirical framework of this paper is adapted by limiting firm-year observations to the three years starting the year before the activism event and ending the year after the event. It allows for a closer inspection of what activist investors and the newly appointed directors focus on as a matter of priority.

Results from this analysis are set out in Table 2.19. The first outcome of interest is buybacks and it appears that the significant change in the first year into the activist's campaign is not related to director appointments. Firms spend \$42m on average on buybacks in the year prior to the activism event as shown in Table 2.3. Controlling for firm-level heterogeneity, time effects, firm size and firm age, share repurchases increase by approximately \$11m in the first year. Director appointments, however, do not seem to be associated with a statistically significant marginal increase in buybacks, suggesting that some corporate policy changes do not warrant the appointment of a director after the campaign is launched. Share repurchases, in particular, are relatively straightforward decisions that activist investors can probably negotiate with management and the incumbent board.

Another common activist demand is the sale of non-core or underperforming assets (Brav et al., 2015) that can be observed from changes in firm size measured by total

Table 2.18: Activist director expertise and firm outcomes

This table presents return on assets and Tobin's Q around different activist investor tactics. The following specification is estimated:

$$Y_{it} = \alpha + \beta_1 \cdot Post_{it} + \beta_2 \cdot (Appointment_i \times Post_{it}) + \gamma \cdot X'_{i,t} + \eta_i + \delta_t + \varepsilon_{it}$$

The sample includes activism targets between 2005 and 2018 and all firm-year observations five years before and after the event. *Post* is an indicator variable for firm years that are within $(t+1,\ t+5)$ years after the activism event year. X' is a vector of firm characteristics that may vary over time, η_i is the combined effect of all firm-specific unobserved variables that are constant over time, δ_t are year fixed effects, and ε_{it} is the random disturbance term. The dummy variable *Other industries* takes the value of one in $(t+2,\ t+5)$ years and zero otherwise if the is a newly-appointed director that has experience in a two-digit SIC industry different from the target firm's. All other variables are defined in Appendix 2.8. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the three-digit SIC level.

	Tobin's Q			ROA		
	(1)	(2)	(3)	(4)	(5)	(6)
Post	0.067*	0.083**	0.052	0.006*	0.007***	0.004
	(1.926)	(2.284)	(1.471)	(1.774)	(2.710)	(1.205)
× Other industries			0.082***			0.009**
			(2.659)			(2.101)
Size		0.373***	0.373***		0.042***	0.042***
		(4.471)	(4.458)		(12.471)	(12.458)
BM		0.369	0.369		0.091***	0.091***
		(1.467)	(1.481)		(4.896)	(4.858)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.602	0.639	0.640	0.760	0.778	0.778
Firms	1,869	1,869	1,869	1,867	1,865	1,865
Observations	14,587	14,587	14,587	14,558	14,548	14,548

assets. Taking into account firm heterogeneity, time effects and market capitalization, there is some evidence that firm size decreases by approximately $122m in the first year after the event as shown in column 3, but this change is not statistically significant. Directors in this case are associated with a significantly larger decrease in firm size with a combined impact of $358m or 11% of the prior year's total assets. Given the strong positive influence of market capitalization in the specification, the impact is likely to be even larger for small firms. These findings suggest that divestments are more complex decisions that require more in-depth analysis at the board level, which could explain the role of newly appointed directors.

The specifications in columns 3 to 6 examine additional corporate policy changes for long-term debt levels, cash holdings and R&D expenditure at targeted firms. In comparison to relatively straightforward and short-term share repurchases, changing the firm's long-term debt structure is likely to require more involved deliberations at the board level. Share repurchases, for example, are typically voluntary and shareholders that decide not to participate in the buyback also benefit in the form of a mechanical increase in the share price given the fewer number of shares outstanding, ceteris paribus. By contrast, changing leverage through the reduction of long-term debt is likely to alter firm-level risk that not all investors may favor to the same extent as the activist. It is more likely that this decision would need to be made after deliberations at the board level and not through negotiations between the activist and management.

Similarly, cash and short-term investments held by firms can be used in a number of ways. Some of these include share buybacks or the repayment of debt, but firms could also pre-pay for stock in return for supplier discounts that would lead to higher operating profit margins. Cash can be invested in multiple ways, such as in capital projects, R&D programs, or geographic expansion, that are all likely to require market research, analysis, deliberations and decision-making at the board level.

Consistent with this intuition, columns 3 to 6 in Table 2.19 show that leverage, long-term debt, cash and short-term investments, and R&D expenditure do not change significantly across targeted firms in the first two years of the campaign. Meaningful changes are limited to campaigns where at least one director is appointed. Firms hold $865m in long-term debt in the year of the event, which decreases by $179m on average, or by almost 20%

more for activism campaigns with a new director. Compared to the $285m of cash and short-term investments that firm hold in the year of the campaign, cash levels decrease by 14% more for firms with an activist-appointed director. Finally, R&D expenses decrease by almost $7m at activism targets with a newly appointed director from a base level of $65m, or by almost 11% more compared to targets with no director appointments.

Caution is taken in interpreting these results to avoid assigning definitive causality and asserting that directors drive changes in corporate policies. Appointments are likely to occur endogenously. For example firms with excess cash holdings and high long-term debt levels may be more likely to need a new director's strategic insight and long-term contribution when changing the firm's capital structure. By contrast, a similar firm with high cash holdings but low debt levels could carry out share repurchases without the same level of strategic planning and so reverse causality may be at play in the director appointment decision. Nevertheless, these correlations remain insightful in helping us better understand what activists do and when directors are associated with corporate policy decisions at targeted firms.

2.7. Conclusion

This study provides new insights into shareholder activism in two important ways. First, I show that returns to shareholder activism are attributable to the directors appointed to the board after an activist launches a campaign. Prior literature shows that activists create value through the efficient reallocation of financial capital. Shareholders realize short-term returns when the activist agitates for the sale of tangible and intangible assets. Production plants reallocated to new owners operate more efficiently (Brav et al., 2015) and patents sold to other firms receive more citations (Brav et al., 2018). The bulk of activism returns are attributed to the takeover of the entire firm in a process facilitated by the activist investor (Greenwood and Schor, 2009; Boyson et al., 2017). But only a quarter of the targeted firms are sold (Boyson et al., 2017), which makes it relevant to understand what activists actually do to create long-term value for firms that are not taken over.

Table 2.19: Corporate policies and activist director appointments

This table presents associations between corporate policies and director appointments at activism targets. The following specification is estimated:

$$Y_{it} = \alpha + \beta_1 \cdot Post_{it} + \beta_2 \cdot (Appointment_{it} \times Post_{it}) + \gamma \cdot X'_{it} + \eta_i + \delta_t + \varepsilon_{it}$$

The sample includes firm-year observations for activism targets from the fiscal year before to the fiscal year after the event. *Post* is an indicator variable for observations in the year after the activism event. X' is a vector of firm characteristics that may vary over time, η_i is the combined effect of all firm-specific unobserved variables that are constant over time, δ_t are year fixed effects, and ε_{it} is the random disturbance term. The *Director appointment* dummy variables take the value of one if at least on director was appointed to the board within the first year after the activist announced the campaign, and zero otherwise. All other variables are defined in Appendix 2.8. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the two-digit SIC level.

	Buyback	Firm size	Leverage	Debt	Cash	R&D
	(1)	(2)	(3)	(4)	(5)	(6)
Post	10.834***	−122.015	0.003	−57.742*	−7.101	−1.527
	(2.656)	(−1.566)	(0.906)	(−1.838)	(−0.930)	(−0.763)
× Director appointment	−1.553	−357.573***	−0.026***	−169.333***	−39.246***	−6.967*
	(−0.198)	(−3.106)	(−3.046)	(−3.213)	(−2.860)	(−1.884)
Size	6.715***	319.544***	−0.041***	53.625	32.930***	4.801***
	(3.787)	(3.810)	(−8.859)	(1.017)	(4.881)	(3.799)
Firm age	1.484	451.397	0.061	6.321	59.364	35.467**
	(0.099)	(1.107)	(1.363)	(0.029)	(1.089)	(2.427)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.628	0.960	0.836	0.903	0.902	0.969
Firms	1,823	1,869	1,866	1,866	1,869	1,072
Observations	5,537	5,852	5,823	5,825	5,852	3,232

This paper contributes to this literature by demonstrating that a different kind of reallocation takes place even without the sale of the firm or its assets to a new owner. If new directors join the board, they can contribute their skills, expertise and perhaps a fresh perspective to help turn around the underperforming firm. This change is the reallocation of human capital because the owners of the firm remain largely the same but the key decision makers are now different. I show that expertise matters because newly appointed directors with listed board experience improve performance more than other new directors. When their experience comes from multiple industries or from one that is different from the target firm's, improvements in stock returns are even higher.

The main analysis of targeted firms is extended to a control group of firms matched on a propensity score with consistent results. It provides additional insight by showing that it is not only the skill and the expertise of newly appointed directors that influence long-term returns. Because similarly skilled directors do not improve performance at control firms, it is likely that an intervention in the labor market for directors contributes to the results. Frictions in this market can lead to suboptimal allocation of directors to firms. Effective activist investors can redress these deviations by identifying and attracting a director that is well-suited to contributing to the firm's growth or turnaround. In that sense, activist investors do not face the constrained optimization problem of the firm's management and its incumbent board that may be unsuccessful in attracting well-matched directors. When such a director cannot be identified, or is unable or unwilling to join the board, an activist investor has the option of abandoning the potential campaign and moving on to targeting a different firm where a matched director is available. The management and incumbent board of the underperforming firm do not have the same option. These dynamics also provide an insight into the endogenous selection process that helps to improve our understanding of why not all underperforming firms are targeted by activist investors.

In additional analysis, I also show that activist heterogeneity is not the main driver of long-term returns. If some activists are more effective in general, they could successfully influence director appointments and long-term stock returns at the same time. Examining this alternative explanation, I show that returns continue to be primarily influenced by newly appointed directors and not unobserved activist characteristics.

Finally, I provide evidence on what activist investors and newly appointed directors actually do in the first year after the activist becomes an active minority shareholder. Firms underperform for many different reasons and activist campaigns are tailored to provide firm-specific solutions to improve returns. Examining corporate policies that are commonly identified by investors, this paper shows that some are not associated with new director appointments. Share repurchases, in particular, seem to increase significantly regardless of new director appointments. Activist investors can probably negotiate buybacks with management and the incumbent board directly because they are typically optional without ostensibly harming any particular investor group. Other corporate polices do not change significantly for the sample of targeted firms unless there is a director appointment. Decisions that involve more complex problems and may affect various shareholders differently are likely to require more in-depth deliberations at the board level. Analysis in this paper shows that long-term debt, cash holdings and R&D expenditures only decrease significantly in the first year when a new activist director is appointed to the board.

We often think of directors as monitors that discipline management and even remove the CEO when it becomes necessary. But if they have suitable skills and expertise they are just as likely to provide more substantive input and steer the firm's operations and strategy. However, they may not be matched to the firm that would benefit from their human capital and overall fit because of frictions in the director labor market. This paper's results contribute to developing a deeper understanding of what activist investors do and how they create value. They are influential shareholders and a key mechanism in corporate governance because they mitigate the potential negative impact when managers fail to pursue strategies that deliver value to shareholders. Observing how they resolve frictions in the labor market for directors can guide policy makers, shareholders and other stakeholders in removing barriers that keep the most suitable directors out of the boardroom where their contributions could be most valuable.

2.8. Variable definitions

Capitalized text in brackets refer to Compustat variable names.

Variable	Definition and description
Average assets	Total assets (TA) averaged over (t - 1) and t
BHAR [x, y]	Percentage buy-and-hold abnormal return for firm i
	$$BHAR_{it} = \left(\left[\prod_{t=x}^{Y}(1 + r_{it}) - 1 \right] - \left[\prod_{t=x}^{Y}(1 + r_{mt}) - 1 \right] \right) \times 100\%$$
	where x is the number of trading days before the event and y is the number of trading days after the event, r_{it} is the return for firm i on trading day t, and r_{mt} is the return on the CRSP value-weighted index on trading day t.
BM	Natural logarithm of the firm's book-to-market ratio, calculated as in Daniel and Titman (1997): book equity scaled by market capitalization. Book equity is calculated as stockholders equity plus deferred taxes (TXDB) plus investment tax credit (ITCB) minus post-retirement benefit asset (PRBA) minus preferred stock. Stockholders equity is either total stockholders equity (SEQ), or if missing then total common equity (CEQ) plus preferred stock par value (PSTK), or if missing then total assets (AT) minus total liabilities (LT) plus minority interest (MIB). Preferred stock is either preferred stock redemption value (PSTKRV), or if missing then preferred stock liquidating value (PSTKL), or if missing the preferred stock carrying value (PSTK).
Board Size	The number of active directors at the firm at the start of the firm's fiscal year from BoardEx
Business segments	The number of industry segments or product lines ('BUSSEG' in STYPE)
Buyback	Purchase of common and preferred stock (PRSTKC)
CAR [x, y]	Percentage cumulative abnormal returns for firm i is
	$$CAR_{it} = \left[\sum_{t=x}^{Y}(r_{it} - r_{mt}) \right] \times 100\%$$
	where x is the number of trading days before the event and y is the number of trading days after the event, r_{it} is the return for firm i on trading day t, and r_{mt} is the return on CRSP value-weighted market index for trading day t.
Cash	Cash and short-term investments (CHE)
Common dividends	Total amount of dividends declared on common equity (DVC)
Dividend yield	Common dividends (DVC) scaled by market capitalization.
EBITDA	Earnings before interest: the sum of net sales (SALE) minus cost of goods sold (COGS) minus selling, general & administrative expense (XSGA)
Firm age	The difference between the firm's first and relevant reporting dates (DATADATE) measured in years.
Firm size	Total assets (TA)
Inventory turnover	Cost of goods sold (COGS) scaled by inventories (INVT) averaged over (t - 1) and t
Investment manager	Professional investment manager with $100m or more under management that file either quarterly Schedule 13F holdings reports (13F-HR) or quarterly Schedule 13F notice reports (13F-NT) with the SEC

Variable	Definition and description
Leverage	The sum of long-term debt (DLTT) and debt in current liabilities (DLC) scaled by assets (AT)
Long-term debt	Total balance sheet long-term debt (DLTT)
Market capitalization	Listed in millions of dollars, common shares outstanding (CSHO) multiplied by the annual fiscal year end stock price (PRCC_F)
Net turnover	Sales / Turnover (Net) (SALE)
Non-management proxy	SEC filing types as listed in Appendix E.5
Operating income	Operating income before depreciation (OIBDP)
Payout ratio	Common dividends (DVC) and purchase of common and preferred stock (PRSTKC) scaled by market capitalization.
R&D	Research and development expense (XRD)
R&D/assets	Research and development expense (XRD) scaled by average assets
Return on assets	Operating income before depreciation (OIBDP) scaled by average assets
Return on sales	Operating income before depreciation (OIBDP) scaled by net sales
Size	Natural logarithm of the firm's market capitalization
Stock holdings	The number of unique six-digit CUSIP entries obtained from quarterly Schedule 13F holdings reports aggregated across reporting groups.
Tobin's Q	Total assets plus market capitalization minus book equity, scaled by total assets. For the formula for book equity, please refer to the variable definition for BM.

Chapter 3

Active blockholders: Monitoring without monitors

Abstract

I examine insider trading activities by outside blockholders and compare their performance to executives and directors. Directors monitor management and blockholder directors are expected to be even stronger monitors yet my findings reveal that on average blockholders and blockholder directors are less informed. By contrast, active blockholders and hedge funds are significantly better at monitoring compared to other blockholders, even when they do not have board representation: their trades earn similar abnormal returns as independent directors. The paper also provides evidence that information asymmetries between executives and directors shown in prior work do not hold after appropriately controlling for firm risk.

JEL classification: G34

Keywords: Board of directors, Shareholder activism

3.1. Introduction

Investors rely on strong directors to monitor management and mitigate managers' ability to engage in self-enriching behavior that can harm shareholder returns and disadvantage employees and other stakeholders. Directors are tasked with recruiting top executives, setting their remuneration, monitoring their performance and dismissing them when it becomes necessary. But ultimately the residual claimants to the firm's cash flows are the firm's shareholders, so it is important that they are well-informed about the affairs of the firm. This is necessary, so that they can make informed decisions about which directors to support for nomination, changing their investment in the firm, or completely divesting their ownership.

There is evidence that institutional investors engage in monitoring and become involved in order to mitigate agency cost (Chen, Harford, and Li, 2007; Fich, Harford, and Tran, 2015). Ownership concentration is positively related to executive pay-for-performance sensitivity and negatively related to forced CEO turnover (Hartzell and Starks, 2003; Parrino, Sias, and Starks, 2003). They can also discipline manager through trading (Edmans, 2009; Edmans and Manso, 2011) or the threat of exit (Bharath, Jayaraman, and Nagar, 2013). However, it is challenging to develop an understanding of who knows what about a firm's operations and future prospects. One can hypothesize that the firm's managers are more informed than shareholders because it is the managers' primary remit to be well-versed in the firm's operations, if for no other reason than their own career concerns. Even if shareholders are expected to be less informed than executives, it may not matter overall if their ownership stake is so small that they couldn't possibly have a meaningful influence on the governance of the firm. The vote of small shareholders could potentially make a difference at the firm's annual meeting in aggregate. However, the collective action problem tells us that the rational behavior of small investors is not to commit their time to learning about the firm before making decisions and exercising their shareholder rights. The cost of this commitment is too high in comparison to the potential gain for most smaller investors.

The role of shareholders is potentially more meaningful when they own a stake in the firm that is large enough to provide an incentive to become informed. These large shareholders, commonly referred to as blockholders, are expected to be stronger moni-

tors, which in turn could lead to improved outcomes for all shareholders. In this regard, small shareholders can be free-rider beneficiaries of the efforts of these blockholders. This paper examines whether blockholders are well-informed by examining information asymmetries between them and the firm's executives and its directors. I then explore whether some blockholders are more informed than others, which would suggest that they are also stronger monitors.

This research question is examined by exploiting the Securities Exchange Act of 1934 that requires executives, directors, and 10% blockholders to report all changes in their ownership position to the Securities Exchange Commission (SEC). While some of this information is available in commercial datasets, I opt to download this data directly from the SEC's EDGAR filing system. This yields a richer dataset that facilitates the identification of different blockholder types, which is an important aspect of the study. As shown in this paper, commercial datasets can also misclassify insiders, which is avoided by using the original filings from the SEC.

This paper's first contribution is to provide a comprehensive overview of insider trading activity at US public firms starting from January 2004 to June 2020. I provide a description of trading activity separately for purchase and sales transactions based on insider classification derived from regulatory filings. In addition, I also classify blockholders along a number of dimensions, which prior insider trading research has not been able to do. I show that blockholders are responsible for over 27% of insider purchases and that a third of these blockholders are institutional investors and another third are private firms. Approximately half of the blockholders are active investors that aim to influence the control and management of the firm and under a quarter of blockholders declared that they are passive investors when accumulating the first 5% of the firm's equity. I also provide an overview of the size of blockholder investments, both in absolute and relative terms. Active blockholder trades reveal that they own 15% of the firms they invest in with an average investment size of $323m. This is in contrast to passive blockholders that own under 12% of the firm but at an average investment size of $755m.

My paper is grounded in prior work that examines information asymmetries between executives and other insiders and finds that executives are more informed than independent directors and directors that are affiliated with a blockholder. Ravina and Sapienza (2009)

show that director trades are associated with lower long-term returns when compared to trades by executives. I provide a comprehensive replication of these findings and show that some of the results are more likely to be explained by common firm risk factors than information asymmetries. After controlling for firm size and the firm's book-to-market ratio following Fama and French (1993) instead of total assets and Tobin's Q, differences in long-term buy-and-hold returns between the firm's executives and its independent directors are no longer statistically significant in this paper's sample.

Building on this work, I provide an insight into information asymmetries between executives and blockholders. I show that short-term returns around the announcement of a purchase transaction are lower on average for blockholders when compared to trades by executives. These stock purchases are meant to be good news because they signal that insiders are confident about the firm's future prospects. Insiders are likely to have better information about the firm that the general investing public, and it is expected that they signal this confidence by investing their own money. This paper provides evidence that when blockholders make a purchase, the market's reaction to the news is a cumulative abnormal return (CAR) that is 50-60 bps lower than trades announced for executives. Blockholder purchases are still associated with a CAR of 129 bps on average, but they are significantly lower compared to CARs when executives purchase stock in their own firm.

An important contribution of this paper is to provide a classification of blockholders to understand heterogeneity in their monitoring activity. The analysis of abnormal returns indicates that the market reaction to stock purchases by active blockholders is not significantly different from independent directors, even when they did not appoint a director to the board. Active investors indicate their intention to influence the management and control of the firm when they reach a 5% stake in the firm and this finding provides evidence that they remain strong monitors. By contrast, the average stock reaction to purchases by other blockholders are significantly lower when compared to independent directors, even when the blockholder has a director on the board. The market's reaction to stock purchases suggests that blockholder directors are more informed when they're appointed by a blockholder that is a professional investment manager.

I next explore whether this difference can be explained by opportunistic trading. This type of trading does not follow a routine schedule, defined as trading in the same month

in each of the prior three years. Prior work shows that opportunistic trading is associated with higher returns because of their surprise element (Cohen, Malloy, and Pomorski, 2012). If executives are more likely to engage in opportunistic trading than outside blockholders or other insiders, it may explain why their trading is associated with higher abnormal returns. I find that after controlling for routine and opportunistic trading activity, the return differential between executives and blockholders remains significant.

Prior work has also shown that insiders engage in contrarian market timing, buying shares when prices are low and selling when prices are high (Jenter, 2005). In this paper I examine insider heterogeneity to understand whether different insider groups form different views of the firm's intrinsic value prior to purchasing or selling stock in their firm. I confirm prior work on market timing by insiders and show that insiders purchase stock near the 20-day low point for the stock price and benefit from a significant stock price increase over the following month. This paper's contribution to this literature is to show that executives pick a low point for purchases that is significantly lower than the low point that directors pick. Blockholders as a group seem the least successful at market timing with both their stock purchases and stock sale transactions. This may reflect differences in access to proprietary firm-specific information or interest in becoming informed.

Well-functioning securities markets rely on timely disclosure of information because investors and regulators need it to facilitate their decision making. Part of this disclosure regime is the timely reporting of trading by insiders in their company's stock. In this paper, I exploit this reporting mechanism to study information asymmetries between the firm's executives and blockholders. Large shareholders are meant to be important monitors to mitigate agency cost, the scope for managers to engage in self-enriching behavior to the detriment of other shareholders. They are expected to do this by exercising their voice and their voting power in the annual process of director elections where they can support directors that will be effective in monitoring and advising management.

Blockholders need to be well-informed in order to make good decisions about nominating the appropriate directors to the board and to make other decisions about their investment in the firm, they need to be well-informed. Their trading activity seems to reveal that other market participants do not believe this to be the case because trading activity in their firm's stock is significantly less informative than trading by the firm's

executives and directors. Regulators and exchanges may wish to reconsider the current disclosure regime imposed on public firms and the trend towards regulatory relief regarding disclosure in order to ensure that the firm's beneficial owners are sufficiently well-informed to make decisions about their investment.

3.2. Data and institutional background

I study information asymmetries among executives, directors and 10% blockholders using data on insider trading obtained directly from the Securities Exchange Commission's (SEC) EGDAR system. Section 16 of the Securities Exchange Act of 1934 requires that a record of all changes in ownership are filed with the SEC by the end of the second business day following the date of the transaction. This requirement applies to beneficial owners of more than 10% of the firm's equity, persons affiliated with the owner, the firm's directors, officers in a policy-making function, and their immediate family members. For executives and directors, the reporting requirement stands for six months after the end of their appointment if the trade relates to an opposite transaction of what had been previously reported during their appointment. Section 16(a) of the Securities Exchange Act of 1934 identifies a number of investors that are not required to report their trading activity if they do not intend to change or influence the control of the firm. Examples include employee benefit plans, brokers, investment banks, investment advisors, insurance companies, and investment companies registered under the Investment Company Act of 1940, such as mutual funds. Because they make investments on behalf of others, these types of investors are not considered beneficial owners of the firms they invest in.

The most common source of insider trading information in prior research is the Thomson Reuters Insiders Data (TRID) product that makes "Form 4 - Statement of changes in beneficial ownership of securities" filings available commercially. The original reports have been submitted in a structured XML format to the SEC's EDGAR system since mid-2003, which facilitates the creation of relational databases from filings. I opt to acquire this information directly from EDGAR by downloading all filings and parsing the XML content because this process yields a richer set of data. This approach ensures that all filings are included in my analysis and that the insider's Central Index Key (CIK) identifier is

retained, which allows linking the insider to their other filings that can identify important characteristics about them. For example, using SEC filing data I identify whether the insider is a domestic or foreign corporation based on 10-K, 8-K, and 6-K filings. Professional investment managers are identified based on their Schedule 13F quarterly holding reports, which is a requirement when the fund manages $100m in assets or more. The list of private investment firms, such as venture capital, private equity and hedge funds is obtained based on Form D filings that record exempt offerings of securities under Regulation D.

Finally, I also merge data from Schedule 13G and 13D filings that identify insiders that are passive or active blockholders of 5% or more of the firm's equity at the time they reached the reporting threshold. If the investor filed both a Schedule 13G and 13D filing prior to the insider trading transaction, I consider the most recent one in classifying them as a passive or active blockholder.

Obtaining insider trading data directly from the SEC is also motivated by an analysis of TRID errors that can lead to misclassification. Approximately 179,000 insider filings are submitted by multiple entities during the sample period, which makes up some 7% of all observations They are often filed by an executive of the firm with their spouse, family trust or holding company. An examination of TRID shows that Thomson Reuters only records the identity of the first entity, which is arbitrary in the filing, and seems to discard all additional entities. This is illustrated by the July 8, 2004 share purchase of buyout investor Harold Simmons in Valhi Inc, jointly filed with Contran Corp. Because Contran is listed as the first entity in the SEC filing, Thomson Reuters shows that this trade was carried out by a 10% blockholder. It disregards the fact that Harold Simmons was Valhi's chairman at the time, and he is classified in both the filing and the firm's annual report as a director as well as an executive officer. The original XML data provided in EDGAR allows us to correctly identify these observations as trades carried out by insiders that are executives, directors and also blockholders at the same time.

Once all Form 4 filings are downloaded and processed, the following filtering and matching steps are applied. First, I limit my analysis to open market purchase and sales transactions of non-derivative instruments reported in Table I of the filing, a standard approach in the literature. Transactions are required to have both a non-missing and non-zero share price and number of shares, and a valid transaction date after January 1,

2004. This is the first full year that transactions are reported to the SEC in a structured XML format. In the steps that follow, I match stock prices from the Compustat Securities dataset requiring that a valid price is available from not more than five days prior to the transaction and that the common stock of the firm is listed on the NYSE or NASDAQ. I undertake additional text matching steps to ensure that the share class listed in the description field of the filing matches the class of security in Compustat in order to identify the most appropriate share price for the transaction. Following Lakonishok and Lee (2015), I also require that the share price reported in the filing is within a 20% range of the matched stock price from Compustat. When insiders misreport the share price for the transaction by including the total transaction value in the nominated field, the error is corrected in a data cleaning step. Finally, financial statement data is obtained from the Compustat quarterly dataset using the fiscal quarter closest to the transaction date with a preference given to prior quarters when one is available.

Table 3.1 provides an overview of the sample that starts on January 2, 2004 and ends on June 30, 2020. Using data obtained directly from the SEC's EDGAR system allows for a classification of insiders based on their relationship with the firm declared in the filing. The annual breakdown of total purchases in the last column shows that the sample is fairly evenly distributed across all years, with the exception of 2008 that saw more than three times as many purchases than the following year. It appears that blockholders were responsible for a significant portion of the increase. Sales, on the other hand, decreased from 2007 to 2008 and decreased even more from 2009, which trend seems to have continued since. Some 79% of all transactions are stock sales, and executives account for over 45% of those sales transactions, whereas they only account for 13% of purchases. This is likely reflective of the fact that stock awards are a component of executives' compensation and it is their rational choice to diversify their firm-specific risk, given that their careers, reputation, remuneration and wealth are all concentrated in a single firm.

3.2.1. Trading activity by insiders

The first set of analyses in this paper provides an overview of insider trading activity at listed firms between January 2004 and June 2020. Panel A in Table 3.2 includes a breakdown of stock purchase transactions based on the classification provided in SEC trading

Table 3.1: Annual breakdown of insider trading transactions

This table presents the annual breakdown of insider trading transactions by purchases and sales and by insider types. Executives, Directors and Blockholders are insiders that nominate only one relationship with the firm on their "Form 4 - Statement of changes in beneficial ownership of securities" filing to the SEC. In subsequent columns the following transactions are tabulated: (D/B) for directors that are also blockholders, (E/B) for executives that are also blockholders, and (E/D/B) for executives that are also directors and blockholders. The Other relationship category in the Form 4 filing typically captures former insiders and family members of current insiders. The All column summarizes all transactions for each year by transaction type, and also the total number of purchases and sales separately. The sample period starts on January 2, 2004 and ends on June 30, 2020.

	Executives	Directors	B/holders	(D/B)	(E/B)	(E/D)	(E/D/B)	Other	All
Purchases									
2004	3,467	8,569	4,145	388	8	2,225	818	346	19,966
2005	3,662	9,231	7,524	581	102	2,450	1,477	374	25,401
2006	3,311	8,998	10,125	579	39	2,650	1,803	778	28,283
2007	5,171	14,037	9,150	1,940	7	4,101	3,106	580	38,092
2008	7,657	19,633	24,231	4,230	25	6,106	4,021	2,050	67,953
2009	4,224	10,149	7,046	1,116	37	3,409	1,959	850	28,790
2010	3,092	7,944	4,490	1,492	4	2,013	1,430	314	20,779
2011	4,042	9,249	5,508	1,042	0	3,125	2,598	233	25,797
2012	3,634	7,879	6,353	797	1	2,326	2,554	109	23,653
2013	2,676	6,556	2,483	739	0	1,798	2,360	85	16,697
2014	3,124	6,883	3,766	1,100	28	2,061	3,537	379	20,878
2015	3,623	7,730	3,819	1,162	9	3,268	3,914	317	23,842
2016	2,921	7,277	3,636	1,631	5	3,006	3,207	1,447	23,130
2017	2,502	6,012	3,478	807	11	2,125	1,663	81	16,679
2018	2,813	7,633	3,772	1,107	2	3,375	1,382	13,318	33,402
2019	2,628	7,426	3,182	1,026	11	2,920	1,652	8,801	27,646
2020 (to June)	2,604	6,018	1,744	712	1	1,878	857	159	13,973
All purchases	61,151	151,224	104,452	20,449	290	48,836	38,338	30,221	454,961
Sales									
2004	61,708	37,893	18,492	6,838	281	37,167	11,126	7,483	180,988
2005	68,607	36,139	18,641	11,217	85	43,697	15,898	3,358	197,642
2006	90,770	46,740	12,623	6,632	142	57,104	29,322	2,808	246,141
2007	121,875	61,960	22,202	22,416	143	85,654	27,297	5,297	346,844
2008	68,961	36,778	21,507	7,020	133	61,694	12,538	2,933	211,564
2009	27,541	19,870	9,038	4,477	216	15,084	2,583	1,768	80,577
2010	38,159	22,637	6,592	4,427	172	15,332	3,947	1,549	92,815
2011	36,166	17,267	4,444	2,159	38	14,078	3,725	897	78,774
2012	35,197	18,409	12,396	1,746	56	13,413	2,745	1,547	85,509
2013	42,578	17,342	5,224	2,492	154	13,984	2,423	1,171	85,368
2014	38,741	15,998	5,288	1,976	34	13,656	2,645	1,344	79,682
2015	32,097	13,663	4,487	1,499	31	13,259	2,728	837	68,601
2016	26,418	12,423	4,908	1,462	30	10,755	4,113	991	61,100
2017	30,927	14,287	5,998	1,338	67	12,375	2,446	765	68,203
2018	29,753	13,735	4,343	1,830	17	13,257	4,191	572	67,698
2019	29,593	13,188	5,064	2,391	23	12,659	4,529	748	68,195
2020 (to June)	19,179	7,625	3,330	1,047	30	7,944	2,739	280	42,174
All sales	798,270	405,954	164,577	80,967	1,652	441,112	134,995	34,348	2,061,875

reports and Panel B provides a breakdown based on the blockholder classification introduced earlier in Section 3.2. The first insight offered in the table is that pure blockholders are the second most frequent buyers behind directors and they account for almost 23% of all transactions in the sample. They are the most significant buyers based on transaction value with an average purchase size of almost $2.1m and a median of just over $19,000. In comparison, the average purchase size by executives is just over $46,000 with a median value of approximately $6,800. The only group with a higher average in the sample are other insiders, but the average value of approximately $2.6m is highly skewed given the median value of just $250. Blockholders are also the second most frequent buyers after accounting for their population size: almost 2,300 blockholder-only insiders trade 46 times on average in the sample.

Panel B in Table 3.2 provides new insights about blockholder heterogeneity by classifying the sample of insiders that are either blockholders only (22.96%) or blockholders and directors at the same time (4.49%), but not executives. This subsample makes up 27.45% of the sample for insider purchases. Limiting the analysis to blockholders that own 10% or more of the firm's equity, this table shows that active blockholders are the most frequent buyers and their average trade size is also almost the largest in the sample. The average trade value is only higher for insiders that are public firms, which suggests that these transactions pertain to building a toehold stake in firms that are likely to become takeover targets. These trades make up only 2 percent of the sample and it is the smallest blockholder category. There are approximately half as many trades by passive blockholders as active blockholders and their average trade size is less than half of active blockholders at approximately $1.1m. The distribution of active blockholder trades appears more skewed with a lower median purchase size and over twice the standard deviation of passive blockholders.

Institutional managers comprise a little over 9 percent of this sample. Because the active or passive blockholder and institutional manager classifications are not mutually exclusive, this insight provides evidence that only a portion of these blockholders are institutional fund managers with a portfolio of $100m or more. Other investor categories include private investment firms, other private firms, and individuals that are not directors. Private investment firms have the third largest median transaction size at over $55,000,

behind institutional managers and public firms.

Stock sales by insiders reveals a pattern that is markedly different from purchases. Table 3.3 shows that sales by officers account for under 40% of the sample. This is expected because stock awards are a common component of executive remuneration packages. Directors that are also company executives are the second largest category in the sample by the number of transactions, but on average they trade three times as often as insiders that are executives only.

Blockholders that are not officers or directors make up about 8% of stock sale transactions with the highest mean transaction value of approximately $6.1m. However, the median value of these transactions at $38,400 is lower than the $45,700 for officers. Turning to Panel B of Table 3.3 reveals that passive blockholders are the most frequent sellers with an average transaction value of $3.8m, which is the second lowest average after non-director individuals.

An interesting feature of insider trading data is that it includes information on the size of the insider's holding following the reported transaction. Merging this data with the firm's market capitalization on the transaction date provides an insight into the average holding interest of insiders in each group. Table 3.4 shows that blockholders own approximately 15.5% of their firm's equity based on insider trading reports. Individuals that are directors only own under 2% and executives own approximately 0.2%.

The average holding size of blockholders is $640m, which is the second largest after the $977m average for the insiders that are blockholders but also directors and executives of the firm. Exploring blockholder heterogeneity in Panel B of Table 3.4 reveals that the average holding size for institutional managers is over $1bn and they own just under 11% of the firm's equity. The average holding size of passive investors is more than twice the size of active investors with an average of $755m. On average they own 11.7% of the firm, compared to the 15.4% average ownership stake of active blockholders. It is relatively uncommon for listed firms to have an ownership stake in other listed firms, but there are 473 instances over the 16-year sample period. The average holding size by these blockholders is under $1bn and they own almost 19% of the target firm's equity. These observations are likely to include mostly pre-takeover toehold stakes and carve-outs where the parent continues to hold a minority stake in the listed subsidiary.

Table 3.2: Summary statistics: insider purchases

This table present descriptive statistics for stock purchases by insiders based Form 4 filings between January 2004 and June 2020. Percentage values represent the portion of transactions by the type of insider. Holding values expressed in dollar terms represent the number shares owned following the transaction multiplied by the share price on the day of the transaction, or if missing, the value following the transaction listed in the filing. The number of insiders listed in the last column are unique entities within the given insider category. Panel A shows insider classifications based on regulatory filings and the same insider may belong to more than one category for different transactions over time. In Panel B, *Active* and *Passive* blockholders are insiders that filed a Schedule 13D or 13G form prior to the transaction. *Institutional managers* are identified based on Schedule 13(f) quarterly portfolio holding reports, owners are classified as *Public firms* if their financial statements are filed with the SEC. *Private investment firms* are companies that have sold securities without registration under the Securities Act of 1933, and *Other private firms* are all other entries that are not individuals. In Panel B, an insider may belong to more than one category at the same time. Transactions values are expressed in dollars and the *Insiders* column shows the number of unique insiders in each mutually exclusive category in Panel A and potentially overlapping categories in Panel B. *Avg n* is the average number of transactions by the type of insider.

	Observations		Values ($)			Insiders	
	Percentage	Transactions	Mean	Median	Std.dev.	Avg n	Insiders
Panel A: SEC classification							
Officers							
- officer only	13.44	61,151	46,360	6,790	776,500	4.38	13,959
- also director	10.73	48,836	121,147	11,186	1,274,105	9.05	5,399
- also owner	0.06	290	267,357	7,563	1,055,206	6.90	42
- also director and owner	8.43	38,338	198,413	11,622	3,298,912	54.38	705
Non-officers							
- director only	33.24	151,224	181,459	11,030	3,368,527	7.57	19,983
- owner only	22.96	104,452	2,067,528	19,284	61,332,277	46.22	2,260
- director and owner	4.49	20,449	1,530,982	31,121	22,327,237	20.76	985
Other insiders	6.64	30,221	2,635,912	249	383,540,999	38.50	785
All insiders	100.00	454,961	815,017	10,659	103,261,758	11.32	40,188
Panel B: Non-officer insiders							
Ownership over 10%							
- Active blockholder	13.58	61,770	2,373,758	26,448	62,976,256	51.56	1,198
- Passive blockholder	6.36	28,942	1,099,947	28,631	30,694,768	39.70	729
- Institutional manager	9.33	42,445	1,648,478	67,226	23,621,843	64.02	663
- Public firm	2.12	9,651	9,070,283	130,158	104,197,827	39.07	247
- Private investment firm	5.52	25,112	1,948,864	55,381	29,071,950	39.99	628
- Other private firm	9.22	41,941	1,674,025	9,373	62,067,680	45.10	930
- Non-director individual	4.49	20,443	812,521	19,847	42,235,226	32.55	628
All owners $\geq$ 10%	27.45	124,901	1,979,683	20,565	56,810,493	40.94	3,051
Ownership under 10%							
- Active blockholder	1.48	6,744	548,476	19,838	3,728,660	18.79	359
- Passive blockholder	0.70	3,174	248,059	11,374	1,529,482	11.84	268
- Institutional manager	0.56	2,547	1,677,163	70,000	6,106,537	23.15	110
- Public firm	0.15	679	299,651	16,429	3,324,267	22.63	30
- Private investment firm	0.40	1,835	43,496,394	7,947	1,556,329,938	24.80	74
- Other private firm	1.31	5,951	144,367	1,948	3,222,815	43.76	136
Classified owners $<$ 10%	2.65	12,076	6,953,775	16,581	606,738,815	17.65	684

Table 3.3: Summary statistics: insider sales

This table present descriptive statistics for stock sales by insiders based Form 4 filings between January 2004 and June 2020. Percentage values represent the portion of transactions by the type of insider. Holding values expressed in dollar terms represent the number shares owned following the transaction multiplied by the share price on the day of the transaction, or if missing, the value following the transaction listed in the filing. The number of insiders listed in the last column are unique entities within the given insider category. Panel A shows insider classifications based on regulatory filings and Panel B shows a classification of insiders that are not officers. Transactions values are expressed in dollars and the *Insiders* column shows the number of unique insiders in each mutually exclusive category in Panel A and potentially overlapping categories in Panel B. *Avg n* is the average number of transactions by the type of insider. Variable descriptions are provided in Table 3.2.

	Observations		Values ($)			Insiders	
	Percentage	Transactions	Mean	Median	Std.dev.	Avg n	Insiders
Panel A: SEC classification							
Officers							
- officer only	38.72	798,270	288,076	45,704	3,002,703	19.68	40,559
- also director	21.39	441,112	419,768	31,105	3,331,809	60.27	7,319
- also owner	0.08	1,652	479,176	19,735	2,266,398	14.75	112
- also director and owner	6.55	134,995	699,237	20,043	10,951,221	131.96	1,023
Non-officers							
- director only	19.69	405,954	923,195	36,428	16,740,840	20.34	19,963
- owner only	7.98	164,577	6,101,739	38,386	71,369,992	37.59	4,378
- director and owner	3.93	80,967	3,672,336	21,068	37,738,413	54.52	1,485
Other insiders	1.67	34,348	1,834,113	46,450	25,177,071	12.37	2,777
All insiders	100.00	2,061,875	1,091,060	36,745	23,336,487	29.80	69,202
Panel B: Non-officer insiders							
Ownership over 10%							
- Active blockholder	3.37	69,467	3,831,108	28,262	59,919,621	45.61	1,523
- Passive blockholder	5.59	115,302	3,765,309	30,518	47,958,175	65.40	1,763
- Institutional manager	2.51	51,796	8,448,600	67,030	95,789,986	56.67	914
- Public firm	0.90	18,570	13,781,703	24,931	132,945,771	57.67	322
- Private investment firm	1.10	22,638	13,394,443	99,145	86,765,717	22.53	1,005
- Other private firm	3.19	65,767	6,048,344	27,567	56,125,282	30.89	2,129
- Non-director individual	2.28	46,931	2,472,381	18,950	27,601,360	39.21	1,197
All owners $\geq$ 10%	11.91	245,544	5,300,655	32,085	62,329,550	44.41	5,529
Ownership under 10%							
- Active blockholder	1.36	28,033	2,189,922	25,565	30,999,213	43.19	649
- Passive blockholder	2.46	50,722	1,127,498	30,780	14,704,662	64.61	785
- Institutional manager	0.32	6,693	11,969,360	287,430	93,587,938	28.24	237
- Public firm	0.04	794	23,769,995	60,904	229,314,764	12.60	63
- Private investment firm	0.10	2,021	17,759,078	384,935	129,350,253	11.75	172
- Other private firm	0.58	11,970	2,275,416	54,340	29,007,885	26.08	459
Classified owners < 10%	3.94	81,271	1,846,499	30,366	30,016,739	53.33	1,524

Table 3.4: Summary statistics: insider holdings

This table present descriptive statistics for stock holdings by insiders based on Form 4 filings between January 2004 and June 2020. Percentage values represent holdings in the firm immediately following the insider's trade. Panel A shows insider classifications based on regulatory filings and Panel B shows a classification of insiders that are not officers. Holding values are expressed in thousands of dollars and the *Insiders* column shows the number of unique insiders in each mutually exclusive category in Panel A and potentially overlapping categories in Panel B. *Avg n* is the average number of transactions by the type of insider.

	Holding interest (%)			Holding value ($k)			Insiders	
	Average	Median	Std.dev.	Average	Median	Std.dev.	Avg n	Insiders
Panel A: SEC classification								
Officers								
- officer only	0.20	0.05	1.66	5,179	1,323	55,562	18.01	47,729
- also director	1.94	0.53	9.33	144,057	9,135	1,366,107	47.50	10,315
- also 10% owner	9.06	8.33	9.58	29,181	10,712	42,432	13.21	147
- also director and 10% owner	12.83	8.89	18.96	977,408	94,602	6,020,897	124.16	1,396
Non-officers								
- director only	1.28	0.15	3.81	146,900	1,344	1,819,088	17.45	31,932
- 10% owner only	15.47	11.53	17.39	639,966	59,159	7,349,603	48.89	5,503
- director and 10% owner	11.31	9.93	13.11	157,864	60,603	405,126	48.00	2,113
Other insiders	1.97	0.11	5.97	140,162	1,084	606,758	19.39	3,330
All insiders	3.78	0.22	10.73	208,033	3,616	3,075,729	28.30	88,929
Panel B: Non-officer insiders								
Ownership over 10%								
- Active blockholder	15.37	12.51	14.84	323,190	56,699	1,143,947	59.06	2,222
- Passive blockholder	11.69	10.80	10.65	754,567	61,662	2,222,126	69.08	2,088
- Institutional manager	10.90	10.76	10.89	1,055,178	40,550	2,561,478	84.45	1,116
- Public firm	18.72	14.25	17.92	986,261	95,318	1,906,524	60.04	470
- Private investment firm	10.69	10.08	11.57	182,033	25,714	539,209	36.06	1,324
- Other private firm	20.64	15.15	20.70	388,635	84,349	1,638,383	39.55	2,723
- Non-director individual	11.66	10.02	15.96	208,509	31,630	14,173,911	46.21	1,458
All owners $\geq$ 10%	14.33	11.16	16.43	507,982	59,440	6,270,545	52.16	7,102
Ownership under 10%								
- Active blockholder	4.40	2.68	7.13	87,764	15,091	230,867	40.39	861
- Passive blockholder	3.54	2.59	3.40	1,319,990	20,321	5,703,715	58.33	924
- Institutional manager	3.64	2.42	4.15	140,381	21,111	355,024	33.00	280
- Public firm	3.27	3.62	2.97	125,144	15,561	197,512	18.88	78
- Private investment firm	2.87	1.31	3.56	112,967	5,325	1,109,561	17.85	216
- Other private firm	4.95	0.63	9.91	467,598	15,075	959,198	32.00	560
Classified owners $<$ 10%	3.79	2.51	5.16	799,476	17,655	4,384,675	49.39	1,890

3.2.2. Returns to insider trading

Prior to embarking on the analysis of stock returns across insider groups in a multivariate setting, a baseline examination of univariate statistics can uncover patterns to further motivate this work. Table 3.5 sets out the results of this analysis by tabulating firm characteristics and stock returns data for all trades and across the three main types of owners that engage in the trading of their firm's stock. In order to provide a more direct comparison, the three insider groups in this table only include trading activity if the insider belongs to a single category and not any of the others. For instance, directors that are also executives at the firm are excluded.

It is instructive to note that insider trading by blockholders is a phenomenon concentrated in smaller firms when compared to trading by executives. This is partly a feature of the reporting regime that requires blockholder reporting for owners of 10% of more of the firm's listed equity. While the mean market capitalization of firms with trading by officers is \$12.9bn, the mean for firms with trading by blockholders is is \$5.1bn. More of the blockholder trading is concentrated in value firms with an average book-to-market ratio of 0.69 compared to firms with officer trades with a mean book-to-market ratio of 0.48. The averages for firms with director trades lie between the firm average for officers and blockholders. These findings provide additional motivation to control for firm size and the book-to-market ratio when examining trading returns in multivariate specifications.

Examining insider stock purchases shows that both short-term cumulative abnormal returns (CARs) and longer term buy-and-hold returns (BHARs) are significantly lower for directors and blockholders in comparison to executives. For example, the three-day CAR after the announcement of an executive's trade is 30 basis points (bps) lower for blockholders than executives, which is a 23% difference. Long-term BHARs over the 180-day period after the trade are a little over 6 percentage points lower for directors and 9 percentage points lower for blockholders compared to executives. The magnitude of these differences are large and statistically significant.

Differences between returns associated with sales by different insider groups are mixed. Negative returns in the short-term event window would suggest that the market reacts negatively to the news that insiders sell stock in their firm. Negative returns over the

longer horizon, on the other hand, would suggest that insiders were successful in avoiding potential future losses by selling stock. With these priors in mind, it appears that CARs in the three and five-day event windows are negative on the news of sales by executives, but they are four times as low at 20 bps in the three-day window and almost ten times as low in the five-day window for blockholders. While this is informative preliminary evidence, these returns also need to be examined by controlling for firm characteristics in multivariate regressions. It is also likely that the market understands that executives sell stock because of considerations that are unrelated to firm value, which is less likely to be the case for blockholders. Long-term returns are positive following sales by executives and blockholders, suggesting that these insiders miss out on future positive abnormal stock returns. By contrast, when directors sell, they avoid potential future losses over the 2-6 month period. Prior literature points out that sales can be motivated by factors other than profit, such as liquidity needs or portfolio diversification, which needs to be kept in mind in interpreting these findings for stock sale transactions.

3.2.3. Market timing univariate overview

Prior work provides evidence that insiders are contrarian traders that purchase stock in their firm as prices and valuations decrease and sell when they increase (Jenter, 2005; Seyhun, 1990, 1992). If insiders have valuable proprietary information about the future prospects of their firm that is not available to the general public, they can exploit this information advantage to increase stock returns associated with the purchase and sale of the firms' stock through market timing. The final panel in Table 3.5 examines whether this market timing by insiders is different for the three main groups of insiders. Examining univariate means for the entire sample reveals that insiders seems to be skilled at timing both the purchase and sale of their stock. Decomposing cumulative raw returns to the time periods before and after the transaction, executives purchase shares after a 5.49% stock price decrease and sell after a 5.53% price run-up. Having purchased shares, stock prices increase by 4.21% in the following month on average, and having sold shares they increase by 0.92% on average. Executives seem to know when it is just the right time to purchase and sell shares in their firm.

Exploring differences across insider groups shows that when directors purchase shares,

the prior 20-day price decrease is 2% lower than the average for executives. Comparing blockholders to executives, the difference is significantly larger at 4.17%. Directors sell after a cumulative price run-up of 4.90%, which is 63 bps lower than the average for executives. The same price run-up for blockholders is 4.22%, which is 132 bps lower on average than for executives. These findings suggest that executives have an information advantage over directors, and an even larger one over blockholders.

3.3. Empirical analysis

3.3.1. Replication of prior work

The first set of empirical analyses replicate findings in prior literature regarding information asymmetries between different types of insiders. The hypothesis tested by Ravina and Sapienza (2009) is that executives are the most informed insiders and hence their transactions yield returns that are higher than transactions by directors. RS examine buy-and-hold abnormal returns for executives, independent directors, blockholder directors. Their study classifies these insiders based on one of the 54 roles assigned to each trade by Thomson Reuters, but their paper does not provide a detailed explanation of which specific roles constitute each class. In the original Form 4 filing, entities can select one or more of the classifications for executives, directors, blockholders and other insiders. There are also two text fields to clarify the nature of the role, which is where insiders typically note if they have a job title.

To replicate some of the RS findings using the new sample period, the assumption is made that their definition of executive includes all officers regardless of whether they are also directors, blockholders, or other insiders. It is also assumed that their "independent director, but not a large blockholder" definition excludes officers and other insiders. Their definition of "large outside blockholder" includes directors that are not executives or other insiders but own more than 10% of the firm's stock, which is followed in this paper. RS assert that their three dummies constitutes full rank and omit executives from their regression specification claiming it is subsumed in the constant term. It is noted that "other" is the fourth insider class that is specifically excluded from their "large outside blockholder" definition, but not mentioned in their classification of other insider types. In

Table 3.5: Summary statistics: firm characteristics and insider transactions

This table presents descriptive statistics for key firm characteristics for insider transactions and open market stock purchases and sales by insiders. The first column includes transactions by officers, directors, 10% owners and other insiders in categories that can overlap. The columns for officers, directors and owners provide descriptive statistics for trades by insiders that belong to only that insider group. Purchase and sale values are listed in $m based on the Form 4 filing. Returns are cumulative abnormnal returns (CAR) and buy-and-hold abnormal returns (BHAR) listed in percentage form. They are expressed in excess of the value-weighted CRSP return, calculated daily and added (CAR) or compounded (BHAR) for the period indicated. For these returns, day ($t = 0$) marks the day the Form 4 was filed and the other numbers indicate time periods in trading days. Market timing returns are raw cumulative returns (CRET) and day ($t = 0$) marks the day of the transaction, not the filing date. All other variable definitions are provided in the Appendix 3.5.

	Executives	Directors	Blockholders	(Directors – Executives)		(Blockholders – Executives)	
	Mean	Mean	Mean	Mean	*t*-stat	Mean	*t*-stat
Market cap.	12.91	7.51	5.13	−5.39***	(-81.09)	−7.78***	(-129.29)
Total assets	14.81	8.11	7.38	−6.70***	(-56.98)	−7.43***	(-57.39)
Book-to-market	0.41	0.55	0.69	0.13***	(107.57)	0.28***	(141.05)
Tobin's Q	2.75	3.12	2.46	0.37	(0.99)	−0.28***	(-3.15)
Purchases							
CAR [0,+2]	1.59	1.28	1.29	−0.30***	(-8.70)	−0.30***	(-8.33)
CAR [0,+4]	1.89	1.56	1.64	−0.33***	(-7.98)	−0.26***	(-5.88)
CAR [0,+20]	3.04	2.63	1.80	−0.42***	(-6.08)	−1.25***	(-16.69)
BHAR [0,0]	0.51	0.40	0.42	−0.11***	(-5.43)	−0.09***	(-4.33)
BHAR [0,+30]	3.25	2.44	1.86	−0.82***	(-8.73)	−1.39***	(-14.12)
BHAR [0,+60]	4.68	3.34	2.44	−1.34***	(-9.23)	−2.24***	(-14.41)
BHAR [0,+90]	5.71	3.75	2.46	−1.97***	(-10.58)	−3.25***	(-16.21)
BHAR [0,+180]	10.35	4.30	1.29	−6.05***	(-17.77)	−9.06***	(-25.55)
Sales							
CAR [0,+2]	-0.05	-0.02	-0.25	0.02***	(3.04)	−0.20***	(-14.93)
CAR [0,+4]	-0.04	-0.05	-0.41	−0.01	(-1.21)	−0.38***	(-21.78)
CAR [0,+20]	0.19	0.20	0.40	0.01	(0.70)	0.21***	(5.82)
BHAR [0,0]	0.05	0.05	-0.04	−0.00	(-0.14)	−0.09***	(-11.45)
BHAR [0,+30]	0.23	0.18	0.58	−0.05**	(-2.25)	0.35***	(6.85)
BHAR [0,+60]	0.35	-0.29	1.96	−0.64***	(-17.98)	1.62***	(21.66)
BHAR [0,+90]	0.37	-0.53	3.68	−0.91***	(-20.87)	3.31***	(36.70)
BHAR [0,+180]	0.85	-0.41	7.58	−1.26***	(-19.64)	6.72***	(52.69)
Market timing							
Purchases							
CRET [-20,+20]	-1.41	0.01	1.45	1.42***	(12.36)	2.86***	(22.34)
CRET [-20,0]	-5.49	-3.48	-1.32	2.01***	(20.43)	4.17***	(38.28)
CRET [0,+20]	4.21	3.79	3.10	−0.42***	(-5.31)	−1.10***	(-12.59)
Sales							
CRET [-20,+20]	6.03	5.51	4.65	−0.52***	(-15.24)	−1.38***	(-23.62)
CRET [-20,0]	5.53	4.90	4.22	−0.63***	(-24.42)	−1.32***	(-29.48)
CRET [0,+20]	0.92	0.89	1.08	−0.03	(-1.13)	0.17***	(4.07)
Observations	859,421	557,178	269,029				

order to replicate the same regression specification as in RS and achieve full rank across the indicator variables, transactions by other insiders are excluded if they did not also select at least one of the other three categories. For this replication only, blockholders excluded if they are not also executives or directors.

Purchases are likely to be more informative because sales can be motivated by reasons other than profit, including consumption needs, tax considerations, or portfolio diversification. Accordingly, the analysis in this section is limited to purchases and the analogous results for insider sale transactions are included in the appendix. The dependent variable is the market-adjusted buy-and-hold abnormal return estimated over the 90 trading days that starts with the trading day that the transaction is announced. RS examine additional holding periods for the day of the transaction only for 30, 60 and 180 trading days. They note that the Securities Exchange Act of 1934 requires that insiders need to return any profit made from insider trading if the transaction is offset within six months to motivate their emphasis on the 180 trading day window throughout their analysis. Given that there are approximately 21 trading days each month, the six-month holding period is probably best captured by the analysis of 126-day returns. The analysis here will focus on 90-day returns because it is the closest period also used in the RS study. Regression results for all other time periods are tabulated in the appendix.

Holding period returns for insider trading transactions are examined using the model set out in Equation 3.1.

$$\begin{aligned} BHAR\,[x,\,y]_{it} \;=\; & \alpha + \beta_1 \cdot D(\text{Independent Director}_{it}) \\ & + \beta_2 \cdot D(\text{Blockholder Director}_{it}) + \gamma \cdot X'_{it} + \eta_i + \delta_t + \varepsilon_{it} \end{aligned} \tag{3.1}$$

where $BHAR\,[x,\,y]$ is the buy-and-hold abnormal return over 90 trading days after the announcement of the trade for firm i on transaction day t, D(Independent Director) is an indicator variable that takes the value of one if the insider is a director but not a blockholder of the firm and zero otherwise, D(Blockholder Director) is an indicator variable for directors that are also owners with 10% or more equity in the firm, and zero otherwise. The relationship between returns and purchases by executives of the firm is subsumed

in the constant term. X' is a vector of firm characteristics that vary over time, η_i are firm-specific intercepts, δ_t are time fixed effects for the date of the transaction and ε is the random disturbance term. For a comparison of the magnitude of the β_1 and β_2 coefficients, the constant term α is identified as the average of the fixed effects by imposing the constraint set out in Equation 3.2. Panel fixed effects now sum to zero across all observations in the sample with each η_i weighted by the number of observations in the panel.

$$\sum_{i=1}^{N} \sum_{t=1}^{T} \cdot \eta_i = 0 \tag{3.2}$$

The results that examine insider purchases are tabulated in Table 3.6. The baseline findings for the 2004-2020 sample period are comparable to the RS results that are based on a sample period between 1986 and 2003. Pooled regression coefficients in column 1 indicate that director purchases are associated with 90-day returns that are 163 bps lower than purchases by executives, but the difference for blockholder director returns is not statistically significant. Column 2 accounts for unobserved time-invariant heterogeneity across firms in a panel regression framework and shows that directors within the same firm realize returns that are approximately 83 bps lower on average compared to returns realized by executives. Again, there is no statistically significant difference in the results for blockholder directors. Because panel regressions compare insiders within the same firm, the lower coefficient estimate for directors in column 1 suggests that directors may be trading more frequently in firms with lower returns. This finding is also consistent with the RS study.

A more robust specification for modeling stock returns also needs to control for well-known determinants of returns and firm risk, such as firm size and the book-to-market ratio (Cohen et al., 2012). RS acknowledge that insider trading is more prevalent in smaller value stocks that have historically performed well and would hence bias results. They note that insider trading returns may not be robust to controlling for trading strategies that exploit the firm size and book-to-market risk factors. This motivates the authors to include two additional firm-level controls: firm size and the book-to-market ratio. These

results are tabulated in column 3 for my sample and show that the main coefficient of interest is consistent with both the specification in column 2 and the RS results.

However, a more careful examination of the RS variable definitions reveals that the authors include the natural logarithm of the firm's assets as their size measure instead of the commonly accepted market capitalization proxy. The correlation between the two measures of firm size is approximately 0.81 in this paper's sample, which is high, but not perfect. Their book-to-market definition also seems to diverge from the conventional proxy. Instead of common equity scaled by market capitalization, RS define book-to-market as last year's market capitalization plus total assets minus common equity, all scaled by total assets. This is closer to the definition of Tobin's Q. The correlation between the inverse of this value – to bring a market measure to the numerator – and the conventional book-to-market ratio is 0.16 for the 2004-2020 sample period, which is quite low.

Subsequent specifications examine whether the main results are robust to controlling for more commonly accepted measures of firm risk. Regression results in columns 5 and 6 show that returns realized by directors are not significantly different from returns for executives after controlling for market capitalization on the day of the transaction, the firm's book-to-market ratio based on the prior year's book value of equity and time fixed effects. It is proposed that following conventional proxies introduced by Fama and French (1993) is more appropriate in controlling for trading strategies aimed at exploiting the firm size and book-to-market risk factors. Finally, a more comprehensive specification in column 6 also includes stock returns in the month prior to the transaction and in the year prior to the transaction, excluding the last month [t-2, t-12]. These proxies are expected to control for additional determinants of stock returns, a momentum factor. The results show that differences in stock returns are indistinguishable from zero when comparing purchases by executives, directors and blockholders.

3.3.2. Short-term returns to insider trading

Building on the results in Section 3.3.1, short-term returns are next examined in order to understand the market's reaction to insider purchases. Stock returns are limited to the first month following the insider's trade in order to mitigate the impact of other factors that may explain returns over longer horizons, but are unrelated to the insider's purchase

Table 3.6: Abnormal returns to insider purchases

This table reports regressions of returns on indicators of purchases by firm insiders over our January 2004 to June 2020 sample period and includes only purchase transactions by officers and directors. The dependent variable is buy-and-hold abnormal return in percentage form in excess of the value-weighted market index over the 90-day period following the insider purchase transaction. Director is a categorical variable equal to one if the purchase is by a director, who is not an officer, 10% owner, or other insider. Blockholder is a categorical variable equal to one if the individual is a director and a 10% owner, but not an officer or other insider at the firm. The categorical variable indicating purchases by officers is subsumed in the constant term. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the insider individual level.

	BHAR [0,+90]					
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	5.527***	5.443***	43.707***	85.182***	89.484***	90.933***
	(10.100)	(23.911)	(6.688)	(24.348)	(23.346)	(23.989)
Independent director	−1.630**	−0.826**	−0.745**	0.082	−0.051	−0.082
	(−2.504)	(−2.366)	(−2.146)	(0.251)	(−0.172)	(−0.271)
Blockholder director	3.516	−1.271	−1.353	−1.252	−1.304	−1.624
	(1.620)	(−0.904)	(−1.024)	(−0.927)	(−1.040)	(−1.264)
Total assets			−5.724***			
			(−5.856)			
Tobin's Q			−0.001***			
			(−5.306)			
Size				−13.219***	−14.018***	−14.237***
				(−22.697)	(−21.909)	(−22.670)
BM				4.855***	3.743***	4.050***
				(8.669)	(7.529)	(8.020)
Past Month Returns						1.977
						(1.501)
Past Year Returns						−0.325***
						(−2.630)
Firm fixed effects	No	Yes	Yes	Yes	Yes	Yes
Time fixed effects	No	No	No	No	Yes	Yes
Adjusted R^2	0.001	0.237	0.245	0.295	0.359	0.360
Observations	300,617	300,294	298,396	288,189	288,064	284,587

decision. The results in Table 3.6 show that short-term abnormal returns are 37 bps lower for independent directors and 59 bps lower for blockholder directors within the same firm, controlling for time effects. These results remain consistent over both the five-day and twenty-day periods, but the magnitude of the difference becomes significantly larger at 179 bps for blockholder directors over the twenty-day period. This result also holds after controlling for other well-known determinants of returns in the last three columns, which is not the case for the results that examine longer period returns in Table 3.6.

3.3.3. Comprehensive insider classification

Motivated by the results in Section 3.3.2, I now examine return heterogeneity across insider groups by extending the previous analysis to a comprehensive classification of insiders. Whereas the previous set of analyses limited the insider trading universe to executives, independent directors, and blockholder directors, the new sample includes all open market purchase transactions by insiders, including blockholders and other insiders. I exploit the rich data in the original EDGAR filings by noting that insiders are not exclusively executives, directors or blockholders, but they can be any combination of the three. A comprehensive classification of insiders is created by first separating the sample to executives and other insiders and then creating indicator variables when they are also directors, blockholders, or both. The dataset also contains insiders in a category defined as "Other" that includes former executives and directors of the firm, vice presidents and managers of parents or subsidiaries. Building on the model set out in Equation 3.1, the following regression model is estimated:

$$\begin{aligned} CAR\,[x,\,y]_{it} \;=\; & \alpha + \beta \cdot \left[D(\text{Executive}_{it}) \times D(\text{Director}_{it}) \times D(\text{Blockholder}_{it})\right] \\ & + \kappa \cdot D(\text{Other}_{it}) + \gamma \cdot X'_{it} + \eta_i + \delta_t + \varepsilon_{it} \end{aligned} \tag{3.3}$$

In Equation 3.3, $CAR\,[x,\,y]$ is the market-adjusted cumulative abnormal return for stock purchases in firm i between trading days x and y where $(t=0)$ is the transaction's announcement date. The indicator variables for *Executive*, *Director*, and *Blockholder* take the value of one when they capture the reporting entity's relationship to the firm and zero

Table 3.7: Short-term returns to insider purchases

This table reports panel regressions of returns on indicators of purchases by firm insiders over our January 2004 to June 2020 sample period and includes only purchase transactions by officers and directors. The dependent variable is cumulative abnormal return in percentage form in excess of the value-weighted market index over the period indicated in the column heading, where $(t = 0)$ indicates the announcement date of the transaction. Director is a categorical variable equal to one if the purchase is by a director, who is not an officer, 10% owner, or other insider. Blockholder is a categorical variable equal to one if the individual is a director and a 10% owner, but not an officer or other insider at the firm. The categorical variable indicating purchases by officers is subsumed in the constant term. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the insider level.

	(1) CAR [0,+2]	(2) CAR [0,+4]	(3) CAR [0,+20]	(4) CAR [0,+2]	(5) CAR [0,+4]	(6) CAR [0,+20]
Constant	1.720***	2.073***	3.273***	8.318***	11.109***	25.456***
	(49.407)	(49.582)	(46.659)	(18.939)	(21.595)	(27.271)
Independent director	−0.368***	−0.410***	−0.361***	−0.233***	−0.252***	−0.053
	(−6.573)	(−6.054)	(−3.231)	(−4.109)	(−3.622)	(−0.475)
Blockholder director	−0.593***	−0.481*	−1.794***	−0.581***	−0.514*	−1.762***
	(−2.836)	(−1.909)	(−3.529)	(−2.609)	(−1.899)	(−3.315)
Size				−1.094***	−1.485***	−3.658***
				(−14.671)	(−16.858)	(−22.968)
BM				0.535***	0.890***	1.874***
				(8.023)	(9.256)	(13.276)
Past Month Returns				−1.142**	−1.643**	−2.356**
				(−2.303)	(−2.338)	(−2.245)
Past Year Returns				0.043	0.089	0.187**
				(0.954)	(1.404)	(1.997)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.209	0.226	0.271	0.220	0.235	0.296
Observations	312,079	312,014	310,942	295,579	295,519	294,538

otherwise. The model is saturated with all possible interaction terms with the exception of $(1 \times 0 \times 0)$ that captures executives that are neither directors nor blockholders, which is subsumed in the constant term. The *Other* indicator variable captures insiders that only selected "Other" on their insider trading report and no other classification. X' is a vector of firm characteristics that may vary over time. For consistency with prior literature, it includes established determinants of firm risk factors: the logarithmic terms of market capitalization and book-to-market ratio, and the firm's stock return over the past month and past year, excluding the prior month [t-2, t-12]. Finally, η_i is the combined effect of all firm-specific unobserved variables that are constant over time, δ_t denotes transaction date fixed effects and ε_{it} is the random disturbance term. As before, the constant term α is identified as the average of the fixed effects by imposing the constraint that panel fixed effects sum to zero across all observations, with each η_i and δ_t weighted by the number of observations within their group.

This analysis focuses on short time horizons in an event study framework because it allows for a cleaner identification of the market's reaction to purchases by insiders. Table 3.6 provided evidence that long-term stock returns are not significantly different for purchases directors and executives, after controlling for the firm size and book-to-market risk factors. Table 3.7 explored differences in short-term returns across executives and directors and showed that blockholder director purchases are associated with lower returns compared to purchases by executives.

The first finding in Table 3.8 confirms univariate evidence on the magnitude of event returns associated with purchases by executives and shows that these returns are not explained away by firm-level risk factors. Purchases by other types of executives, who are also directors or blockholders are not significantly different from purchases by individuals who are executives only. The table also shows that trades by insiders classified as Other are not associated with returns that are different from executives either.

The pattern that emerges in examining the remaining coefficients of interest is that purchases by insiders who are not executives are associated with returns that are significantly lower. Controlling for time-variant firm risk factors and time trends in column 4, blockholder purchases are associated with three-day announcement returns that are approximately 50-57 bps lower on average than returns for executives at the same firm.

Returns around independent director trades are approximately 21 bps lower compared to executives. If information asymmetries explain these results, as suggested by Ravina and Sapienza (2009), one would expect blockholder directors to be more informed than pure blockholders without a board position. It is then somewhat surprising to find that blockholder directors are associated with the largest differences in returns. While the 6.7 bps difference between pure blockholders and blockholder directors in the three-day window appears small in magnitude, it would amount to a 5.63 percentage point difference on an annualized basis. Purchases by blockholder directors are associated with a 21-day CAR that is approximately 159 bps lower than executive purchases and 66 bps lower than insiders that are blockholders only. Differences for independent directors are not significant over the 21-day period.

It is not immediately obvious how these results should be interpreted. They may provide suggestive evidence that executives are insiders that are first to know about and trade on information that is relevant for firm value. When returns for stock purchases by insiders are associated with higher abnormal returns, an interpretation is that the market treats these events as good news. When returns are comparatively lower, the news is either not as good or less informative. Following this interpretation, independent directors seem to be less informed and blockholders seem to be the least informed based on abnormal returns in the days following the purchase of their company's stock. It is somewhat puzzling that returns around purchases by blockholder directors seem to be the lowest, because one would expect them to be more informed than independent directors and pure blockholders. This specification, however, does not directly test whether differences between the coefficients for various non-executive insiders are statistically significant. The natural question arises whether the results are explained by information asymmetry, an information lag, or differences in propensity to trade. Yet another potential explanation may be that trades are only perceived to be different in their information content by the market, when in fact they are not.

3.3.4. Blockholder heterogeneity

The results tabulated in Table 3.8 confirm the potentially intuitive finding that insider trading by executives is more informative than trading by the firm's directors and

Table 3.8: Market reaction to insider stock purchases

This table reports panel regressions of returns on indicators of insider types between January 2004 and June 2020 including purchase transactions by executives, directors and blockholders. The dependent variables are 3-day, 5-day and 21-day cumulative abnormal returns in percentage form, in excess of the value-weighted market index. Categorical variables equal to one if the purchase is by an executive, director, blockholder, or other insider. The interaction term for executives that are not directors or blockholders is subsumed in the constant term. Size and BM are the natural logarithms of market equity on the day of the transaction and the book-to-market ratio based on the firm's common equity in the quarter closest to the transaction. Past month and year returns are the return for the given firm over the prior month and the prior year excluding the prior month. Comprehensive time fixed effects for each observed trading day are included where indicated. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the insider level.

	CAR [0,+2]			CAR [0,+4]		
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	1.739***	8.374***	8.299***	2.078***	11.516***	11.378***
	(25.323)	(18.292)	(17.495)	(25.357)	(19.687)	(18.844)
Non-executive insider						
Blockholder only	−0.594***	−0.542***	−0.522***	−0.612***	−0.533***	−0.485***
	(−4.785)	(−4.311)	(−4.035)	(−4.069)	(−3.434)	(−3.052)
Director only	−0.336***	−0.241***	−0.218***	−0.347***	−0.225***	−0.199**
	(−4.597)	(−3.328)	(−2.955)	(−3.989)	(−2.588)	(−2.253)
Blockholder director	−0.580***	−0.628***	−0.612***	−0.521**	−0.582**	−0.528**
	(−2.757)	(−2.917)	(−2.763)	(−2.272)	(−2.432)	(−2.141)
Executive insider						
Also blockholder	1.154*	1.064*	1.231*	1.011	0.889	1.038
	(1.665)	(1.740)	(1.955)	(1.030)	(0.939)	(1.047)
Also director	−0.030	−0.052	−0.049	−0.008	−0.061	−0.059
	(−0.333)	(−0.580)	(−0.534)	(−0.070)	(−0.551)	(−0.529)
Also blockholder director	0.004	−0.086	−0.012	0.157	0.026	0.138
	(0.023)	(−0.434)	(−0.059)	(0.672)	(0.107)	(0.542)
Other insider	−0.176	−0.085	−0.049	−0.183	−0.106	−0.073
	(−0.935)	(−0.491)	(−0.284)	(−0.767)	(−0.486)	(−0.338)
Size		−1.082***	−1.083***		−1.532***	−1.528***
		(−14.170)	(−13.623)		(−15.610)	(−14.998)
BM		0.533***	0.476***		0.851***	0.785***
		(7.331)	(6.113)		(8.169)	(6.978)
Past month returns			−1.077***			−1.721***
			(−2.848)			(−3.000)
Past year returns			−0.001			0.042
			(−0.042)			(0.803)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	No	Yes	Yes	No	Yes	Yes
Adjusted R^2	0.144	0.158	0.158	0.158	0.177	0.176
Observations	451,841	434,393	430,143	451,660	434,218	429,968

blockholders. Empirical evidence suggests that purchases by non-executive blockholders is associated with lower abnormal returns, but the question arises whether the differences within the non-executive group are significant. Directors are meant to be important monitors of management to mitigate agency cost, but blockholders also have an incentive to engage in monitoring and so one would expect blockholder directors to be the strongest monitors in this group. Whether different types of blockholders engage in different monitoring intensity is also an empirical question to explore.

In order to test these hypotheses, the model shown in Table 3.8 is estimated again, this time selecting directors to form the baseline group subsumed in the constant term and grouping all executives together as a control. The main coefficients of interest are insiders that are blockholders only and blockholder directors. Column 1 in Table 3.9 shows that the market's reaction to purchases by these two insider groups is significantly lower than for independent directors. Blockholder purchases are associated with a three-day CAR that is 29 bps lower, while the difference is 37 bps for blockholder director trades.

The remaining four columns examine blockholder subgroups. Columns 2 and 3 indicate that institutional manager and passive investor purchases are only similar to independent director purchases when the blockholder also has a board seat. By contrast, columns 4 and 5 show that active blockholder and hedge fund trades are of similar magnitude as independent director trades even without a board seat. Active blockholders are identified through Schedule 13D filings that often mention the investors intention to engage in discussions with management and the board regarding improvements in firm performance and potential operational changes. This suggests that blockholders with an agenda to become involved and the resources to monitor the firm can get informed even without nominating a director to the board. The market's reaction to their stock purchases suggests that the are considered to be at least as well-informed as the firm's independent directors.

3.3.5. Opportunistic trading

Results shown in the previous section could also be explained by opportunistic behavior if opportunistic insider trading yields higher returns and different types of insiders engage in opportunistic trading to different degrees. This hypothesis is tested by first examining whether opportunistic and routine trades by insiders yield different returns. I follow Cohen

Table 3.9: Market reaction to outside blockholder stock purchases

This table reports panel regressions of 3-day CARs on stock purchases by insiders. Categorical variables equal to one if the purchase is by a blockholder of the indicated type and zero otherwise. The constant captures directors that are neither executives nor blockholders. Controls include an indicator for other insiders, firm size, book-to-market ratio, calendar year and firm fixed effects. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the insider level.

	(1)	(2)	(3)	(4)	(5)
Constant	8.125***	8.141***	8.107***	8.152***	8.134***
	(17.895)	(17.824)	(17.873)	(17.864)	(17.883)
Blockholder only	−0.289**				
	(−2.481)				
IM: Institutional manager		−0.282*			
		(−1.660)			
IM: Other insider		−0.293**			
		(−2.052)			
PI: Passive investor			−0.610**		
			(−2.129)		
PI: Other insider			−0.218*		
			(−1.757)		
AI: Active investor				0.045	
				(0.203)	
AI: Other insider				−0.366***	
				(−2.829)	
HF: Hedge fund					0.064
					(0.323)
HF: Other insider					−0.387***
					(−2.938)
Blockholder director	−0.372*				
	(−1.766)				
IM: Institutional manager		0.015			
		(0.051)			
IM: Other insider		−0.490**			
		(−2.045)			
PI: Passive investor			−0.197		
			(−0.225)		
PI: Other insider			−0.364*		
			(−1.715)		
AI: Active investor				0.122	
				(0.389)	
AI: Other insider				−0.492**	
				(−2.143)	
HF: Hedge fund					−0.342
					(−0.962)
HF: Other insider					−0.380*
					(−1.682)
Executives	0.211***	0.212***	0.212***	0.209***	0.209***
	(3.442)	(3.450)	(3.453)	(3.400)	(3.393)
Controls	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.157	0.157	0.157	0.157	0.157
Observations	434,393	434,393	434,393	434,393	434,393

et al. (2012) by limiting the sample to observations where the insider traded in all three prior years. Cohen et al. (2012) call this the partitionable universe because it only includes transactions for which it can be determined whether the specific trade follows a pattern. Purchases and sales are classified as routine if the insider carried out a trade in the same direction in all three prior years in the same month. All other trades are classified as opportunistic.

The method used in the identification of routine and opportunistic trades discards a significant numbers of observations, because most individuals do not have a trading record in all three prior years. To understand whether this sample selection may bias my results, I first compare descriptive statistics across the two samples. It appears in Table 3.10 that there are significantly more executives in the sample that are also blockholder directors. They make up almost 27% of the partitionable universe sample compared to 9% in the full sample. Insiders that are not executives seem to trade less regularly because they make up less of the partitionable universe sample.

To calibrate baseline expectations, I replicate the main findings in Cohen et al. (2012) for the sample of insider transactions between 2004 and 2020 and tabulate the results in Table 3.11. Consistent with the authors' finding, columns 1 and 2 show that opportunistic purchases are associated with 21-day buy-and-hold returns that are approximately 1.8 percentage points higher than the sample of returns for all insider purchases and sales. However, in columns 4 and 5 I find that insider sales are associated with returns that are approximately 1.3 percentage points lower regardless of whether they are classified as opportunistic or routine. By contrast, Cohen et al. (2012) find that only opportunistic sale transactions are associated with significantly lower returns, not routine ones. Complementing their findings, an additional specification estimates the model with firm fixed effects in columns 3 and 6 and provides evidence that routine purchases are also associated with higher returns once time-invariant unobserved firm heterogeneity is accounted for. The difference of approximately 77 bps is economically significant and it suggests that insider purchases of their firm's stock are seen as good news by the market even when they occur in the same month each year. The same specification for insider sale transactions is consistent with the other specifications and show that both types of transactions are associated with lower returns.

Table 3.10: Summary statistics: partitionable universe

This table provides descriptive statistics that compares the sample of insider trading transactions to the partitionable universe subsample where routine and opportunistic transactions can be identified following Cohen et al. (2012). The subsample is limited to observations where the insider traded in all three prior years, then purchases and sales as classified as routine if the insider carried out a trade in the same direction in all three prior years in the same month. Other trades are classified as opportunistic. Officers, directors and owners are identified based on the relationship of reporting person to the firm provided in Form 4 filings to the SEC. All other variable definitions are provided in the Appendix 3.5.

	Insider universe			Partitionable universe		
	Percentage	Mean	Median	Percentage	Mean	Median
Purchases						
Officers						
- officer only	13.44	46,360	6,790	11.09	19,414	1,730
- also director	10.73	121,147	11,186	11.95	127,858	8,350
- also owner	0.06	267,357	7,563	0.01	1,783	2,177
- also director and owner	8.43	198,413	11,622	24.44	129,727	12,720
Non-officers						
- director only	33.24	181,459	11,030	28.62	73,217	4,625
- owner only	22.96	2,067,528	19,284	18.71	715,997	6,357
- director and owner	4.49	1,530,982	31,121	4.39	841,755	41,002
Other insiders	6.64	2,635,912	249	0.78	157,320	10,054
Sales						
Officers						
- officer only	38.72	288,076	45,704	40.85	379,135	75,654
- also director	21.39	419,768	31,105	25.44	600,396	62,639
- also owner	0.08	479,176	19,735	0.04	1,113,861	235,996
- also director and owner	6.55	699,237	20,043	6.30	950,296	27,486
Non-officers						
- director only	19.69	923,195	36,428	19.19	780,758	44,143
- owner only	7.98	6,101,739	38,386	4.08	5,205,337	66,654
- director and owner	3.93	3,672,336	21,068	3.29	1,419,660	26,209
Other insiders	1.67	1,834,113	46,450	0.80	464,232	74,956
Holdings						
Officers						
- officer only		5,178,938	1,323,360		6,302,784	2,318,340
- also director		144,057,133	9,134,736		151,047,246	12,180,477
- also 10% owner		29,181,353	10,712,004		7,681,079	5,580,611
- also director and 10% owner		977,407,194	94,602,400		1,404,865,366	123,244,696
Non-officers						
- director only		146,899,747	1,344,377		638,209,431	3,375,996
- 10% owner only		639,964,681	59,158,572		1,107,292,473	318,141,696
- director and 10% owner		157,862,745	60,603,312		121,815,515	65,454,800

Table 3.11: Performance of routine and opportunistic trades by insiders

This table reports regressions of returns on indicators of opportunistic and routine purchase and sale transactions by insiders over our January 2004 to June 2020 sample period and includes purchase transactions by executives, directors and blockholders. The dependent variable is the 21-day cumulative abnormal return in percentage form, in excess of the value-weighted market index. Comprehensive time fixed effects for each observed trading day are included where indicated. All other variable are defined in Table 3.8. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the insider level.

	(1)	(2)	(3)	(4)	(5)	(6)
Opportunistic × Executive	1.763***	1.814***	1.878***			
	(3.198)	(5.703)	(6.774)			
Routine Buy	0.319	0.615	0.772**			
	(0.555)	(1.239)	(2.042)			
Opportunistic Sell				−1.250***	−1.428***	−1.744***
				(−2.613)	(−5.236)	(−6.499)
Routine Sell				−1.303***	−1.124***	−1.515***
				(−2.698)	(−3.410)	(−4.825)
Size	0.164	0.056	−2.740***	0.155	0.043	−2.764***
	(0.778)	(0.563)	(−11.956)	(0.721)	(0.434)	(−11.969)
BM	−0.062	−0.242	0.367	−0.047	−0.221	0.344
	(−0.182)	(−1.333)	(1.357)	(−0.142)	(−1.240)	(1.222)
Past month returns	−1.381	−1.792**	−2.923***	−1.455	−1.797**	−2.934***
	(−1.089)	(−2.091)	(−4.269)	(−1.117)	(−2.068)	(−4.291)
Past year returns	0.083	0.247	−0.788***	0.090	0.234	−0.798***
	(0.644)	(0.523)	(−2.786)	(0.679)	(0.498)	(−2.820)
Date fixed effects	No	Yes	Yes	No	Yes	Yes
Firm fixed effects	No	No	Yes	No	No	Yes
Adjusted R^2	0.004	0.135	0.273	0.003	0.134	0.273
Number of observations	480,176	480,175	479,985	480,176	480,175	479,985

A more direct test in Equation 3.4 can examine whether differences in returns between routine and opportunistic trades are different by estimating the following regression on subsamples that include purchase and sale transactions separately.

$$CAR\ [x,\ y]_{it} \ = \ \alpha + \beta_1 \cdot D(\text{Opportunistic}_{it}) + \gamma \cdot X'_{it} + \eta_i + \delta_t + \varepsilon_{it} \tag{3.4}$$

where *Opportunistic* is an indicator variable for opportunistic trades and the other terms are as defined for Equation 3.1. The intercept captures returns associated with routine trades.

The results presented in Table 3.12 show that in a pooled regression framework, purchases by insiders are associated with a 183 bps CAR over the 21-day period after the transaction's announcement, controlling for common risk factors of firm size and book-to-market ratio and returns over the prior year. The return associated with opportunistic purchases is higher by approximately 124 bps, which is both economically and statistically significant. Controlling for time effects, returns for routine purchases captured by the intercept are not statistically significant, but opportunistic purchases are of similar magnitude as previously identified. Accounting for time-invariant unobserved firm heterogeneity, returns associated with opportunistic purchases remain statistically significant, albeit of smaller magnitude at approximately 70 bps.

The interpretation of sales transactions is less obvious. The results seem to confirm the common conjecture that sales are often motivated by factors that are not necessarily related to insiders' view on firm value, such as personal consumption, tax considerations and portfolio diversification goals. Columns 4 and 5 in Table 3.12 show that the 21-day returns associated with routine sales are not significantly different from zero. When time effects are taken into account, there is some evidence that insiders avoid approximately 40 bps in potential losses when they engage in opportunistic sale transactions. The marginal effect of opportunistic sales is not statistically significant once firm-level average returns are taken into account as shown in column 6.

I next examine whether returns to opportunistic and routine insider trades are different for executives, directors and blockholders. Because the main research question in this

Table 3.12: Performance of opportunistic trades by insiders

This table reports regressions of returns on indicators of opportunistic and routine purchase and sale transactions by insiders. The sample is limited to transactions in the partitionable universe described in Section 3.3.5 and includes purchase transactions by executives, directors and blockholders. The dependent variable is the 21-day cumulative abnormal return in percentage form, in excess of the value-weighted market index. Comprehensive time fixed effects for each observed trading day are included where indicated. All other variable are defined in Table 3.8. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the individual level.

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	1.826**	1.166	30.320***	−1.578	−0.427	23.102***
	(2.267)	(1.463)	(11.973)	(−1.025)	(−0.639)	(11.867)
Opportunistic Buy	1.237**	1.084**	0.704**			
	(2.554)	(2.500)	(2.202)			
Opportunistic Sell				0.055	−0.362*	−0.250
				(0.122)	(−1.823)	(−1.302)
Size	−0.266***	−0.136	−4.676***	0.244	0.122	−2.600***
	(−2.689)	(−1.462)	(−11.370)	(1.057)	(1.258)	(−10.503)
BM	−0.614**	−0.502*	1.181**	0.098	−0.079	0.679***
	(−2.308)	(−1.868)	(2.524)	(0.281)	(−0.558)	(3.367)
Past Month Returns	−4.725***	−3.961**	−2.990**	−0.288	−1.380	−1.642**
	(−2.584)	(−2.412)	(−2.094)	(−0.193)	(−1.411)	(−2.300)
Past Year Returns	0.333*	0.348**	0.326**	0.005	0.106	0.157**
	(1.833)	(2.231)	(2.443)	(0.032)	(1.136)	(2.302)
Firm fixed effects	No	No	Yes	No	No	Yes
Time fixed effects	No	Yes	Yes	No	Yes	Yes
Adjusted R^2	0.010	0.241	0.439	0.002	0.147	0.286
Observations	79,904	79,849	79,490	396,468	396,405	396,210

paper relates to the information content of these trades and less so to long-term returns realized by insiders, the empirical tests revert to examining shorter horizon returns over the 3-day and 5-day period after the transaction is reported to the SEC. As an initial step I examine whether executives are more likely to engage in opportunistic trading because if they do, it may explain the higher abnormal returns associated with their trades.

Regression results in Table 3.13 show that approximately 54% of purchases by officers can be classified as non-routine within the partitionable universe sample, but directors and blockholders are more likely to purchase their firm's stock in a schedule that is not considered regular. The differences are consistent and remain significant after controlling for key firm characteristics and time trends. Columns 4 to 6 present evidence that the portion of trades considered non-routine is almost 83% for sale transactions, with no discernible differences across insider types.

I now turn my attention to returns associated with routine and opportunistic trades by different types of insiders. The sample for this analysis continues to be limited to the set of transactions where the insider traded in each of the three previous years, the partitionable universe.

In line with earlier analysis, the sample for the first tests only include executives, directors and blockholders if they don't belong to any other insider category for a more direct comparison of insider types. For example, directors that are also blockholders are excluded. A model is estimated that extends Equation 3.4 to include indicator variables for directors and blockholders and each possible pairwise combination of the indicator for opportunistic trades and insider types. The intercept then captures average returns associated with routine trades carried out by executives. Table 3.14 provides evidence that of all opportunistic purchases, only trades by executives are associated with higher returns. Controlling for routine trades by all other insiders, there is no evidence that opportunistic blockholder and director purchases are associated with higher returns. This finding offers the first evidence that the higher returns achieved by executives could be driven by their opportunistic trading activity. This is especially interesting because they engage in opportunistic trading less often than other insiders as shown in Table 3.13. I also examine returns based on the comprehensive classification of investors in Table 3.15 and show that the results are consistent with this analysis.

Table 3.13: Propensity to engage in opportunistic trading

This table reports pooled regressions of opportunistic purchase and sale transaction indicators for insider trading on insider types. The following regression is estimated as a linear probability model:

$$P(\text{Opportunistic}_{it}) \;=\; \alpha + \beta_1 \cdot D(\text{Blockholder}_{it}) + \beta_2 \cdot D(\text{Director}_{it}) + \gamma \cdot X'_{it} + \delta_t + \varepsilon_{it}$$

where P(Opportunistic) is an indicator that takes the value of one if the insider engaged in an opportunistic trade, the D(Blockholder) dummy variable captures owners of 10% or more of the firm's equity, D(Director) indicates if the insider is a director and the constant term captures the firm's executives. X' is a vector of investor characteristics that may vary over time, δ_t are transaction date fixed effects, and ε_{it} is the random disturbance term. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the insider level.

	Opportunistic purchases			Opportunistic sales		
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.539***	0.711***	0.697***	0.829***	1.062***	1.044***
	(18.256)	(11.939)	(16.867)	(89.102)	(17.013)	(21.120)
Blockholder	0.279***	0.287***	0.206***	0.019	−0.010	−0.014
	(5.240)	(5.412)	(3.576)	(0.372)	(−0.238)	(−0.420)
Director	0.187***	0.169***	0.123***	0.000	−0.019	−0.010
	(5.359)	(4.838)	(5.040)	(0.002)	(−0.613)	(−0.446)
Size		−0.028***	−0.018**		−0.020***	−0.019***
		(−3.085)	(−2.523)		(−2.915)	(−3.426)
BM		−0.000	0.000		0.042***	0.036***
		(−0.019)	(0.011)		(3.555)	(4.980)
Time fixed effects	No	No	Yes	No	No	Yes
Adjusted R^2	0.046	0.055	0.397	0.000	0.025	0.159
Observations	48,235	47,361	47,190	263,721	258,941	258,884

Table 3.14: Performance of opportunistic purchases by insider types

This table reports regressions of returns on indicators of insider types and opportunistic trading activity for a sample of purchase transactions by insiders. The dependent variable is the cumulative abnormal return over three, five and 21 days where ($t = 0$) is the date the transaction is reported to the SEC. *Opportunistic* takes the value of one if the purchase is classified as opportunistic following the methodology described in Section 3.3.5. All other variables are defined in Table 3.13. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the insider level.

	(1) CAR [0,+2]	(2) CAR [0,+2]	(3) CAR [0,+4]	(4) CAR [0,+4]	(5) CAR [0,+20]	(6) CAR [0,+20]
Constant	0.281***	4.457***	0.228***	6.101***	0.002	18.532***
	(4.231)	(3.739)	(2.626)	(3.757)	(0.009)	(5.658)
Blockholder	−1.200**	−1.740**	−0.763	−0.447	−1.175***	−2.681
	(−2.375)	(−2.238)	(−1.498)	(−0.672)	(−3.377)	(−1.392)
Director	0.043	0.231*	0.060	0.200	0.114	0.514*
	(0.422)	(1.877)	(0.477)	(1.421)	(0.390)	(1.684)
Opportunistic × Executive	0.772***	0.645***	0.958***	0.434***	1.922***	−0.042
	(4.414)	(4.477)	(4.211)	(2.599)	(4.711)	(−0.133)
Opportunistic × Blockholder	0.196	1.016	−0.819**	−0.430	−1.473**	−0.433
	(0.503)	(1.502)	(−1.965)	(−1.062)	(−2.333)	(−0.522)
Opportunistic × Director	−0.071	−0.413**	−0.020	−0.312	−0.090	0.279
	(−0.322)	(−2.359)	(−0.070)	(−1.481)	(−0.167)	(0.667)
Size		−0.695***		−0.952***		−2.857***
		(−3.545)		(−3.518)		(−5.353)
BM		0.567*		1.521***		5.302***
		(1.695)		(3.736)		(6.282)
Past month returns		−3.256***		−4.714***		−4.197***
		(−4.206)		(−4.650)		(−2.896)
Past year returns		0.293***		0.479***		0.489***
		(3.869)		(5.130)		(3.635)
Firm fixed effects	No	Yes	No	Yes	No	Yes
Time fixed effects	No	Yes	No	Yes	No	Yes
Adjusted R^2	0.012	0.403	0.013	0.445	0.013	0.463
Observations	48,009	46,614	47,999	46,605	47,788	46,401

Table 3.15: Performance of routine and opportunistic trades

This table reports regressions of returns on indicators of insider types and opportunistic trading activity for a sample of purchase transactions by insiders. The dependent variable is the cumulative abnormal return over three, five and 21 days where ($t = 0$) is the date the transaction is reported to the SEC. *Opportunistic purchase* (OP) takes the value of one if the purchase is classified as opportunistic following the methodology described in Section 3.3.5. All other variables are defined in Table 3.8. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the insider level.

	(1) CAR [0,+2]	(2) CAR [0,+2]	(3) CAR [0,+4]	(4) CAR [0,+4]	(5) CAR [0,+20]	(6) CAR [0,+20]
Constant	0.199***	6.647***	0.156*	10.824***	−0.115	30.781***
	(3.154)	(8.203)	(1.920)	(8.419)	(−0.566)	(12.049)
Opportunistic purchase (OP)	0.814***	0.604***	0.945***	0.512***	1.822***	0.665*
	(4.869)	(4.143)	(4.343)	(2.925)	(4.367)	(1.785)
Non-executive insider						
Blockholder only	−1.130**	−0.886**	−0.683	−0.045	−1.220***	−1.386
	(−2.200)	(−1.994)	(−1.320)	(−0.122)	(−3.658)	(−1.334)
Director only	0.087	0.147	0.072	0.172	0.232	0.553*
	(0.866)	(1.236)	(0.586)	(1.185)	(0.769)	(1.709)
Blockholder director	−0.179	−0.480	0.268	−0.768	−0.303	−2.616**
	(−0.365)	(−1.046)	(0.550)	(−1.370)	(−0.324)	(−2.202)
Executive insider						
Also blockholder	0.451***	−0.035	0.348***	−1.570***	0.148	−2.072**
	(7.159)	(−0.075)	(4.284)	(−3.514)	(0.731)	(−2.445)
Also director	0.278	0.115	0.193	−0.044	0.817	−0.274
	(1.235)	(0.760)	(0.883)	(−0.249)	(1.392)	(−0.733)
Also blockholder director	0.376***	−0.047	0.710***	−0.092	1.352*	−2.283**
	(3.538)	(−0.134)	(4.244)	(−0.213)	(1.891)	(−2.147)
Non-executive insider						
OP × Blockholder only	0.155	0.587	−0.819**	−0.550*	−1.296**	−0.245
	(0.394)	(1.186)	(−1.965)	(−1.704)	(−2.026)	(−0.343)
OP × Director only	−0.119	−0.368**	0.038	−0.366*	−0.077	−0.597
	(−0.559)	(−2.105)	(0.138)	(−1.682)	(−0.140)	(−1.247)
OP × Blockholder director	0.495	0.237	0.511	0.014	0.407	0.428
	(0.982)	(0.443)	(0.755)	(0.021)	(0.356)	(0.336)
Executive insider						
OP × Also blockholder	0.876	2.196*	1.116	3.067***	−0.230	0.810
	(1.096)	(1.938)	(1.576)	(3.073)	(−0.098)	(0.493)
OP × Also director	0.480	−0.014	0.705	0.232	−0.052	−0.265
	(1.204)	(−0.066)	(1.554)	(0.885)	(−0.065)	(−0.514)
OP × Also blockholder director	0.443	−0.383	0.407	−0.303	1.311	1.395
	(0.776)	(−1.049)	(0.729)	(−0.623)	(1.112)	(1.168)
Controls	No	Yes	No	Yes	No	Yes
Firm fixed effects	No	Yes	No	Yes	No	Yes
Time fixed effects	No	Yes	No	Yes	No	Yes
Adjusted R^2	0.018	0.384	0.018	0.410	0.019	0.437
Observations	80,125	80,125	80,125	80,125	80,125	80,125

3.3.6. Market timing

The final analysis in this paper examines information asymmetries between insiders based on the timing of their transactions. Jenter (2005) shows that insiders are contrarian investors that sell their own firm's stock when valuations are high and buy when valuations are low. This is examined using this paper's sample by estimating cumulative stock returns starting from 20 trading days before the insider's trade and ending 20 trading days after. The findings confirm prior work on market timing by insiders (Jenter, 2005; Lakonishok and Lee, 2015; Seyhun, 1992). Figures 3.1 and 3.2 show that insiders as a group seem to be apt at picking a low point in their firm's stock price when making a purchase decision. Figures 3.3 and 3.4 show that they are also skilled at picking a high stock price when making a decision to sell their firm's stock.

The important contribution of this work is to examine these transactions separately for executives, directors and blockholders. Figure 3.1 provides evidence that executives seem to be significantly better at market timing when purchasing their firm's stock. It was shown in Table 3.5 that the stock price is at a 549 bps low point for executive purchases compared to the 132 bps low point for blockholder purchases. The subsequent 20-day price increase for executives is 421 bps on average, compared to the 310 bps price increase for blockholders. These differences suggest that more of executives' theoretical trading profit is derived from market timing than post-trade stock price increases, especially when compared to blockholders.

Stock sales show a similar pattern in Figures 3.3 and 3.4. Executives sell after a 553 bps price run-up on average, compared to the 422 bps price run-up for blockholders. After selling, executives forgo a 92 bps potential stock return over the following 20-day trading period, compared to the 108 bps potential average stock return that blockholders forgo. Evidence again suggests that more of the difference is due to timing the stock sale decision than attributable to losses avoided after the transaction. These findings support the main findings of this paper regarding significant information asymmetries between the firm's executives and large blockholders.

Examining this question in a multivariate setting, Table 3.16 shows that the differences are also statistically significant for insiders that are not executives. Controlling for time

effects in columns 2 and 5, the results show that the 20-day low point by blockholder-only insiders is approximately 415 bps higher for purchases and 134 bps lower for sale transactions compared to the intercept that captures executive-only insiders. The same transactions for director-only insiders is associated with a 153 bps difference for purchases and a 54 bps difference for sales. It is surprising that purchase timing differences are also significant for blockholders that are executives as well as directors because they are expected to be at least as well-informed as executive-only insiders. It is similarly interesting that sales timing differences for executives that are also directors is approximately 100 bps lower than the price run-up for executive-only insiders. This group is likely to be made up of CEOs that may be either wish to avoid negative publicity around selling stock after a price run-up, or they may only be selling stock according to a predetermined trading plan governed by SEC Rule 10b5-1.

To explore blockholder heterogeneity in market timing, the model is estimated again for the subset of insiders that are blockholders exclusively. Focusing the analysis on the specifications in columns 2 and 5 in Table 3.17 that control for time effects, there is some evidence that institutional managers pay more attention to market timing. Their purchases are associated with a 20-day low point that is 154 bps lower on average than all other blockholders. This is in context of the average low point of 132 bps for all blockholders shown in Table 3.5. Differences for other private firms and individuals is significantly lower, by approximately 420 bps on average. Passive blockholders appear to pay more attention to market timing of their sale transactions because the 20-day price run-up is 269 bps higher than all other blockholders. When blockholders that are public firms sell stock in other public firms, the stock price run-up is lower by approximately 279 bps. To put this in context, Table 3.5 shows that the average price run-up for all blockholders is 422 bps over the 20-day period prior to the transaction.

A model with both firm and time fixed effects is also tabulated in columns 3 and 6 of Table 3.17 for comparison. However, it is not obvious that this phenomenon is best examined in a panel setting because there may not be sufficient within-firm variation in blockholder types with insider trading data. Future work may examine this question in more detail.

Table 3.16: Market timing of insider trading transactions

This table reports regressions of cumulative returns on indicators of purchases and sales by firm insider groups. The dependent variable is the raw cumulative return over the period that starts 20 trading days before the transaction and ends on the transaction date. All other variables are defined in Table 3.8. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the insider individual level.

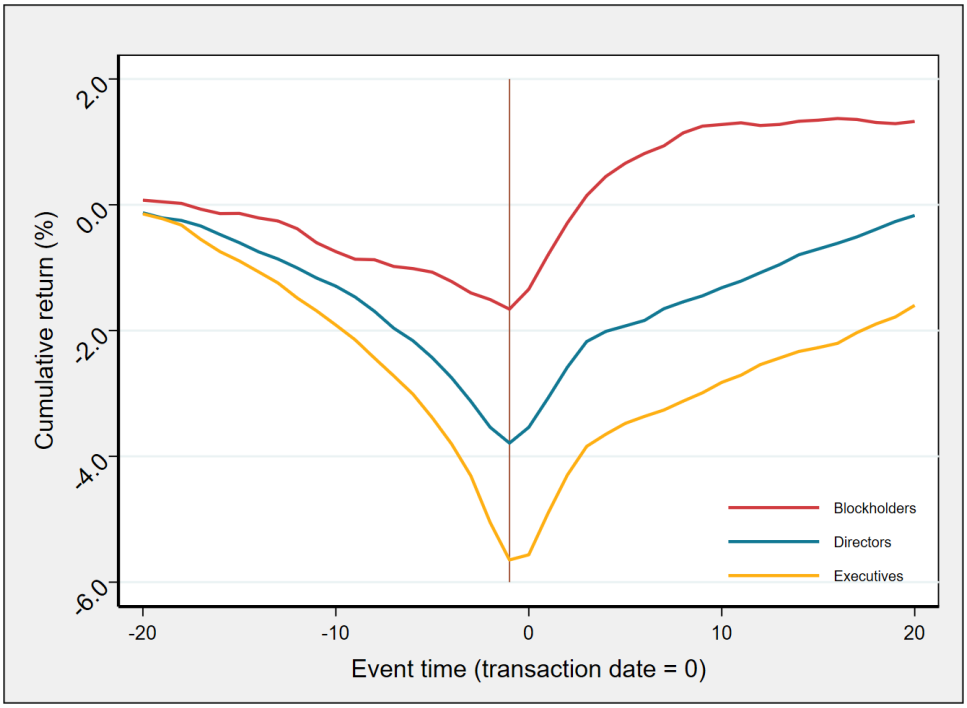
	Purchase CRET [-20, 0]			Sale CRET [-20, 0]		
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	−5.491***	−5.239***	−5.044***	5.534***	5.451***	5.413***
	(−22.180)	(−27.304)	(−20.638)	(74.125)	(81.437)	(77.681)
Non-executive insider						
Blockholder only	4.167***	4.151***	4.185***	−1.317**	−1.343**	−1.371***
	(5.491)	(9.765)	(9.237)	(−2.264)	(−2.531)	(−4.685)
Director only	2.006***	1.528***	1.508***	−0.631***	−0.539***	−0.694***
	(6.248)	(6.896)	(7.059)	(−3.105)	(−3.142)	(−5.087)
Blockholder director	7.727***	7.531***	5.770***	−1.536*	−1.502**	−0.716
	(6.865)	(7.110)	(9.507)	(−1.933)	(−2.316)	(−1.383)
Executive insider						
Also blockholder	8.363**	5.549	5.429	0.391	−0.108	−1.233
	(1.982)	(1.314)	(1.316)	(0.265)	(−0.077)	(−0.979)
Also director	0.695	0.706*	0.096	−1.320***	−1.010***	−0.830***
	(1.275)	(1.671)	(0.245)	(−6.874)	(−6.422)	(−6.909)
Also blockholder director	4.506***	3.836***	5.338***	−0.268	−0.145	−0.108
	(5.213)	(4.982)	(4.548)	(−0.724)	(−0.396)	(−0.265)
Other insider	4.494***	4.141***	1.468***	0.796	0.301	0.272
	(12.409)	(5.982)	(2.785)	(0.534)	(0.359)	(0.492)
Firm fixed effects	No	No	Yes	No	No	Yes
Time fixed effects	No	Yes	Yes	No	Yes	Yes
Adjusted R^2	0.005	0.138	0.285	0.002	0.182	0.303
Observations	452,362	452,362	452,053	2,056,168	2,056,168	2,055,972

Table 3.17: Market timing of blockholder transactions

This table reports regressions of cumulative returns on indicators of purchases and sales by different types of blockholders. The dependent variable is the raw cumulative return over the period that starts 20 trading days before the transaction and ends on the transaction date. All other variables are defined in Table 3.8. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the insider level.

	Purchase CRET [-20, 0]			Sale CRET [-20, 0]		
	(1)	(2)	(3)	(4)	(5)	(6)
Active blockholder	−1.552	−0.747	0.961	1.332	1.480	0.393
	(−0.755)	(−0.820)	(1.148)	(0.735)	(1.413)	(0.495)
Passive blockholder	1.059	0.467	−0.293	1.813*	2.692***	1.437**
	(0.757)	(0.481)	(−0.363)	(1.883)	(4.416)	(2.330)
Institutional manager	−2.031*	−1.538*	−0.873	−1.427	−0.814	−0.082
	(−1.772)	(−1.956)	(−1.096)	(−1.039)	(−1.091)	(−0.104)
Public firm	−0.321	0.571	4.859***	−3.371*	−2.790**	−0.705
	(−0.194)	(0.569)	(3.633)	(−1.648)	(−2.517)	(−0.630)
Private investment firm	−2.922	−1.818	2.194**	1.630	1.741*	0.163
	(−1.569)	(−1.537)	(2.223)	(0.864)	(1.788)	(0.190)
Other private firm	−6.448***	−4.172***	1.798*	0.362	0.285	−0.418
	(−2.844)	(−3.773)	(1.910)	(0.191)	(0.256)	(−0.519)
Non-director individual	−6.200***	−4.160***	2.008**	−0.508	0.150	0.415
	(−2.597)	(−2.959)	(2.027)	(−0.284)	(0.131)	(0.482)
Constant	4.120*	2.159*	−3.340***	3.595**	2.781**	3.580***
	(1.829)	(1.779)	(−3.326)	(2.130)	(2.565)	(4.135)
Firm fixed effects	No	No	Yes	No	No	Yes
Time fixed effects	No	Yes	Yes	No	Yes	Yes
Adjusted R^2	0.009	0.358	0.666	0.006	0.330	0.585
Observations	104,204	104,169	103,911	163,934	163,931	163,562

Fig. 3.1. Cumulative returns around insider stock purchases

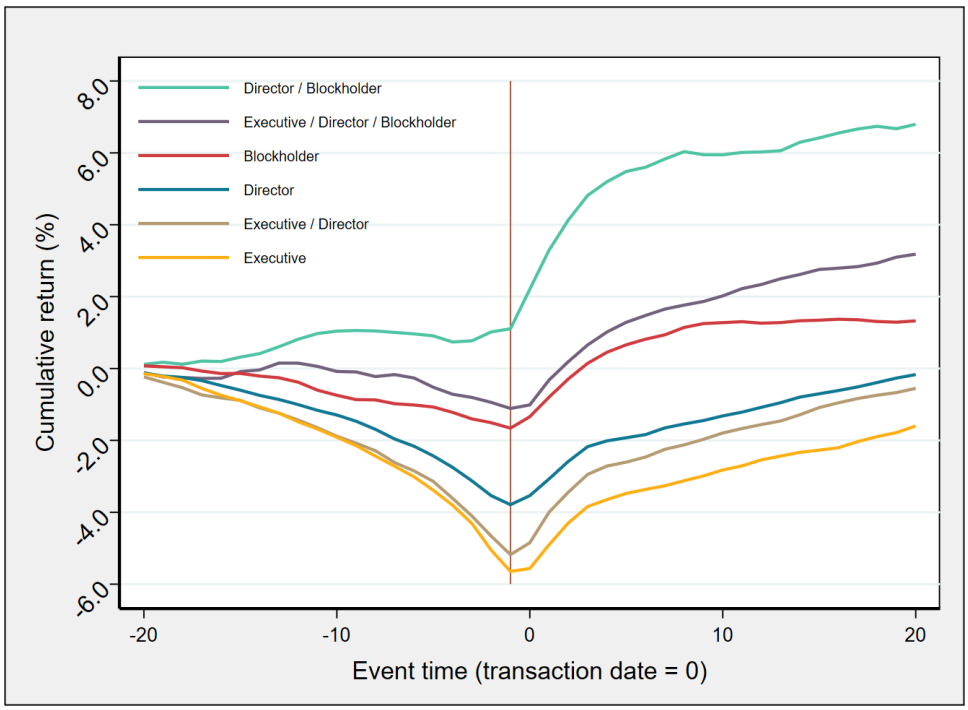


This figure represents total cumulative raw returns for the 41-day period commencing 20 days before the transaction date of the insider's stock purchase and ending 20 days after. The sample includes purchases by insiders that are classified as either owners, directors, or officers only and do not belong to more than one category. Insiders that are classified under multiple categories or classified as other insiders are removed from this sample.

3.4. Conclusion

This study provides new evidence regarding information asymmetries between different firm insiders. The paper sets out to develop insights about potential differences between access to information about the firm's operations, or interest in obtaining it, by different classes of insiders: the firm's executives, directors and blockholders. The paper asserts that blockholders play an important role in corporate governance because they can monitor management to mitigate agency problems either directly or by supporting the election of the appropriate directors that monitor, reward, hire and fire managers on behalf of shareholders. Blockholders are different from other shareholders because they have greater incentive to analyze and monitor firm performance. The collective action problem tells us that it is not optimal for small shareholders to commit the time and effort required to

Fig. 3.2. Cumulative returns around insider stock purchases: all insider groups

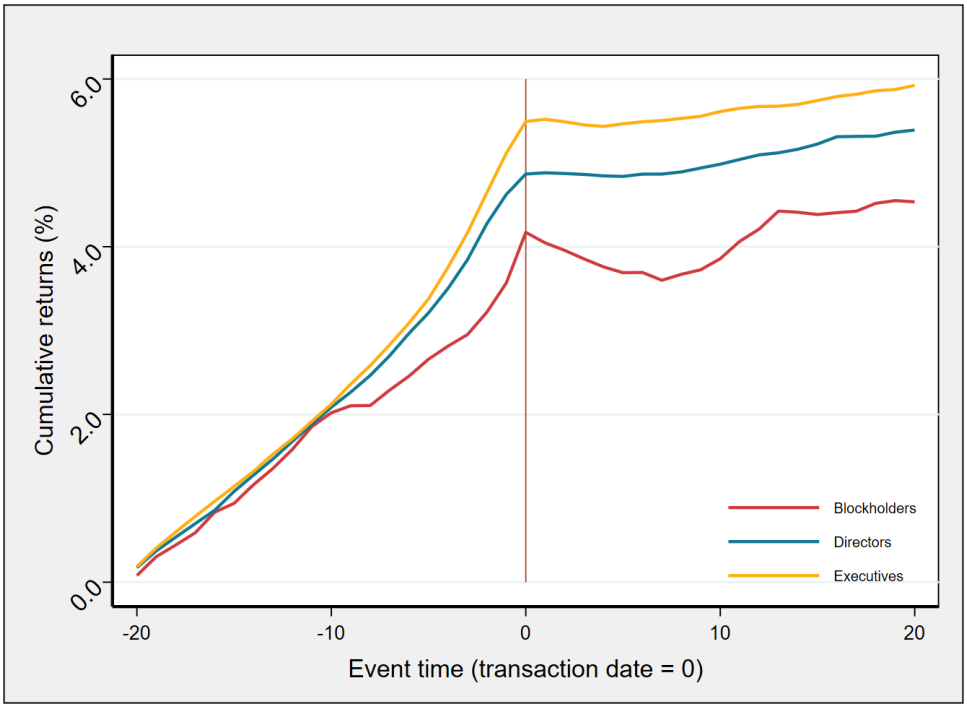


This figure represents total cumulative raw returns for the 41-day period commencing 20 days before the transaction date of the insider's stock purchase and ending 20 days after. The sample includes sales by insiders that are classified as either owners, directors, officers or one of the other three overlapping categories: executive / directors, director / blockholders and the group of insiders that belong to all three groups. Insiders that are classified as executive / blockholders or other insiders are removed from this sample.

become well-versed in the firm's affairs in order to make informed shareholder decisions. The potential payoff for small shareholders is relatively insignificant compared to the investment in time required to understand the firm's unique challenges or to identify and recruit directors to work on the investors behalf. By contrast, the paper shows that blockholders' average investment size in the sample is over $500m and it is over $1bn for institutional fund managers. These shareholders are likely to have both the resources and the incentives to influence decision-making at the firm either by using their voice or the threat of exit. In order for these shareholders to be effective, they need to be well-informed. The findings in this paper provide evidence that this is not necessarily the case.

The observation that these stakeholders are often referred to by different names is an obvious evidence of the tension regarding what is expected of the, in a corporate governance framework. The SEC requires that Form 4 insider trading reports are filed by

Fig. 3.3. Cumulative returns around insider stock sales

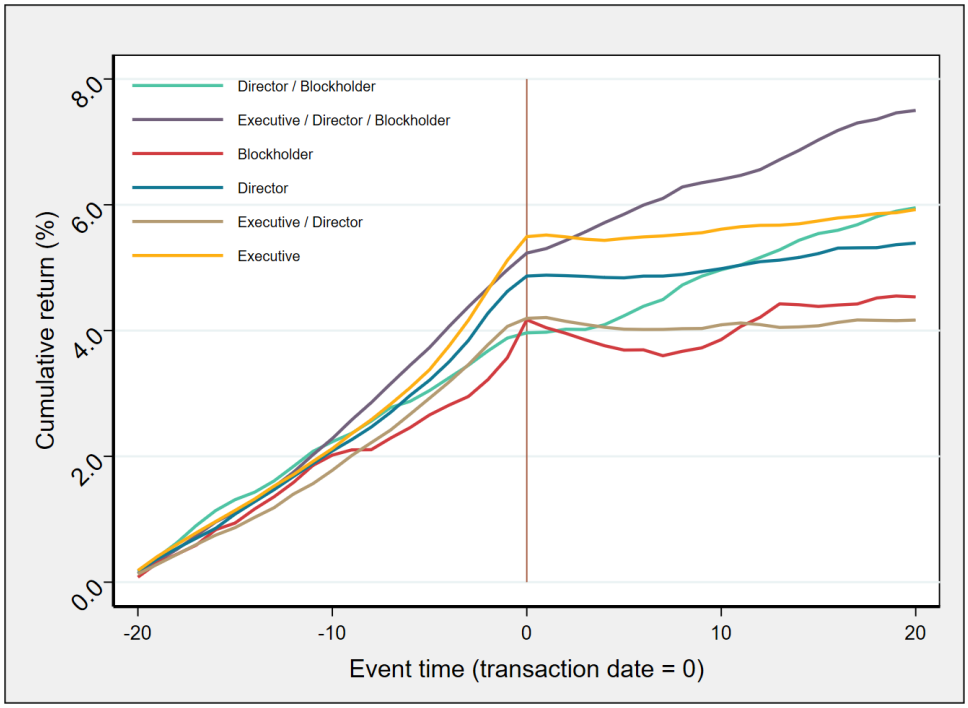


This figure represents total cumulative raw returns for the 41-day period commencing 20 days before the transaction date of the insider's stock sale and ending 20 days after. The sample includes sales by insiders that are classified as either owners, directors, or officers only and do not belong to more than one category. Insiders that are classified under multiple categories or classified as other insiders are removed from this sample.

the firm's officers, directors and 10% owners in a clear indication that regulation considers blockholders to be insiders with similar access to firm-specific information as executives and directors. By contrast, academic literature often refers to 10% owners not associated with executives as outside blockholders.

It is then perhaps intuitive to expect that blockholders are the least informed group in a pecking order after executives and directors. It is important to understand whether empirical evidence supports this conjecture because blockholders are expected to be strong monitors of management and they need to be well-informed to do this effectively. This paper provides evidence that blockholders as a group are significantly less informed compared to independent directors, even when they have a director on the firm's board. Empirical evidence suggests that institutional fund managers are only well-informed when they also have a board seat. However, there are two particular investor groups that are consid-

Fig. 3.4. Cumulative returns around insider stock sales: all insider groups



This figure represents total cumulative raw returns for the 41-day period commencing 20 days before the transaction date of the insider's stock sale and ending 20 days after. The sample includes sales by insiders that are classified as either owners, directors, officers or one of the other three overlapping categories: executive / directors, director / blockholders and the group of insiders that belong to all three groups. Insiders that are classified as executive / blockholders or other insiders are removed from this sample.

ered well-informed by the market even without a board seat. Stock purchases by active blockholders and private investment firms, or hedge funds, are as informative as trades by independent directors, suggesting that they are well-informed monitors of the firm's affairs.

3.5. Variable definitions

Capitalized text in brackets refer to Compustat variable names.

Variable	Definition and description
BHAR [x, y]	Percentage buy-and-hold abnormal return for firm i
	$$BHAR_{it} = \left(\left[\prod_{t=x}^{Y}(1+r_{it}) - 1 \right] - \left[\prod_{t=x}^{Y}(1+r_{mt}) - 1 \right] \right) \times 100\%$$
	where x is the number of trading days before the event and y is the number of trading days after the event, r_{it} is the return for firm i on trading day t, and r_{mt} is the return on the CRSP value-weighted index on trading day t.
BM	Natural logarithm of the firm's Book-to-market ratio
Book-to-market	Calculated as in Daniel and Titman (1997): book equity scaled by market capitalization. Book equity is calculated as stockholders equity plus deferred taxes (TXDB) plus investment tax credit (ITCB) minus post-retirement benefit asset (PRBA) minus preferred stock. Stockholders equity is either total stockholders equity (SEQ), or if missing then total common equity (CEQ) plus preferred stock par value (PSTK), or if missing then total assets (AT) minus total liabilities (LT) plus minority interest (MIB). Preferred stock is either preferred stock redemption value (PSTKRV), or if missing then preferred stock liquidating value (PSTKL), or if missing the preferred stock carrying value (PSTK)
CAR [x, y]	Percentage cumulative abnormal returns for firm i is
	$$CAR_{it} = \left[\sum_{t=x}^{Y}(r_{it} - r_{mt}) \right] \times 100\%$$
	where x is the number of trading days before the event and y is the number of trading days after the event, r_{it} is the return for firm i on trading day t, and r_{mt} is the return on CRSP value-weighted market index for trading day t.
CRET [x, y]	Percentage cumulative returns for firm i is
	$$CRET_{it} = \left[\sum_{t=x}^{Y}(r_{it}) \right] \times 100\%$$
	where x is the number of trading days before the event and y is the number of trading days after the event, and r_{it} is the return for firm i on trading day t
Market capitalization	Listed in \$bn, the number of shares outstanding multiplied by the share price in the Compustat daily securities file on the day of the transaction
Past month (year) return	Stock return for the firm over the prior month [t-0, t-1] and the prior year excluding the prior month [t-2, t-12].
Size	Natural logarithm of the firm's Market Capitalization
Tobin's Q	Total assets plus market capitalization minus book equity, scaled by total assets

Variable	Definition and description
Total assets	Listed in $bn from the firm's quarterly financial statement closest to the transaction

Concluding remarks

It is important to understand the impact of the firm's ownership on its governance. The firm's executives are agents entrusted to manage the firm on behalf of its owners. However, the principal-agent problem shows that executives' rational behavior may maximize private benefits for themselves and not firm value. The financial loss suffered due to this principal-agent problem is the agency cost that is primarily borne by the firm's principals, but the same behavior can also disadvantage other stakeholders, such as employees or suppliers, or the environment. When the firm is owned by a large number of small shareholders, there is limited capacity by owners to hold executives accountable for self-enriching behavior. It is not in the interest of small shareholders to invest the time and energy to monitor management and even if they did, their individual voting power is insufficient to discipline management.

Enter the blockholder. These large shareholders differ in their ability to monitor managers because the size of their investment makes it worthwhile to invest time to become informed about the affairs of the firm. While monitoring and advising management is formally carried our by directors, large shareholders have the incentive to ensure that the most appropriate director is elected to the board in order to carry out this task on behalf of shareholders.

The first contribution of this dissertation is providing insights into the activities and characteristics of blockholders in public US firms. The first chapter in my dissertation examines all blockholders that declare their intention to change or influence the management of the firm when they reach a 5% ownership stake. This type of blockholder is typically referred to as an activist shareholder. The chapter provides evidence that the most active blockholders hold concentrated investment portfolios that allow them to be involved in the management and operations of target firms. Active blockholders tend to have a track record of engagement with fellow shareholders through the proxy solicitation process and, when they intervene, the probability of a new director's appointment increases significantly. The chapter proposes a novel method for identifying active blockholders, based on investor characteristics revealed from regulatory filings. This approach can replace or complement the current method used in finance research that identifies shareholder

activism campaigns based on a subjective evaluation of regulatory filings. The method I introduce overcomes the ambiguity associated with the subjective evaluation approach and allows for a more accurate examination of activism.

The second chapter in the dissertation examines how exactly activist investors improve shareholder value. I provide evidence that activists exploit and redress frictions in the labor market for directors. The empirical analysis shows that activist-appointed directors are associated with improved firm performance that is higher than the improvement at comparable targeted firms without newly appointed directors. Examining director appointments before and after being targeted by an activist and comparing firm performance to a matched sample of control firms, I find that new directors are only associated with improved performance when an activist is involved in the nomination. Observing how activist investors resolve frictions in the labor market for directors can guide policy makers and other shareholders in removing barriers that keep the most suitable directors out of the boardroom where their contributions could be most valuable.

The third chapter examines the market's view of different types of investors. For blockholders to be effective in monitoring management, they need to be well-informed. The analysis in the third chapter shows that blockholders as a group are significantly less informed than the firm's other insiders because abnormal returns around their stock purchases are lower than for the firm's executives and directors. However, there is large variation across types of blockholders. Active blockholders are associated with a significantly higher CARs than other blockholders, which suggests that their trades are both informative and considered to be good news by the market. This finding provides reassuring empirical evidence that active investors fulfill their monitoring role.

The ongoing examination of the ownership of corporations is warranted because of the changing ownership landscape of US listed firms. The growth of passive index funds has meant increased ownership concentration, but potentially less active monitoring. There is also a diminished credibility in the threat of exit. This dissertation provides novel insights into the role of activist investors and their influence on the governance of the firms they invest in. They are important because they redress agency problems at widely-held listed firms and all shareholders benefit when targeted firms successfully engineer a turnaround and return to growth.

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Chapter 4

Appendices

The appendix section of this dissertation aims to provide additional evidence of the data collection process, the multiple methods of data matching, and supplementary analysis carried out in completing this work. Tables and figures are self-contained with their own description and they link to the main body of each chapter.

Chapter 1 Additional Tables

Appendix A. Chapter 1: Sample selection method

I follow the below sample selection method based on regulatory filings from the SEC's EDGAR system:

1. Collect all Schedule 13D filings where the CIK of the filer is not missing. The starting dataset includes the filing date, and the name and CIK identifier for both the investor ("Filer") and the target firm ("Issuer").
2. Download the index of all corporate filings, such as 10-K, 10-Q, or 8-K forms, and eliminate Schedule 13D filing observations from the previous step if the Filer submitted one prior to the Schedule 13D filing date; these are corporations regulated by the 1934 Securities Exchange Act.
3. Eliminate observations if the Filer submitted mutual fund filing, such as N-8A, N-Q, or N-PX form prior to the Schedule 13D filing date; these are mutual funds regulated by the Investment Company Act of 1940.
4. Include an indicator variable if the filer is an investment manager that submitted a Schedule 13F filing before the Schedule 13D filing.
5. Estimate the number of firms owned by the investment manager for a) all periods prior to the Schedule 13D event, b) for the year prior to the event, and c) for all available periods. Include an indicator variable if the average quarterly value is under 500 for all periods prior to the Schedule 13D event.
6. Download all non-management proxy filing and sum to include all prior filing for each Schedule 13D filer and date combination.
7. Include a dummy variable if the Schedule 13D filer submitted a non-management proxy for any other firm before the Schedule 13D event.
8. Include a dummy variable if the Schedule 13D filer submitted a non-management proxy for the same target firm after the Schedule 13D event.

In identifying activism events, Greenwood and Schor (2009) limit their sample of Schedule 13D filings to those submitted by investment managers that also filed a Schedule 13F holdings report at some point in their history. This quarterly reporting is a requirement

for investment managers with discretion over at least $100 million in securities. Managers either report their holdings directly on a Schedule 13F-HR filing, or submit a Schedule 13F-NT notice that nominates another entity or multiple entities that file on behalf of the manager. Some filers submit a joint Schedule 13F-HR filing, such as the Royal Bank of Scotland and its related entities on September 30, 2000.

I take advantage of this reporting structure to identify fund families. I download all Schedule 13F-HR filings and extract the identity of the filer (the parent) and the entities it files on behalf (subsidiaries). Next, I download all Schedule 13F-NT ("notice") filings that identify subsidiary entities and their reporting parent or parents. Both steps are necessary, because reporting is not comprehensive: parents may not include all entities in their report and subsidiaries may not submit a 13F-NT report at all. For instance, Elliott Management Corp routinely reports on behalf of Elliott Associates and Elliott International. Elliott Associates LP filed over 300 Schedule 13D filings since 1996, but did not submit a Schedule 13F filing prior to 2011. A sample selection method that relies on Schedule 13F reports, such as Greenwood and Schor (2009), may miss these observations unless fund families are properly identified.

In identifying activist investors, Greenwood and Schor (2009) require a Schedule 13F holdings report at some point in the history of the Schedule 13D filer. It is unclear whether reporting managers are identified as of the sample creation date or the Schedule 13D filing date. If the Schedule 13D filer only commenced their quarterly Schedule 13F reporting years later, this approach may lead to look-ahead bias. My sample selection requires that a holding report is filed by either the entity or a parent no later than the end of the quarter of the Schedule 13D filing.

A.1. Identifying investment management families

In order to identify investment managers with concentrated holdings, such as hedge funds, I need to estimate the number of securities held by the entity that files the Schedule 13D beneficial ownership form. This requires that I identify investment management groups, such as hedge fund families, based their holdings reports.

Institutional investment managers with investment discretion over $100m or more are required to report their holdings of Section 13(f) securities quarterly. The list of these

securities are published by the SEC quarterly and includes the issuer's name, CUSIP number and the type of security, such as ordinary shares, debt, or put options. Investment managers report their own holdings and any other securities they hold on behalf of other managers in a Schedule 13F-HR filing. I will refer to these instances as parents reporting on behalf of the fund family. Other managers in the family are identified by their SEC File Number in these filings, which is different from the commonly used Central Index Key. In turn, other members of the fund family file a Schedule 13F-NT ("Notice") only and identify the parent or parents that report on their behalf. A third type of filing is a combination report that includes the direct holdings of the filer and lists the parents that also report on its behalf.

These filings are often incomplete: notice filings may be missing or identify a parent that does not list the family member in the main report. For example, High River Limited Partnership is a Carl Icahn fund that filed a Schedule 13D beneficial ownership form when it reached a 5% equity holding in Lawson Software on June 8, 2010. High River has never filed a holding report; only a Schedule 13F-NT Notice. However, for the quarter ended on June 30, 2010, the field for the "List of Other Managers Reporting for this Manager" was empty. In many other quarters, it nominated Carl Icahn as the reporting parent. The Schedule 13F Holdings form by Carl Icahn for the specific quarter listed the 12 securities the fund family held during the period and identified the 10 other managers in its fund family, including High River.

Next, I identify fund families in each reporting quarter by combining parent reports and notices. When there is more than one reporting parent, I combine the number of securities reported by each parent. As an extreme example, Well Fargo Bank NA nominated 91 reporting parents in its June 30, 2012 notice filing: mostly brokerages and other asset management firms.

Finally, I estimate the number of securities held by the fund family by counting the number of unique entries that match the CUSIP numbers that I obtain from the Thomson-Reuters Institutional Holdings (13F) Database.

A.2. CRSP / Compustat matching

CIK numbers identify firms in SEC EDGAR filings. I first obtain all historical CIK numbers and the associated GVKEYs from the CRSP/Compustat Merged Company Header History (crsp.comphist) dataset and merge filings to the Compustat panel on the CIK of the target firm ("Issuer") from the Schedule 13D filing. The Compustat header history dataset also includes starting and ending dates, but it is not comprehensive and would result is a significantly reduced matched dataset. Because CIKs can match to multiple GVKEYs this step may create duplicate entries. I mark them to ensure that they match to unique firm-year observations in later steps. Next, I use the CRSP/Compustat linking history dataset to obtain CRSP permno identifiers based on the date of the Schedule 13D filing. Finally, I obtain share and exchanges code from the CRSP daily stock exchange dates (crsp.dseexchdates).

A.3. Compustat panel matching

My starting dataset includes all North-American firm-year observations that represent consolidated reports in industrial, standardized data format for domestic firms. I remove observations with missing fiscal year, total assets, net sales, or common equity. I match Schedule 13D events to Compustat on the GVKEY obtained in the process described in Section A.2. I require that the event occurs prior to the reporting date of the Compustat entry for the fiscal year (datadate) and that it is after the previous firm-year observation's reporting date, or that the difference between the Schedule 13D filing date and the reporting date is not more than a year. This will result in duplicate firm-year observations if more than one Schedule 13D was filed for the same firm in a given year. Next, I classify Schedule 13D events to identify activist investors. Finally, I remove duplicate firm-year pairs by keeping the first Schedule 13D observation. If there are multiple events, but the earlier ones are not classified as an activism event, I keep the first activism event. For example, if the first Schedule 13D is filed by a corporation and a subsequent one by an investment manager with 20 stocks in their portfolio; I keep the second event. When there are multiple qualifying events; I keep the one where the investor holds less then 500 stocks, or the first one if they are not different along this dimension.

A.4. BoardEx matching

I match BoardEx to the Compustat panel by obtaining all unique BoardID – CIK and BoardID – CUSIP combinations from the North American Company Names and Company Profiles datasets in BoardEx. I match on Compustat CIK, Compustat CUSIP, and the CUSIP obtained from the CRSP Daily Stock Event - Name History (dsenames) dataset. I then require that the annual report date in BoardEx precedes the Compustat reporting date and that it is after the previous firm-year observation's reporting date, or that the difference between the annual report date and the reporting date is not more than a year. For firms with an activism event, I require that the BoardEx annual report date is after the event date.

This matching procedure may result in a one-to-many matches because firms that undergo restructuring often maintain the same CUSIP and hence GVKEY, but BoardEx assigns the a new identifier when the CIK changes, similarly to CRSP. In order to maintain a panel dataset with unique firm-year observations on the Compustat GVKEY and fyear variables, these duplicates need to be resolved. To determine the most appropriate match, I limit the BoardEx employment dataset to listed organizations and prioritize the BoardEx match that has directors with appointment and departure dates that fall within the firm's current and prior Compustat reporting dates.

A relevant example is Digital Generation, Inc. (GVKEY 062016) that experienced activism events in 2012 and 2013 and was delisted in 2014. Sizmek Inc is the spin-off of its online segment that was listed in 2014. Compustat maintained the same GVKEY for the firm, but BoardEx and CRSP assigned new identifiers. The matching algorithm is based on BoardEx identifiers and so the newly appointed directors to the Sizmek board are not connected to the previous activism events, even though they were related to the same Compustat firm.

Overall, BoardEx seems to be the best at capturing these restructuring events. In another example, Macrovision delisted in 2008, changed its name to Rovi and listed again in 2009. It acquired Tivo in 2016 and changed its name. While CRSP and Compustat maintained the same identifier for the firm throughout, BoardEx assigned it a new BoardID when it re-listed in 2009.

A.5. BoardEx appointments and departures

I identify director appointments and departures from the BoardEx director employment dataset (Na_dir_profile_emp). I require that the appointment or departure date falls before the Compustat reporting date and that it is after the previous firm-year observation's reporting date, or that the difference between the annual report date and the reporting date is not more than a year. Directors are often reappointed, which results in duplicate observations for the same company-director pair in BoardEx. For example, when directors change roles by becoming the lead director or chairperson, BoardEx records a role ending date for the first appointment and a new starting date for the next appointment, which is often the following day. I identify new appointments if it's the director's first starting date with the company and departures as the director's last appointment ending date. I follow the same procedure even if there is a gap between appointment dates.

A.6. Listing date

The final sample size may be affected by seemingly innocuous choices, such as the date for examining the firm's listing status. A common approach is to select the reporting date (datadate) value from Compustat for the Compustat / CRSP matching. An alternative is to require the firm to be listed one year prior to the reporting date, which is essentially the start of the firm's given fiscal year. Studying shareholder activism, however, it often is the case that the firm is not yet listed at the beginning of the year, or it has been de-listed by the end of the fiscal year. In constructing the dataset, I require that the common equity of activism targets are listed on the NYSE, NASDAQ or AMEX on the date of the beneficial ownership filing, or at the beginning of the fiscal year for control firms.

A.7. Proxy dates and statements

The period field in most proxy statements represent the date of the upcoming annual meeting of shareholders, but it may be imprecise for some observations. The filing date field, on the other hand, is generated by the SEC's EDGAR system and is the more reliable date for matching purposes. For example, the 2012 proxy statement of Barnes Groups Inc (CIK: 0000009984) is filed on March 21, 2012 with a "Period of Report" value

of December 31, 2012, while the proxy statement reveals that it relates to a May 4, 2012 annual meeting. For my panel of directors, I use the filing date to identify which proxy statement should contain the most recent biographical information on the director. It is the filing with a date that falls both after the starting date of the firm's fiscal year and the director's appointment date.

A.8. Activism event date

SEC requires that Schedule 13D forms are filed within ten days of the event that requires the filing; in this case reaching a 5% ownership threshold. SEC metadata includes the filing date that can be obtained with precision. The date of event which requires filing of the statement, on the other hand, is only included in the text body of the filing, which cannot be obtained with full accuracy. I use an imputed event date by subtracting ten days from the filing date.

A.9. Activism appointments

I make the following merging choices to identify the appropriate directors whose appointment may be influenced by Schedule 13D filings. First, I require that the director is on the board at the end of the Compustat fiscal year (datadate) based on the BoardEx employment history dataset. Next, I match the Schedule 13D event if the director was appointed within a year of the event date, but after the start of the company's fiscal year, which is the lagged fiscal year, but at most one year. In all other matching steps I require that the event date falls within the firm's fiscal year start and end dates. The same approach would, however, miss director appointments if the event date fell just before the end of the fiscal year and the appointment occurred just after the start of the following fiscal year. For example, the fiscal year at Cartesian Inc ends on December 31. On December 19, 2011 Stern Family Partners filed a Schedule 13D form that proposed "retention of independent financial advisors to explore strategic opportunities, including a possible sale of the Company, seeking nominations for the Board from the Company's largest shareholders". On January 25, 2012 Cartesian appointed Peter Woodward to the board and emphasized his turnaround experience in the a subsequent proxy filing. Because the Schedule 13D filing occurred in a different fiscal year than the director's appointment,

this matching step needs to ensure that the relationship is appropriately captured.

Table A2.1: Director appointments and activism with time periods

This table reports random effects generalized least squares regressions on the association between board appointments, hedge fund activism and shareholder activism by estimating the following model:

$$D(\text{Appointment})_{i(t+1)} = \mu_t + \beta \cdot D(\text{Activism})_{it} + \delta_t + \delta_n + \alpha_i + \varepsilon_{it}$$

where D(Appointment) takes the value of one if a director is appointed for firm i in year $(t+\lambda)$, where λ is one, two or three years. *Hedge fund activism* is a dummy variable that identifies activism targets following Brav et al. (2008), and *Shareholder activism* is a dummy variable that takes the value of one for firms with new blockholders described in Section 1.4.3. In the model, δ_t are year fixed effects, δ_n are industry fixed effects, α_i is the combined effect of all firm-specific unobserved variables that are constant over time, and ε_{it} is the random disturbance term. The sample period is 2005 to 2014 to provide an overlapping time period between the two identification methods. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the firm level.

	(t + 1)		(t + 1) to (t + 2)		(t + 1) to (t + 3)	
	(1)	(2)	(3)	(4)	(5)	(6)
Shareholder activism	0.108***		0.069***		0.042***	
	(8.034)		(5.518)		(3.840)	
Hedge fund activism		0.103***		0.084***		0.058***
		(7.432)		(6.640)		(5.367)
Intercept	0.486***	0.485***	0.631***	0.630***	0.758***	0.758***
	(7.055)	(6.997)	(6.282)	(6.280)	(8.869)	(8.869)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Within R^2	0.025	0.025	0.021	0.021	0.018	0.018
σ (panel)	0.115	0.115	0.228	0.228	0.271	0.271
σ (disturbance)	0.474	0.474	0.435	0.435	0.374	0.374
rho	0.056	0.055	0.216	0.216	0.345	0.345
Firms	5,823	5,823	5,823	5,823	5,823	5,823
Observations	35,901	35,901	35,901	35,901	35,901	35,901

Table A2.2: Director appointments and activism with time periods: nonlinear models

This table reports random effects logistic regressions on the association between board appointments, hedge fund activism and shareholder activism by estimating the following model:

$P(\text{Appointment})_{i(t+1)} = \mu_t + \beta \cdot D(\text{Activism})_{it} + \delta_t + \delta_n + \alpha_i + \varepsilon_{it}$

where P(Appointment) takes the value of one if a director is appointed for firm i in year $(t+\lambda)$, where λ is one, two or three years. *Hedge fund activism* is a dummy variable that identifies activism targets following Brav et al. (2008), and *Shareholder activism* is a dummy variable that takes the value of one for firms with new blockholders described in Section 1.4.3. In the model, δ_t are year fixed effects, δ_n are industry fixed effects, α_i is the combined effect of all firm-specific unobserved variables that are constant over time, and ε_{it} is the random disturbance term. The sample period is 2005 to 2014 to provide an overlapping time period between the two identification methods. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the firm level. The Hausman specification test indicates that the random effects model in this specification is consistent.

	(t+1)		(t+1) to (t+2)		(t+1) to (t+3)	
	(1)	(2)	(3)	(4)	(5)	(6)
Shareholder activism	0.465***		0.365***		0.303***	
	(8.198)		(5.482)		(3.832)	
Hedge fund activism		0.444***		0.448***		0.421***
		(7.559)		(6.446)		(5.086)
Intercept	0.052	0.042	0.886*	0.879*	1.848***	1.842***
	(0.159)	(0.126)	(1.844)	(1.829)	(2.701)	(2.692)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
RE: firm SD	0.479	0.479	1.100	1.101	1.688	1.690
	(0.330)	(0.330)	(0.480)	(0.480)	(0.684)	(0.684)
rho	0.065	0.065	0.269	0.269	0.464	0.465
	(0.084)	(0.084)	(0.043)	(0.043)	(0.041)	(0.041)
LR test of rho	247.989	248.366	2392.437	2396.238	4451.627	4456.604
$p > \overline{\chi^2}$	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Wald χ^2	395.375	385.626	435.034	445.906	348.566	359.132
$p > \chi^2$	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
LRI	0.005	0.005	0.050	0.050	0.105	0.105
Firms	5,823	5,823	5,823	5,823	5,819	5,819
Observations	35,900	35,900	35,900	35,900	35,854	35,854

Table A2.3: Director departures and blockholder characteristics

This table reports OLS regressions on the association between board departures and blockholder characteristics by estimating the following model:

$$D(\text{Departure})_{i(t+1)} = \alpha + \beta_1 \cdot D(\text{Blockholder})_{it} + \beta_2 \cdot D(\text{Investor type})_{it} + \eta_i + \delta_t + \varepsilon_{it}$$

where *Departure* takes the value of one if a director's role ends at firm i in year $(t+1)$. D(Blockholder) is a dummy variable denoting new Schedule 13D beneficial ownership filings. D(Investor type) takes on the following values in different specifications: *Investment managers* is a dummy variable that identifies institutional investment managers with discretion over $100m or more. *Holdings < 500* takes the value of 1 if the filer is an institutional investment manager that held less than 500 stocks on average in all quarters prior to the Schedule 13D event, and zero otherwise. *Proxy track record* takes the value of 1 if the filer submitted at least one non-management proxy statement for any target firm prior to the event, and zero otherwise. *Non-management proxy* is a dummy variable indicating if the filer submitted a proxy statement for the target firm after the Schedule 13D event. Finally, *Shareholder activism* takes the value of one if either one of the following three indicators takes the value of one: *Holdings < 500*, *Proxy track record*, and *Non-management proxy*. In the model, η_i is the combined effect of all firm-specific unobserved variables that are constant over time, δ_t are year fixed effects, and ε_{it} is the random disturbance term. The sample period is 2005 to 2018. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the two-digit SIC level.

		Investor Characteristics				
	(1)	(2)	(3)	(4)	(5)	(6)
Blockholder	6.84***	5.08***	5.17***	5.80***	6.10***	4.59***
	(8.15)	(4.95)	(5.23)	(6.52)	(7.08)	(4.39)
Investment managers		4.84***				
		(2.99)				
Holdings < 500			5.51***			
			(3.19)			
Proxy track record				7.84***		
				(3.35)		
Non-management proxy					10.90***	
					(3.37)	
Shareholder activism						5.73***
						(3.51)
Intercept	38.05***	38.11***	38.10***	38.12***	38.11***	38.15***
	(47.42)	(47.47)	(47.48)	(47.47)	(47.48)	(47.53)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
$\beta_1 + \beta_2$	6.84***	9.93***	10.68***	13.64***	17.00***	10.31***
	(8.15)	(7.50)	(7.28)	(6.18)	(5.41)	(7.87)
Adjusted R^2	0.063	0.064	0.064	0.064	0.064	0.064
Firms	6,447	6,447	6,447	6,447	6,447	6,447
Observations	45,541	45,541	45,541	45,541	45,541	45,541

Table A2.4: Director departures, hedge fund activism and shareholder activism

This table reports OLS regressions on the association between board departures and blockholder characteristics by estimating the following model:

$$D(\text{Departure})_{i(t+1)} = \alpha + \beta_1 \cdot D(\text{Blockholder})_{it} + \beta_2 \cdot D(\text{Investor type})_{it} + \eta_i + \delta_t + \varepsilon_{it}$$

where *Departure* takes the value of one if a director's role ends at firm i in year $(t+1)$. *Hedge fund activism* is a dummy variable that identifies hedge fund activism events following Brav et al. (2008), *Shareholder activism* is a dummy variable that takes the value of one for events described in Section 1.4.3. The sample period is 2005 to 2014. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the firm level.

	(1)	(2)	(3)	(4)	(5)	(6)
Hedge fund activism	7.71***	7.85***	7.94***			
	(5.59)	(5.69)	(5.29)			
Shareholder activism				9.69***	9.77***	9.68***
				(7.14)	(7.17)	(6.46)
Intercept	39.97***	38.53***	38.93***	39.87***	38.76***	38.90***
	(127.09)	(4.68)	(50.20)	(126.19)	(4.69)	(50.16)
Year fixed effects	No	Yes	Yes	No	Yes	Yes
Industry fixed effects	No	Yes	No	No	Yes	No
Firm fixed effects	No	No	Yes	No	No	Yes
Adjusted R^2	0.001	0.005	0.067	0.002	0.005	0.067
Firms	5,823	5,823	5,823	5,823	5,823	5,823
Observations	35,901	35,901	35,901	35,901	35,901	35,901

Table A2.5: Director departures and blockholder characteristics: nonlinear models

This table reports logit regressions on the association between shareholder activism and board departures. Specifically, I estimate:

$$P(\text{Departure})_{i(t+1)} = \mu_t + \beta_1 \cdot D(\text{Blockholder})_{it} + \beta_2 \cdot D(\text{Investor type})_{it} + \delta_t + \delta_i + \alpha_i + \varepsilon_{it}$$

where P(Departure) takes the value of one if a director's role ends at firm i in year $(t+1)$; X' is a vector of investor characteristics in Models (3) to (6) that may vary over time, δ_t are year fixed effects, δ_i are firm fixed effects, and ε_{it} is the random disturbance term. All other variables are defined in Tables 1.4 and 1.5. The sample period is 2005 to 2014 to provide an overlapping sample between the two identification methods. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics are based on standard errors clustered at the firm level and are shown in parentheses. A small and insignificant χ^2 value in an untabulated Hausman test suggests that the random effects model is consistent.

		Investor Characteristics				
	(1)	(2)	(3)	(4)	(5)	(6)
Blockholder	0.263***	0.167***	0.172***	0.218***	0.223***	0.150***
	(8.114)	(4.174)	(4.476)	(6.325)	(6.677)	(3.657)
Investment managers		0.269***				
		(4.286)				
Holdings < 500			0.302***			
			(4.500)			
Proxy track record				0.352***		
				(3.872)		
Non-management proxy					0.625***	
					(4.769)	
Shareholder activism						0.293***
						(4.592)
Intercept	-0.258	-0.245	-0.246	-0.248	-0.250	-0.241
	(-0.900)	(-0.849)	(-0.855)	(-0.863)	(-0.873)	(-0.837)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
RE: firm SD	0.500	0.498	0.497	0.499	0.498	0.498
Standard error	[0.017]	[0.017]	[0.017]	[0.017]	[0.017]	[0.017]
rho	0.071	0.070	0.070	0.070	0.070	0.070
Standard error	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
LRI	0.007	0.007	0.007	0.007	0.007	0.007
Firms	6,447	6,447	6,447	6,447	6,447	6,447
Observations	45,540	45,540	45,540	45,540	45,540	45,540

Table A2.6: Director departures and blockholder characteristics: marginal effects

This table reports marginal effects from the logit regressions in Table A2.5.

		Investor Characteristics				
	(1)	(2)	(3)	(4)	(5)	(6)
Blockholder	0.060***	0.038***	0.039***	0.049***	0.051***	0.034***
	(8.151)	(4.181)	(4.486)	(6.344)	(6.700)	(3.661)
Investment managers		0.061***				
		(4.287)				
Holdings < 500			0.069***			
			(4.501)			
Proxy track record				0.080***		
				(3.874)		
Non-management proxy					0.142***	
					(4.772)	
Shareholder activism						0.067***
						(4.596)
Observations	45,540	45,540	45,540	45,540	45,540	45,540

Table A2.7: Director departures and activism with time periods

This table reports random effects generalized least squares regressions on the association between board appointments, hedge fund activism and shareholder activism by estimating the following model:

$$D(\text{Departure})_{i(t+1)} = \mu_t + \beta \cdot D(\text{Activism})_{it} + \delta_t + \delta_n + \alpha_i + \varepsilon_{it}$$

where D(Departure) takes the value of one if a director leaves the firm i in year $(t+\lambda)$, where λ is one, two or three years. *Hedge fund activism* is a dummy variable that identifies activism targets following Brav et al. (2008), and *Shareholder activism* is a dummy variable that takes the value of one for firms with new blockholders described in Section 1.4.3. In the model, δ_t are year fixed effects, δ_n are industry fixed effects, α_i is the combined effect of all firm-specific unobserved variables that are constant over time, and ε_{it} is the random disturbance term. The sample period is 2005 to 2014 to provide an overlapping time period between the two identification methods. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the firm level.

	(t + 1)		(t + 1) to (t + 2)		(t + 1) to (t + 3)	
	(1)	(2)	(3)	(4)	(5)	(6)
Shareholder activism	0.097***		0.088***		0.050***	
	(7.132)		(7.254)		(4.741)	
Hedge fund activism		0.078***		0.079***		0.053***
		(5.679)		(6.539)		(5.045)
Intercept	0.411***	0.392***	0.654***	0.654***	0.737***	0.749***
	(4.636)	(4.432)	(6.733)	(6.736)	(8.177)	(8.323)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Within R^2	0.013	0.013	0.016	0.016	0.012	0.012
σ (panel)	0.131	0.131	0.233	0.233	0.275	0.275
σ (disturbance)	0.474	0.474	0.435	0.435	0.371	0.371
rho	0.071	0.071	0.223	0.223	0.355	0.355
Firms	5,823	5,823	5,823	5,823	5,823	5,823
Observations	35,901	35,901	35,901	35,901	35,901	35,901

Table A2.8: Director departures and activism with time periods: nonlinear model

This table reports random effects logistic regressions on the association between board appointments, hedge fund activism and shareholder activism by estimating the following model:

$$P(\text{Departure})_{i(t+1)} = \mu_t + \beta \cdot D(\text{Activism})_{it} + \delta_t + \delta_n + \alpha_i + \varepsilon_{it}$$

where P(Departure) takes the value of one if a director leaves the firm i in year $(t+\lambda)$, where λ is one, two or three years. *Hedge fund activism* is a dummy variable that identifies activism targets following Brav et al. (2008), and *Shareholder activism* is a dummy variable that takes the value of one for firms with new blockholders described in Section 1.4.3. In the model, δ_t are year fixed effects, δ_n are industry fixed effects, α_i is the combined effect of all firm-specific unobserved variables that are constant over time, and ε_{it} is the random disturbance term. The sample period is 2005 to 2014 to provide an overlapping time period between the two identification methods. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the firm level. The Hausman specification test indicates that the random effects model in this specification is consistent.

	(t+1)		(t+1) to (t+2)		(t+1) to (t+3)	
	(1)	(2)	(3)	(4)	(5)	(6)
Shareholder activism	0.419***		0.482***		0.384***	
	(7.368)		(7.071)		(4.688)	
Hedge fund activism		0.338***		0.428***		0.402***
		(5.728)		(6.125)		(4.767)
Intercept	-0.518	-0.527	0.581	0.574	1.655**	1.651**
	(-1.500)	(-1.525)	(1.232)	(1.218)	(2.409)	(2.401)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
RE: firm SD	0.522	0.522	1.101	1.101	1.686	1.687
	(0.345)	(0.345)	(0.471)	(0.471)	(0.687)	(0.687)
rho	0.076	0.076	0.269	0.269	0.464	0.464
	(0.075)	(0.075)	(0.043)	(0.043)	(0.042)	(0.042)
LR test of rho	331.250	331.539	2401.442	2403.747	4404.334	4409.143
$p > \overline{\chi^2}$	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Wald χ^2	210.904	189.705	229.287	217.061	193.069	193.736
$p > \chi^2$	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
LRI	0.007	0.007	0.051	0.051	0.106	0.106
Firms	5,823	5,823	5,823	5,823	5,822	5,822
Observations	35,900	35,900	35,900	35,900	35,892	35,892

Table A2.9: Descriptive statistics for activism targets

This table report summary statistics for activist shareholders that are described in Section 1.4.3. Variable definitions are provided in Appendix 1.9.

	Mean	Std. Dev.	p25	p50	p75
Firm characteristics					
Total assets	3,122.349	20,384.069	129.797	449.894	1,723.400
Net turnover	1,576.027	6,614.674	64.345	267.784	1,114.160
Market capitalization	1,378.639	4,038.522	84.057	270.118	989.550
Operating income	197.283	891.395	-2.169	20.835	131.140
Long-term debt	865.052	5,629.763	0.100	48.110	399.567
R&D expense	65.270	336.096	1.210	10.677	37.370
Capital expenditure	132.995	850.565	1.522	8.398	46.775
Common dividends	20.282	176.219	0.000	0.000	0.612
Cash	202.184	1,265.005	10.766	32.535	114.118
Short-term investments	128.689	2,494.084	0.000	0.291	23.000
EBITDA	197.283	891.395	-2.169	20.835	131.140
Firm age	19.145	14.542	8.500	15.498	23.501
Segments	4.715	3.365	2.000	4.000	6.000
Financial ratios					
Return on assets	0.001	0.269	-0.016	0.061	0.121
ΔROA _[t-3,t-1]	0.015	0.566	-0.050	-0.005	0.028
Return on sales	-5.024	173.130	-0.006	0.091	0.189
Tobin's Q	5.429	182.973	1.005	1.285	1.842
Leverage	0.251	0.302	0.019	0.178	0.380
Dividend yield	3.175	150.477	0.000	0.000	0.003
Payout ratio	3.421	154.794	0.000	0.003	0.038
R&D/assets	0.119	0.201	0.006	0.050	0.153
CAPEX/assets	0.044	0.074	0.008	0.022	0.050
Sales per employee	0.011	0.174	0.002	0.004	0.006
Inventory turnover	35.111	201.122	2.900	5.626	17.383
Board characteristics					
Board size	9.310	3.435	7.000	8.000	11.000
Tenure in years	7.147	4.284	4.017	6.586	9.514
Prior listed boards	1.791	1.293	0.826	1.652	2.500
Concurrent boards	1.641	0.521	1.222	1.571	2.000
Qualifications	2.004	0.519	1.667	2.000	2.313
Age	58.885	4.915	55.667	58.833	62.125
Female director	0.097	0.103	0.000	0.091	0.154
Observations	2,417				

Table A2.10: Activist investor characteristics

This table reports descriptive statistics for investor characteristics for the shareholder activism sample described in Section 1.4.3. The sample period is 2005 to 2018. *Investment managers* takes the value of one if the filer has also filed an institutional manager holding report, and zero otherwise. *Corporations* is a dummy variable if the filer also files a corporate filing. *Holding size* for the fund family is estimated based on quarterly institutional manager holding reports filed in the year prior to the event, all periods prior to the event, and for all available periods. Dummy variables indicating holding sizes of under 250, 500, and 1000 are based on all periods prior to the activism event. *Proxy track record* is the number of investor filings that signal engagement with other shareholders for any target firm, prior to the event. *Non-management proxy* takes the value of one for filer-target pairs with a filing that signals engagement with other shareholders. A comprehensive description of all Specific SEC filing types is included in the appendix.

	Mean	Std. Dev.	p25	p50	p75
Investment managers	82.127	38.321	100.000	100.000	100.000
Holding size (year)	176.433	424.399	17.500	36.250	98.000
Holding size (all prior)	157.343	388.782	17.429	36.917	89.353
Holding size (all)	186.932	426.234	17.364	39.129	112.491
% Holdings $<$ 250	71.618	45.095	0.000	100.000	100.000
% Holdings $<$ 500	75.796	42.840	100.000	100.000	100.000
% Holdings $<$ 1000	79.686	40.242	100.000	100.000	100.000
Proxy track record	32.460	61.465	4.000	11.000	34.000
% At least 1 proxy	46.007	49.851	0.000	0.000	100.000
% At least 5 proxies	34.464	47.535	0.000	0.000	100.000
% At least 10 proxies	24.576	43.063	0.000	0.000	0.000
% Non-management proxy	15.763	36.447	0.000	0.000	0.000
Group size	2.882	3.714	1.000	1.000	3.000
Previously passive	28.300	45.055	0.000	0.000	100.000
Prior passive filings	3.140	2.618	1.000	2.000	4.000
Number of firms	2,417				

Table A2.11: The evolution of Tobin's Q and ROA over time

This table reports pooled regressions of Return on Assets and Tobin's Q. The independent variables are indicator variables that take the value of one if the firm was targeted by a hedge fund activist or a shareholder activism in the given year (t : *Event year*), or j years prior to the current year indicated by the variables ($t+j$), ($j = 1, 2, .., 5$). Control variables include pre-event dummies ($t-j$), ($j = 1, 2, 3$) that take the value of one if the firm is targeted by an activist shareholder j years going forward. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the firm level.

	Return on Assets		Tobin's Q	
	H/f activism	S/h activism	H/f activism	S/h activism
t: Event year	-0.0139***		-0.1045***	
	(-4.20)		(-3.83)	
(t + 1)	-0.0020		0.0226	
	(-0.58)		(0.73)	
(t + 2)	0.0020		0.0471	
	(0.56)		(1.54)	
(t + 3)	0.0030		0.0950***	
	(0.78)		(3.03)	
(t + 4)	0.0038		0.1260***	
	(1.00)		(4.19)	
(t + 5)	0.0039		0.1105***	
	(1.01)		(3.25)	
t: Event year		-0.0117***		-0.0455
		(-3.18)		(-1.50)
(t + 1)		-0.0020		0.0691**
		(-0.47)		(2.03)
(t + 2)		0.0022		0.1055***
		(0.49)		(3.00)
(t + 3)		0.0051		0.1142***
		(1.15)		(2.88)
(t + 4)		0.0118***		0.1475***
		(2.62)		(3.35)
(t + 5)		0.0061		0.0608
		(1.15)		(1.56)
Size	0.0412***	0.0413***	0.5071***	0.5072***
	(30.99)	(30.95)	(36.12)	(36.12)
Firm age	0.0414***	0.0414***	-0.2325***	-0.2303***
	(9.83)	(9.83)	(-5.99)	(-5.92)
Year fixed effects	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Pre-event dummies	Yes	Yes	Yes	Yes
Adjusted R^2	0.777	0.777	0.628	0.628
Firms	9,683	9,683	9,709	9,709
Observations	70,585	70,585	70,865	70,865

Table A2.12: F-tests (1): The evolution of Tobin's Q and ROA over time

Replicating Bebchuk et al. (2015) and comparing it to the proposed measure of investor activism. This table reports differences between the t : *Event year* coefficient and the $(t+j)$, $(j = 3, 4, 5)$ coefficients from the linear regression tabulated in Table A2.11.

	Return on Assets		Tobin's Q	
	H/f activism	S/h activism	H/f activism	S/h activism
Panel B: F-tests				
(t+3) vs. (t)	0.0170	0.0168	0.1995	0.1597
F-stat	17.76	13.22	41.74	18.67
p-value	0.000	0.000	0.000	0.000
(t+4) vs. (t)	0.0178	0.0234	0.2305	0.1929
F-stat	18.24	21.67	50.81	17.61
p-value	0.000	0.000	0.000	0.000
(t+5) vs. (t)	0.0178	0.0177	0.2150	0.1062
F-stat	16.56	9.25	32.98	6.45
p-value	0.000	0.002	0.000	0.011
Firms	9,683	9,683	9,709	9,709
Observations	70,585	70,585	70,865	70,865

Table A2.13: F-tests (2): The evolution of Tobin's Q and ROA over time

This table sets out tests results of the differences between the t : *Event year* coefficient and the $(t+x) : x \in \{3, 4, 5\}$ year coefficients in Table A2.11. It also sets out differences between the $(t-1)$ coefficient (one of the pre-event dummies in Table A2.11) and the $(t+j)$, $(j = 1, 2, .., 5)$ coefficients from the linear regression models set out in Table A2.11. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics are shown in parentheses. The "H/f activism" columns in this table replicate Table IV in Bebchuk et al. (2015) for the 2005 to 2014 sample period. The "S/h activism" columns show the corresponding changes in Tobin's Q and ROA when the activism event is identified using the method described in Section 1.4.3.

	Return on Assets		Tobin's Q	
	H/f activism	S/h activism	H/f activism	S/h activism
Relative to (t)				
(t+1) vs. (t)	0.0119***	0.0097***	0.1271***	0.1146***
	(3.98)	(2.77)	(5.13)	(4.14)
(t+2) vs. (t)	0.0160***	0.0138***	0.1516***	0.1510***
	(4.52)	(3.39)	(5.52)	(4.75)
(t+3) vs. (t)	0.0170***	0.0168***	0.1995***	0.1597***
	(4.21)	(3.64)	(6.46)	(4.32)
(t+4) vs. (t)	0.0178***	0.0234***	0.2305***	0.1929***
	(4.27)	(4.66)	(7.13)	(4.20)
(t+5) vs. (t)	0.0178***	0.0177***	0.2150***	0.1062**
	(4.07)	(3.04)	(5.74)	(2.54)
Relative to (t-1)				
(t+1) vs. (t-1)	0.0047	0.0035	0.1984***	0.1426***
	(1.32)	(0.87)	(7.19)	(4.80)
(t+2) vs. (t-1)	0.0087**	0.0076*	0.2229***	0.1791***
	(2.27)	(1.65)	(7.64)	(5.23)
(t+3) vs. (t-1)	0.0098**	0.0106**	0.2707***	0.1877***
	(2.34)	(2.13)	(8.55)	(4.78)
(t+4) vs. (t-1)	0.0106**	0.0172***	0.3018***	0.2210***
	(2.46)	(3.27)	(9.05)	(4.77)
(t+5) vs. (t-1)	0.0106**	0.0115*	0.2863***	0.1343***
	(2.40)	(1.91)	(7.55)	(3.12)
Firms	9,683	9,683	9,709	9,709
Observations	70,585	70,585	70,865	70,865

Table A2.14: Policy changes at hedge fund activism targets (ROA, ROS, ATO)

This table reports pooled regressions of operational and financial policy changes on the indicator of hedge fund activism as described in Brav et al. (2008). Variable definitions are provided in Appendix 1.9.

	Δ ROA		Δ ROS		Δ ATO	
	(t-1) - (t+2)	(t-2) - (t+2)	(t-1) - (t+2)	(t-2) - (t+2)	(t-1) - (t+2)	(t-2) - (t+2)
	(1)	(2)	(3)	(4)	(5)	(6)
Hedge fund activism	0.031***	0.020**	0.625	-0.104	0.033*	0.051***
	(3.555)	(2.537)	(0.365)	(-0.119)	(1.902)	(2.768)
Tobin's Q	0.018***	0.026***	-2.091	0.262	-0.003	-0.003
	(3.596)	(4.202)	(-1.108)	(0.163)	(-1.342)	(-1.112)
Size	0.005*	-0.002	0.422	0.519	-0.014***	-0.013***
	(1.818)	(-0.679)	(0.219)	(1.179)	(-7.529)	(-5.344)
Leverage/assets	-1.896	-2.262	-2.0e+03	-64.029	0.211	0.129
	(-1.128)	(-1.160)	(-0.760)	(-0.173)	(0.772)	(0.368)
R&D/assets	-0.015	-0.043	3.174	13.530	0.058	0.161***
	(-0.186)	(-0.481)	(0.069)	(0.595)	(1.453)	(3.243)
Return on assets	-0.063	0.081**				
	(-1.625)	(2.230)				
Return on sales			-0.951	-0.010		
			(-1.596)	(-0.127)		
ATO					-0.068***	-0.015
					(-5.441)	(-1.024)
Constant	-0.107*	-0.020	-5.904	-8.550**	0.274***	0.238***
	(-1.664)	(-0.685)	(-0.290)	(-2.034)	(7.431)	(5.169)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.036	0.044	0.430	-0.004	0.031	0.027
Observations	15,637	14,836	15,229	14,478	15,653	14,854

Table A2.15: Policy changes at hedge fund activism targets (Leverage, CAPEX, Payout)

This table reports pooled regressions of operational and financial policy changes on the indicator of hedge fund activism as described in Brav et al. (2008). Variable definitions are provided in Appendix 1.9.

	Δ Leverage		Δ CAPEX		Δ Payout	
	(t-1) - (t+2)	(t-2) - (t+2)	(t-1) - (t+2)	(t-2) - (t+2)	(t-1) - (t+2)	(t-2) - (t+2)
	(1)	(2)	(3)	(4)	(5)	(6)
Hedge fund activism	-0.009	-0.012	-0.006***	-0.006***	0.002	0.002
	(-0.626)	(-0.900)	(-3.392)	(-2.658)	(1.278)	(1.187)
Tobin's Q	-0.042**	-0.051**	0.001***	0.001***	-0.000**	-0.000
	(-2.095)	(-2.106)	(3.813)	(3.163)	(-2.390)	(-1.288)
Size	0.023**	0.025**	0.000	-0.000	0.000	0.000
	(2.094)	(2.248)	(0.755)	(-0.715)	(1.135)	(0.339)
Leverage/assets	20.254**	21.488**	-0.026	-0.046	0.008	0.001
	(2.095)	(2.222)	(-0.926)	(-1.067)	(0.640)	(0.073)
R&D/assets	0.341*	0.375*	-0.008***	-0.005	0.002	-0.001
	(1.943)	(1.837)	(-3.024)	(-1.430)	(0.584)	(-0.315)
Leverage	-0.182	-0.064				
	(-1.480)	(-0.491)				
CAPEX/assets			-0.244***	-0.057**		
			(-8.723)	(-2.053)		
Dividend yield					0.068	0.107
					(1.539)	(1.404)
Constant	-0.018	-0.040	0.004	0.015***	0.002	0.004
	(-0.212)	(-0.440)	(0.345)	(4.980)	(0.675)	(1.305)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.303	0.372	0.087	0.042	0.002	0.005
Observations	15,557	14,751	15,626	14,828	15,619	14,816

Chapter 2 Additional Tables

Table A3.16: Sample Breakdown by Stock Exchange

This table reports the number of activist targets by stock exchange.

	Number of Events	Percent
New York Stock Exchange	782	32.35
NYSE American Stock Exchange	149	6.16
NASDAQ	1,486	61.48
Full sample	2,417	100.00

Table A3.17: Target Firm Descriptive Statistics and Differences

This table reports means, medians and standard deviations of target firm characteristics for the hedge fund activism sample described in Brav et al. (2008) and the shareholder activism sample described in Section 2.2. For comparison, both samples are limited to the 2005 to 2014 sample period. The last two columns report differences in means between the two samples, and the statistical significance of the differences based on t-tests that allow for unequal variances.

	Brav et al. (2008) sample			Data-driven sample			Differences	
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	Difference	t-stat
Firm characteristics								
Total assets	2,474.41	372.94	19,349.58	3,194.58	449.89	23,377.82	720.17	(0.98)
Net turnover	1,296.99	239.13	4,129.52	1,631.30	266.10	7,398.99	334.31	(1.64)
Market capitalization	1,187.51	211.32	3,555.63	1,279.63	248.62	3,641.29	92.12	(0.74)
Operating income	169.21	18.17	675.20	203.49	20.86	933.26	34.28	(1.23)
Long-term debt	532.83	23.24	2,627.37	794.50	39.88	6,058.32	261.67*	(1.65)
R&D Expense	51.29	8.73	196.05	69.73	9.66	388.22	18.44	(1.30)
Capital expenditure	106.96	7.60	673.76	130.54	8.44	886.36	23.57	(0.87)
Common dividends	15.29	0.00	73.64	15.85	0.00	72.94	0.56	(0.22)
Cash	141.80	27.30	403.73	206.75	31.64	1,442.22	64.95*	(1.81)
Short-term investments	142.74	0.29	3,019.64	152.88	0.28	2,914.69	10.13	(0.10)
EBITDA	169.21	18.17	675.20	203.49	20.86	933.26	34.28	(1.23)
Firm age	19.66	15.50	13.95	19.24	15.25	14.17	−0.42	(-0.86)
Segments	4.82	4.00	3.27	4.83	4.00	3.40	0.01	(0.11)
Business segments	2.22	1.00	1.57	2.21	1.00	1.59	−0.01	(-0.18)
Georgraphic segments	2.93	2.00	2.54	2.98	2.00	2.62	0.04	(0.39)
Operating segments	4.81	5.00	1.92	4.91	5.00	1.91	0.10	(0.42)
Key ratios								
Return on assets	0.03	0.07	0.21	0.02	0.07	0.22	−0.01	(-0.71)
ΔROA $_{[t-3,t-1]}$	-0.01	-0.01	0.46	-0.00	-0.00	0.27	0.01	(0.43)
Return on sales	-1.40	0.09	24.10	-6.10	0.09	201.91	−4.70	(-0.96)
Tobin's Q	1.55	1.24	1.03	1.62	1.24	1.30	0.07*	(1.84)
Leverage	0.22	0.14	0.26	0.23	0.16	0.27	0.01	(1.51)
Dividend yield	0.16	0.00	5.72	4.37	0.00	176.53	4.21	(1.00)
Payout ratio	0.20	0.00	5.91	4.72	0.00	182.15	4.53	(1.01)
R&D/assets	0.10	0.05	0.14	0.11	0.05	0.16	0.01	(0.83)
CAPEX/assets	0.04	0.02	0.06	0.04	0.02	0.06	0.00	(1.01)
Sales per employee	0.01	0.00	0.06	0.01	0.00	0.20	0.00	(0.67)
Inventory turnover	22.73	5.54	78.12	32.93	5.53	204.53	10.20*	(1.67)
Number of campaigns	1,613			1,757				

Table A3.18: Campaign and investor characteristics by director appointments

This table presents the means for campaign and investor characteristics for the sample of activism campaigns and the two subsamples where either no directors were appointed or at least one director was appointed to the target firm's board within the first year of the campaign. Firm characteristics are measured in the year of the activism event and variable definitions are provided in Appendix 2.8. Variables are not winsorized. The last two columns report differences in means between the subsamples with statistical significance based on t-tests that allow for unequal variances. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels.

	All targets	No director	New director	Differences	
	Mean	Mean	Mean	Mean	t-stat
Returns %					
Activism CAR [-1, +1]	3.153	3.376	3.004	−0.371	(-0.504)
Activism CAR [-2, +2]	3.537	3.617	3.483	−0.134	(-0.164)
Activism CAR [-5, +5]	4.799	4.928	4.714	−0.214	(-0.208)
Activism CAR [-7, +7]	5.830	5.395	6.118	0.723	(0.672)
Activism CAR [-20, +20]	6.286	4.937	7.179	2.242	(1.512)
BHAR: 1-year	1.780	0.278	2.720	2.442	(0.724)
BHAR: 2-year	2.426	-0.435	4.217	4.652	(0.927)
BHAR: 3-year	1.880	-3.759	5.408	9.167	(1.471)
BHAR: 4-year	1.645	-5.663	6.218	11.880	(1.451)
BHAR: 5-year	-1.049	-7.289	2.856	10.145	(1.053)
Investor characteristics					
% Investment managers	82.127	82.043	82.179	0.136	(0.085)
Holding size (all prior)	157.343	195.324	133.660	−61.664***	(-3.265)
% Holdings < 250	71.618	68.602	73.504	4.902**	(2.573)
% Holdings < 500	75.796	73.333	77.337	4.004**	(2.209)
% Holdings < 1000	79.686	79.140	80.027	0.887	(0.525)
Proxies filed previously	32.460	26.757	36.209	9.451***	(2.750)
% At least 1 proxy	46.007	47.419	45.124	−2.295	(-1.100)
% At least 5 proxies	34.464	36.452	33.221	−3.230	(-1.618)
% At least 10 proxies	24.576	25.699	23.874	−1.825	(-1.008)
% Non-management proxy	15.763	9.785	19.502	9.717***	(6.860)
Group size	2.882	2.933	2.849	−0.084	(-0.543)
Previously passive	28.300	28.172	28.379	0.207	(0.110)
Prior passive filings	3.140	3.214	3.095	−0.119	(-0.551)
Number of observations	2,417	930	1,487		

Table A3.19: Firm characteristics by director appointments

This table presents the means for firm characteristics for the sample of activism campaigns and the two subsamples where either no directors were appointed or at least one director was appointed to the target firm's board within the first year of the campaign. Firm characteristics are measured in the year of the activism event and variable definitions are provided in Appendix 2.8. Variables are not winsorized. The last two columns report differences in means between the subsamples with statistical significance based on t-tests that allow for unequal variances. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels.

	All targets	No director	New director	Differences	
	Mean	Mean	Mean	Mean	t-stat
Total assets	3,122.349	2,673.530	3,403.050	729.520	(0.878)
Net turnover	1,576.027	1,384.857	1,695.589	310.732	(1.089)
Market capitalization	1,378.639	1,181.921	1,499.144	317.222**	(1.993)
Operating income	197.283	168.267	215.457	47.190	(1.404)
Long-term debt	865.052	686.445	977.119	290.673	(1.141)
R&D expense	65.270	56.324	70.433	14.108	(0.749)
Capital expenditure	132.995	92.217	158.540	66.323*	(1.906)
Common dividends	20.282	22.564	18.855	−3.709	(-0.419)
Cash	202.184	173.790	219.978	46.188	(0.913)
Short-term investments	128.689	88.954	153.625	64.671	(0.733)
EBITDA	197.283	168.267	215.457	47.190	(1.404)
Firm age	19.145	18.762	19.384	0.623	(1.038)
Segments	4.715	4.576	4.798	0.222	(1.541)
Business segments	2.150	2.093	2.184	0.090	(1.269)
Georgraphic segments	2.954	2.782	3.062	0.280**	(2.276)
Operating segments	4.897	4.692	5.018	0.326	(1.133)
Financial ratios					
Return on assets	0.001	0.019	-0.010	−0.029**	(-2.566)
ΔROA $_{[t-3,t-1]}$	0.015	-0.005	0.027	0.032	(1.514)
Return on sales	-5.024	-1.049	-7.548	−6.498	(-1.109)
Tobin's Q	5.429	11.383	1.722	−9.661	(-0.995)
Leverage	0.251	0.246	0.253	0.007	(0.546)
Dividend yield	3.175	8.002	0.165	−7.837	(-0.981)
Payout ratio	3.421	8.542	0.206	−8.336	(-0.990)
R&D/assets	0.119	0.109	0.125	0.016	(1.478)
CAPEX/assets	0.044	0.041	0.046	0.005*	(1.653)
Sales per employee	0.011	0.007	0.014	0.006	(1.022)
Inventory turnover	35.111	28.026	39.613	11.587	(1.237)
Number of observations	2,417	930	1,487		

Table A3.20: Additional descriptive statistics for activism target firms

This table reports additional descriptive statistics for the sample of activism targets described in Table A3.19. Means, standard deviations, 25th, 50th, and 75th percentiles are reported.

	Mean	Std. Dev.	p25	p50	p75
Total assets	3,122.349	20,384.069	129.797	449.894	1,723.400
Net turnover	1,576.027	6,614.674	64.345	267.784	1,114.160
Market capitalization	1,378.639	4,038.522	84.057	270.118	989.550
Operating income	197.283	891.395	-2.169	20.835	131.140
Long-term debt	865.052	5,629.763	0.100	48.110	399.567
R&D expense	65.270	336.096	1.210	10.677	37.370
Capital expenditure	132.995	850.565	1.522	8.398	46.775
Common dividends	20.282	176.219	0.000	0.000	0.612
Cash	202.184	1,265.005	10.766	32.535	114.118
Short-term investments	128.689	2,494.084	0.000	0.291	23.000
EBITDA	197.283	891.395	-2.169	20.835	131.140
Firm age	19.145	14.542	8.500	15.498	23.501
Segments	4.715	3.365	2.000	4.000	6.000
Business segments	2.150	1.560	1.000	1.000	3.000
Georgraphic segments	2.954	2.575	1.000	2.000	4.000
Operating segments	4.897	1.863	4.000	5.000	6.000
Financial ratios					
Return on assets	0.001	0.269	-0.016	0.061	0.121
ΔROA $_{[t-3,t-1]}$	0.015	0.566	-0.050	-0.005	0.028
Return on sales	-5.024	173.130	-0.006	0.091	0.189
Tobin's Q	5.429	182.973	1.005	1.285	1.842
Leverage	0.251	0.302	0.019	0.178	0.380
Dividend yield	3.175	150.477	0.000	0.000	0.003
Payout ratio	3.421	154.794	0.000	0.003	0.038
R&D/assets	0.119	0.201	0.006	0.050	0.153
CAPEX/assets	0.044	0.074	0.008	0.022	0.050
Sales per employee	0.011	0.174	0.002	0.004	0.006
Inventory turnover	35.111	201.122	2.900	5.626	17.383
Number of observations	2,417				

Table A3.21: Director appointments and firm characteristics

This table reports the association between director appointments and firm characteristics. The estimated model is:

$Appointment_{i,t+1} = \alpha_i + \gamma \cdot X_i' + \delta_t + \delta_i + \varepsilon_i$

The sample includes activism targets between 2005 and 2018 and the firm-year observation of the activism event. *Appointment* is an indicator variable taking the value of one if a director was appointed and zero otherwise. X' is a vector of firm characteristics measured in $t-1$, δ_t are year fixed effects, δ_i are industry fixed effects based on two-digit SIC classification, and ε_{it} is the random disturbance term. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the two-digit SIC level.

	(1) Logit	(2) Logit	(3) Logit	(4) OLS
Total assets	−0.004	−0.004	0.009	0.004
	(−0.287)	(−0.267)	(0.571)	(1.380)
Net turnover	0.024	0.028	0.033	0.004
	(0.987)	(1.073)	(0.907)	(0.741)
Market capitalization	0.008	0.001	−0.007	0.002
	(0.332)	(0.051)	(−0.245)	(0.610)
Operating income	−0.164	−0.155	−0.147	−0.027
	(−1.208)	(−1.278)	(−1.113)	(−1.481)
Long-term debt	0.082*	0.075	0.067	0.004
	(1.761)	(1.609)	(1.418)	(0.517)
Cash	0.154	0.142	0.100	−0.007
	(1.295)	(1.133)	(0.619)	(−0.556)
Short-term investments	−0.066	−0.057	−0.155	−0.036*
	(−0.642)	(−0.528)	(−1.250)	(−1.694)
Firm age	2.783	2.277	5.910	1.480
	(0.674)	(0.560)	(1.343)	(1.499)
Return on assets	−0.634**	−0.461	−0.584*	−0.129*
	(−2.115)	(−1.444)	(−1.850)	(−1.878)
ΔROA $_{[t-3,t-1]}$	0.029	0.018	0.016	−0.000
	(0.600)	(0.693)	(0.668)	(−0.213)
Return on sales	0.012	0.013	0.004	0.001
	(1.394)	(1.603)	(0.580)	(0.506)
Market-to-book ratio	2.009	2.198	2.152	0.444
	(0.733)	(0.709)	(0.645)	(0.594)
Leverage	−0.045	−0.078	−0.060	−0.002
	(−0.250)	(−0.450)	(−0.371)	(−0.043)
Dividend yield	−1.261	−1.462	−1.082	−0.266
	(−0.873)	(−1.091)	(−0.768)	(−0.833)
Payout ratio	0.122	0.534	0.561	0.132
	(0.167)	(0.777)	(0.841)	(0.855)
CAPEX/assets	0.679	0.720	0.626	0.137
	(1.588)	(1.593)	(1.086)	(1.064)
Sales per employee	4.210	4.643*	1.695	0.341
	(1.450)	(1.661)	(0.656)	(0.552)
R&D/assets	0.171	0.310	−0.046	−0.021
	(0.438)	(0.842)	(−0.126)	(−0.260)
Segments	0.034**	0.032**	0.036*	0.008**
	(2.456)	(2.388)	(1.954)	(2.262)
Year fixed effects	No	Yes	Yes	Yes
Industry fixed effects	No	No	Yes	Yes
(Pseudo) R^2	0.014	0.031	0.057	0.025
Observations	1,827	1,827	1,820	1,827

Table A3.22: Director appointments and expertise

This table presents two-year market-adjusted buy and hold returns around different methods of activist investor tactics. The following specification is estimated:

$$BHAR_{i,t} = \mu_t + \beta_1 \cdot Post_{i,t} + \beta_2 \cdot (Appointment_i \times Post_{i,t}) + \gamma \cdot X'_{i,t} + \delta_t + \delta_i + \alpha_i + \varepsilon_{i,t}$$

The sample includes activism targets between 2005 and 2018 and all firm-year observations five years before and after the event. *Post* is an indicator variable for firm years that are within [t+1, t+5] years after the activism event year. X' is a vector of firm characteristics that may vary over time, δ_t are year fixed effects, δ_i are firm fixed effects, α_i is the combined effect of all firm-specific unobserved variables that are constant over time, and ε_{it} is the random disturbance term. In Column 1, the $Appointment_i \times Post_{i,t}$ dummy variable takes the value of one in [t+2, t+5] years after the event if at least on director was appointed to the board within the first year after the activist became involved. In Columns 2 to 4, dummy variables take the value of one if the appointed director has prior experience on listed boards, in a two-digit SIC industry different from the target firm, or in multiple industries. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the firm level.

		Director experience			
	(1)	(2)	(3)	(4)	(5)
Post	0.130***	0.133***	0.120***	0.136***	0.103***
	(5.725)	(5.849)	(5.249)	(5.935)	(4.533)
× Director appointment	0.076***				
	(2.865)				
× Listed board		0.086***			
		(2.964)			
× Other industries			0.083***		0.085***
			(3.391)		(3.518)
× Multiple industries				0.105***	0.108***
				(3.149)	(3.254)
Size	0.437***	0.437***	0.437***	0.438***	0.437***
	(25.635)	(25.642)	(25.675)	(25.673)	(25.668)
BM	0.963***	0.963***	0.964***	0.964***	0.964***
	(5.556)	(5.562)	(5.635)	(5.563)	(5.620)
CAPEX	−0.135***	−0.135***	−0.133***	−0.135***	−0.133***
	(−3.521)	(−3.513)	(−3.430)	(−3.511)	(−3.459)
ROA	0.362***	0.362***	0.362***	0.363***	0.362***
	(3.027)	(3.029)	(3.031)	(3.044)	(3.039)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes
$\beta_1 + \beta_2$	0.206***	0.219***	0.203***	0.241***	0.297***
	(6.401)	(6.419)	(6.839)	(6.382)	(7.267)
Adjusted R^2	0.268	0.268	0.268	0.268	0.269
Firms	1,865	1,865	1,865	1,865	1,865
Observations	14,439	14,439	14,439	14,439	14,439

Table A3.23: Additional summary statistics for treated and control firms

This table reports additional summary statistics for the sample of activism targets and control firms described in Table 2.14. Means, standard deviations, 25th, 50th, and 75th percentiles are reported.

	Mean	Std. Dev.	p25	p50	p75
Firm characteristics					
Total assets	2,693.396	18,529.180	112.320	402.094	1,495.491
Net turnover	1,532.809	7,285.859	59.433	238.171	987.526
Market capitalization	1,469.832	6,973.419	83.537	264.778	999.733
Operating income	194.933	1,094.770	-0.651	21.788	122.400
Long-term debt	722.366	5,623.461	0.007	27.759	298.873
R&D Expense	54.640	266.281	0.789	9.570	34.269
Capital expenditure	109.280	693.908	1.354	7.600	41.109
Tobin's Q	3.824	131.634	1.012	1.326	2.019
Segments	4.554	3.128	2.000	4.000	6.000
Financial ratios					
Return on assets	0.006	0.301	-0.007	0.068	0.134
ΔROA $_{[t-3,t-1]}$	0.039	1.266	-0.045	-0.002	0.032
Return on sales	-2.695	66.489	0.004	0.097	0.207
Leverage	0.229	0.298	0.008	0.152	0.342
Dividend yield	1.648	108.220	0.000	0.000	0.010
R&D/assets	0.122	0.224	0.005	0.050	0.151
CAPEX/assets	0.044	0.070	0.008	0.023	0.051
Board characteristics					
Board size	9.142	3.435	7.000	8.000	11.000
Tenure in years	7.640	4.549	4.214	7.013	10.130
Prior listed boards	1.650	1.278	0.667	1.429	2.375
Concurrent boards	1.595	0.521	1.167	1.500	1.889
Qualifications	1.973	0.554	1.625	2.000	2.318
Age	58.968	5.008	55.750	59.000	62.286
Appointments					
Director appointed (%)	0.515	0.500	0.000	1.000	1.000
Number of new directors	1.118	1.671	0.000	1.000	2.000
Days to first appointment	123.667	100.203	38.000	103.000	190.000
Days to last appointment	181.042	108.536	87.000	180.000	276.000
Prior listed boards	2.428	3.206	0.000	1.000	4.000
Concurrent boards	0.807	1.178	0.000	0.000	1.000
Qualifications	2.099	0.947	1.500	2.000	2.500
Industry experience	0.149	0.356	0.000	0.000	0.000
Number of industries	1.131	2.777	0.000	0.000	1.000
Age	53.439	7.875	48.500	54.000	59.000
Matched sample	4,660				

Table A3.24: Propensity score matching model

This table provides a description of the propensity score matching procedure. Prior literature identifies several firm characteristics that are strongly associated with being targeted by activist investors: firm size, market-to-book ratio, return on assets, and the change in return on assets over a three-year period prior to the event. This specification is tested with the results set out in the first column of Table A3.24. In each of the subsequent specifications tabulated, one of the variables are omitted and the new model is compared to the base specification. The likelihood ratio test statistics and associated p-values indicate that omitting any of the variables except for the log transformation of market capitalization does not result in a significantly poorer model fit. Comparing models tabulated in columns 2 to 5, the specification with the highest log likelihood value is the one that omits the three-year change in ROA. It is also the one that maximizes the number of firm-year observations with non-missing values as evidenced in column 6.
In order to carefully identify the most appropriate control firm for each treated firm, I follow a number of steps. First, I estimate and save a "propensity score" for each firm in the sample, which is the predicted value from the logit model specified in column 6 of Table A3.24. Second, I ensure that if a firm is targeted in any year, a different firm-year observation for the same firm is never considered a candidate as a control firm in future matching steps. Next, I create group identifiers to classify firms that fall within the same year and two-digit Standard Industry Classification (SIC) code. Finally, I match a control firm to each treated firm based on the closest propensity score within the "firm year-SIC" group, without replacement. The table provides various model candidates for the propensity score matching. The following model is estimated in a logit framework:

$$Activism_{it} = \alpha + \gamma \cdot X'_{it} + \varepsilon_{it}$$

where *Activism* is an indicator variable taking the value of one if the firm was targeted by an activist investor and zero otherwise. X' is a vector of firm characteristics that may vary over time, and ε_{it} is the random disturbance term. The sample includes all Compustat firms between 2005 and 2018 with available values for X'. For consistency, specifications set out in columns 2 to 5 are restricted to observations that were used to estimate the column 1 specification. The likelihood ratio test statistic and associated p-value is a test of model fit between the first and subsequent specifications, where the subsequent specification is the nested model. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics are shown in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-1.406^{***}	-1.406^{***}	-1.415^{***}	-1.415^{***}	-1.720^{***}	-1.399^{***}
	(-46.507)	(-46.541)	(-48.594)	(-48.619)	(-173.853)	(-48.190)
Size	-0.053^{***}	-0.053^{***}	-0.052^{***}	-0.052^{***}		-0.051^{***}
	(-10.779)	(-10.784)	(-10.989)	(-10.979)		(-10.731)
Market-to-book ratio	0.000	0.000	0.000	0.000	-0.000	0.000
	(0.104)	(0.107)	(0.060)	(0.062)	(-0.031)	(0.019)
ROA $_{t-1}$	0.039	0.040			-0.078^{**}	-0.033
	(1.081)	(1.116)			(-2.435)	(-1.419)
ΔROA $_{[t\text{-}3,t\text{-}1]}$	-0.015		-0.015		-0.014	
	(-0.777)		(-0.802)		(-0.845)	
LR χ^2		0.961	1.196	2.238	117.965	
		(0.327)	(0.274)	(0.327)	(0.000)	
Log Likelihood	$-8,932.565$	$-8,933.046$	$-8,933.163$	$-8,933.684$	$-8,991.548$	$-9,471.013$
Observations	51,190	51,190	51,190	51,190	51,190	52,343

Table A3.25: Activist directors and returns: matched sample interaction terms (1/2)

This table presents two-year market-adjusted buy-and-hold returns associated with the appointment of activist directors. The following specification is estimated:

$$BHAR_{i,t} = \mu_t + \beta_1 \cdot (Appt_{i,t} \times Act_{i,t} \times P_{i,t}) + \beta_2 \cdot (Act_{i,t} \times P_{i,t}) + \beta_3 \cdot P_{i,t} + \gamma \cdot X'_{i,t} + \delta_t + \delta_i + \alpha_i + \varepsilon_{i,t}$$

The sample includes activism targets and control firms between 2005 and 2018 and firm-year observations five years before and after the event, or pseudo-event for control firms. *Appt* is a dummy variable that takes the value of one in years $[t+2,\ t+5]$ if a director is appointed within a year of the event or pseudo event in column 2 or has a track record on listed boards in column 3. The *Act* dummy takes the value of one for targeted firms in years $[t+2,\ t+5]$ and zero otherwise. P is an indicator variable for firm years that are within $[t+1,\ t+5]$ years after the activism event year, or pseudo event year for control firms. X' is a vector of firm characteristics that may vary over time, δ_t are year fixed effects, δ_i are firm fixed effects, α_i is the combined effect of all firm-specific unobserved variables that are constant over time, and ε_{it} is the random disturbance term. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the two-digit SIC level.

	(1)	(2)	(3)
Activism=0 × Post=1	0.011		
	(0.490)		
Activism=1 × Post=0	−0.270		
	(−1.243)		
Activism=1 × Post=1	0.170***		
	(7.791)		
Appointment=0 × Activism=0 × Post=1		−0.003	
		(−0.070)	
Appointment=0 × Activism=1 × Post=0		−0.044	
		(−0.204)	
Appointment=0 × Activism=1 × Post=1		0.145***	
		(2.860)	
Appointment=1 × Activism=0 × Post=0		0.061**	
		(2.484)	
Appointment=1 × Activism=0 × Post=1		0.070**	
		(2.318)	
Appointment=1 × Activism=1 × Post=0		−0.299	
		(−1.117)	
Appointment=1 × Activism=1 × Post=1		0.228***	
		(7.352)	
Experience=0 × Activism=0 × Post=1			0.005
			(0.170)
Experience=0 × Activism=1 × Post=0			0.089
			(0.343)
Experience=0 × Activism=1 × Post=1			0.132***
			(3.662)
Experience=1 × Activism=0 × Post=0			0.004
			(0.204)
Experience=1 × Activism=0 × Post=1			0.019
			(0.639)
Experience=1 × Activism=1 × Post=0			−0.413
			(−1.599)
Experience=1 × Activism=1 × Post=1			0.186***
			(6.577)
Controls, year and firm fixed effects	Yes	Yes	Yes
Adjusted R^2	0.281	0.281	0.281
Firms	3,359	3,359	3,359
Observations	26,158	26,158	26,158

Table A3.26: Activist directors and returns: matched sample interaction terms (2/2)

This table presents two-year market-adjusted buy and hold returns associated with the appointment of skilled directors. The following specification is estimated:

$BHAR_{i,t} = \mu_t + \beta_1 \cdot (Appt_{i,t} \times Act_{i,t} \times P_{i,t}) + \beta_2 \cdot (Act_{i,t} \times P_{i,t}) + \beta_3 \cdot P_{i,t} + \gamma \cdot X'_{i,t} + \delta_t + \delta_i + \alpha_i + \varepsilon_{i,t}$

The sample includes activism targets and control firms between 2005 and 2018 and firm-year observations five years before and after the event, or pseudo-event for control firms. *Appt* is a dummy variable that takes the value of one in years $[t+2, t+5]$ if a director with experience in another industry is appointed within a year of the event or pseudo event in column 2 or in multiple industries in column 3. The *Act* dummy takes the value of one for targeted firms in years $[t+2, t+5]$ and zero otherwise. P is an indicator variable for firm years that are within $[t+1, t+5]$ years after the activism event year, or pseudo event year for control firms. X' is a vector of firm characteristics that may vary over time, δ_t are year fixed effects, δ_i are firm fixed effects, α_i is the combined effect of all firm-specific unobserved variables that are constant over time, and ε_{it} is the random disturbance term. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the two-digit SIC level.

	(1)	(2)	(3)
Activism=0 × Post=1	0.011		
	(0.490)		
Activism=1 × Post=0	−0.270		
	(−1.243)		
Activism=1 × Post=1	0.170***		
	(7.791)		
Other=0 × Activism=0 × Post=1		−0.001	
		(−0.037)	
Other=0 × Activism=1 × Post=0		0.104	
		(0.440)	
Other=0 × Activism=1 × Post=1		0.142***	
		(3.765)	
Other=1 × Activism=0 × Post=0		0.061***	
		(2.648)	
Other=1 × Activism=0 × Post=1		0.071**	
		(2.430)	
Other=1 × Activism=1 × Post=0		−0.463*	
		(−1.769)	
Other=1 × Activism=1 × Post=1		0.233***	
		(7.747)	
Multiple=0 × Activism=0 × Post=1			−0.001
			(−0.041)
Multiple=0 × Activism=1 × Post=0			0.093
			(0.362)
Multiple=0 × Activism=1 × Post=1			0.141***
			(4.748)
Multiple=1 × Activism=0 × Post=0			−0.001
			(−0.027)
Multiple=1 × Activism=0 × Post=1			0.033
			(1.062)
Multiple=1 × Activism=1 × Post=0			−0.416
			(−1.587)
Multiple=1 × Activism=1 × Post=1			0.193***
			(6.783)
Controls, year and firm fixed effects	Yes	Yes	Yes
Adjusted R^2	0.281	0.281	0.281
Firms	3,359	3,359	3,359
Observations	26,158	26,158	26,158

Table A3.27: Director appointments and expertise

This table provides a decomposition of announcement returns for the 21-day CAR estimated in Table 2.10, estimating:

$CAR_{\text{FF: [-10,+10]},i} = \alpha_i + \beta_1 \cdot \text{Director skill}_i + \beta_2 \cdot \text{Filing mention}_i + \varepsilon_i$

The sample includes all director announcement events at targeted firms between 2005 and 2018. In columns 2 and 5, the *Director skill* indicator variable takes the value of 1 if the director announced has prior experience as a director on listed boards. In columns 3 and 6, , the *Director skill* dummy captures directors with listed board experience in multiple two-digit SIC industries. In columns 4 and 7 it indicates listed board experience in the same two-digit SIC industry as the firm. *Filing mention* is an indicator variable if the director's name was previously mentioned in a regulatory filing submitted by the activist investor, and ε_{it} is the random disturbance term. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics are shown in parentheses.

	All directors			Newly announced directors			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	1.104	1.587	1.344**	2.298**	2.928**	2.557***	1.224
	(1.378)	(1.372)	(2.242)	(2.563)	(2.356)	(3.548)	(0.722)
Listed board	1.127			1.215			0.824
	(1.077)			(1.163)			(0.648)
Other industries		0.222			0.084		1.100
		(0.172)			(0.065)		(0.768)
Multiple industries			1.611			1.866	1.718
			(1.374)			(1.592)	(1.258)
Mentioned in filing				−3.079***	−3.042***	−3.165***	−3.146***
				(−2.938)	(−2.901)	(−3.015)	(−2.995)
$\alpha_1 + \sum(\beta_1)$	2.232***	1.810***	2.955***	3.513***	3.012***	4.423***	4.865***
	(3.316)	(3.142)	(2.933)	(4.388)	(4.251)	(3.961)	(3.869)
Announcements	1,484	1,484	1,484	1,484	1,484	1,484	1,484
Instances (β_1)	875	1,195	391	875	1,195	391	229

Tables A3.28 to A3.47 report coefficient estimates of linear regressions where the dependent variables are Return on Assets in columns (1) to (6) and Tobin's Q in columns (7) to (12). For full sample regressions, the sample includes all Compustat / CRSP firms between 2005 and 2018. For matched sample regressions, the sample includes target and control firms identified through propensity score matching between 2005 and 2018. In columns (1) and (7) the independent variables are indicator variables that take the value of one if the firm was targeted by an engaged investor in the given event year t, or j years prior to the current year indicated by the variables $(t + j), (j = 1, 2, .., 5)$.

Control variables include the natural logarithm of market capitalization at the end of the firm's fiscal year ($ln(MV)$), the natural logarithm of firm age, which is the first date with data for the firm in Compustat ($ln(Age)$), and pre-event dummies $(t - j), (j = 1, 2, 3)$ that take the value of one if the firm is targeted by an engaged investor j years going forward. All regressions include year fixed effects and firm fixed effects, and standard errors are clustered at the firm level.

Table A3.28: Full Sample Regressions: Engaged Investors and Director Appointments

Columns (2-6) and (8-12) examine sub-samples and the dummies take the value of one if the firm was targeted but no directors were appointed within the first two years, or at least $k, (k = 1, 2, 3, 4)$ directors were appointed.

	Return on Assets						Tobin's Q					
	(1) All events	(2) No Directors	(3) 1+ appt.	(4) 2+ appt.	(5) 3+ appt.	(6) 4+ appt.	(7) All events	(8) No Directors	(9) 1+ appt.	(10) 2+ appt.	(11) 3+ appt.	(12) 4+ appt.
t: Event year	-0.0102***	-0.0089*	-0.0106**	-0.0145**	-0.0202**	-0.0381***	-0.0609**	-0.0045	-0.0939**	-0.1551***	-0.2161***	-0.2003**
	(-2.95)	(-1.73)	(-2.31)	(-2.36)	(-2.35)	(-3.39)	(-2.16)	(-0.11)	(-2.57)	(-3.43)	(-3.38)	(-2.31)
(t + 1)	-0.0033	-0.0011	-0.0045	-0.0123**	-0.0195**	-0.0388***	0.0347	0.0874*	0.0041	-0.0773	-0.1518**	-0.1691*
	(-0.89)	(-0.20)	(-0.93)	(-2.03)	(-2.41)	(-3.60)	(1.16)	(1.96)	(0.10)	(-1.61)	(-2.20)	(-1.87)
(t + 2)	0.0004	0.0046	-0.0021	-0.0001	-0.0124	-0.0246**	0.0753**	0.1203**	0.0495	-0.0281	-0.1050	-0.0303
	(0.11)	(0.79)	(-0.43)	(-0.01)	(-1.54)	(-2.39)	(2.38)	(2.52)	(1.18)	(-0.56)	(-1.49)	(-0.33)
(t + 3)	0.0033	0.0022	0.0042	0.0028	-0.0069	-0.0223*	0.1081***	0.1732***	0.0690	0.0445	-0.0236	-0.0144
	(0.81)	(0.37)	(0.75)	(0.39)	(-0.75)	(-1.71)	(3.10)	(3.22)	(1.50)	(0.80)	(-0.32)	(-0.15)
(t + 4)	0.0109***	0.0113**	0.0106**	0.0107	0.0069	-0.0042	0.1198***	0.1898***	0.0746	0.0726	0.0331	0.0231
	(2.78)	(1.97)	(1.96)	(1.47)	(0.73)	(-0.31)	(2.96)	(3.11)	(1.38)	(1.12)	(0.39)	(0.24)
(t + 5)	0.0061	0.0012	0.0097	0.0125	0.0079	0.0057	0.0779**	0.1576***	0.0218	-0.0278	0.0275	0.0714
	(1.30)	(0.19)	(1.59)	(1.47)	(0.76)	(0.46)	(2.23)	(2.96)	(0.47)	(-0.47)	(0.34)	(0.62)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.785	0.785	0.785	0.785	0.785	0.785	0.628	0.628	0.628	0.628	0.628	0.628
Firms	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582
Observations	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352

Table A3.29: Full Sample F-tests: Engaged Investors and Director Appointments

This table reports differences between the event year t or $(t\text{-}1)$ and the $(t+j), (j = 1, 2, .., 5)$ coefficients from Table A3.28 with t-statistics in parentheses.

	Return on Assets						Tobin's Q					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All events	No Directors	1+ appt.	2+ appt.	3+ appt.	4+ appt.	All events	No Directors	1+ appt.	2+ appt.	3+ appt.	4+ appt.
(t+1) vs. (t)	0.0069**	0.0078	0.0061	0.0022	0.0007	-0.0007	0.0955***	0.0919**	0.0980***	0.0778**	0.0643	0.0312
	(2.14)	(1.62)	(1.45)	(0.40)	(0.09)	(-0.07)	(3.98)	(2.23)	(3.42)	(2.43)	(1.36)	(0.53)
(t+2) vs. (t)	0.0106***	0.0135**	0.0085*	0.0144**	0.0078	0.0135	0.1362***	0.1248**	0.1434***	0.1270***	0.1111**	0.1701**
	(2.73)	(2.29)	(1.68)	(2.27)	(0.86)	(1.05)	(4.58)	(2.53)	(4.01)	(3.30)	(2.11)	(2.55)
(t+3) vs. (t)	0.0135***	0.0111*	0.0148**	0.0173**	0.0133	0.0158	0.1690***	0.1776***	0.1629***	0.1997***	0.1925***	0.1860**
	(3.03)	(1.78)	(2.43)	(2.23)	(1.22)	(0.99)	(4.96)	(3.12)	(3.97)	(4.23)	(3.23)	(2.42)
(t+4) vs. (t)	0.0211***	0.0202***	0.0212***	0.0253***	0.0271**	0.0339*	0.1806***	0.1943***	0.1685***	0.2277***	0.2492***	0.2235***
	(4.56)	(2.91)	(3.45)	(3.06)	(2.29)	(1.95)	(4.22)	(3.09)	(3.01)	(3.79)	(3.35)	(2.81)
(t+5) vs. (t)	0.0163***	0.0101	0.0204***	0.0270***	0.0280**	0.0438***	0.1388***	0.1621***	0.1158**	0.1273**	0.2436***	0.2717**
	(3.09)	(1.27)	(3.02)	(2.95)	(2.26)	(2.71)	(3.66)	(2.80)	(2.36)	(2.25)	(3.05)	(2.23)
(t+1) vs. (t-1)	0.0049	0.0075	0.0030	-0.0040	-0.0117	-0.0194	0.1315***	0.1847***	0.0965***	0.0569	0.0421	0.0307
	(1.27)	(1.37)	(0.59)	(-0.61)	(-1.32)	(-1.46)	(4.82)	(4.41)	(2.72)	(1.33)	(0.68)	(0.40)
(t+2) vs. (t-1)	0.0086**	0.0132**	0.0054	0.0082	-0.0046	-0.0052	0.1721***	0.2176***	0.1419***	0.1061**	0.0889	0.1695*
	(1.99)	(2.08)	(0.96)	(1.10)	(-0.47)	(-0.36)	(5.40)	(4.25)	(3.58)	(2.27)	(1.33)	(1.96)
(t+3) vs. (t-1)	0.0115**	0.0108	0.0117*	0.0111	0.0009	-0.0029	0.2049***	0.2704***	0.1614***	0.1787***	0.1703**	0.1854**
	(2.43)	(1.58)	(1.84)	(1.31)	(0.08)	(-0.16)	(5.75)	(4.63)	(3.67)	(3.33)	(2.42)	(2.02)
(t+4) vs. (t-1)	0.0191***	0.0199***	0.0181***	0.0191**	0.0147	0.0152	0.2166***	0.2871***	0.1670***	0.2067***	0.2270***	0.2229**
	(3.90)	(2.78)	(2.80)	(2.14)	(1.24)	(0.82)	(4.93)	(4.21)	(2.99)	(3.20)	(2.68)	(2.39)
(t+5) vs. (t-1)	0.0142***	0.0099	0.0172**	0.0208**	0.0156	0.0251	0.1748***	0.2548***	0.1142**	0.1063*	0.2214***	0.2711**
	(2.61)	(1.25)	(2.44)	(2.12)	(1.23)	(1.40)	(4.41)	(4.10)	(2.27)	(1.74)	(2.68)	(2.20)

Table A3.30: Full Sample Regressions: Engaged Investors and Director Experience

Columns (2-6) and (8-12) examine sub-samples and the dummies take the value of one if the firm was targeted by an engaged investor, but the directors that were appointed within the first two years had no prior board experience, or prior to the appointment had been appointed to least $k, (k = 2, 4, 6, 8)$ listed company boards.

	Return on Assets						Tobin's Q					
	(1) All events	(2) No experience	(3) 2+ boards	(4) 4+ boards	(5) 6+ boards	(6) 8+ boards	(7) All events	(8) No experience	(9) 2+ boards	(10) 4+ boards	(11) 6+ boards	(12) 8+ boards
t: Event year	-0.0102***	-0.0091	-0.0141**	-0.0124	-0.0091	-0.0039	-0.0609**	-0.0331	-0.1333***	-0.0925	-0.1226*	-0.1086
	(-2.95)	(-0.92)	(-2.31)	(-1.64)	(-0.87)	(-0.29)	(-2.16)	(-0.38)	(-2.89)	(-1.59)	(-1.65)	(-1.15)
(t + 1)	-0.0033	0.0106	-0.0133**	-0.0177**	-0.0161	-0.0062	0.0347	0.0587	-0.0163	0.0313	0.0670	0.1097
	(-0.89)	(0.94)	(-2.13)	(-2.22)	(-1.34)	(-0.43)	(1.16)	(0.66)	(-0.32)	(0.46)	(0.69)	(0.81)
(t + 2)	0.0004	0.0130	-0.0131**	-0.0130*	-0.0160	-0.0105	0.0753**	0.0255	0.0555	0.0556	0.0325	0.1467
	(0.11)	(1.12)	(-2.15)	(-1.65)	(-1.39)	(-0.70)	(2.38)	(0.26)	(1.04)	(0.83)	(0.35)	(1.20)
(t + 3)	0.0033	0.0087	-0.0031	-0.0106	-0.0215	-0.0028	0.1081***	0.0339	0.0691	0.1345*	0.1828*	0.2163*
	(0.81)	(0.73)	(-0.41)	(-1.07)	(-1.42)	(-0.13)	(3.10)	(0.30)	(1.16)	(1.71)	(1.73)	(1.66)
(t + 4)	0.0109***	0.0084	0.0046	0.0045	-0.0101	0.0129	0.1198***	0.1494	0.0237	0.0246	0.1663	0.1897
	(2.78)	(0.73)	(0.60)	(0.45)	(-0.67)	(0.68)	(2.96)	(1.16)	(0.36)	(0.28)	(1.34)	(1.34)
(t + 5)	0.0061	0.0136	0.0066	0.0057	-0.0049	0.0172	0.0779**	-0.0016	0.0182	0.0301	0.1407	0.2284
	(1.30)	(1.12)	(0.77)	(0.50)	(-0.27)	(0.65)	(2.23)	(-0.02)	(0.28)	(0.35)	(1.32)	(1.60)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.785	0.785	0.785	0.785	0.785	0.785	0.628	0.628	0.628	0.628	0.628	0.628
Firms	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582
Observations	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352

Table A3.31: Full Sample F-tests: Engaged Investors and Director Experience

This table reports differences between the event year t or $(t\text{-}1)$ and the $(t+j), (j = 1, 2, .., 5)$ coefficients from Table A3.30 with t-statistics in parentheses.

	Return on Assets						Tobin's Q					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All events	No experience	2+ boards	4+ boards	6+ boards	8+ boards	All events	No experience	2+ boards	4+ boards	6+ boards	8+ boards
(t+1) vs. (t)	0.0069**	0.0197**	0.0008	-0.0053	-0.0069	-0.0023	0.0955***	0.0919*	0.1170***	0.1238**	0.1896**	0.2182**
	(2.14)	(2.45)	(0.15)	(-0.74)	(-0.62)	(-0.21)	(3.98)	(1.69)	(3.18)	(2.47)	(2.52)	(2.04)
(t+2) vs. (t)	0.0106***	0.0221**	0.0010	-0.0005	-0.0069	-0.0066	0.1362***	0.0586	0.1888***	0.1481***	0.1551**	0.2553***
	(2.73)	(2.52)	(0.15)	(-0.07)	(-0.62)	(-0.42)	(4.58)	(0.88)	(3.95)	(2.70)	(2.11)	(2.64)
(t+3) vs. (t)	0.0135***	0.0178*	0.0110	0.0018	-0.0123	0.0011	0.1690***	0.0670	0.2024***	0.2270***	0.3055***	0.3249***
	(3.03)	(1.93)	(1.27)	(0.17)	(-0.80)	(0.06)	(4.96)	(0.75)	(3.75)	(3.39)	(3.29)	(2.97)
(t+4) vs. (t)	0.0211***	0.0175*	0.0187**	0.0169	-0.0010	0.0168	0.1806***	0.1825	0.1570**	0.1171	0.2889**	0.2982**
	(4.56)	(1.80)	(2.10)	(1.44)	(-0.06)	(0.83)	(4.22)	(1.46)	(2.47)	(1.45)	(2.51)	(2.29)
(t+5) vs. (t)	0.0163***	0.0227**	0.0207**	0.0181	0.0043	0.0211	0.1388***	0.0316	0.1515**	0.1226	0.2634**	0.3370**
	(3.09)	(2.09)	(2.22)	(1.41)	(0.23)	(0.80)	(3.66)	(0.34)	(2.36)	(1.55)	(2.55)	(2.46)
(t+1) vs. (t-1)	0.0049	0.0086	-0.0028	-0.0086	-0.0127	0.0034	0.1315***	0.0981	0.1418***	0.1629**	0.2152**	0.2570**
	(1.27)	(0.95)	(-0.41)	(-1.00)	(-0.98)	(0.23)	(4.82)	(1.48)	(3.09)	(2.56)	(2.35)	(2.23)
(t+2) vs. (t-1)	0.0086**	0.0109	-0.0026	-0.0038	-0.0126	-0.0009	0.1721***	0.0648	0.2136***	0.1871***	0.1807**	0.2940***
	(1.99)	(1.24)	(-0.34)	(-0.43)	(-1.07)	(-0.05)	(5.40)	(0.92)	(4.04)	(2.86)	(2.07)	(2.67)
(t+3) vs. (t-1)	0.0115**	0.0066	0.0073	-0.0015	-0.0181	0.0068	0.2049***	0.0732	0.2272***	0.2660***	0.3311***	0.3636***
	(2.43)	(0.70)	(0.79)	(-0.13)	(-1.15)	(0.35)	(5.75)	(0.80)	(3.84)	(3.41)	(2.93)	(2.90)
(t+4) vs. (t-1)	0.0191***	0.0063	0.0151	0.0137	-0.0067	0.0225	0.2166***	0.1887	0.1819***	0.1561*	0.3145**	0.3370**
	(3.90)	(0.63)	(1.56)	(1.12)	(-0.41)	(1.18)	(4.93)	(1.51)	(2.84)	(1.76)	(2.40)	(2.41)
(t+5) vs. (t-1)	0.0142***	0.0115	0.0170*	0.0148	-0.0014	0.0268	0.1748***	0.0378	0.1764***	0.1616*	0.2889***	0.3757***
	(2.61)	(1.00)	(1.69)	(1.13)	(-0.08)	(1.09)	(4.41)	(0.43)	(2.67)	(1.94)	(2.60)	(2.65)

Table A3.32: Full Sample Regressions: Engaged Investors and Concurrent Appointments

Columns (2-6) and (8-12) examine sub-samples and the dummies take the value of one if the firm was targeted by an engaged investor, and the directors that were appointed within the first two years had five or more concurrent listed company board appointments (*busy directors*), or were serving on at least $k, (k = 1, 2, 3, 4)$ boards concurrently.

	Return on Assets						Tobin's Q					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All events	5+ boards	1+ boards	2+ boards	3+ boards	4+ boards	All events	5+ boards	1+ boards	2+ boards	3+ boards	4+ boards
t: Event year	-0.0102***	0.0428	-0.0151**	-0.0243***	-0.0314**	-0.0341	-0.0609**	-0.0769	-0.1229***	-0.2016***	-0.1824*	-0.2956*
	(-2.95)	(1.63)	(-2.40)	(-2.78)	(-2.41)	(-1.61)	(-2.16)	(-0.29)	(-2.72)	(-3.20)	(-1.81)	(-1.80)
(t + 1)	-0.0033	0.0268	-0.0146**	-0.0194**	-0.0025	0.0014	0.0347	0.4272	0.0013	-0.0710	0.0348	0.0479
	(-0.89)	(0.79)	(-2.33)	(-2.34)	(-0.21)	(0.07)	(1.16)	(0.97)	(0.03)	(-1.01)	(0.28)	(0.23)
(t + 2)	0.0004	-0.0012	-0.0097	-0.0149*	-0.0146	-0.0032	0.0753**	0.3170	0.0563	0.0375	-0.0019	0.0508
	(0.11)	(-0.03)	(-1.57)	(-1.85)	(-1.19)	(-0.17)	(2.38)	(1.08)	(1.11)	(0.53)	(-0.02)	(0.30)
(t + 3)	0.0033	0.0205	-0.0017	-0.0092	-0.0081	0.0060	0.1081***	0.2129	0.0700	0.0069	0.0473	-0.0722
	(0.81)	(0.31)	(-0.23)	(-0.87)	(-0.49)	(0.29)	(3.10)	(0.57)	(1.28)	(0.09)	(0.44)	(-0.47)
(t + 4)	0.0109***	0.0833**	0.0102	0.0017	0.0035	0.0199	0.1198***	0.7114	0.0311	0.0341	0.1554	0.1082
	(2.78)	(2.57)	(1.41)	(0.17)	(0.24)	(1.07)	(2.96)	(1.61)	(0.50)	(0.38)	(1.16)	(0.67)
(t + 5)	0.0061	-0.0263	0.0088	0.0105	0.0097	0.0079	0.0779**	0.1667	0.0344	0.0154	0.0665	0.0693
	(1.30)	(-0.53)	(1.10)	(0.80)	(0.60)	(0.39)	(2.23)	(0.54)	(0.55)	(0.16)	(0.63)	(0.49)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.785	0.785	0.785	0.785	0.785	0.785	0.628	0.628	0.628	0.628	0.628	0.628
Firms	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582
Observations	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352

Table A3.33: Full Sample F-tests: Engaged Investors and Concurrent Appointments

This table reports differences between the event year t or $(t\text{-}1)$ and the $(t+j), (j = 1, 2, .., 5)$ coefficients from Table A3.32 with t-statistics in parentheses.

	Return on Assets						Tobin's Q					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All events	5+ boards	1+ boards	2+ boards	3+ boards	4+ boards	All events	5+ boards	1+ boards	2+ boards	3+ boards	4+ boards
(t+1) vs. (t)	0.0069**	-0.0160	0.0005	0.0049	0.0288***	0.0355**	0.0955***	0.5041**	0.1242***	0.1306***	0.2172***	0.3435***
	(2.14)	(-0.60)	(0.09)	(0.66)	(2.64)	(2.20)	(3.98)	(2.08)	(3.60)	(2.79)	(2.64)	(2.89)
(t+2) vs. (t)	0.0106***	-0.0440	0.0054	0.0094	0.0168	0.0309	0.1362***	0.3940*	0.1792***	0.2391***	0.1805**	0.3463**
	(2.73)	(-0.96)	(0.79)	(1.06)	(1.16)	(1.47)	(4.58)	(1.79)	(3.94)	(4.21)	(2.10)	(2.42)
(t+3) vs. (t)	0.0135***	-0.0224	0.0134	0.0151	0.0232	0.0400*	0.1690***	0.2898	0.1929***	0.2085***	0.2297**	0.2234*
	(3.03)	(-0.34)	(1.60)	(1.24)	(1.23)	(1.80)	(4.96)	(1.34)	(3.85)	(3.21)	(2.26)	(1.84)
(t+4) vs. (t)	0.0211***	0.0405	0.0253***	0.0260**	0.0349*	0.0539**	0.1806***	0.7883**	0.1540**	0.2357***	0.3378**	0.4037***
	(4.56)	(1.32)	(2.91)	(2.09)	(1.81)	(2.45)	(4.22)	(2.29)	(2.54)	(2.84)	(2.53)	(2.63)
(t+5) vs. (t)	0.0163***	-0.0692	0.0239***	0.0348**	0.0411*	0.0419	0.1388***	0.2437	0.1573**	0.2170**	0.2489**	0.3649**
	(3.09)	(-1.09)	(2.66)	(2.34)	(1.92)	(1.56)	(3.66)	(1.33)	(2.47)	(2.32)	(2.28)	(2.29)
(t+1) vs. (t-1)	0.0049	-0.0535	-0.0013	-0.0004	0.0089	0.0018	0.1315***	0.5787**	0.1258***	0.0993	0.1880	0.3376**
	(1.27)	(-1.29)	(-0.18)	(-0.05)	(0.60)	(0.09)	(4.82)	(2.36)	(2.65)	(1.57)	(1.63)	(2.42)
(t+2) vs. (t-1)	0.0086**	-0.0816	0.0036	0.0041	-0.0031	-0.0027	0.1721***	0.4685*	0.1808***	0.2078***	0.1512	0.3404**
	(1.99)	(-1.44)	(0.46)	(0.39)	(-0.17)	(-0.13)	(5.40)	(1.93)	(3.40)	(2.96)	(1.35)	(2.20)
(t+3) vs. (t-1)	0.0115**	-0.0599	0.0116	0.0098	0.0033	0.0064	0.2049***	0.3644	0.1945***	0.1772**	0.2005	0.2175
	(2.43)	(-0.75)	(1.27)	(0.75)	(0.14)	(0.25)	(5.75)	(1.36)	(3.36)	(2.25)	(1.63)	(1.54)
(t+4) vs. (t-1)	0.0191***	0.0029	0.0235**	0.0207	0.0150	0.0203	0.2166***	0.8628**	0.1556**	0.2045**	0.3086**	0.3978**
	(3.90)	(0.09)	(2.46)	(1.52)	(0.68)	(0.93)	(4.93)	(2.25)	(2.45)	(2.24)	(2.02)	(2.42)
(t+5) vs. (t-1)	0.0142***	-0.1067*	0.0221**	0.0295*	0.0212	0.0083	0.1748***	0.3182	0.1589**	0.1858**	0.2197*	0.3590**
	(2.61)	(-1.70)	(2.26)	(1.91)	(0.88)	(0.33)	(4.41)	(1.24)	(2.38)	(1.96)	(1.88)	(2.25)

Table A3.34: Full Sample Regressions: Engaged Investors and Executive Background

	Return on Assets						Tobin's Q					
	(1) All events	(2) No exec	(3) Management	(4) Top	(5) CFO	(6) Chair	(7) All events	(8) No exec	(9) Management	(10) Top	(11) CFO	(12) Chair
t: Event year	-0.0102***	-0.0090**	-0.0120*	-0.0124*	-0.0197*	-0.0155**	-0.0609**	-0.0061	-0.1557***	-0.1435***	-0.1645**	-0.1105**
	(-2.95)	(-2.13)	(-1.93)	(-1.74)	(-1.92)	(-1.97)	(-2.16)	(-0.18)	(-3.36)	(-2.78)	(-2.29)	(-2.00)
(t + 1)	-0.0033	-0.0012	-0.0068	-0.0085	-0.0115	-0.0123*	0.0347	0.0872**	-0.0565	-0.0530	-0.0747	-0.0355
	(-0.89)	(-0.26)	(-1.12)	(-1.24)	(-1.15)	(-1.66)	(1.16)	(2.33)	(-1.12)	(-0.94)	(-0.93)	(-0.60)
(t + 2)	0.0004	0.0013	-0.0013	-0.0035	0.0041	-0.0057	0.0753**	0.1185***	-0.0004	-0.0055	0.0196	-0.0009
	(0.11)	(0.27)	(-0.21)	(-0.50)	(0.40)	(-0.82)	(2.38)	(3.03)	(-0.01)	(-0.09)	(0.23)	(-0.01)
(t + 3)	0.0033	0.0036	0.0025	0.0051	-0.0003	-0.0039	0.1081***	0.1397***	0.0517	0.0569	0.0960	0.0522
	(0.81)	(0.76)	(0.34)	(0.59)	(-0.03)	(-0.45)	(3.10)	(3.11)	(0.89)	(0.88)	(1.03)	(0.75)
(t + 4)	0.0109***	0.0093**	0.0133*	0.0168**	0.0100	0.0113	0.1198***	0.1718***	0.0276	0.0253	0.0271	0.0236
	(2.78)	(1.97)	(1.87)	(2.09)	(0.95)	(1.30)	(2.96)	(3.39)	(0.43)	(0.36)	(0.31)	(0.29)
(t + 5)	0.0061	0.0011	0.0153*	0.0146*	0.0142	0.0116	0.0779**	0.1210***	0.0009	0.0061	0.0109	0.0062
	(1.30)	(0.18)	(1.92)	(1.72)	(1.03)	(1.29)	(2.23)	(2.74)	(0.01)	(0.09)	(0.11)	(0.09)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.785	0.785	0.785	0.785	0.785	0.785	0.628	0.628	0.628	0.628	0.628	0.628
Firms	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582
Observations	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352

Table A3.35: Full Sample F-tests: Engaged Investors and Executive Background

This table reports differences between the event year t or $(t\text{-}1)$ and the $(t+j), (j = 1, 2, .., 5)$ coefficients from Table A3.34 with t-statistics in parentheses.

	Return on Assets						Tobin's Q					
	(1) All events	(2) No exec	(3) Management	(4) Top	(5) CFO	(6) Chair	(7) All events	(8) No exec	(9) Management	(10) Top	(11) CFO	(12) Chair
(t+1) vs. (t)	0.0069**	0.0078*	0.0052	0.0038	0.0081	0.0032	0.0955***	0.0933***	0.0992***	0.0905**	0.0898*	0.0751*
	(2.14)	(1.94)	(0.98)	(0.63)	(1.02)	(0.48)	(3.98)	(2.96)	(2.89)	(2.34)	(1.93)	(1.83)
(t+2) vs. (t)	0.0106***	0.0103**	0.0107	0.0088	0.0238**	0.0098	0.1362***	0.1246***	0.1553***	0.1380***	0.1841***	0.1097**
	(2.73)	(2.14)	(1.63)	(1.18)	(2.40)	(1.27)	(4.58)	(3.35)	(3.38)	(2.88)	(2.63)	(2.15)
(t+3) vs. (t)	0.0135***	0.0126**	0.0145*	0.0174*	0.0193	0.0116	0.1690***	0.1459***	0.2075***	0.2004***	0.2605***	0.1627***
	(3.03)	(2.56)	(1.73)	(1.81)	(1.53)	(1.14)	(4.96)	(3.28)	(4.16)	(3.79)	(3.13)	(2.93)
(t+4) vs. (t)	0.0211***	0.0183***	0.0253***	0.0292***	0.0297**	0.0269**	0.1806***	0.1780***	0.1833***	0.1689***	0.1916**	0.1342*
	(4.56)	(3.32)	(3.09)	(3.19)	(2.25)	(2.56)	(4.22)	(3.31)	(3.02)	(2.63)	(2.23)	(1.81)
(t+5) vs. (t)	0.0163***	0.0101	0.0272***	0.0270***	0.0338**	0.0271**	0.1388***	0.1271***	0.1566**	0.1496**	0.1754*	0.1168*
	(3.09)	(1.52)	(3.07)	(2.82)	(2.18)	(2.54)	(3.66)	(2.65)	(2.48)	(2.15)	(1.69)	(1.84)
(t+1) vs. (t-1)	0.0049	0.0081*	-0.0011	0.0006	-0.0037	0.0004	0.1315***	0.1459***	0.1056**	0.1093**	0.0442	0.1028*
	(1.27)	(1.75)	(-0.16)	(0.09)	(-0.38)	(0.05)	(4.82)	(4.13)	(2.50)	(2.37)	(0.68)	(1.91)
(t+2) vs. (t-1)	0.0086**	0.0106**	0.0044	0.0056	0.0120	0.0070	0.1721***	0.1771***	0.1618***	0.1568***	0.1385*	0.1373**
	(1.99)	(2.09)	(0.59)	(0.68)	(1.05)	(0.82)	(5.40)	(4.40)	(3.25)	(2.96)	(1.79)	(2.23)
(t+3) vs. (t-1)	0.0115**	0.0130**	0.0082	0.0142	0.0075	0.0088	0.2049***	0.1984***	0.2139***	0.2192***	0.2149**	0.1904***
	(2.43)	(2.44)	(0.89)	(1.37)	(0.55)	(0.82)	(5.75)	(4.20)	(3.99)	(3.75)	(2.45)	(2.88)
(t+4) vs. (t-1)	0.0191***	0.0186***	0.0190**	0.0260***	0.0178	0.0241**	0.2166***	0.2305***	0.1897***	0.1876***	0.1460*	0.1619**
	(3.90)	(3.23)	(2.16)	(2.65)	(1.37)	(2.18)	(4.93)	(4.03)	(3.16)	(2.91)	(1.76)	(2.09)
(t+5) vs. (t-1)	0.0142***	0.0104	0.0210**	0.0238**	0.0220	0.0243**	0.1748***	0.1796***	0.1631**	0.1684**	0.1297	0.1445**
	(2.61)	(1.55)	(2.22)	(2.34)	(1.39)	(2.14)	(4.41)	(3.46)	(2.56)	(2.38)	(1.22)	(2.07)

Table A3.36: Full Sample Regressions: Engaged Investors and Appointment Time and Operational Background

	Return on Assets						Tobin's Q					
	(1) All events	(2) 365+Days	(3) < 365 Days	(4) CEO	(5) COO	(6) President	(7) All events	(8) 365+Days	(9) < 365 Days	(10) CEO	(11) COO	(12) President
t: Event year	-0.0102***	0.0671***	-0.0107**	-0.0155**	-0.0175*	-0.0173**	-0.0609**	0.3648***	-0.0942***	-0.1495***	-0.2425***	-0.1578***
	(-2.95)	(19.16)	(-2.32)	(-2.10)	(-1.89)	(-2.16)	(-2.16)	(12.54)	(-2.58)	(-2.79)	(-3.01)	(-2.75)
(t + 1)	-0.0033	0.1415***	-0.0046	-0.0124*	-0.0118	-0.0155*	0.0347	-1.2884***	0.0053	-0.0630	-0.2251***	-0.0466
	(-0.89)	(37.47)	(-0.95)	(-1.74)	(-1.18)	(-1.95)	(1.16)	(-41.55)	(0.13)	(-1.10)	(-2.72)	(-0.72)
(t + 2)	0.0004	-0.0052	-0.0021	-0.0081	-0.0049	-0.0068	0.0753**	-1.5550***	0.0513	-0.0241	-0.0944	-0.0124
	(0.11)	(-1.38)	(-0.42)	(-1.12)	(-0.44)	(-0.82)	(2.38)	(-50.83)	(1.22)	(-0.39)	(-0.95)	(-0.18)
(t + 3)	0.0033	0.0221***	0.0042	0.0043	0.0078	0.0021	0.1081***	-1.6338***	0.0714	0.0436	-0.0576	0.0582
	(0.81)	(5.84)	(0.75)	(0.50)	(0.52)	(0.20)	(3.10)	(-51.11)	(1.55)	(0.65)	(-0.55)	(0.77)
(t + 4)	0.0109***	0.0112***	0.0106**	0.0141*	0.0120	0.0138	0.1198***	-2.0144***	0.0784	0.0005	-0.1122	0.0165
	(2.78)	(2.96)	(1.97)	(1.69)	(0.97)	(1.41)	(2.96)	(-61.65)	(1.45)	(0.01)	(-1.21)	(0.20)
(t + 5)	0.0061	0.0000	0.0097	0.0119	0.0216*	0.0088	0.0779**	0.0000	0.0222	-0.0455	-0.0963	-0.0077
	(1.30)	(.)	(1.58)	(1.43)	(1.70)	(0.88)	(2.23)	(.)	(0.48)	(-0.68)	(-0.86)	(-0.09)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.785	0.785	0.785	0.785	0.785	0.785	0.628	0.628	0.628	0.628	0.628	0.628
Firms	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582	10,582
Observations	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352	84,352

Table A3.37: Full Sample F-tests: Engaged Investors and Operational Background

This table reports differences between the event year t or $(t\text{-}1)$ and the $(t+j), (j = 1, 2, .., 5)$ coefficients from Table A3.36 with t-statistics in parentheses.

	Return on Assets						Tobin's Q					
	(1) All events	(2) 365+Days	(3) < 365 Days	(4) CEO	(5) COO	(6) President	(7) All events	(8) 365+Days	(9) < 365 Days	(10) CEO	(11) COO	(12) President
(t+1) vs. (t)	0.0069**	0.0745***	0.0060	0.0031	0.0057	0.0018	0.0955***	-1.6532***	0.0995***	0.0865**	0.0174	0.1112***
	(2.14)	(35.87)	(1.43)	(0.47)	(0.83)	(0.25)	(3.98)	(-86.40)	(3.49)	(2.08)	(0.39)	(2.72)
(t+2) vs. (t)	0.0106***	-0.0723***	0.0086*	0.0074	0.0126	0.0105	0.1362***	-1.9198***	0.1455***	0.1254**	0.1482**	0.1454***
	(2.73)	(-28.24)	(1.69)	(0.95)	(1.29)	(1.20)	(4.58)	(-88.21)	(4.09)	(2.43)	(2.23)	(2.70)
(t+3) vs. (t)	0.0135***	-0.0450***	0.0148**	0.0199**	0.0253*	0.0194	0.1690***	-1.9986***	0.1656***	0.1932***	0.1850**	0.2160***
	(3.03)	(-16.99)	(2.44)	(1.99)	(1.65)	(1.61)	(4.96)	(-85.91)	(4.07)	(3.47)	(2.22)	(3.46)
(t+4) vs. (t)	0.0211***	-0.0559***	0.0213***	0.0296***	0.0295**	0.0311***	0.1806***	-2.3792***	0.1726***	0.1501**	0.1304*	0.1743**
	(4.56)	(-19.81)	(3.46)	(3.04)	(2.35)	(2.74)	(4.22)	(-91.26)	(3.11)	(2.21)	(1.70)	(2.23)
(t+5) vs. (t)	0.0163***	-0.0671***	0.0204***	0.0274***	0.0391***	0.0261**	0.1388***	-0.3648***	0.1164**	0.1041*	0.1463	0.1501*
	(3.09)	(-19.16)	(3.03)	(2.78)	(3.28)	(2.30)	(3.66)	(-12.54)	(2.38)	(1.74)	(1.25)	(1.82)
(t+1) vs. (t-1)	0.0049	0.0863***	0.0029	0.0004	0.0004	-0.0027	0.1315***	-0.6693***	0.0972***	0.1158**	0.0190	0.1044**
	(1.27)	(33.49)	(0.58)	(0.05)	(0.05)	(-0.31)	(4.82)	(-29.47)	(2.74)	(2.38)	(0.42)	(2.11)
(t+2) vs. (t-1)	0.0086**	-0.0604***	0.0054	0.0047	0.0073	0.0060	0.1721***	-0.9359***	0.1432***	0.1547***	0.1497**	0.1386**
	(1.99)	(-21.75)	(0.97)	(0.54)	(0.67)	(0.61)	(5.40)	(-42.37)	(3.62)	(2.73)	(2.25)	(2.32)
(t+3) vs. (t-1)	0.0115**	-0.0332***	0.0117*	0.0171	0.0201	0.0149	0.2049***	-1.0147***	0.1633***	0.2225***	0.1865**	0.2092***
	(2.43)	(-11.80)	(1.84)	(1.58)	(1.24)	(1.13)	(5.75)	(-42.32)	(3.73)	(3.64)	(2.36)	(3.10)
(t+4) vs. (t-1)	0.0191***	-0.0440***	0.0182***	0.0269**	0.0242*	0.0266**	0.2166***	-1.3953***	0.1703***	0.1794***	0.1319*	0.1675**
	(3.90)	(-15.62)	(2.81)	(2.55)	(1.86)	(2.16)	(4.93)	(-55.42)	(3.06)	(2.59)	(1.92)	(2.19)
(t+5) vs. (t-1)	0.0142***	-0.0552***	0.0173**	0.0247**	0.0338***	0.0216*	0.1748***	0.6191***	0.1141**	0.1334**	0.1478	0.1433*
	(2.61)	(-18.92)	(2.44)	(2.33)	(2.81)	(1.74)	(4.41)	(25.24)	(2.27)	(2.07)	(1.34)	(1.72)

Table A3.38: Matched Sample Regressions: Engaged Investors and Director Appointments

Columns (2-6) and (8-12) examine sub-samples and the dummies take the value of one if the firm was targeted but no directors were appointed within the first two years, or at least $k, (k = 1, 2, 3, 4)$ directors were appointed.

	Return on Assets						Tobin's Q					
	(1) All events	(2) No Directors	(3) 1+ appt.	(4) 2+ appt.	(5) 3+ appt.	(6) 4+ appt.	(7) All events	(8) No Directors	(9) 1+ appt.	(10) 2+ appt.	(11) 3+ appt.	(12) 4+ appt.
t: Event year	-0.0119***	-0.0101**	-0.0124***	-0.0167***	-0.0226***	-0.0412***	-0.0568**	0.0040	-0.0934**	-0.1580***	-0.2166***	-0.1992**
	(-3.49)	(-1.99)	(-2.73)	(-2.74)	(-2.64)	(-3.63)	(-2.02)	(0.10)	(-2.57)	(-3.53)	(-3.42)	(-2.29)
(t + 1)	-0.0055	-0.0034	-0.0064	-0.0142**	-0.0208***	-0.0403***	0.0482	0.1072**	0.0115	-0.0722	-0.1446**	-0.1583*
	(-1.51)	(-0.64)	(-1.34)	(-2.36)	(-2.58)	(-3.69)	(1.60)	(2.38)	(0.29)	(-1.51)	(-2.10)	(-1.73)
(t + 2)	-0.0013	0.0024	-0.0034	-0.0012	-0.0129	-0.0238**	0.0770**	0.1262***	0.0466	-0.0371	-0.1223*	-0.0472
	(-0.33)	(0.42)	(-0.70)	(-0.18)	(-1.61)	(-2.30)	(2.44)	(2.65)	(1.12)	(-0.74)	(-1.75)	(-0.51)
(t + 3)	0.0014	0.0004	0.0023	0.0007	-0.0087	-0.0237*	0.1144***	0.1857***	0.0681	0.0431	-0.0244	-0.0002
	(0.35)	(0.07)	(0.43)	(0.10)	(-0.95)	(-1.79)	(3.27)	(3.46)	(1.48)	(0.77)	(-0.33)	(-0.00)
(t + 4)	0.0076**	0.0072	0.0080	0.0077	0.0039	-0.0075	0.1234***	0.1951***	0.0734	0.0624	0.0231	0.0217
	(2.01)	(1.34)	(1.50)	(1.06)	(0.41)	(-0.54)	(3.05)	(3.22)	(1.36)	(0.96)	(0.27)	(0.22)
(t + 5)	0.0034	-0.0008	0.0066	0.0094	0.0045	0.0024	0.0696**	0.1540***	0.0068	-0.0508	0.0056	0.0614
	(0.73)	(-0.12)	(1.09)	(1.12)	(0.44)	(0.19)	(1.99)	(2.90)	(0.15)	(-0.86)	(0.07)	(0.52)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.747	0.747	0.747	0.747	0.747	0.747	0.618	0.618	0.618	0.618	0.618	0.618
Firms	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450
Observations	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469

Table A3.39: Matched Sample F-tests: Engaged Investors and Director Appointments

This table reports differences between the event year t or $(t\text{-}1)$ and the $(t+j), (j = 1, 2, .., 5)$ coefficients from Table A3.38 with t-statistics in parentheses.

	Return on Assets						Tobin's Q					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All events	No Directors	1+ appt.	2+ appt.	3+ appt.	4+ appt.	All events	No Directors	1+ appt.	2+ appt.	3+ appt.	4+ appt.
(t+1) vs. (t)	0.0064**	0.0067	0.0060	0.0025	0.0018	0.0010	0.1050***	0.1032**	0.1049***	0.0858***	0.0720	0.0409
	(2.01)	(1.41)	(1.43)	(0.46)	(0.23)	(0.08)	(4.38)	(2.53)	(3.64)	(2.66)	(1.49)	(0.67)
(t+2) vs. (t)	0.0107***	0.0125**	0.0090*	0.0156**	0.0097	0.0174	0.1338***	0.1222**	0.1399***	0.1209***	0.0943*	0.1519**
	(2.76)	(2.16)	(1.78)	(2.47)	(1.07)	(1.33)	(4.52)	(2.51)	(3.89)	(3.13)	(1.77)	(2.22)
(t+3) vs. (t)	0.0134***	0.0105*	0.0147**	0.0174**	0.0139	0.0175	0.1712***	0.1817***	0.1614***	0.2011***	0.1923***	0.1989**
	(3.03)	(1.71)	(2.43)	(2.23)	(1.26)	(1.07)	(5.02)	(3.23)	(3.91)	(4.21)	(3.17)	(2.48)
(t+4) vs. (t)	0.0196***	0.0173***	0.0204***	0.0244***	0.0265**	0.0338*	0.1802***	0.1912***	0.1668***	0.2204***	0.2398***	0.2208***
	(4.35)	(2.67)	(3.34)	(2.96)	(2.22)	(1.88)	(4.21)	(3.07)	(2.97)	(3.65)	(3.16)	(2.67)
(t+5) vs. (t)	0.0153***	0.0094	0.0190***	0.0261***	0.0271**	0.0436***	0.1264***	0.1500***	0.1002**	0.1072*	0.2222***	0.2606**
	(2.94)	(1.20)	(2.84)	(2.87)	(2.18)	(2.65)	(3.34)	(2.63)	(2.04)	(1.89)	(2.76)	(2.08)
(t+1) vs. (t-1)	0.0040	0.0068	0.0020	-0.0050	-0.0121	-0.0204	0.1397***	0.1940***	0.1019***	0.0624	0.0501	0.0412
	(1.07)	(1.25)	(0.41)	(-0.77)	(-1.39)	(-1.54)	(5.14)	(4.67)	(2.89)	(1.47)	(0.81)	(0.54)
(t+2) vs. (t-1)	0.0082*	0.0126**	0.0050	0.0080	-0.0042	-0.0039	0.1686***	0.2130***	0.1370***	0.0975**	0.0724	0.1523*
	(1.94)	(2.02)	(0.91)	(1.09)	(-0.44)	(-0.26)	(5.31)	(4.23)	(3.46)	(2.10)	(1.09)	(1.75)
(t+3) vs. (t-1)	0.0109**	0.0106	0.0108*	0.0099	-0.0001	-0.0038	0.2060***	0.2725***	0.1585***	0.1776***	0.1704**	0.1993**
	(2.36)	(1.58)	(1.72)	(1.17)	(-0.01)	(-0.21)	(5.78)	(4.71)	(3.61)	(3.32)	(2.43)	(2.15)
(t+4) vs. (t-1)	0.0172***	0.0173**	0.0164**	0.0169*	0.0126	0.0124	0.2150***	0.2820***	0.1638***	0.1969***	0.2179**	0.2212**
	(3.61)	(2.56)	(2.57)	(1.91)	(1.07)	(0.67)	(4.89)	(4.19)	(2.93)	(3.06)	(2.57)	(2.34)
(t+5) vs. (t-1)	0.0129**	0.0094	0.0150**	0.0186*	0.0131	0.0223	0.1612***	0.2408***	0.0973*	0.0838	0.2003**	0.2610**
	(2.40)	(1.22)	(2.16)	(1.91)	(1.05)	(1.26)	(4.07)	(3.92)	(1.94)	(1.38)	(2.43)	(2.08)

Table A3.40: Matched Sample Regressions: Engaged Investors and Director Experience

Columns (2-6) and (8-12) examine sub-samples and the dummies take the value of one if the firm was targeted by an engaged investor, but the directors that were appointed within the first two years had no prior board experience, or prior to the appointment had been appointed to least $k, (k = 2, 4, 6, 8)$ listed company boards.

	Return on Assets						Tobin's Q					
	(1) All events	(2) No experience	(3) 2+ boards	(4) 4+ boards	(5) 6+ boards	(6) 8+ boards	(7) All events	(8) No experience	(9) 2+ boards	(10) 4+ boards	(11) 6+ boards	(12) 8+ boards
t: Event year	-0.0119***	-0.0101	-0.0163***	-0.0144*	-0.0113	-0.0073	-0.0568**	-0.0251	-0.1341***	-0.0916	-0.1272*	-0.1181
	(-3.49)	(-1.03)	(-2.68)	(-1.91)	(-1.08)	(-0.56)	(-2.02)	(-0.29)	(-2.94)	(-1.58)	(-1.71)	(-1.26)
(t + 1)	-0.0055	0.0096	-0.0155**	-0.0193**	-0.0179	-0.0107	0.0482	0.0674	-0.0047	0.0438	0.0850	0.1387
	(-1.51)	(0.86)	(-2.50)	(-2.44)	(-1.51)	(-0.77)	(1.60)	(0.76)	(-0.09)	(0.64)	(0.85)	(0.99)
(t + 2)	-0.0013	0.0114	-0.0143**	-0.0139*	-0.0159	-0.0083	0.0770**	0.0314	0.0507	0.0422	0.0141	0.1216
	(-0.33)	(1.00)	(-2.37)	(-1.78)	(-1.40)	(-0.57)	(2.44)	(0.32)	(0.94)	(0.63)	(0.15)	(0.99)
(t + 3)	0.0014	0.0065	-0.0046	-0.0119	-0.0222	-0.0012	0.1144***	0.0359	0.0670	0.1292	0.1728	0.1957
	(0.35)	(0.55)	(-0.61)	(-1.22)	(-1.49)	(-0.06)	(3.27)	(0.33)	(1.12)	(1.64)	(1.64)	(1.52)
(t + 4)	0.0076**	0.0066	0.0022	0.0028	-0.0098	0.0152	0.1234***	0.1482	0.0213	0.0291	0.1873	0.2227
	(2.01)	(0.58)	(0.29)	(0.28)	(-0.66)	(0.84)	(3.05)	(1.17)	(0.32)	(0.33)	(1.52)	(1.64)
(t + 5)	0.0034	0.0112	0.0036	0.0021	-0.0073	0.0159	0.0696**	-0.0150	-0.0013	0.0090	0.1179	0.2116
	(0.73)	(0.95)	(0.43)	(0.18)	(-0.41)	(0.61)	(1.99)	(-0.16)	(-0.02)	(0.10)	(1.09)	(1.52)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.747	0.747	0.747	0.747	0.747	0.747	0.618	0.618	0.618	0.618	0.618	0.618
Firms	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450
Observations	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469

Table A3.41: Matched Sample F-tests: Engaged Investors and Director Experience

This table reports differences between the event year t or $(t\text{-}1)$ and the $(t+j), (j = 1, 2, .., 5)$ coefficients from Table A3.40 with t-statistics in parentheses.

	Return on Assets						Tobin's Q					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All events	No experience	2+ boards	4+ boards	6+ boards	8+ boards	All events	No experience	2+ boards	4+ boards	6+ boards	8+ boards
(t+1) vs. (t)	0.0064**	0.0197**	0.0008	-0.0049	-0.0066	-0.0034	0.1050***	0.0926*	0.1294***	0.1355***	0.2122***	0.2568**
	(2.01)	(2.46)	(0.15)	(-0.68)	(-0.59)	(-0.31)	(4.38)	(1.70)	(3.50)	(2.64)	(2.72)	(2.33)
(t+2) vs. (t)	0.0107***	0.0215**	0.0021	0.0005	-0.0046	-0.0010	0.1338***	0.0566	0.1848***	0.1338**	0.1413*	0.2397**
	(2.76)	(2.48)	(0.31)	(0.07)	(-0.41)	(-0.06)	(4.52)	(0.86)	(3.84)	(2.43)	(1.90)	(2.49)
(t+3) vs. (t)	0.0134***	0.0166*	0.0117	0.0025	-0.0108	0.0061	0.1712***	0.0610	0.2011***	0.2209***	0.3000***	0.3138***
	(3.03)	(1.82)	(1.36)	(0.23)	(-0.70)	(0.32)	(5.02)	(0.69)	(3.69)	(3.25)	(3.17)	(2.86)
(t+4) vs. (t)	0.0196***	0.0167*	0.0185**	0.0172	0.0015	0.0226	0.1802***	0.1734	0.1554**	0.1207	0.3145***	0.3408***
	(4.35)	(1.74)	(2.07)	(1.47)	(0.09)	(1.16)	(4.21)	(1.41)	(2.44)	(1.50)	(2.78)	(2.88)
(t+5) vs. (t)	0.0153***	0.0213**	0.0200**	0.0165	0.0040	0.0232	0.1264***	0.0102	0.1329**	0.1006	0.2451**	0.3298**
	(2.94)	(1.99)	(2.15)	(1.29)	(0.22)	(0.90)	(3.34)	(0.11)	(2.07)	(1.26)	(2.33)	(2.45)
(t+1) vs. (t-1)	0.0040	0.0083	-0.0040	-0.0093	-0.0139	-0.0005	0.1397***	0.1021	0.1524***	0.1764***	0.2354**	0.2874**
	(1.07)	(0.94)	(-0.59)	(-1.09)	(-1.09)	(-0.04)	(5.14)	(1.56)	(3.33)	(2.78)	(2.54)	(2.45)
(t+2) vs. (t-1)	0.0082*	0.0101	-0.0027	-0.0038	-0.0119	0.0019	0.1686***	0.0661	0.2078***	0.1747***	0.1645*	0.2703**
	(1.94)	(1.17)	(-0.37)	(-0.44)	(-1.03)	(0.12)	(5.31)	(0.96)	(3.92)	(2.68)	(1.89)	(2.44)
(t+3) vs. (t-1)	0.0109**	0.0052	0.0069	-0.0019	-0.0182	0.0090	0.2060***	0.0705	0.2241***	0.2617***	0.3232***	0.3444***
	(2.36)	(0.56)	(0.75)	(-0.17)	(-1.18)	(0.48)	(5.78)	(0.79)	(3.78)	(3.38)	(2.89)	(2.79)
(t+4) vs. (t-1)	0.0172***	0.0053	0.0137	0.0128	-0.0058	0.0254	0.2150***	0.1829	0.1785***	0.1616*	0.3377***	0.3714***
	(3.61)	(0.54)	(1.43)	(1.06)	(-0.36)	(1.40)	(4.89)	(1.50)	(2.79)	(1.84)	(2.62)	(2.79)
(t+5) vs. (t-1)	0.0129**	0.0100	0.0152	0.0121	-0.0033	0.0260	0.1612***	0.0197	0.1559**	0.1415*	0.2683**	0.3603***
	(2.40)	(0.88)	(1.52)	(0.94)	(-0.18)	(1.08)	(4.07)	(0.23)	(2.36)	(1.70)	(2.39)	(2.58)

Table A3.42: Matched Sample Regressions: Engaged Investors and Concurrent Appointments

Columns (2-6) and (8-12) examine sub-samples and the dummies take the value of one if the firm was targeted by an engaged investor, and the directors that were appointed within the first two years had five or more concurrent listed company board appointments (*busy directors*), or were serving on at least $k, (k = 1, 2, 3, 4)$ boards concurrently.

	Return on Assets						Tobin's Q					
	(1) All events	(2) 5+ boards	(3) 1+ boards	(4) 2+ boards	(5) 3+ boards	(6) 4+ boards	(7) All events	(8) 5+ boards	(9) 1+ boards	(10) 2+ boards	(11) 3+ boards	(12) 4+ boards
t: Event year	-0.0119***	0.0345	-0.0173***	-0.0263***	-0.0333***	-0.0377*	-0.0568**	0.0082	-0.1206***	-0.1924***	-0.1566	-0.2528
	(-3.49)	(1.36)	(-2.76)	(-3.03)	(-2.58)	(-1.82)	(-2.02)	(0.03)	(-2.68)	(-3.07)	(-1.56)	(-1.56)
(t + 1)	-0.0055	0.0239	-0.0164***	-0.0215***	-0.0037	-0.0006	0.0482	0.4896	0.0082	-0.0626	0.0536	0.0715
	(-1.51)	(0.72)	(-2.64)	(-2.61)	(-0.30)	(-0.03)	(1.60)	(1.06)	(0.17)	(-0.88)	(0.42)	(0.34)
(t + 2)	-0.0013	0.0107	-0.0106*	-0.0150*	-0.0145	-0.0011	0.0770**	0.2394	0.0490	0.0333	-0.0033	0.0390
	(-0.33)	(0.26)	(-1.74)	(-1.88)	(-1.22)	(-0.06)	(2.44)	(0.91)	(0.96)	(0.47)	(-0.03)	(0.23)
(t + 3)	0.0014	0.0196	-0.0041	-0.0112	-0.0096	0.0039	0.1144***	0.3125	0.0703	0.0075	0.0596	-0.0508
	(0.35)	(0.29)	(-0.56)	(-1.07)	(-0.59)	(0.19)	(3.27)	(0.81)	(1.28)	(0.10)	(0.55)	(-0.33)
(t + 4)	0.0076**	0.0823**	0.0064	-0.0018	0.0003	0.0176	0.1234***	0.7279	0.0230	0.0292	0.1617	0.1104
	(2.01)	(2.52)	(0.89)	(-0.19)	(0.02)	(0.98)	(3.05)	(1.57)	(0.37)	(0.33)	(1.21)	(0.67)
(t + 5)	0.0034	-0.0287	0.0049	0.0075	0.0057	0.0057	0.0696**	0.1430	0.0188	-0.0019	0.0588	0.0575
	(0.73)	(-0.62)	(0.62)	(0.57)	(0.36)	(0.30)	(1.99)	(0.47)	(0.30)	(-0.02)	(0.56)	(0.41)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.747	0.747	0.747	0.747	0.747	0.747	0.618	0.618	0.618	0.618	0.618	0.618
Firms	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450
Observations	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469

Table A3.43: Matched Sample F-tests: Engaged Investors and Concurrent Appointments

This table reports differences between the event year t or $(t\text{-}1)$ and the $(t+j), (j = 1, 2, .., 5)$ coefficients from Table A3.42 with t-statistics in parentheses.

	Return on Assets						Tobin's Q					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All events	5+ boards	1+ boards	2+ boards	3+ boards	4+ boards	All events	5+ boards	1+ boards	2+ boards	3+ boards	4+ boards
(t+1) vs. (t)	0.0064**	-0.0106	0.0009	0.0048	0.0296***	0.0371**	0.1050***	0.4814*	0.1288***	0.1298***	0.2102**	0.3243***
	(2.01)	(-0.39)	(0.15)	(0.64)	(2.70)	(2.29)	(4.38)	(1.86)	(3.68)	(2.72)	(2.48)	(2.62)
(t+2) vs. (t)	0.0107***	-0.0238	0.0066	0.0113	0.0188	0.0366*	0.1338***	0.2312	0.1696***	0.2257***	0.1533*	0.2917**
	(2.76)	(-0.58)	(0.97)	(1.30)	(1.32)	(1.84)	(4.52)	(1.43)	(3.69)	(3.95)	(1.82)	(2.07)
(t+3) vs. (t)	0.0134***	-0.0149	0.0132	0.0150	0.0238	0.0416*	0.1712***	0.3044	0.1909***	0.1999***	0.2162**	0.2019
	(3.03)	(-0.21)	(1.57)	(1.23)	(1.25)	(1.89)	(5.02)	(1.27)	(3.77)	(3.05)	(2.10)	(1.62)
(t+4) vs. (t)	0.0196***	0.0478	0.0237***	0.0245**	0.0336*	0.0553**	0.1802***	0.7197**	0.1436**	0.2216***	0.3182**	0.3632**
	(4.35)	(1.61)	(2.73)	(1.96)	(1.75)	(2.57)	(4.21)	(2.01)	(2.33)	(2.65)	(2.37)	(2.35)
(t+5) vs. (t)	0.0153***	-0.0632	0.0222**	0.0338**	0.0390*	0.0434*	0.1264***	0.1349	0.1393**	0.1905**	0.2153*	0.3103**
	(2.94)	(-1.05)	(2.48)	(2.27)	(1.83)	(1.65)	(3.34)	(0.74)	(2.18)	(2.02)	(1.96)	(1.97)
(t+1) vs. (t-1)	0.0040	-0.0571	-0.0021	-0.0015	0.0085	0.0002	0.1397***	0.6137**	0.1291***	0.1047*	0.1953*	0.3492**
	(1.07)	(-1.43)	(-0.30)	(-0.16)	(0.59)	(0.01)	(5.14)	(2.38)	(2.74)	(1.66)	(1.70)	(2.46)
(t+2) vs. (t-1)	0.0082*	-0.0703	0.0037	0.0051	-0.0023	-0.0003	0.1686***	0.3635	0.1698***	0.2006***	0.1385	0.3167**
	(1.94)	(-1.32)	(0.47)	(0.49)	(-0.13)	(-0.01)	(5.31)	(1.50)	(3.20)	(2.86)	(1.25)	(2.03)
(t+3) vs. (t-1)	0.0109**	-0.0614	0.0103	0.0088	0.0026	0.0047	0.2060***	0.4366	0.1912***	0.1747**	0.2013*	0.2269
	(2.36)	(-0.75)	(1.13)	(0.69)	(0.12)	(0.19)	(5.78)	(1.56)	(3.31)	(2.24)	(1.66)	(1.59)
(t+4) vs. (t-1)	0.0172***	0.0013	0.0207**	0.0182	0.0125	0.0184	0.2150***	0.8520**	0.1438**	0.1965**	0.3034**	0.3881**
	(3.61)	(0.04)	(2.19)	(1.35)	(0.57)	(0.87)	(4.89)	(2.14)	(2.25)	(2.16)	(2.01)	(2.35)
(t+5) vs. (t-1)	0.0129**	-0.1097*	0.0192**	0.0275*	0.0179	0.0065	0.1612***	0.2671	0.1396**	0.1654*	0.2005*	0.3352**
	(2.40)	(-1.84)	(1.99)	(1.79)	(0.75)	(0.27)	(4.07)	(1.02)	(2.10)	(1.75)	(1.73)	(2.11)

Table A3.44: Matched Sample Regressions: Engaged Investors and Executive Background

	Return on Assets						Tobin's Q					
	(1) All events	(2) No exec	(3) Management	(4) Top	(5) CFO	(6) Chair	(7) All events	(8) No exec	(9) Management	(10) Top	(11) CFO	(12) Chair
t: Event year	-0.0119***	-0.0105**	-0.0138**	-0.0143**	-0.0216**	-0.0183**	-0.0568**	0.0008	-0.1550***	-0.1427***	-0.1586**	-0.1110**
	(-3.49)	(-2.51)	(-2.26)	(-2.04)	(-2.14)	(-2.33)	(-2.02)	(0.02)	(-3.38)	(-2.79)	(-2.22)	(-2.02)
(t + 1)	-0.0055	-0.0038	-0.0081	-0.0098	-0.0115	-0.0144**	0.0482	0.1046***	-0.0504	-0.0473	-0.0732	-0.0200
	(-1.51)	(-0.83)	(-1.35)	(-1.44)	(-1.17)	(-1.97)	(1.60)	(2.76)	(-1.01)	(-0.84)	(-0.91)	(-0.34)
(t + 2)	-0.0013	-0.0011	-0.0018	-0.0038	0.0052	-0.0056	0.0770**	0.1249***	-0.0072	-0.0144	0.0104	-0.0072
	(-0.33)	(-0.22)	(-0.30)	(-0.54)	(0.52)	(-0.81)	(2.44)	(3.21)	(-0.13)	(-0.24)	(0.12)	(-0.11)
(t + 3)	0.0014	0.0018	0.0006	0.0034	-0.0018	-0.0049	0.1144***	0.1492***	0.0510	0.0585	0.0981	0.0502
	(0.35)	(0.38)	(0.08)	(0.39)	(-0.16)	(-0.56)	(3.27)	(3.32)	(0.88)	(0.91)	(1.06)	(0.72)
(t + 4)	0.0076**	0.0062	0.0099	0.0132*	0.0064	0.0093	0.1234***	0.1823***	0.0173	0.0160	0.0206	0.0250
	(2.01)	(1.37)	(1.41)	(1.66)	(0.62)	(1.08)	(3.05)	(3.62)	(0.27)	(0.22)	(0.24)	(0.31)
(t + 5)	0.0034	-0.0012	0.0118	0.0108	0.0092	0.0089	0.0696**	0.1174***	-0.0179	-0.0129	-0.0020	-0.0131
	(0.73)	(-0.20)	(1.51)	(1.30)	(0.68)	(0.99)	(1.99)	(2.65)	(-0.29)	(-0.18)	(-0.02)	(-0.18)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.747	0.747	0.747	0.747	0.747	0.747	0.618	0.618	0.618	0.618	0.618	0.618
Firms	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450
Observations	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469

Table A3.45: Matched Sample F-tests: Engaged Investors and Executive Background

This table reports differences between the event year t or $(t\text{-}1)$ and the $(t+j), (j = 1, 2, .., 5)$ coefficients from Table A3.44 with t-statistics in parentheses.

	Return on Assets						Tobin's Q					
	(1) All events	(2) No exec	(3) Management	(4) Top	(5) CFO	(6) Chair	(7) All events	(8) No exec	(9) Management	(10) Top	(11) CFO	(12) Chair
(t+1) vs. (t)	0.0064**	0.0067*	0.0058	0.0045	0.0100	0.0039	0.1050***	0.1038***	0.1046***	0.0954**	0.0854*	0.0911**
	(2.01)	(1.68)	(1.09)	(0.74)	(1.25)	(0.56)	(4.38)	(3.30)	(3.04)	(2.45)	(1.79)	(2.20)
(t+2) vs. (t)	0.0107***	0.0094**	0.0120*	0.0105	0.0268***	0.0127*	0.1338***	0.1241***	0.1478***	0.1283***	0.1690**	0.1038**
	(2.76)	(1.98)	(1.85)	(1.41)	(2.73)	(1.66)	(4.52)	(3.36)	(3.21)	(2.66)	(2.41)	(2.02)
(t+3) vs. (t)	0.0134***	0.0123**	0.0144*	0.0177*	0.0197	0.0134	0.1712***	0.1485***	0.2060***	0.2012***	0.2567***	0.1612***
	(3.03)	(2.52)	(1.72)	(1.83)	(1.56)	(1.31)	(5.02)	(3.36)	(4.11)	(3.76)	(3.06)	(2.86)
(t+4) vs. (t)	0.0196***	0.0166***	0.0237***	0.0275***	0.0280**	0.0276***	0.1802***	0.1815***	0.1723***	0.1587**	0.1791**	0.1361*
	(4.35)	(3.17)	(2.92)	(3.01)	(2.14)	(2.63)	(4.21)	(3.41)	(2.82)	(2.44)	(2.08)	(1.84)
(t+5) vs. (t)	0.0153***	0.0093	0.0256***	0.0251***	0.0307**	0.0272**	0.1264***	0.1166**	0.1371**	0.1298*	0.1565	0.0980
	(2.94)	(1.42)	(2.92)	(2.65)	(2.01)	(2.54)	(3.34)	(2.45)	(2.18)	(1.87)	(1.51)	(1.52)
(t+1) vs. (t-1)	0.0040	0.0070	-0.0015	0.0001	-0.0030	-0.0007	0.1397***	0.1539***	0.1108***	0.1135**	0.0426	0.1157**
	(1.07)	(1.53)	(-0.23)	(0.02)	(-0.31)	(-0.09)	(5.14)	(4.38)	(2.64)	(2.48)	(0.66)	(2.15)
(t+2) vs. (t-1)	0.0082*	0.0097*	0.0047	0.0061	0.0137	0.0081	0.1686***	0.1742***	0.1539***	0.1464***	0.1263	0.1285**
	(1.94)	(1.94)	(0.64)	(0.76)	(1.23)	(0.97)	(5.31)	(4.38)	(3.09)	(2.76)	(1.63)	(2.09)
(t+3) vs. (t-1)	0.0109**	0.0126**	0.0071	0.0133	0.0067	0.0088	0.2060***	0.1986***	0.2121***	0.2194***	0.2140**	0.1859***
	(2.36)	(2.42)	(0.78)	(1.29)	(0.50)	(0.83)	(5.78)	(4.24)	(3.96)	(3.75)	(2.45)	(2.83)
(t+4) vs. (t-1)	0.0172***	0.0170***	0.0165*	0.0232**	0.0149	0.0230**	0.2150***	0.2316***	0.1784***	0.1768***	0.1364*	0.1607**
	(3.61)	(3.06)	(1.89)	(2.39)	(1.16)	(2.11)	(4.89)	(4.09)	(2.96)	(2.72)	(1.66)	(2.09)
(t+5) vs. (t-1)	0.0129**	0.0096	0.0183**	0.0207**	0.0177	0.0226**	0.1612***	0.1667***	0.1432**	0.1479**	0.1138	0.1226*
	(2.40)	(1.45)	(1.97)	(2.08)	(1.14)	(2.00)	(4.07)	(3.23)	(2.27)	(2.10)	(1.08)	(1.75)

Table A3.46: Matched Sample Regressions: Engaged Investors and Appointment Time and Operational Background

	Return on Assets						Tobin's Q					
	(1) All events	(2) 365+Days	(3) < 365 Days	(4) CEO	(5) COO	(6) President	(7) All events	(8) 365+Days	(9) < 365 Days	(10) CEO	(11) COO	(12) President
t: Event year	-0.0119***	0.0606***	-0.0124***	-0.0174**	-0.0204**	-0.0189**	-0.0568**	0.3492***	-0.0937***	-0.1494***	-0.2403***	-0.1498***
	(-3.49)	(12.77)	(-2.74)	(-2.37)	(-2.24)	(-2.39)	(-2.02)	(8.81)	(-2.58)	(-2.82)	(-3.03)	(-2.63)
(t + 1)	-0.0055	0.1335***	-0.0065	-0.0139**	-0.0131	-0.0166**	0.0482	-1.2724***	0.0127	-0.0589	-0.2291***	-0.0443
	(-1.51)	(26.56)	(-1.36)	(-1.97)	(-1.32)	(-2.11)	(1.60)	(-31.19)	(0.32)	(-1.03)	(-2.79)	(-0.69)
(t + 2)	-0.0013	-0.0126**	-0.0034	-0.0084	-0.0047	-0.0077	0.0770**	-1.5415***	0.0484	-0.0347	-0.1135	-0.0231
	(-0.33)	(-2.57)	(-0.69)	(-1.19)	(-0.42)	(-0.94)	(2.44)	(-38.31)	(1.16)	(-0.57)	(-1.15)	(-0.34)
(t + 3)	0.0014	0.0132***	0.0024	0.0027	0.0072	0.0003	0.1144***	-1.6299***	0.0705	0.0436	-0.0522	0.0613
	(0.35)	(2.65)	(0.43)	(0.30)	(0.47)	(0.03)	(3.27)	(-39.12)	(1.54)	(0.65)	(-0.50)	(0.81)
(t + 4)	0.0076**	0.0041	0.0080	0.0103	0.0091	0.0101	0.1234***	-1.9998***	0.0773	-0.0102	-0.1248	0.0076
	(2.01)	(0.84)	(1.51)	(1.24)	(0.74)	(1.03)	(3.05)	(-47.41)	(1.44)	(-0.14)	(-1.35)	(0.09)
(t + 5)	0.0034	0.0000	0.0066	0.0078	0.0185	0.0047	0.0696**	0.0000	0.0073	-0.0652	-0.1199	-0.0243
	(0.73)	(.)	(1.09)	(0.96)	(1.49)	(0.47)	(1.99)	(.)	(0.16)	(-0.98)	(-1.07)	(-0.30)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.747	0.747	0.747	0.747	0.747	0.747	0.618	0.618	0.618	0.618	0.618	0.618
Firms	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450	3,450
Observations	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469	42,469

Table A3.47: Matched Sample F-tests: Engaged Investors and Operational Background

This table reports differences between the event year t or $(t\text{-}1)$ and the $(t+j), (j = 1, 2, .., 5)$ coefficients from Table A3.46 with t-statistics in parentheses.

	Return on Assets						Tobin's Q					
	(1) All events	(2) 365+Days	(3) < 365 Days	(4) CEO	(5) COO	(6) President	(7) All events	(8) 365+Days	(9) < 365 Days	(10) CEO	(11) COO	(12) President
(t+1) vs. (t)	0.0064**	0.0729***	0.0059	0.0035	0.0073	0.0024	0.1050***	-1.6216***	0.1064***	0.0905**	0.0112	0.1055**
	(2.01)	(28.08)	(1.41)	(0.53)	(1.06)	(0.34)	(4.38)	(-67.38)	(3.72)	(2.17)	(0.25)	(2.53)
(t+2) vs. (t)	0.0107***	-0.0732***	0.0091*	0.0090	0.0158*	0.0112	0.1338***	-1.8907***	0.1421***	0.1147**	0.1268*	0.1267**
	(2.76)	(-22.74)	(1.80)	(1.15)	(1.65)	(1.28)	(4.52)	(-69.35)	(3.97)	(2.21)	(1.94)	(2.34)
(t+3) vs. (t)	0.0134***	-0.0474***	0.0148**	0.0201**	0.0276*	0.0192	0.1712***	-1.9791***	0.1642***	0.1931***	0.1881**	0.2111***
	(3.03)	(-14.35)	(2.44)	(1.99)	(1.78)	(1.58)	(5.02)	(-68.67)	(4.01)	(3.43)	(2.23)	(3.34)
(t+4) vs. (t)	0.0196***	-0.0564***	0.0205***	0.0277***	0.0296**	0.0290**	0.1802***	-2.3490***	0.1709***	0.1392**	0.1155	0.1575**
	(4.35)	(-16.18)	(3.36)	(2.83)	(2.34)	(2.55)	(4.21)	(-72.96)	(3.07)	(2.02)	(1.49)	(1.99)
(t+5) vs. (t)	0.0153***	-0.0606***	0.0190***	0.0252**	0.0390***	0.0236**	0.1264***	-0.3492***	0.1009**	0.0842	0.1204	0.1256
	(2.94)	(-12.77)	(2.85)	(2.58)	(3.32)	(2.09)	(3.34)	(-8.81)	(2.06)	(1.40)	(1.02)	(1.51)
(t+1) vs. (t-1)	0.0040	0.0822***	0.0020	-0.0003	0.0001	-0.0029	0.1397***	-0.6556***	0.1026***	0.1185**	0.0178	0.1040**
	(1.07)	(25.31)	(0.40)	(-0.04)	(0.01)	(-0.34)	(5.14)	(-23.36)	(2.91)	(2.45)	(0.40)	(2.10)
(t+2) vs. (t-1)	0.0082*	-0.0639***	0.0051	0.0052	0.0086	0.0059	0.1686***	-0.9248***	0.1383***	0.1427**	0.1334**	0.1251**
	(1.94)	(-18.56)	(0.92)	(0.60)	(0.79)	(0.61)	(5.31)	(-34.09)	(3.50)	(2.52)	(2.01)	(2.09)
(t+3) vs. (t-1)	0.0109**	-0.0381***	0.0108*	0.0163	0.0204	0.0140	0.2060***	-1.0132***	0.1604***	0.2211***	0.1947**	0.2096***
	(2.36)	(-10.92)	(1.73)	(1.51)	(1.26)	(1.07)	(5.78)	(-34.39)	(3.67)	(3.62)	(2.44)	(3.09)
(t+4) vs. (t-1)	0.0172***	-0.0471***	0.0165***	0.0239**	0.0223*	0.0238*	0.2150***	-1.3830***	0.1671***	0.1672**	0.1221*	0.1559**
	(3.61)	(-13.70)	(2.58)	(2.29)	(1.73)	(1.95)	(4.89)	(-45.36)	(3.01)	(2.40)	(1.75)	(2.02)
(t+5) vs. (t-1)	0.0129**	-0.0513***	0.0151**	0.0214**	0.0318***	0.0184	0.1612***	0.6168***	0.0972*	0.1122*	0.1270	0.1240
	(2.40)	(-12.86)	(2.16)	(2.05)	(2.70)	(1.51)	(4.07)	(18.12)	(1.93)	(1.74)	(1.14)	(1.49)

Chapter 3 Additional Tables

Table A4.48: Summary statistics: firm characteristics and insider transactions

This table presents descriptive statistics for key firm characteristics for insider trading transactions and open market stock purchases and sales by insiders. The first column includes transactions by officers, directors, 10% owners and other insiders in categories that can overlap. The columns for officers, directors and owners provide descriptive statistics for trades by insiders that belong to only that insider group. Purchase and sale values are listed in millions of dollars based on the Form 4 filing. Returns are cumulative abnormal returns (CAR) and buy-and-hold abnormal returns (BHAR) listed in percentage form. They are expressed in excess of the value-weighted CRSP return, calculated daily and added (CAR) or compounded (BHAR) for the period indicated. For these returns, day ($t = 0$) marks the day the Form 4 was filed and the other numbers indicate time periods in trading days. Market timing returns are raw cumulative returns (CRET) and day ($t = 0$) marks the day of the transaction, not the filing date. All other variable definitions are provided in the Appendix 3.5.

	All trades		Executives		Directors		Blockholders	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Market cap.	10.469	1.460	12.909	2.243	7.514	1.125	5.134	0.610
Total assets	11.220	1.168	14.808	1.610	8.111	1.131	7.380	0.675
Book-to-market	0.483	0.352	0.413	0.319	0.545	0.408	0.693	0.461
Tobin's Q	2.858	1.858	2.747	1.969	3.121	1.643	2.463	1.534
Purchases								
CAR [0,+2]	1.456	0.779	1.587	0.774	1.284	0.651	1.288	0.751
CAR [0,+4]	1.797	1.002	1.891	0.963	1.557	0.831	1.636	0.991
CAR [0,+20]	2.695	1.402	3.045	1.479	2.629	1.491	1.799	0.630
BHAR [0,0]	0.474	0.202	0.513	0.211	0.404	0.158	0.423	0.190
BHAR [0,+30]	2.639	0.800	3.252	0.830	2.436	0.873	1.862	0.187
BHAR [0,+60]	3.614	0.332	4.680	0.683	3.337	0.591	2.436	-0.835
BHAR [0,+90]	4.279	-0.111	5.713	0.808	3.747	0.366	2.461	-1.689
BHAR [0,+180]	5.733	-2.203	10.347	0.651	4.299	-1.819	1.287	-6.723
Sales								
CAR [0,+2]	-0.050	-0.113	-0.047	-0.102	-0.024	-0.073	-0.250	-0.339
CAR [0,+4]	-0.053	-0.122	-0.036	-0.114	-0.048	-0.127	-0.414	-0.430
CAR [0,+20]	0.248	0.139	0.190	0.161	0.204	0.190	0.403	-0.093
BHAR [0,0]	0.036	-0.032	0.049	-0.020	0.048	-0.032	-0.043	-0.046
BHAR [0,+30]	0.325	-0.142	0.231	-0.067	0.177	-0.119	0.583	-0.707
BHAR [0,+60]	0.463	-0.669	0.346	-0.482	-0.290	-1.140	1.963	-1.254
BHAR [0,+90]	0.468	-0.833	0.372	-0.797	-0.533	-1.760	3.680	0.320
BHAR [0,+180]	0.854	-1.947	0.852	-1.478	-0.407	-2.717	7.576	0.676
Market timing								
Purchases								
CRET [-20,+20]	0.764	0.574	-1.414	-0.044	0.008	0.608	1.445	0.478
CRET [-20,0]	-2.882	-1.524	-5.491	-2.413	-3.485	-1.524	-1.324	-0.968
CRET [0,+20]	3.961	2.598	4.207	2.581	3.785	2.559	3.104	1.895
Sales								
CRET [-20,+20]	5.530	5.138	6.032	5.715	5.514	4.730	4.651	3.941
CRET [-20,0]	4.935	4.272	5.534	4.937	4.904	4.038	4.218	2.820
CRET [0,+20]	0.927	1.086	0.916	1.156	0.891	1.026	1.085	0.852
Number of observations	2,452,267		859,421		557,178		269,029	

Table A4.49: Returns to purchases by insiders: pooled analysis

This table reports pooled and panel regressions of returns on indicators of stock purchases by insiders. The sample includes insider trading transactions between January 2004 and June 2020 for executives, independent directors or blockholder directors. The dependent variable is the market-adjusted buy-and-hold return in percentage form over the time period indicated in the column heading, where $(t = 0)$ is the announcement date of the transaction. *Independent director* is an indicator variable equal to one if the purchase is by a director, who is not an officer, 10% owner, or other insider and zero otherwise. *Blockholder director* is an indicator variable equal to one if the individual is a director and a 10% owner, but not an officer or other insider at the firm and zero otherwise. The categorical variable indicating purchases by executives is subsumed in the constant term.

	Pooled regressions					Firm fixed effects				
	(1) RET(t)	(2) RET(t + 30)	(3) RET(t + 60)	(4) RET(t + 90)	(5) RET(t + 180)	(6) RET(t)	(7) RET(t + 30)	(8) RET(t + 60)	(9) RET(t + 90)	(10) RET(t + 180)
Constant	0.526***	3.232***	4.566***	5.527***	9.124***	0.548***	3.178***	4.343***	5.443***	8.677***
	(12.717)	(14.623)	(12.290)	(10.100)	(9.222)	(24.435)	(30.755)	(26.070)	(23.911)	(20.058)
Independent director	−0.118**	−0.787***	−1.154***	−1.630**	−4.619***	−0.104***	−0.317*	−0.287	−0.826**	−2.759***
	(−2.389)	(−3.007)	(−2.578)	(−2.504)	(−4.095)	(−2.929)	(−1.913)	(−1.069)	(−2.366)	(−4.157)
Blockholder director	0.355***	0.744	0.443	3.516	6.507	−0.110	−1.971***	−2.572**	−1.271	−0.540
	(2.957)	(0.735)	(0.324)	(1.620)	(1.566)	(−0.910)	(−3.372)	(−1.987)	(−0.904)	(−0.170)
Firm fixed effects	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.001	0.001	0.000	0.001	0.003	0.097	0.208	0.200	0.237	0.282
Observations	312,635	310,664	307,750	300,617	294,578	312,313	310,347	307,435	300,294	294,268

Table A4.50: Returns to purchases by insiders: control variables

This table reports panel regressions of returns on indicators of stock purchases by insiders. Variable definitions are provided in Table A4.49 and Appendix 3.5. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the individual level.

	Replication control variables					Risk factor control variables				
	(1) RET(t)	(2) RET(t + 30)	(3) RET(t + 60)	(4) RET(t + 90)	(5) RET(t + 180)	(6) RET(t)	(7) RET(t + 30)	(8) RET(t + 60)	(9) RET(t + 90)	(10) RET(t + 180)
Constant	0.875*	16.224***	25.216***	43.707***	91.867***	2.277***	36.616***	63.264***	85.182***	170.276***
	(1.841)	(6.950)	(6.268)	(6.688)	(8.267)	(10.407)	(31.141)	(29.132)	(24.348)	(20.839)
Independent director	−0.101***	−0.309*	−0.238	−0.745**	−2.541***	−0.053	0.154	0.454*	0.082	−0.954
	(−2.831)	(−1.852)	(−0.884)	(−2.146)	(−3.847)	(−1.481)	(0.972)	(1.791)	(0.251)	(−1.549)
Blockholder director	−0.097	−1.879***	−2.580**	−1.353	−0.932	−0.143	−1.770***	−2.306*	−1.252	−0.126
	(−0.803)	(−3.184)	(−2.015)	(−1.024)	(−0.308)	(−1.204)	(−3.014)	(−1.783)	(−0.927)	(−0.036)
Total assets	−0.049	−1.943***	−3.112***	−5.724***	−12.453***					
	(−0.690)	(−5.585)	(−5.190)	(−5.856)	(−7.498)					
Tobin's Q	−0.000	−0.000***	−0.000***	−0.001***	−0.002***					
	(−0.925)	(−5.161)	(−4.039)	(−5.306)	(−7.819)					
Size						−0.284***	−5.477***	−9.654***	−13.219***	−27.038***
						(−7.755)	(−28.550)	(−26.988)	(−22.697)	(−19.745)
BM						0.159***	2.802***	4.764***	4.855***	6.153***
						(3.931)	(11.765)	(13.575)	(8.669)	(7.090)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.097	0.211	0.204	0.245	0.293	0.103	0.256	0.262	0.295	0.369
Observations	310,371	308,434	305,528	298,396	292,388	299,314	297,486	294,780	288,189	282,474

Table A4.51: Returns to purchases by insiders: time effects and past returns

This table reports panel regressions of returns on indicators of stock purchases by insiders. Variable definitions are provided in Table A4.49 and Appendix 3.5. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the individual level.

	Time effects					Past returns				
	(1) RET(t)	(2) RET(t + 30)	(3) RET(t + 60)	(4) RET(t + 90)	(5) RET(t + 180)	(6) RET(t)	(7) RET(t + 30)	(8) RET(t + 60)	(9) RET(t + 90)	(10) RET(t + 180)
Constant	2.545***	35.672***	65.621***	89.484***	179.164***	2.556***	35.939***	66.526***	90.933***	181.869***
	(11.198)	(30.492)	(29.629)	(23.346)	(20.932)	(10.958)	(30.232)	(30.098)	(23.989)	(21.010)
Independent director	−0.068**	0.043	0.333	−0.051	−0.840	−0.062*	0.047	0.357	−0.082	−0.897
	(−2.109)	(0.304)	(1.429)	(−0.172)	(−1.556)	(−1.891)	(0.326)	(1.508)	(−0.271)	(−1.630)
Blockholder director	−0.096	−1.935***	−2.164**	−1.304	−0.975	−0.078	−2.002***	−2.213**	−1.624	−0.862
	(−0.950)	(−3.463)	(−2.267)	(−1.040)	(−0.330)	(−0.746)	(−3.507)	(−2.264)	(−1.264)	(−0.283)
Size	−0.327***	−5.332***	−10.121***	−14.018***	−28.724***	−0.333***	−5.393***	−10.281***	−14.237***	−29.170***
	(−8.531)	(−27.458)	(−27.569)	(−21.909)	(−19.938)	(−8.494)	(−27.309)	(−28.098)	(−22.670)	(−20.060)
BM	0.185***	2.475***	3.733***	3.743***	3.745***	0.177***	2.537***	3.911***	4.050***	3.994***
	(5.400)	(9.535)	(12.806)	(7.529)	(4.395)	(4.930)	(8.959)	(12.646)	(8.020)	(4.486)
Past Month Returns						−0.582**	−2.003**	−1.500*	1.977	0.639
						(−2.290)	(−2.150)	(−1.790)	(1.501)	(0.413)
Past Year Returns						0.025	0.148*	0.037	−0.325***	−0.291*
						(1.087)	(1.742)	(0.478)	(−2.630)	(−1.768)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.156	0.338	0.336	0.359	0.414	0.158	0.322	0.336	0.360	0.415
Observations	299,186	297,359	294,653	288,064	282,356	295,676	293,849	291,144	284,587	278,909

Table A4.52: Returns to sales by insiders: pooled analysis

This table reports pooled and panel regressions of returns on indicators of stock sales by insiders. Variable definitions are provided in Table A4.49 and Appendix 3.5. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the individual level.

	Pooled regressions					Firm fixed effects				
	(1) RET(t)	(2) RET(t + 30)	(3) RET(t + 60)	(4) RET(t + 90)	(5) RET(t + 180)	(6) RET(t)	(7) RET(t + 30)	(8) RET(t + 60)	(9) RET(t + 90)	(10) RET(t + 180)
Constant	0.041***	0.248	0.422	0.335	0.583	0.037***	0.145**	0.196**	−0.003	0.171
	(3.660)	(1.301)	(1.328)	(0.975)	(1.073)	(4.797)	(2.371)	(2.029)	(−0.025)	(1.083)
Independent director	0.006	−0.096	−0.756	−0.919	−1.055	0.018	0.237*	−0.113	−0.066	−0.234
	(0.265)	(−0.352)	(−1.607)	(−1.576)	(−1.050)	(0.975)	(1.797)	(−0.470)	(−0.231)	(−0.561)
Blockholder director	0.022	1.687***	1.531*	0.814	−2.893	0.036	2.452***	3.604***	4.440***	2.638
	(0.366)	(3.016)	(1.655)	(0.530)	(−0.786)	(0.474)	(3.912)	(3.794)	(3.238)	(1.354)
Firm fixed effects	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.000	0.001	0.001	0.000	0.000	0.040	0.116	0.153	0.178	0.232
Observations	1,844,264	1,828,501	1,816,375	1,803,801	1,758,270	1,844,064	1,828,301	1,816,166	1,803,594	1,758,077

Table A4.53: Returns to sales by insiders: control variables

This table reports panel regressions of returns on indicators of stock sales by insiders. Variable definitions are provided in Table A4.49 and Appendix 3.5. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the individual level.

	Replication control variables					Risk factor control variables				
	(1) RET(t)	(2) RET(t + 30)	(3) RET(t + 60)	(4) RET(t + 90)	(5) RET(t + 180)	(6) RET(t)	(7) RET(t + 30)	(8) RET(t + 60)	(9) RET(t + 90)	(10) RET(t + 180)
Constant	0.560***	15.312***	34.229***	51.109***	106.190***	0.702***	19.780***	44.124***	65.918***	138.248***
	(4.727)	(8.313)	(9.363)	(10.960)	(11.489)	(6.771)	(13.769)	(21.799)	(28.585)	(25.316)
Independent director	0.019	0.250*	−0.093	−0.032	−0.135	0.019	0.177	−0.258	−0.266	−0.541
	(1.011)	(1.902)	(−0.384)	(−0.114)	(−0.333)	(0.985)	(1.326)	(−1.036)	(−0.909)	(−1.283)
Blockholder director	0.036	2.426***	3.514***	4.291***	2.283	0.041	2.332***	3.294***	4.044***	1.775
	(0.472)	(3.721)	(3.791)	(3.190)	(1.341)	(0.527)	(3.566)	(3.478)	(3.051)	(1.009)
Total assets	−0.060***	−1.789***	−4.050***	−6.119***	−12.885***					
	(−4.396)	(−10.132)	(−12.255)	(−14.753)	(−15.356)					
Tobin's Q	−0.029**	−0.709***	−1.501***	−2.163***	−4.019***					
	(−2.555)	(−3.140)	(−3.152)	(−3.386)	(−3.213)					
Size						−0.083***	−2.394***	−5.353***	−8.037***	−17.048***
						(−5.841)	(−13.631)	(−20.543)	(−23.786)	(−21.259)
BM						0.017	0.840***	1.902***	2.851***	4.701***
						(0.738)	(3.443)	(4.231)	(4.838)	(4.410)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.040	0.125	0.171	0.205	0.281	0.041	0.128	0.178	0.217	0.309
Observations	1,843,437	1,827,758	1,815,664	1,803,116	1,757,620	1,810,518	1,795,491	1,783,926	1,771,763	1,727,646

Table A4.54: Returns to sales by insiders: time effects and past returns

This table reports panel regressions of returns on indicators of stock sales by insiders. Variable definitions are provided in Table A4.49 and Appendix 3.5. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the individual level.

	Time effects					Past returns				
	(1) RET(t)	(2) RET(t + 30)	(3) RET(t + 60)	(4) RET(t + 90)	(5) RET(t + 180)	(6) RET(t)	(7) RET(t + 30)	(8) RET(t + 60)	(9) RET(t + 90)	(10) RET(t + 180)
Constant	1.069***	29.872***	64.703***	96.546***	193.607***	1.045***	29.855***	64.707***	96.526***	193.587***
	(8.289)	(22.412)	(30.903)	(32.469)	(30.491)	(8.133)	(22.326)	(30.749)	(32.398)	(30.440)
Independent director	0.028	0.124	−0.225	−0.204	−0.498	0.026	0.130	−0.215	−0.188	−0.481
	(1.538)	(1.007)	(−1.073)	(−0.790)	(−1.290)	(1.436)	(1.058)	(−1.029)	(−0.732)	(−1.252)
Blockholder director	0.059	2.262***	3.047***	3.939***	1.904	0.057	2.266***	3.064***	3.949***	1.899
	(0.823)	(3.869)	(3.427)	(3.354)	(1.144)	(0.792)	(3.859)	(3.439)	(3.362)	(1.136)
Size	−0.133***	−3.758***	−8.117***	−12.146***	−24.511***	−0.131***	−3.755***	−8.116***	−12.139***	−24.503***
	(−7.655)	(−22.084)	(−28.477)	(−27.978)	(−26.459)	(−7.518)	(−22.020)	(−28.345)	(−27.910)	(−26.408)
BM	−0.001	0.429*	1.190***	1.833***	2.646***	−0.013	0.424*	1.202***	1.882***	2.681***
	(−0.062)	(1.936)	(2.749)	(3.100)	(2.606)	(−0.652)	(1.860)	(2.734)	(3.188)	(2.645)
Past Month Returns						−0.309***	0.235	1.033	2.808**	2.292
						(−3.679)	(0.360)	(1.077)	(2.513)	(1.629)
Past Year Returns						0.003	−0.064	−0.131	−0.333***	−0.302**
						(0.401)	(−1.020)	(−1.422)	(−3.097)	(−2.270)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.089	0.195	0.242	0.275	0.368	0.089	0.195	0.242	0.276	0.368
Observations	1,810,295	1,795,271	1,783,707	1,771,545	1,727,433	1,809,208	1,794,187	1,782,623	1,770,462	1,726,351

Table A4.55: Event study returns to insider trading: pooled analysis

Pooled regressions of cumulative abnormal returns on insider types for stock purchases.

	(1) CAR [-1,+1]	(2) CAR [0,+2]	(3) CAR [-2,+2]	(4) CAR [0,+4]	(5) CAR [0,+20]	(6) CAR [-1,+1]	(7) CAR [0,+2]	(8) CAR [-2,+2]	(9) CAR [0,+4]	(10) CAR [0,+20]
Constant	1.311***	1.587***	1.279***	1.891***	3.045***	3.205***	2.736***	4.152***	3.298***	6.250***
	(19.714)	(23.702)	(14.623)	(24.270)	(22.655)	(20.535)	(19.515)	(17.206)	(17.546)	(18.195)
Non-executive insider										
Blockholder only	0.191	−0.300	0.873***	−0.256	−1.246***	−0.105	−0.361***	0.284	−0.343*	−1.164***
	(1.028)	(−1.583)	(3.145)	(−0.985)	(−2.979)	(−0.711)	(−2.631)	(1.341)	(−1.740)	(−3.765)
Director only	−0.056	−0.303***	0.130	−0.334***	−0.416**	−0.165**	−0.274***	−0.076	−0.281***	−0.392**
	(−0.623)	(−3.472)	(1.109)	(−3.247)	(−2.415)	(−2.149)	(−3.628)	(−0.674)	(−3.058)	(−2.494)
Blockholder director	1.777***	0.730***	2.854***	1.027***	1.206	1.278***	0.614***	1.794***	0.871***	0.948
	(6.744)	(3.311)	(7.822)	(3.351)	(1.469)	(5.219)	(2.794)	(4.497)	(2.799)	(1.267)
Executive insider										
Also blockholder	2.799**	0.546	4.739**	0.629	−7.107*	1.835	−0.418	2.633**	−0.831	−7.570*
	(2.153)	(0.656)	(2.318)	(0.478)	(−1.818)	(1.574)	(−0.702)	(2.007)	(−0.903)	(−1.804)
Also director	0.353**	0.202	0.491**	0.275	0.331	0.188	0.156	0.196	0.172	0.228
	(2.187)	(1.411)	(2.270)	(1.643)	(1.247)	(1.548)	(1.310)	(1.175)	(1.249)	(0.948)
Also blockholder director	−0.090	−0.101	0.470	0.058	0.124	−0.126	−0.007	0.192	0.208	0.603
	(−0.152)	(−0.263)	(0.591)	(0.127)	(0.184)	(−0.389)	(−0.034)	(0.451)	(0.868)	(1.182)
Other insider	0.418**	−0.187	1.058***	−0.038	0.810	0.352*	0.143	0.504	0.425	2.373***
	(2.560)	(−1.009)	(3.324)	(−0.143)	(1.224)	(1.747)	(0.601)	(0.893)	(1.271)	(3.013)
Size						−0.297***	−0.214***	−0.414***	−0.260***	−0.597***
						(−13.136)	(−10.679)	(−13.225)	(−9.496)	(−11.275)
BM						−0.170**	−0.128**	−0.370***	−0.079	−0.052
						(−2.566)	(−2.110)	(−3.461)	(−0.998)	(−0.372)
Past Month Returns						1.902***	−1.468***	7.700**	−2.070***	−2.833***
						(2.898)	(−2.995)	(2.305)	(−3.059)	(−2.771)
Past Year Returns						−0.169***	0.054	−0.754**	0.098	0.199**
						(−2.833)	(1.183)	(−2.528)	(1.560)	(2.101)
Time fixed effects	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.003	0.001	0.004	0.002	0.003	0.116	0.100	0.147	0.110	0.141
Observations	452,026	452,147	451,116	451,966	450,563	430,434	430,312	430,307	430,138	428,854

Table A4.56: Event study returns to insider trading: panel analysis

	(1) CAR [-1,+1]	(2) CAR [0,+2]	(3) CAR [-2,+2]	(4) CAR [0,+4]	(5) CAR [0,+20]	(6) CAR [-1,+1]	(7) CAR [0,+2]	(8) CAR [-2,+2]	(9) CAR [0,+4]	(10) CAR [0,+20]
Constant	1.478***	1.739***	1.541***	2.078***	3.227***	7.525***	8.262***	9.408***	11.162***	26.404***
	(20.441)	(25.323)	(15.439)	(25.357)	(21.787)	(18.247)	(18.659)	(16.256)	(20.069)	(22.959)
Non-executive insider										
Blockholder only	−0.140	−0.594***	0.387*	−0.612***	−1.355***	−0.260**	−0.502***	0.137	−0.508***	−0.922***
	(−0.984)	(−4.785)	(1.903)	(−4.069)	(−3.806)	(−1.978)	(−4.140)	(0.735)	(−3.415)	(−2.948)
Director only	−0.149**	−0.336***	0.021	−0.347***	−0.330**	−0.125*	−0.210***	0.035	−0.195**	−0.012
	(−1.989)	(−4.597)	(0.212)	(−3.989)	(−2.228)	(−1.810)	(−3.141)	(0.380)	(−2.375)	(−0.088)
Blockholder director	0.393**	−0.580***	0.903***	−0.521**	−1.663***	0.226	−0.569***	0.492	−0.568**	−1.585***
	(2.179)	(−2.757)	(2.804)	(−2.272)	(−3.372)	(1.273)	(−2.738)	(1.627)	(−2.307)	(−3.257)
Executive insider										
Also blockholder	2.777**	1.154*	5.720***	1.011	−3.436	2.205**	0.476	3.748***	−0.167	−2.058
	(2.399)	(1.665)	(3.283)	(1.030)	(−1.079)	(2.214)	(0.718)	(3.076)	(−0.199)	(−1.178)
Also director	0.022	−0.030	0.068	−0.008	−0.051	−0.007	−0.016	0.045	−0.018	0.055
	(0.221)	(−0.333)	(0.508)	(−0.070)	(−0.251)	(−0.076)	(−0.196)	(0.389)	(−0.173)	(0.299)
Also blockholder director	0.525***	0.004	1.194***	0.157	−0.396	0.251	−0.021	0.704***	0.073	−0.698*
	(2.699)	(0.023)	(4.041)	(0.672)	(−0.861)	(1.390)	(−0.117)	(2.730)	(0.325)	(−1.870)
Other insider	0.186	−0.176	0.392	−0.183	1.203	0.084	−0.081	0.264	−0.122	0.764*
	(0.822)	(−0.935)	(1.208)	(−0.767)	(1.561)	(0.523)	(−0.578)	(1.137)	(−0.708)	(1.771)
Size						−0.968***	−1.079***	−1.247***	−1.492***	−3.816***
						(−14.369)	(−14.528)	(−13.249)	(−15.815)	(−19.608)
BM						0.379***	0.498***	0.391***	0.788***	1.714***
						(4.397)	(6.914)	(3.916)	(7.195)	(9.877)
Past Month Returns						2.110***	−1.437***	4.996***	−2.024***	−2.599**
						(2.683)	(−2.682)	(2.782)	(−2.738)	(−2.547)
Past Year Returns						−0.172**	0.075	−0.490***	0.125*	0.208**
						(−2.441)	(1.545)	(−3.062)	(1.875)	(2.259)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.156	0.144	0.221	0.158	0.203	0.241	0.226	0.317	0.249	0.325
Observations	451,720	451,841	450,802	451,660	450,260	430,107	429,985	429,980	429,811	428,527

Table A4.57: Long-term returns to insider trading: pooled analysis

Pooled regressions of buy-and-hold abnormal returns on insider types for stock purchases.

	(1) RET(t)	(2) RET(t + 30)	(3) RET(t + 60)	(4) RET(t + 90)	(5) RET(t + 180)	(6) RET(t)	(7) RET(t + 30)	(8) RET(t + 60)	(9) RET(t + 90)	(10) RET(t + 180)
Constant	0.513***	3.252***	4.680***	5.713***	10.347***	1.056***	6.146***	10.177***	12.984***	22.940***
	(14.673)	(17.532)	(16.546)	(14.683)	(15.315)	(13.379)	(13.980)	(13.455)	(11.304)	(12.273)
Non-executive insider										
Blockholder only	−0.090	−1.390***	−2.243***	−3.251***	−9.060***	−0.193**	−1.311***	−2.470***	−3.171***	−7.167***
	(−0.845)	(−2.965)	(−2.983)	(−2.617)	(−4.641)	(−2.159)	(−3.334)	(−3.259)	(−2.959)	(−4.390)
Director only	−0.109**	−0.816***	−1.343***	−1.966***	−6.048***	−0.112***	−0.652***	−1.326***	−2.206***	−5.129***
	(−2.486)	(−3.539)	(−3.581)	(−3.722)	(−6.862)	(−2.717)	(−3.125)	(−3.883)	(−4.794)	(−6.597)
Blockholder director	0.348***	0.512	0.023	2.690	3.937	0.304***	0.690	0.437	2.389	3.538
	(3.095)	(0.541)	(0.018)	(1.336)	(1.024)	(2.608)	(0.792)	(0.330)	(1.290)	(0.999)
Executive insider										
Also blockholder	−0.231	−7.520*	−7.963**	−9.588	−24.575**	−0.578	−6.905	−10.062**	−11.219*	−22.371**
	(−0.353)	(−1.881)	(−2.128)	(−1.468)	(−2.178)	(−1.063)	(−1.585)	(−2.421)	(−1.777)	(−2.326)
Also director	0.052	0.080	0.164	−0.040	−1.550	0.000	0.171	0.125	−0.245	−1.478
	(0.686)	(0.243)	(0.297)	(−0.045)	(−0.962)	(0.003)	(0.538)	(0.261)	(−0.368)	(−1.292)
Also blockholder director	−0.015	−0.122	−0.590	−0.590	−2.546	0.005	0.607	0.482	0.272	−0.196
	(−0.122)	(−0.166)	(−0.476)	(−0.328)	(−0.845)	(0.062)	(0.881)	(0.356)	(0.148)	(−0.081)
Other insider	−0.141	1.103	−2.321	−5.667***	−19.794***	0.070	3.485***	1.540	1.517	−5.014**
	(−1.271)	(1.142)	(−1.623)	(−2.653)	(−10.081)	(0.453)	(3.063)	(0.789)	(0.563)	(−2.448)
Size						−0.092***	−0.560***	−0.988***	−1.344***	−2.547***
						(−7.790)	(−8.501)	(−8.705)	(−7.702)	(−8.891)
BM						−0.010	0.175	0.428	0.147	−0.251
						(−0.287)	(0.951)	(1.550)	(0.379)	(−0.319)
Past Month Returns						−0.612***	−3.116**	−2.419**	1.989	−0.476
						(−2.741)	(−2.557)	(−2.062)	(1.265)	(−0.242)
Past Year Returns						0.042**	0.214*	0.052	−0.552***	−0.525**
						(2.012)	(1.903)	(0.470)	(−3.123)	(−2.138)
Time fixed effects	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.001	0.002	0.001	0.003	0.008	0.080	0.147	0.136	0.131	0.123
Observations	452,411	449,623	445,819	437,139	428,223	430,569	427,954	424,441	416,439	407,969

Table A4.58: Long-term returns to insider trading: panel analysis

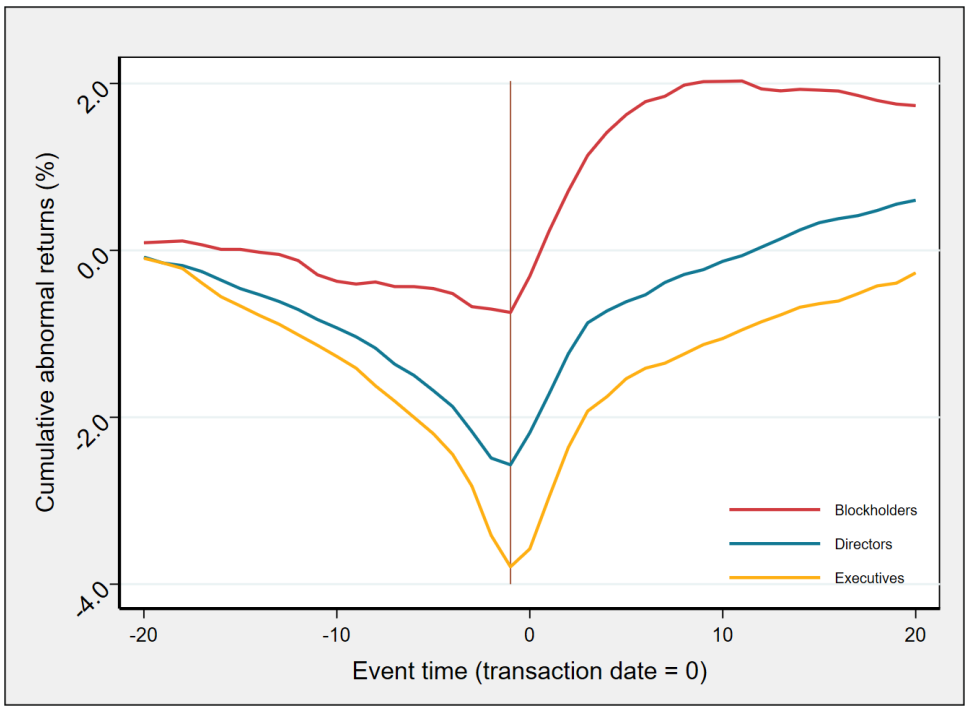
	(1) RET(t)	(2) RET(t + 30)	(3) RET(t + 60)	(4) RET(t + 90)	(5) RET(t + 180)	(6) RET(t)	(7) RET(t + 30)	(8) RET(t + 60)	(9) RET(t + 90)	(10) RET(t + 180)
Constant	0.535***	3.274***	4.437***	4.949***	6.644***	2.746***	36.535***	65.418***	91.916***	181.197***
	(13.831)	(15.187)	(12.342)	(10.236)	(8.804)	(11.647)	(28.535)	(26.058)	(22.332)	(20.730)
Non-executive insider										
Blockholder only	−0.102	−1.614***	−3.488***	−4.279***	−4.960***	−0.094	−0.862**	−1.984***	−2.188**	−2.114
	(−1.370)	(−3.068)	(−3.256)	(−3.002)	(−3.134)	(−1.339)	(−1.981)	(−2.605)	(−2.192)	(−1.496)
Director only	−0.094**	−0.415**	−0.525	−0.932**	−2.731***	−0.057	0.010	0.189	−0.141	−0.894
	(−2.321)	(−2.031)	(−1.588)	(−2.126)	(−3.628)	(−1.516)	(0.052)	(0.620)	(−0.356)	(−1.341)
Blockholder director	−0.103	−1.936***	−2.317**	−1.622	−2.279	−0.072	−1.652***	−1.576*	−1.624	−0.918
	(−0.998)	(−3.791)	(−2.087)	(−1.298)	(−0.908)	(−0.782)	(−3.233)	(−1.795)	(−1.464)	(−0.393)
Executive insider										
Also blockholder	0.282	−4.581	−8.372	−10.128	−7.728	0.032	−1.625	−3.281	−3.392	−3.781
	(0.426)	(−0.948)	(−0.886)	(−0.804)	(−0.754)	(0.059)	(−0.666)	(−0.719)	(−0.615)	(−0.413)
Also director	0.022	−0.348	−0.393	−0.579	−1.518	−0.008	−0.171	−0.278	−0.558	−1.389
	(0.416)	(−1.249)	(−0.811)	(−0.852)	(−1.436)	(−0.161)	(−0.704)	(−0.698)	(−1.013)	(−1.523)
Also blockholder director	−0.080	−0.115	−0.781	0.760	4.360*	−0.107	−0.413	−1.242	0.105	3.074
	(−0.750)	(−0.159)	(−0.524)	(0.377)	(1.783)	(−1.110)	(−0.728)	(−1.246)	(0.077)	(1.520)
Other insider	−0.068	1.840	4.148	5.904	−0.573	0.015	1.080	1.958	3.067	0.308
	(−0.663)	(1.264)	(1.097)	(1.158)	(−0.240)	(0.206)	(1.473)	(1.134)	(1.260)	(0.223)
Size						−0.364***	−5.483***	−10.039***	−14.386***	−29.188***
						(−9.183)	(−26.555)	(−24.348)	(−21.426)	(−20.247)
BM						0.171***	2.215***	3.849***	4.363***	4.743***
						(4.265)	(9.337)	(10.178)	(5.941)	(3.922)
Past Month Returns						−0.649**	−2.273**	−1.664*	1.936	−0.069
						(−2.531)	(−2.396)	(−1.742)	(1.491)	(−0.048)
Past Year Returns						0.050**	0.159*	0.047	−0.368***	−0.335**
						(2.124)	(1.827)	(0.530)	(−2.876)	(−2.066)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.106	0.221	0.227	0.268	0.294	0.180	0.345	0.377	0.414	0.422
Observations	452,102	449,320	445,518	436,832	427,927	430,238	427,628	424,119	416,113	407,659

Table A4.59: Short-term returns to insider purchases: pooled analysis

This table reports pooled regressions of returns on indicators of purchases by firm insiders over our 2004 to 2020 sample period and includes only purchase transactions by officers and directors. The dependent variable is cumulative abnormal return in percentage form in excess of the value-weighted market index over the period indicated in the column heading, where $(t = 0)$ indicates the announcement date of the transaction. Director is a categorical variable equal to one if the purchase is by a director, who is not an officer, 10% owner, or other insider. Blockholder is a categorical variable equal to one if the individual is a director and a 10% owner, but not an officer or other insider at the firm. The categorical variable indicating purchases by officers is subsumed in the constant term. Statistical significance is denoted by *, **, and *** at the 10%, 5%, and 1% levels, and t-statistics shown in parentheses are based on standard errors clustered at the insider individual level.

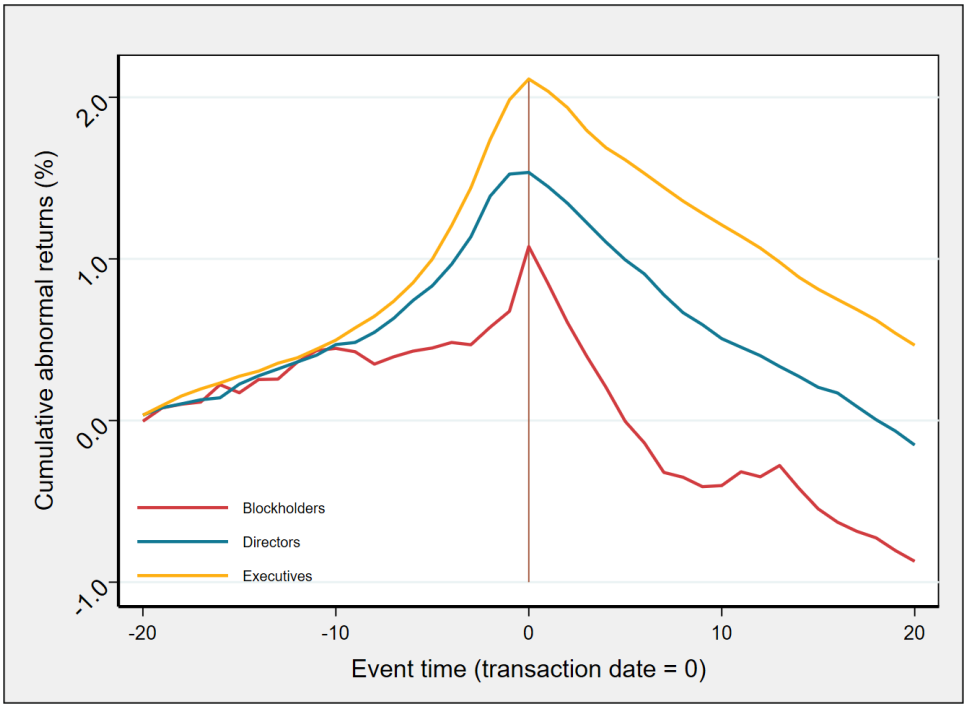
	(1) CAR [0,+2]	(2) CAR [0,+4]	(3) CAR [0,+20]	(4) CAR [0,+2]	(5) CAR [0,+4]	(6) CAR [0,+20]
Constant	1.651***	2.024***	3.240***	2.862***	3.577***	6.064***
	(19.126)	(21.306)	(23.095)	(23.040)	(23.327)	(19.662)
Independent director	−0.385***	−0.485***	−0.655***	−0.372***	−0.479***	−0.688***
	(−4.020)	(−4.459)	(−3.845)	(−5.012)	(−5.546)	(−3.794)
Blockholder director	0.692***	0.912***	1.011	0.623***	0.844***	0.931
	(3.340)	(3.193)	(1.456)	(2.778)	(2.648)	(1.240)
Size				−0.219***	−0.274***	−0.495***
				(−12.363)	(−12.262)	(−10.388)
BM				−0.028	0.081	0.218*
				(−0.442)	(1.068)	(1.794)
Past Month Returns				−1.365**	−1.938**	−3.080**
				(−2.464)	(−2.496)	(−2.437)
Past Year Returns				0.052	0.104	0.236**
				(1.038)	(1.481)	(2.076)
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.084	0.095	0.116	0.094	0.105	0.126
Observations	312,402	312,337	311,261	295,911	295,851	294,871

Fig. 4.1. Cumulative abnormal returns around insider stock purchases



This figure represents total cumulative abnormal returns for the 41-day period commencing 20 days before the transaction date of the insider's stock purchase and ending 20 days after. The returns are estimated following Fama and French (1992) three-factor model and using the value-weighted CRSP index and the SMB and HML factors. Factor loadings are estimated over the 100-day period that ends 11 days before the transaction date.
The sample includes purchases by insiders that are classified as either owners, directors, or officers only and do not belong to more than one category. Insiders that are classified under multiple categories or classified as other insiders are removed from this sample.

Fig. 4.2. Cumulative abnormal returns around insider stock sales



This figure represents total cumulative abnormal returns for the 41-day period commencing 20 days before the transaction date of the insider's stock sale and ending 20 days after. The returns are estimated following Fama and French (1992) three-factor model and using the value-weighted CRSP index and the SMB and HML factors. Factor loadings are estimated over the 100-day period that ends 11 days before the transaction date.
The sample includes sale transactions by insiders that are classified as either owners, directors, or officers only and do not belong to more than one category. Insiders that are classified under multiple categories or classified as other insiders are removed from this sample.

Appendix E. EDGAR form types

E.1. Beneficial ownership

Submission Type	Description
SC 13D	Schedule filed to report acquisition of beneficial ownership of 5% or more of a class of equity securities
SC 13D/A	
SC 13G	Schedule filed to report acquisition of beneficial ownership of 5% or more of a class of equity securities by passive investors and certain institutions
SC 13G/A	

E.2. Corporates

Companies required to file under the 1934 Securities Exchange Act identified by any of the below filings after 1993 and prior to the Schedule 13 filing date.

Submission Type	Description
10-K	Annual report pursuant to Section 13 and 15(d)
10-K/A	
10-Q	Quarterly report pursuant to Section 13 or 15(d)
10-Q/A	
8-K	Current report filing
8-K/A	
S-1	General form of registration statement for all companies including face-amount certificate companies
S-3	Registration statement for specified transactions by certain issuers
S-4	Registration of securities issued in business combination transactions
10-12G	Initial general form for registration of a class of securities pursuant to Section 12(g)
20-F	Form for initial registration of a class of securities of foreign private issuers pursuant to Section 12(b)
40-F	Registration of a class of securities of certain Canadian issuers pursuant to Section 12(b) of the 1934 Act
6-K	Current report of foreign issuer pursuant to Rules 13a-16 and 15d-16
F-1	Registration statement for securities of certain foreign private issuers
F-6	Registration statement for American Depositary Receipts representing securities of certain foreign private issuers
F-6EF	Auto effective registration statement for American Depositary Receipts representing securities of certain foreign private issuers

E.3. Investment Companies

Companies required to file under the Investment Company Act of 1940 identified by any of the below filings after 1993 and prior to the Schedule 13 filing date.

Submission Type	Description
N-8A	Initial notification of registration under Section 8(a)
N-Q	Quarterly Schedule of Portfolio Holdings of Registered Management Investment
N-Q/A	Company
N-PX	Annual Report of Proxy Voting Record of Registered Management Investment
N-PX/A	Companies

E.4. Institutional manager holding reports

Submission Type	Description
13F-HR	Initial Quarterly Form 13F Holdings Report filed by institutional managers
13F-HR/A	
13F-NT	Initial Quarterly Form 13F Notice Report filed by institutional managers
13F-NT/A	

E.5. Engagement with other shareholders

Submission Type	Description
PREN14A	Preliminary proxy statement filed by non-management
PRRN14A	Revised preliminary proxy statement filed by non-management
DEFN14A	Definitive proxy statement filed by non-management
DFRN14A	Revised definitive proxy statement filed by non-management
DFAN14A	Definitive additional proxy soliciting materials filed by non-management including Rule 14(a)(12) material
PREC14C	Preliminary information statements - contested solicitations
DEFC14C	Definitive information statement – contested solicitations
PREC14A	Preliminary proxy statement in connection with contested solicitations
DEFC14A	Definitive proxy statement in connection with contested solicitations
PX14A6G	Notice of exempt solicitation
PX14A6N	Notice of exempt solicitation for the purpose of determining whether to solicit proxies, consents, or authorizations in opposition to a proposed roll-up transaction filed pursuant to Rule 14a6(g) of the Securities Exchange Act of 1934