

# The Costs of Shareholder Activism: Evidence from a Sequential Decision Model

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**Abstract.** I estimate the implied costs of shareholder monitoring by modeling activism as a sequential decision process, in which activists choose a more hostile tactic after less confrontational approaches fail. The sequential definition provides a more accurate description of activism and motivates a structural model, which I estimate empirically using a comprehensive hand-collected dataset of 1492 hedge fund campaigns between 2000 and 2007. I find that the average activist campaign costs \$10.5 million. Half of this cost comes from the proxy stage. Initial demand negotiations are the second most expensive activist tactic, followed by board representation. I also introduce a more narrow definition of campaign success, which reduces in half the previously reported success estimates. The high costs and low success rate of activism suggest that its net gains are substantially lower than previously thought.

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# 1 Introduction

The separation of ownership and control generates significant conflicts of interest between managers and shareholders. The market for corporate control can moderate these agency conflicts. However, small shareholders may lack the proper incentives to discipline company insiders due to free-riding (Grossman and Hart (1980)). Shleifer and Vishny (1986) discuss the role of large shareholders in mitigating the free-rider problem.

Shareholder activists are blockholders who purchase minority stakes in public companies with the intention of influencing major corporate policies. The trade-off between the *private* costs and the *shared* benefits of control determines the activist's incentives to monitor effectively. In order to understand this trade-off, we need to evaluate both the benefits and the costs of activism.

Recent academic work has shown that (hedge fund) activism generates abnormal market-adjusted returns both in absolute terms and in comparison to passive investing (Brav, Jiang, Partnoy and Thomas (2009), Klein and Zur (2009), Clifford (2009)).<sup>2</sup> However, most evidence about the costs of activism is anecdotal and incomplete.

My goal in this paper is to estimate the costs of shareholder monitoring implied by the activist's decision-making behavior. I propose a novel definition of activism as a *sequence* of decision steps, in which activists choose a more hostile tactic only after less confrontational approaches fail. Under this definition, the process starts with the initial filing of activist intentions with the Securities and Exchange Commission (defined as stage 0), followed by the formal communication of specific demands to the target firm (stage 1). Depending on the outcome of private demand negotiations, the activist may decide to terminate the campaign, or request board representation (stage 2), which allows for a more direct interaction with company insiders. If the activist is denied board representation, he/she can solicit input from other shareholders (stage 3), and eventually wage a proxy fight (stage 4).

I estimate the costs of *each* stage (tactic) of the activist process - demand negotiations, board representation and proxy contest. In addition, I answer many important questions that have not received enough attention in the previous academic literature: Does activism generate positive *net* gains? How important are unobservable costs (such as the activist's time and effort) in relation to legal and disclosure expenses? Which phase of the activist process is the most costly? Are confrontational approaches more expensive, and do they have higher success rates? What is the role of governance in implementing the activist's stated objectives? The answers to these questions provide a more in-depth understanding of activism.

The sequential definition of activism can be presented theoretically as a dynamic discrete-choice model. It features a single activist and a target firm trading at a discount from fundamental value. Only a shareholder activist has the expertise and motivation to effectively monitor and eliminate the discount, which represents the activist's expected reward if the intervention is successful. The activist chooses the optimal sequence of tactics in communicating with the target based on a cost-

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<sup>2</sup>Since 2000, over 80% of all activist campaigns have been led by hedge funds rather than other institutional investors.

benefit analysis of monitoring. High-effort tactics are more likely to result in success but are also more costly. This is the main trade-off facing the activist.

The model assumes that costs vary with the choice of tactic but are independent of campaign characteristics such as expected net reward, activist ownership, etc. In this view, tactic-specific unobservable variables (such as the activist's time and effort) determine the costs of each stage. Put differently, the cost of human capital, not investment capital, is what drives the activist's decision to continue a campaign. Clifford (2009) similarly argues that "it is the unobservable costs (time and effort of the hedge fund manager...) that dominate the costs of activism." (p.335)

The theoretical model motivates the estimation technique, which combines the assumptions of random utility theory with the intuition of backward induction. The estimation not only preserves the main structural elements of the activist's economic decision-making process but also provides the identification restriction required for consistent estimates of the cost parameters. The regression equation is a random utility transformation of the activist's break-even constraint, and is straightforward to estimate by standard statistical software. An additional benefit of the estimation approach is that it significantly reduces the measurement error induced by our imperfect knowledge of the utility of each decision alternative.

The estimation procedure consists of repeated use of conditional binary logistic regressions for each phase of the activist process. At every decision step, I compare the continuation values of the activists that exit to the values of those that continue. The main explanatory variables - the current value of the activist's marked-to-market investment and the expected gross return if the campaign is successful - are motivated by the theoretical model. Knowing the activist's expected reward and observing his/her continuation decision at every stage of the process allows me to estimate a minimum cost threshold based on the activist's economic break-even profit constraint. The stage-specific costs form a sequence of thresholds implied by the observed decision-making behavior.

I estimate the model with a comprehensive hand-collected dataset of hedge fund activist campaigns between 2000 and 2007. The data consists of regulatory filings (Schedule 13D, preliminary and definitive proxy statements) from the Securities and Exchange Commission, and campaign outcome data from SharkRepellent.net.<sup>3</sup> My sample consists of 1492 activist events summarized in 7200 filings by 200 hedge funds, and represents the most complete dataset of hedge fund activist campaigns for the sample period.

Section 4 of Schedule 13D (Purpose of the Transaction) is the single most important source of information for this study. In Section 4, the activist announces his/her investment intent and preferred monitoring approach, which allows me to track the sequence of tactics an activist uses throughout a campaign. In addition, Item 4 details the activist's demands, which can be broadly classified into five main categories - corporate governance, strategic alternatives, corporate structure, opposition to a proposed transaction and general undervaluation.

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<sup>3</sup>Schedule 13D is filed by any person or group that acquires more than 5% of the voting stock of a public company with the intention of influencing its operations or management. See Appendix A for a detailed description of this filing.

The paper's main contributions are empirical. I find that the average campaign that reaches a proxy fight costs \$10.5 million. In terms of invested capital, this amount represents 12% of the mean activist ownership stake. The estimated monitoring costs are economically significant both in absolute terms and in terms of net returns. Subtracting costs significantly reduces deal returns. The mean (median) gross deal return drops from 55.69% (1.31%) to 19.4% (-2.10%). This finding suggests that the net returns from activism are significantly lower than previously thought.

As anticipated, the proxy contest stage has the highest cost equal to \$5.81 million for the average campaign. The bias-corrected bootstrap confidence interval for the proxy stage is between \$2.67 million and \$10.10 million. Demand negotiations are the second most expensive stage, with average costs of \$2.73 million and a 95% confidence interval between \$0.33 million and \$6.94 million. Unlike the proxy contest stage, most of the costs of demand negotiations are unobservable and can only be estimated through a structural approach. Board representation adds another \$1.97 million to the cost of the average campaign, with a 95% confidence interval between \$0.48 and \$4.02 million.

This paper differs from the previous literature in other important respects. Previous studies of hedge fund activism classify most activist demands as corporate-governance related. As governance changes are usually widely-supported by most shareholders, they are often fully or partially implemented. This fact alone results in a very high estimate for the success rate of activism - about 50% in most studies. I consider board representation (governance demands in general) as a crucial step of the activist process but not its ultimate goal. The data confirms that in less than 5% of all events the primary demand is corporate-governance related. Under a more narrow definition of success in terms of the execution of the activist's *primary* objective, I find success in only 19.11% of all campaigns between 2000 and 2007.

Breaking the activist process into a sequence of escalating tactics also allows me to provide a more fine-grained description of its evolution. I find that the most successful activist phase is the proxy contest, in which 67.19% of activists achieve their objectives. Proxy threats are effective in 47.89% of the cases, while 47.80% of activists achieve success through board representation. This compares to a meager 6.67% success rate of demand negotiations.

The comparison of success rates to continuation rates provides interesting insights into the activist's decision-making process. About 70% of activists quit before making formal demands to the target. This suggests that the transition to demand negotiations represents a significant impediment in the overall process. Only 20% of activists request board representation, and less than 5% enter the proxy stage even though it has the highest success rate. This implies that the costs of activist monitoring may be a significant factor in the decision whether to continue a campaign to success.

The rest of the paper proceeds as follows. **Section 2** reviews the related academic literature. **Section 3** describes the data and introduces a new definition of activism as a sequential decision process. **Section 4** develops the theoretical model and **Section 5** discusses the estimation technique. **Section 6** summarizes the descriptive evidence on the activist process. **Section 7** reviews the main empirical results. **Section 8** concludes.

## 2 Literature Review

A common approach in the theoretical literature on shareholder activism is to consider the trade-off between intervention and other factors (liquidity or risk aversion) which may reduce the investor's incentives to monitor (see Kahn and Winton (1998), Maug (1998) and Bolton and von Thadden (1998)). The theoretical model proposed in this paper differs from the previous literature in several respects. First, I model the activist process as a sequence of escalating tactics, in which activists choose a more hostile tactic after less confrontational approaches fail. Second, I focus on the principal cost-benefit trade-off facing the activist and study its effect on the choice of tactics in communicating with the target. Third, I use the theoretical model to motivate an estimation technique, which allows me to determine tactic-specific cost thresholds.

The empirical literature on shareholder activism is large but limited in focus - most papers study whether activism generates positive returns for the target or the activist. Empirical studies of institutional activism - Karpoff (2001), Romano (2001), Gillan and Starks (2007) - have shown that activism does not create meaningful benefits for shareholders. However, a few recent papers have differentiated hedge funds from other institutional investors. Kahan and Rock (2006) argue that hedge fund activists suffer from fewer conflicts of interest, face fewer regulatory restrictions, and have a better-aligned incentive structure. Becht, Franks, Mayer and Rossi (2008) conduct a clinical study of the Hermes Fund and demonstrate that its targets undergo substantial changes in corporate activities which result in large returns for the Fund and the targets.

Bradley, Brav, Goldstein and Jiang (2009) investigate activist arbitrage in closed-end funds and demonstrate that open-ending attempts have a substantial effect on reducing the size of the discount from net asset value. Brav, Jiang, Partnoy and Thomas (2009) document that hedge fund activism is associated with significant announcement and long-term returns. In their study, hedge funds achieve success in 41% of the cases resulting in high deal returns.

Klein and Zur (2009) compare the hostile activist campaigns of hedge funds to those of other activists. Both achieve large positive announcement returns and high success rates but hedge funds earn higher overall returns. Clifford (2009) compares the activist and passive holdings of the same hedge fund managers and documents a significantly larger holding-period return on activist holdings.

The above papers have focused attention to the substantial returns from activism but have largely ignored its costs. My goal in this study is to measure the costs of activist monitoring and evaluate the *net* gains from activism. In that sense, the current paper is a major departure from the previous empirical literature.

## 3 Activist Sample

### 3.1 Data Overview

I construct a comprehensive dataset of hedge funds which declare activist intentions with the SEC. Any person or group that acquires more than 5% of the voting stock of a public company with the intention of influencing its operations or management is required to file Schedule 13D. In addition, any material change in the amount or intent of ownership must be reported in an amended filing (see Appendix A for a detailed description of Schedule 13D).

My data collection procedure consists of four consecutive steps. *Step 1* starts with a list of major 13D filings reported by the Dow Jones in the period between 2000 and 2007. The list contains approximately 5000 entries but many of them were not filed by hedge funds. In *step 2*, I verify the identity of the filers. I use at least two of the following sources: FT.com's *100 Hedge Funds to Watch* (April 27, 2007), Institutional Investor's *Alpha Magazine Hedge Fund 100* (2002-2008), Infovest21's *714 Hedge Fund Managers Register* (Feb. 1, 2006), and a list of hedge fund activists provided by Robin Greenwood. I supplement the sample by searching Factiva for the following text strings: "filer name and hedge fund", "filer name and 13D", "filer name and activism". I also use Internet searches for web sites and articles about the 13D filers. This step yields approximately 200 hedge fund and manager names, which I group into 126 hedge fund families.

In *step 3*, I download from SEC.gov all 13D filings and their amendments for the final list of hedge funds. I collect the following data points - the filing and event dates; the identity and CIK number of the fund; whether the activist files a 13F report with the SEC; the identity, CIK number, CUSIP and SIC code of the target; the percentage owned by the activist and the formal list of demands; the target's reaction and the outcome of each demand.

In item 4 of Schedule 13D the activist announces any plans or proposals with respect to the company. I group activist demands in five categories - corporate governance, strategic alternatives, corporate structure, opposition to a proposed transaction and general undervaluation. Activists who choose the last category without making subsequent demands can be considered passive investors.

In *step 4*, I supplement the sample with data from two additional sources. It is common for an activist to threaten a proxy fight without actually filing proxy materials with the SEC. For example, an activist may file a preliminary statement soliciting materials from shareholders as a "scare tactic" to induce cooperation by the target. In order to differentiate between a proxy threat and a proxy fight, I collect all preliminary (PREC 14A and PREN 14A) and definitive (DFAN 14A and DEFN 14A) proxy filings from SEC.gov. I also use additional outcome data from SharkRepellent.net for the campaigns whose final outcome is not reported in their Schedule 13D. After excluding REITS (SIC 6798), bankrupt companies, blank check entities (SIC 6770), trusts (6792) and ADRs, my final sample consists of 1860 activist-target pairs (1492 of which are unique) summarized in 7200 filings by 126 hedge fund groups.

Previous empirical studies of hedge fund activism have also used mandatory regulatory filings

for data sample construction. However, none of the studies focused on the activists' choice of tactics or differentiated between the distinct effort stages of the activist process. Consequently, the dataset used here offers a more accurate and in-depth look at activism.

### 3.2 New Definition of the Activist Process

The first step in estimating the costs faced by an activist investor is understanding his/her decision-making behavior. The typical definition of shareholder activism does not consider the range of available tactics nor their order. However, activists commonly describe the process as a sequence of decision steps, in which more hostile tactics are chosen only if less confrontational approaches fail to produce results.

For example, Appaloosa Management writes to Beverly Enterprises: "Although we continue to prefer pursuing *private negotiations* with the Company, your actions have left us no choice but to nominate a slate of directors for election at your upcoming annual meeting. ... Our nominees, if elected, will, subject to their fiduciary duties, be committed to going forward with a process that would give due consideration to our proposals..." Another example comes from a letter by Seymour Holtzman of Jewelcor Management to the Chairman of Thistle Group, "My reason for *proposing a slate of Directors* is for the purpose of hiring an investment banker to seek out an attractive merger partner who would be willing to pay a significant premium for our stock. ... Moreover, if you were to assure the shareholders of your willingness to do this, I would give serious consideration to withdrawing my proposed slate of Directors. I know that you and your family are larger shareholders and I hope you will act in the best interest of all of the shareholders, so the Company will not have to waste time and money in a *proxy contest*."

The above anecdotes highlight two common patterns in the data. First, activists consider a range of tactics in their communication with a target - demand negotiations, board representation, proxy threat, and proxy fight. Second, the use of tactics forms an escalating sequence from less hostile to more confrontational. In particular, the activist process usually starts with the communication of a set of demands to the firm. Depending on the outcome of demand negotiations, the activist may decide to terminate the campaign, or request board representation, which allows for a more direct interaction with company insiders. If the activist does not obtain board representation, he/she can start soliciting input from other shareholders (preliminary proxy), and eventually wage a proxy fight (see Figure 1).

Insert Figure 1

I define the activist process as consisting of four consecutive decision steps following the initial filing of Schedule 13D with the SEC (defined as stage 0). The disclosed investment intent in a first filing is usually vague such as the target's "general market undervaluation" or "potential investment appreciation". Most 13D filers never present specific demands, which makes them more similar to passive investors. However, they prove useful in establishing the first cost threshold associated with the transition from passive investing to activist monitoring.

The formal announcement of activist demands is defined as *Stage 1* of the process. *Stage 2* starts with an official request for board representation, most often accomplished by a nomination notice, a shareholder proposal, or a publicly filed letter. *Stage 3* commences with the threat of a proxy fight, which involves the filing of a preliminary proxy statement. *Stage 4* is the actual filing of a definitive proxy statement. Defined in this way, the activist process evolves from private to more public forms of engagement. Estimating the costs of the private stages is difficult (if not impossible) without the use of structural estimation because their costs depend to a lesser degree on legal and regulatory fees.

What makes the proposed sequential definition plausible? What prevents an activist from engaging in further confrontation once a preliminary agreement is reached with the target? The activist usually signs a board representation or standstill agreement, which explicitly prohibits the use of confrontational actions for a specified period of time.<sup>4</sup>

As clear from the letters by Jewelcor Management and Appaloosa, board representation (governance in general) is rarely the ultimate objective of a campaign. In most cases, the activist requests corporate governance changes (such as CEO removal or a ‘poison pill’ termination) as an intermediate step necessary for achieving a campaign’s primary investment goal. The data confirms that in less than 5% of the events, the principal activist demand is corporate-governance related.

This ‘limited’ view of governance as a means to an end has significant implications for empirical research. First, board representation should be considered as an activist tactic, which is more involved than demand negotiations but less confrontational than a proxy fight. Second, the success rate of an activist campaign should be measured in terms of executing the *primary* demand of the activist rather than the transitional steps required to achieve it. Both implications lead to results very different from those reported in previous empirical studies (see section 6 below).

## 4 Structural Model

### 4.1 Main Assumptions

The sequential definition of activism can be presented theoretically as a dynamic discrete-choice model featuring a risk-neutral activist and a target firm. The activist assesses the target’s position relative to an industry-determined benchmark and formulates a set of demands aimed at improving the firm’s market valuation. Consequently, the activist’s intervention (if successful) is expected to result in a revaluation of the target relative to its industry peers.

The activist communicates a list of recommendations to the board of directors and learns about the board’s willingness to implement the proposed demands. Higher-effort (more confrontational) tactics have a higher probability of success but increase the overall cost of the campaign. As a result, the activist will choose higher-effort tactics only if low-effort approaches fail to produce the desired result. Thus, the principal trade-off facing the activist is balancing the costs of monitoring

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<sup>4</sup>For examples of typical agreements, see Jana Partners & Intercept - June 14, 2004; Steel Partners & Ikon - Nov 23, 2007; Riley Investment Management & Carreker - June 27, 2006 available at sec.gov



with its benefits.<sup>5</sup>

The typical activist campaign starts with an announcement of a list of demands aimed at correcting the firm's under-performance relative to its industry.

**Assumption 1** *The target's current market price  $M_{it}$  represents a discount from its fundamental value,  $V_{it}$ . The discount can only be eliminated by an activist shareholder by means of a value-enhancing demand.*

Consistent with the previous theoretical literature, the model assumes that only a large shareholder has the expertise and motivation to monitor effectively (see Shleifer and Vishny (1986), Kahn and Winton (1998)). The discount reflects the target's market position and is a sufficient statistic for the profitability of the campaign. In the empirical analysis, the discount is measured as a percentage of the difference between the firm's and the industry's valuation in terms of Tobin's  $q$ . Defined in this way, the discount equals the activist's expected reward from monitoring. This is consistent with claims made in the recent literature that hedge fund activism is a form of value investing.<sup>6</sup>

When less confrontational tactics do not lead to success, the activist can choose a more hostile approach. Intuitively, more confrontational (higher-effort) tactics allow for a more direct interaction with the firm resulting in a higher probability of success.

**Assumption 2** *Effort is discrete and corresponds to commonly observed activist tactics. Specifically, the activist's choice set is  $n \in \{0, 1, 2, 3, 4\}$ , where 0 = activist filing but no specific demands, 1 = formal demand negotiations, 2 = board representation, 3 = threatened proxy contest, 4 = proxy fight. The available alternatives are mutually exclusive, exhaustive, and finite.*

Depending on the firm's reaction, three scenarios can ensue. If the board responds positively, the activist privately monitors the firm's progress in anticipation of a market revaluation. If the target reacts negatively, the activist can choose to exit (empirically the most common outcome), or select a more direct communication approach such as board representation. Similarly, a negative outcome from board negotiations is followed by an exit, or the choice of a more hostile tactic such as a proxy fight. The activist's objective is to choose the optimal sequence of tactics (effort levels) that will lead to the elimination of the firm's discount without resulting in negative utility.

Higher-effort tactics have a higher probability of success but are also more costly.

**Assumption 3** *Let  $c_n$  denote the stage (effort) costs of activist monitoring. Costs are increasing in effort but independent of campaign-specific characteristics.*

The last assumption suggests that the time and effort of the activist rather than the opportunity cost of capital determine the costs of an intervention.

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<sup>5</sup>The assumption that an activist intervention occurs only when its gain exceeds its cost is common in the blockholder literature (see Bolton and von Thadden (1998), Kahn and Winton (1998) and Maug (1998)).

<sup>6</sup>For example, Brav, Jiang, Partnoy and Thomas (2009) show that activist targets have a statistically significant lower book-to-market and  $q$  ratios than matched firms, and that having lower valuation ratios increases the probability of becoming a target.

## 4.2 Dynamic Effort Choice

The model assumes that each stage of the activist process has a fixed duration equal to the time interval between two annual meetings (see the empirical section for supporting evidence). For example, it is conjectured that the activist requests board representation with an implicit horizon until the next annual meeting. At that time, the activist chooses whether to exit or escalate to the next stage depending on the outcome of board negotiations.

The activist's decision process can be described by a discrete-choice model, whose solution is obtained by backward induction. To preserve consistency with the empirical section, which treats the proxy threat and proxy fight as one combined stage, I assume that activism consists of three distinct phases - demand negotiations, board representation and proxy contest. At each stage, the activist decides whether to continue based on a cost-benefit analysis of monitoring, in which he/she compares the expected return from continuation to the expected cost of activist involvement. The *net* benefit of continuation is then compared to the firm's current market value.

Consider the activist's decision conditional on failure at stage 2 (board representation). The activist compares the utility from the two available alternatives - continue to a proxy fight or sell at the current market price

$$\begin{aligned} U_{i3}(\textit{continue}) &= -c_3 + p_{i3}\pi_{i3}V_{i3} + (1 - p_{i3})\pi_{i3}M_{i3} \\ U_{i3}(\textit{exit}) &= \pi_{i2}M_{i2} \end{aligned} \tag{1}$$

- $c_3$  = cost of the last campaign stage
- $p_{i3}$  = probability of success in a proxy contest
- $\pi_{i3}$  = activist ownership
- $V_{i3}$  = expected firm value if successful
- $M_i$  = current firm value

The model assumes that the costs of each stage are common across activists and driven by the time and effort associated with a particular tactic.<sup>7</sup> In addition, the rest of this section assumes that the activist's best estimate of tomorrow's firm value is today's value, which explicitly precludes market timing. Also, the activist's current ownership is considered representative of the next period's ownership implying that  $\pi_i$  is not chosen strategically. Consequently, I drop the time (stage) subscripts for  $V_i$ ,  $M_i$  and  $\pi_i$ .

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<sup>7</sup>I am currently performing additional empirical tests, in which stage costs also depend on hedge fund attributes (such as the fund's style and size).

The activist continues the campaign if

$$\begin{aligned}\tilde{U}_{i3} &= -c_3 + p_{i3}\pi_i V_i + (1 - p_{i3})\pi_i M_i - \pi_i M_i \geq 0 \\ \tilde{U}_{i3} &= \left(-\frac{c_3}{p_{i3}}\right) \left(\frac{1}{\pi_i M_i}\right) + \left(\frac{V_i}{M_i}\right) - 1 \geq 0\end{aligned}\quad (2)$$

Here,  $\left(\frac{1}{\pi_i M_i}\right)$  is the inverse of the activist's marked-to-market investment and  $\left(\frac{V_i}{M_i}\right)$  is the expected gross return if the campaign is successful. The above transformation simplifies the exposition of the theoretical model and easily translates into an estimating equation (described below).

Next, consider the activist's decision conditional on failure at stage 1 (demand negotiations). The available choices are selling at the current market price or requesting board representation. The latter can result in selling upon failure of stage 2 or continuation to a proxy contest.

$$\begin{aligned}U_{i2}(\textit{continue}) &= -c_2 + p_{i2}\pi_i V_i + (1 - p_{i2}) \max\{\pi_i M_i, -c_3 + p_{i3}\pi_i V_i + (1 - p_{i3})\pi_i M_i\} \\ U_{i2}(\textit{exit}) &= \pi_i M_i\end{aligned}\quad (3)$$

The activist's utility from continuation to a proxy contest can be written as

$$\tilde{U}_{i2}^C = -c_2 - (1 - p_{i2})c_3 + \pi_i (p_{i2} + p_{i3} - p_{i2}p_{i3}) (V_i - M_i) \geq 0\quad (4)$$

The expression in equation 4 needs to be compared to the activist's utility from selling upon failure of the board representation stage

$$\tilde{U}_{i2}^S = -c_2 + \pi_i p_{i2} (V_i - M_i) \geq 0\quad (5)$$

Combining equations 4 and 5, the activist requests board representation if

$$\tilde{U}_{i2} = \max\left\{\frac{-c_2 - (1 - p_{i2})c_3}{p_{i2} + p_{i3} - p_{i2}p_{i3}}, \frac{-c_2}{p_{i2}}\right\} \left(\frac{1}{\pi_i M_i}\right) + \left(\frac{V_i}{M_i}\right) - 1 \geq 0\quad (6)$$

Following a similar line of reasoning, the activist initiates demand negotiations if the utility from continuation  $\tilde{U}_{i1}$  is positive

$$\begin{aligned}\tilde{U}_{i1} &= \chi \left(\frac{1}{\pi_i M_i}\right) + \left(\frac{V_i}{M_i}\right) - 1 \geq 0 \\ \chi &= \max\left\{\frac{-c_1 - (1 - p_{i1})c_2 - (1 - p_{i1})(1 - p_{i2})c_3}{p_{i1} + p_{i2} + p_{i3} - p_{i1}p_{i2} - p_{i1}p_{i3} - p_{i2}p_{i3} + p_{i1}p_{i2}p_{i3}}, \frac{-c_1 - (1 - p_{i1})c_2}{p_{i1} + p_{i2} - p_{i1}p_{i2}}, \frac{-c_1}{p_{i1}}\right\}\end{aligned}\quad (7)$$

In addition to its simplicity, the above model offers several advantages. First, it provides a natural way to estimate the parameters of interest using a binary outcome model for each stage of the activist process. Second, it supplies the necessary identification restriction to determine the scale of the activist's utility.

## 5 Econometric Methodology

### 5.1 Random Utility Model

The activist's optimization problem is an example of a dynamic discrete-choice model, whose solution can be obtained under the general assumptions of random utility theory. Under this formulation, a decision maker faces a choice among several alternatives. The agent knows the utility of each alternative (denoted by  $U_{in}^*$ ) and selects the one with the greatest benefit. The econometrician knows only some characteristics of the available choices which determine the agent's "observable" (representative) utility,  $U_{in}$ . Generally,  $U_{in}^*$  differs from  $U_{in}$  by an error term (also called a random utility component)

$$U_{in}^* = U_{in} + \varepsilon_{in}$$

In the present context, the error captures unobservable factors that vary among activists with the same representative utility such as preference for (or experience with) a specific tactic.

Consider an exogenous sample of activists whose decision process is independent. The probability of activist  $i$  choosing alternative  $n$  is

$$\begin{aligned} \Pr \{U_{in}^* > U_{in'}^*\} &= \Pr \{U_{in} + \varepsilon_{in} > U_{in'} + \varepsilon_{in'}\} = \Pr \{\varepsilon_{in'} - \varepsilon_{in} < U_{in} - U_{in'}\} \\ &= \int_{\varepsilon} I \{\varepsilon_{in'} < \varepsilon_{in} + U_{in} - U_{in'}\} f(\varepsilon) d\varepsilon \end{aligned} \quad (8)$$

where  $I$  is an indicator function equal to one when the expression in the parenthesis is correct. The derivation of the choice probabilities requires solving a multidimensional integral, which takes a closed form only for some specifications of the error structure.<sup>8</sup> For example, assuming that the error terms are iid type I extreme value (Gumbel) results in the logit formulation.

In the logit model, the cumulative distribution of the random utility component  $\varepsilon_{in'}$  (given  $\varepsilon_{in}$ ) can be expressed as

$$F(\varepsilon_{in'}) = \exp(-\exp(-\varepsilon_{in'})) = \exp(-\exp(-(\varepsilon_{in} + U_{in} - U_{in'})))$$

Assuming that the choice of each activist is independent of the decisions of other activists, the above cumulative distribution for the whole sample is just the product of the individual cumulative distributions

$$\begin{aligned} \Pr \{U_{in}^* > U_{in'}^* | \varepsilon_{in}\}_{i \neq j} &= \prod_{i \neq j} \exp(-\exp(-(\varepsilon_{in} + U_{in} - U_{in'}))) \\ \Pr \{U_{in}^* > U_{in'}^*\}_{i \neq j} &= \int \left( \prod_{i \neq j} \exp(-\exp(-(\varepsilon_{in} + U_{in} - U_{in'}))) \right) \exp(-\varepsilon_{in}) \exp(-\exp(-\varepsilon_{in})) d\varepsilon_{in} \end{aligned} \quad (9)$$

Using the fact that the difference between two extreme values is distributed logistic, the above

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<sup>8</sup>See Eckstein and Wolpin (1989) and Train (2003) for surveys of the literature on discrete-choice models.

expression takes the following closed form for a binary choice

$$\Pr \{U_{in}^* > U_{in'}^*\} = p_{in} = \frac{\exp(U_{in})}{1 + \exp(U_{in})} \quad (10)$$

Under a linear probability specification, equation 10 can be rewritten as

$$\begin{aligned} p_{in} &= \frac{\exp(\mathbf{x}'\beta)}{1 + \exp(\mathbf{x}'\beta)} \\ \frac{p_{in}}{1 - p_{in}} &= \exp(\mathbf{x}'\beta) \\ \log\left(\frac{p_{in}}{1 - p_{in}}\right) &= \mathbf{x}'\beta \end{aligned} \quad (11)$$

The theoretical model described in the previous section can be easily translated into a regression equation and estimated by a binary logit model for each stage, in which  $p_{in}$  is the probability of campaign continuation and  $(1 - p_{in})$  is the complementary probability of exit.

## 5.2 Statistical Backward Induction

I estimate the costs of the three stages of activism using statistical backward induction, in which the assumptions of random utility theory are combined with the intuition of backward induction. In particular, first I estimate a binary logit model for the last decision stage (board representation), where the activist chooses whether to continue to a proxy contest or exit.<sup>9</sup> Based on the activist's break-even profit constraint (see equation 2), I derive the minimum cost threshold associated with continuation to the proxy phase. Then, I use the estimated cost of the last stage as an input in the calculation of the cost of board representation, which is itself a result of a binary logit model based on the sample of activists who reach that stage (see equation 6), and so on.

The main advantage of statistical backward induction is its close relationship to the structural model described in the previous section. In fact, the regression equation is a random utility transformation of the activist's break-even constraint presented in equations 1 to 7. In addition, the economic model provides the identification restriction required for consistent estimates of the cost parameters (see the next section).

The transformation also reduces the measurement error induced by our imperfect knowledge of the activist's utility from each decision alternative. Specifically, the regression equation does not include a multiplicative term of the probability of campaign success,  $p_{in}$ , and the potential reward from activism,  $V_{in}$ , which mitigates the consequences of the measurement error in the individual variables. In addition, scaling  $V_{in}$  by the market price provides a more stable measure of return.

The one disadvantage of statistical backward induction is the bias it induces in the standard errors of the earlier stages (demand negotiations and board representation) due to the recursive use of the cost estimates for the proxy stage. However, this bias can be corrected by non-parametric

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<sup>9</sup>I exclude successful campaigns from the estimation sample.

bootstrapping, in which repeated sampling from the activist dataset can be used to estimate the error terms.

The activist's decision upon failure at the penultimate stage can be rewritten under the assumptions of random utility theory as follows

$$U_{i3}^* = -\frac{c_3}{p_{i3}} \left( \frac{1}{\pi_i M_i} \right) + \frac{V_i}{M_i} + \varepsilon_{i3}^* \geq 0 \quad (12)$$

The first two terms determine the activist's representative utility and the error term  $\varepsilon_{i3}^*$  is the (activist-specific) random utility component associated with the proxy phase.

A similar transformation can be performed for the earlier stages of the process. The regression equation for the decision at the end of failed demand negotiations becomes

$$U_{i2}^* = \max \left\{ \frac{-c_2 - (1 - p_{i2})c_3}{p_{i2} + p_{i3} - p_{i2}p_{i3}}, \frac{-c_2}{p_{i2}} \right\} \left( \frac{1}{\pi_i M_i} \right) + \frac{V_i}{M_i} + \varepsilon_{i2}^* \geq 0 \quad (13)$$

The estimating equation for the decision to initiate demand negotiations can be written in a similar way by transforming equation 7.

Notice that the regression for each stage contains the same two theoretically-motivated explanatory variables - the inverse of the activist's marked-to-market investment,  $(\pi_{in} M_{in})^{-1}$ , and the expected gross return in a successful campaign,  $(V_{in}/M_{in})$ , where  $n$  is the current stage. As a result, the activist's decision process can be translated into the following logistic regression

$$\log \left( \frac{\textit{continue}}{\textit{exit}} \right) = \hat{\alpha} + \hat{\beta}_1 \left( \frac{1}{\pi_{in} M_{in}} \right) + \hat{\beta}_2 \left( \frac{V_{in}}{M_{in}} \right) \quad (14)$$

The described estimation procedure is a combination of conditional binary logistic regressions for every phase of the activist process and statistical backward induction. The coefficient  $\hat{\beta}_1$  in each stage-specific estimation determines (up to scale) the costs of continuation to that stage. The identification of the absolute value of the costs requires an additional restriction to determine the scale of each logistic regression (as described in the next section).

The chosen estimation procedure offers significant advantages to alternative discrete-choice models (such as the multinomial or ordered logit). First, it allows for an evaluation of the differential impact of the covariates on each transition by estimating a different vector of coefficients for each stage. Second, it does not impose the unreasonable assumption that the activist chooses the maximum effort level at the start of the campaign (implicit in the above alternatives). Third, statistical backward induction preserves the main structural elements of the activist's economic decision-making process. In addition, the transformed equation is simple to estimate by standard statistical software and offers an alternative to more complex simulation techniques, which require explicit distributional assumptions for the parameters of interest.

A key challenge in studying the activist's behavior is the calculation of the expected return from activism (denoted by  $V_{in}/M_{in}$  in the theoretical model). Exogenous return measures are inappropriate because they already include the market's expectation of the intervention outcome.

Instead, I compute the expected benefits from activism by estimating a *maximum potential firm value*, which equals the target’s valuation if the proposed demands are successfully implemented.<sup>10</sup>

A natural way to estimate a target’s maximum value is to compare it to a better performing peer, and take the difference in the chosen measure as the potential reward from activism. Both firms need to be matched by fundamentals, which may include the target’s industry as well as other firm-level characteristics. I have chosen to use the firm’s industry (three-digit SIC code) as the only determinant of the discount for two reasons. First, practitioners rarely use anything other than an industry benchmark in estimating relative performance. Second, choosing firm-level characteristics that remain unaffected by the activist’s corrective actions is difficult (if not impossible) due to the wide variety of activist demands.

I calculate the activist’s expected reward as a proportion of the gap between the target’s Tobin’s  $q$  and the highest (winsorized) industry  $q$ . The percentage is calibrated to the actual percent revaluation of the targets involved in successful campaigns during the sample period, which is estimated from the data at 30% ( $x$  in the formula below). Specifically, each quarter, I compute the difference between the target’s and the industry’s  $q$  ratios. In order to limit the impact of outliers, I fix this difference to the minimum of the gap at the start of the campaign or at the beginning of each stage. As a last step, I convert the expected reward in terms of potential revaluation of the target if the activist’s demands are successfully executed.

$$\begin{aligned}
 V_{in} &= \pi_{in} * bva * \{Tobin's\ q + x * \min(gap1, gap2)\} \\
 gap1 &= industry\ q - firm\ q\ at\ the\ start\ of\ the\ campaign \\
 gap2 &= industry\ q - firm\ q\ at\ the\ beginning\ of\ each\ stage \\
 bva &= book\ value\ of\ assets\ at\ the\ beginning\ of\ each\ stage
 \end{aligned}$$

### 5.3 Identification

The logit formulation in equations 9 to 11 is derived under the assumption that the random utility component in the activist’s decision-making is distributed type I extreme value (Gumbel) with variance  $\pi^2/6$ . Setting the variance to this particular value is equivalent to normalizing the scale of utility (see Train 2003). For example, we can rewrite the general random utility representation in the following way

$$U_{in}^* = U_{in} + \varepsilon_{in} \iff \check{U}_{in} = U_{in} + \check{\varepsilon}_{in}$$

where the transformed error term  $\check{\varepsilon}_{in}$  has variance  $(\pi^2/6)\sigma^2$ . This underidentification poses a significant problem in determining the absolute value of the cost thresholds because they are derived from the regression coefficients at each stage and those are scaled by  $1/\sigma$ , i.e.

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<sup>10</sup>For a discussion of approaches for estimating a firm’s maximum potential value in reference to mergers and acquisitions, see Edmans, Goldstein and Jiang (2009)

$$\beta = \frac{\beta^*}{\sigma}$$

As a result, the costs cannot be identified without further assumptions. In general, finding an identifying restriction is impossible without a structural model that determines the relationship between the main explanatory variables and the parameters of interest. In the present setup, the economic model provides the following identifying restriction

$$\sigma_{\varepsilon_{in}^*} = \frac{1}{\hat{\beta}_2} \quad (15)$$

As described in the next section, the sample of activists making a (conditional) decision at each stage of the process is different. This implies that the variance of the unobserved activist heterogeneity (captured by the scale parameter of the logistic distribution) is also likely to be different at every stage. In fact, we expect the scale parameter to become smaller with every consecutive phase as the activists employing more confrontational tactics are fewer and more homogeneous. Consequently, estimating a stage-specific variance parameter provides more precise estimates of the cost thresholds.

## 6 Descriptive Evidence

Defining activism as a sequential process allows me to describe its evolution in significantly more detail than previous academic studies. Specifically, I am able to characterize the progression of activism through its stages both across time and across firms and answer many important questions: Has activism become more confrontational over time? Does the activist’s committed capital depend on the level of engagement? Do more hostile approaches have higher success rates? In this section, I attempt to give a more in-depth description of shareholder activism.

Table 1 presents the distribution of hedge fund campaigns for each year of the sample period.<sup>11</sup> The number of activist events increased almost four times from 103 in 2001 to 386 in 2007, significantly outpacing the growth of hedge fund assets under management during the same period. More importantly, there was a substantial shift in the activists’ preferred tactics from private negotiations to more confrontational approaches. Hedge fund activists requested board representation in 23.57% of the campaigns in 2007 versus only 15.53% in 2001 (50% increase). The use of the proxy process showed a similar increase - 15.54% in 2007 versus 10.68% in 2001 (45% increase). Both trends suggest an evolution of activism from private to more public forms of engagement. Brav et al. (2008) also report that activist hedge funds are increasingly following a more public approach but do not show the evolution of these preferences over time.

Insert Table 1

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<sup>11</sup>The dataset used in this study includes all hedge fund activist campaigns, whose first Schedule 13D filing is after January 1, 2000. To correct for the downward bias induced by left censoring, I exclude year 2000 from the time-series study of activism presented in table 1.



Table 2 describes the progression of a typical campaign across the stages of the activist process. The first two columns summarize the data for the full activist sample, while the last two columns present the same results for the targets remaining after the CRSP-Compustat merge. In describing the evolution of the average campaign, I focus on the full sample. 70% of activists quit before making formal demands to the target. This suggests that the transition to demand negotiations represents a significant impediment in the overall process. There is a 20% chance that the average activist will request board representation, and a 7% chance that he/she will threaten a proxy contest. Surprisingly, there is less than 5% chance of actually waging a proxy fight even though this stage has the highest success rate (see below).

Insert Table 2

The twelve most active hedge funds during 2000 - 2007 are Loeb Partners/Third Point (115 campaigns), Millenium Partners (61), Farallon Capital (48), Steel Partners II LP (48), VA Partners LLC (43), Hummingbird Management (39), Blum Capital Partners LP (27), Carl C. Icahn (27), Prides Capital Partners LLC (26), Barington Equity (23), Chap Cap Partners (21) and Ramius LLC (20) (see table 3). These activists account for more than half of all campaigns in the sample period. However, only five of them are also in the group of most hostile - Steel Partners II LP, Carl C. Icahn, Barington Equity, Ramius LLC and Loeb Partners/Third Point. This suggests that both experience and preference for a specific tactic may be important in explaining the activists' behavior. In the empirical section, I show that both fixed effects are statistically significant.

Insert Table 3

One of the main criticisms against hedge fund activists is their allegedly short-term investment horizon. Most critics argue that hedge funds "masquerade" as activists but their true goal is to make a quick profit at the expense of long-term shareholders. However, a closer look at the data reveals that the average duration of an activist campaign is 16 months. Excluding the events in which no formal demands were announced raises the average campaign horizon to 18 months. Brav, Jiang, Partnoy and Thomas (2008) report a similar average duration (20 months) for the campaigns in their sample.

The duration of each distinct phase of the activist process is more important for the purposes of this study. The structural model presented above implicitly assumes a standard stage duration equal to the time interval between two annual meetings (in some cases 6-8 quarters). Table 4 provides empirical support for this assumption. Substantially all activist campaigns have stage durations shorter than 6 quarters. A minor exception is the board representation stage, in which about 8% of the campaigns exceed 8 quarters but virtually all are less than 10 quarters. Overall, the assumption of a standard stage length seems to be empirically justified.

Insert Table 4

What is the activist’s capital commitment during a campaign? The mean (median) percentage stake is 9.7% (8.0%) of the target’s outstanding shares. However, the activist’s dollar stake represents a better measure of resource commitment because most of the targets are small companies. The mean (median) dollar stake at entry is \$60.40M (\$11.28M), while the mean (median) maximum stake over the duration of the campaign is \$88.94M (\$18.12M).

A more interesting question is whether activists vary their ownership with the tactics they employ. Intuitively, we would expect that more confrontational approaches will be associated with larger blockholdings. Table 5 confirms this general intuition. The mean dollar investment increases across the stages of the process, even though the proxy contest stage has a slightly lower ownership than the board representation phase.

Insert Table 5

The classification of demands employed in this paper is a significant departure from the previous empirical studies of hedge fund activism. Both Brav, Jiang, Partnoy and Thomas (2008) and Greenwood and Schor (2009) consider governance as a primary activist objective and classify it as the most common one (36.5% and 22.0% of their respective samples). Under the sequential definition of activism, I view board representation as an intermediate step necessary for achieving the activist’s investment intent, not as the ultimate goal of a campaign. Table 6 confirms that in less than 5% of all events the principal demand is corporate-governance related (CEO removal or ‘poison pill’ termination).

Insert Table 6

The most common activist demand is a sale of the company to a third party (one third of all events), followed by demands for higher dividends (share repurchases), and restructuring of inefficient operations. Greenwood and Schor (2009) convincingly demonstrate that only events resulting in a sale earn significant abnormal returns. This finding points to another possible explanation for the documented high activist returns - elevated market expectations of potential takeover activity. It is also interesting to notice that in 11% of the campaigns the activist makes a bid for the target firm. It has been suggested that hedge fund activism is more successful than other forms of institutional activism because of the hedge fund’s ability to take the firm private if the proposed demands are not implemented (Clifford 2009).

Unlike previous studies, I consider as successful only those campaigns which result in the implementation of the activist’s primary objective(s). Under this narrow definition, I find that the overall success rate of hedge fund activism is only 19.11%. This is considerably lower than the results reported in Brav, Jiang, Partnoy and Thomas (2008) and Klein and Zur (2009) because they count successful governance changes as positive outcomes. With their broader definition, the success rate of activism in my sample rises to 46%, which is in line with their estimates.

In measuring the success rate of the distinct stages of the activist process, I exclude campaigns with fewer than two regulatory filings and large ownership stocks ( $\geq 29.99\%$ ). I find that more confrontational activist tactics have a higher probability of success. The most successful activist

phase is the proxy contest, in which 67.19% of activists achieve their objectives (table 7). Proxy threats are effective in 47.89% of the cases while 47.80% of activists achieve success through board representation. This compares to a meager 6.67% success rate of demand negotiations. However, less than 5% of all campaigns reach the proxy stage, which implies that the costs rather than expected success rates determine the manager's ability to progress through the activist process.

Insert Table 7

Even though the focus in this paper is on the activist, I confirm that the distribution of the targets in my sample is similar to that in previous studies of hedge fund activism. First, activist targets are generally smaller, with a mean (median) market value of \$882.98 million (\$183.24 million) and market-to-book ratio of 4.18 (1.78). Targets also have a lower q ratio compared to the average CRSP-Compustat firm - mean (median) of 1.24 (0.79).

Second, I find that manufacturing and services are the two general industry groups with the most activist targets. The individual two-digit SIC codes with the highest concentration of activism are business services (17% of all targets), retail (11%), chemicals (9%), electronic equipment (7%), instruments (7%) and depository institutions (7%). The fixed effects for each of the above groups are not statistically significant. There is also no evidence of industry concentration by activist group, except for highly specialized industries such as medical instruments and depository institutions.

## 7 Empirical Results

### 7.1 Cost Thresholds

The main parameters of interest in this study are the cost thresholds associated with the stages of the activist process. To provide more robust estimates, I combine the proxy threat and proxy fight into a 'proxy contest' stage resulting in three distinct phases - demand negotiations, board representation and proxy contest. To improve the model fit, I also exclude campaigns that end in a business combination (M&A transaction) without the activist's explicit involvement and interventions whose resolution is not within the sample period of 2000 to 2007 (right-censored observations).

As described in equations 1 to 7, each cost cutoff can be estimated from the break-even utility of the activist and represents a lower bound on the costs of employing a particular engagement tactic. Specifically, I first estimate a (conditional) binary logistic regression for the proxy contest stage by dividing the activists who reach board representation into two sub-samples - those who exit without gaining board membership (coded as 0) and those who continue to a proxy contest (coded as 1). The main explanatory variables are the inverse of the activist's market-to-market investment and the expected gross return if the campaign is successful (as described in equation 12). Then, I use the estimated costs of the proxy stage in a backward induction procedure to derive the costs of board representation and demand negotiations.

In order to identify the absolute value of the cost thresholds, I estimate the scale of each logistic

regression by applying a restriction provided by the economic model (equation 15). The scale parameter can be thought of as a measure of the influence of unobserved activist heterogeneity on the logistic estimation procedure. As a result of the significantly lower number of activist campaigns that reach the more confrontational stages, the proxy contest has the lowest scale parameter and the negotiations phase has the highest scale parameter (see table 8).

Insert Table 8

Table 8 shows the main estimation results. Not surprisingly, the proxy contest stage has the highest cost equal to \$5.81 million for the average activist campaign. This phase starts with the filing of a preliminary proxy statement with the SEC, which initiates official communication between the activist and other shareholders. Even though a proxy contest is usually associated with significant disclosure and legal fees, the costs of the activist's time and effort seem to represent a major portion of the overall cost. For example, Clifford (2009) mentions average legal proxy fees of \$220,000 (p.335). The table also presents the bias-corrected bootstrap confidence intervals for each stage (see the next section for an explanation of the bootstrap procedure). Proxy contest costs range between \$2.67 million and \$10.10 million.

Another interesting finding is that demand negotiations are the second most expensive stage of the activist process, with average costs of \$2.73 million and a 95% confidence interval between \$0.33 million and \$6.94 million. Unlike the proxy contest stage, the disclosure and legal fees associated with demand negotiations are likely to represent an even smaller portion of the overall costs compared to the time and effort of the activist. As a result, most of the costs of the first stage are unobservable and cannot be estimated from publicly-available information. The estimates presented in this paper are the first attempt in the literature to quantify the costs of activist-target negotiations.

Becht, Franks, Mayer and Rossi (2008) discuss the importance of private demand negotiations in the overall activist process, "Shareholder activism is predominantly executed through private interventions as opposed to shareholder proposals at a company's annual meeting, or filing of proxy statements. ... These engagements involved numerous meetings and telephone calls with chairmen, CEOs, and CFOs..., other executives, divisional managers, heads of investor relations, and with non-executive board members, ... [The Fund] also privately contacted other institutional shareholders, with a view to communicating its engagement objectives and soliciting support for its activities. Strikingly, engagements rarely took a public form." (p. 3096).

The least expensive stage is board representation, which adds \$1.97 million to the cost of the average campaign. The 95% bootstrap confidence interval for this stage is between \$0.48 and \$4.02 million. Most of these costs come from the activist's time commitment in terms of board membership, or in terms of the effort to identify board representatives. At this stage, many activists also hire consulting or investment banking firms to prepare formal board presentations of their recommendations.

As seen in table 8, the cost of the average campaign that reaches a proxy fight is \$10.5 million.

In terms of invested capital, this amount represents 12% of the mean activist ownership stake.

Table 9 presents several goodness-of-fit measures for each stage-specific logistic regression. Overall, the best model fit is for the proxy contest stage and the worst for the demand negotiations phase. The model correctly classifies the activists' exit decisions in 63% of the events (demand negotiations) versus 71% of the cases (proxy contest). The McKelvey and Zavoina  $R^2$  best approximates the  $R^2$  obtained by fitting the linear regression model on the underlying latent variable. The  $R^2$  is highest for the transition to board representation (48%) and lowest for demand negotiations (15%). Remember that the baseline model includes only two (theoretically motivated) explanatory variables - the inverse of the activist's marked-to-market investment and the expected gross return if the campaign is successful. The model fit for each stage improves significantly in the presence of additional variables capturing activist-specific characteristics (see the next section).

I also compute the Hosmer-Lemeshow (HL) goodness-of-fit statistic, which compares predicted probabilities with those in the observed data. The Hosmer-Lemeshow test statistic is a Pearson  $\chi^2$  statistic with G-2 degrees of freedom, where G is the number of groupings of the observations. The model has significant explanatory power at all stages.

Insert Table 9

Table 10 presents additional information about each stage-specific binary logistic regression. The estimation allows for correlation among the campaigns of the same activist (clustering) and model misspecification (incorrect likelihood function) by computing robust standard errors with an additional correction for clustered data. Both explanatory variables are significant at the standard statistical levels, with the inverse of the target's current market value being more significant at every stage. The pattern in the magnitude of the estimated coefficients among the three stages offers additional insights. Both covariates have the highest economic significance at the proxy stage and the lowest economic (but still high statistical) significance at the negotiations phase.

Insert Table 10

The estimated monitoring costs are economically significant both in absolute terms and in terms of net returns. In table 11, I compute both gross and net (of costs) raw deal returns. The median average gross return is close to zero (1.31%) but the average gross return is highly positive (55.69%), mainly due to the outsize influence of campaigns that achieve success in the board representation stage. Subtracting costs significantly reduces deal returns. The median net return drops to negative 2.10% while the mean net return goes down to positive 19.4%. It is also interesting to notice that the proxy contest stage has the lowest gross and net deal returns implying that the proxy process may be value-destroying at least from the point of view of the activist.

Insert Table 11

## 7.2 Robustness

Campaigns by the same hedge fund activist are likely to violate the assumption of independent observations. For example, a hedge fund manager may have a preference for (or more experience with) a specific activist tactic. With no explicit correction for the effects of clustered data, the usual standard errors will be incorrect and the estimated confidence intervals biased. However, taking into account clustering by hedge fund activist does not qualitatively change the estimation results.

Simultaneously with the correction for clustered observations, I compute robust standard errors, which are also known as Huber-White or sandwich errors. This correction allows for model misspecification - for instance, fitting an incorrect likelihood function. When a model is misspecified, the usual standard errors are incorrect. In this case, the estimator is known as the minimum ignorance estimator (White 1982). As described in the previous section, the results remain significant even when allowing for model misspecification.

A more direct way to correct for unobserved activist heterogeneity is to include activist-specific attributes and study their effect on the estimation. Table 12 presents the same three logistic regressions as the baseline model but adds three additional explanatory variables capturing activist heterogeneity. The additional covariates are the number of simultaneous campaigns by the same activist in a given quarter, an indicator (Active HFs) for the 12 hedge funds with the most campaigns in the sample period (measuring experience) and an indicator (Hostile HFs) for the 12 hedge funds with the most proxy contests between 2000-2007 (measuring preference for confrontational engagements). The list of the respective hedge funds in each group is presented in table 3.

Insert Table 12

The included activist characteristics have high explanatory power and significantly improve the model fit. The three additional covariates have the highest economic significance in the last stage regression. For example, the number of ongoing campaigns by the same hedge fund negatively affects the likelihood of waging a proxy fight. Also, the results suggest that a firm targeted by a hostile activist is more likely to reach a confrontational stage, while a firm targeted by a more experienced activist is less likely to make that transition. Currently, I am performing additional analyses, which include estimating the costs of monitoring conditional on the size and style of the activist hedge fund.

Due to the recursive backward substitution of estimated costs, the procedure of statistical backward induction yields biased estimates of the standard errors in the first two stages (board representation and demand negotiations). To correct this bias, I use a non-parametric bootstrap method, which relies on simulation to calculate the standard errors. Essentially, bootstrapping involves repeated sampling (with replacement) from the dataset at hand to estimate the error terms. The implicit assumption in bootstrapping is that it is more reasonable to draw inferences from the sample at hand rather than make unrealistic assumptions about the underlying population.

I calculate bias-corrected bootstrap confidence intervals for the cost estimates, where the bias correction adjusts for a potential bias in the tails of the sampling distribution. The bias-corrected bootstrap confidence intervals are very similar to the normal confidence intervals.

## 8 Concluding Remarks

The goal of this paper is to measure the costs of activist monitoring and provide a better understanding of the net gains from activism. I focus on the principal cost-benefit trade-off facing the activist and study its effect on the choice of tactics in interacting with the target firm. A decision to choose a more confrontational tactic implies that its benefits exceed its costs while a decision to exit suggests a negative trade-off.

At the heart of this paper is a novel formulation of shareholder activism as a sequential decision process, in which a more hostile tactic is conditional on having passed through less confrontational stages. This sequential definition motivates a structural model, which provides the estimation equation and the identification restrictions necessary for computing the cost thresholds associated with each activist tactic.

The paper's main contributions are empirical. I use logistic regressions in a statistical backward induction procedure to estimate the costs of each phase of the activist process. Based on a hand-collected dataset of hedge fund campaigns between 2000 and 2007, I find that the overall cost of an activist campaign that reaches a proxy fight is \$10.5 million. The proxy contest phase represents more than half of the overall costs, followed by the demand negotiations stage. The estimated monitoring costs are economically significant and substantially reduce deal returns.

I also describe the activist process in significantly more detail than previous academic studies. I find that the considerable cost of transitioning to the first stage of demand negotiations is the main 'bottleneck' of the process, resulting in a 70% exit rate. Less than 5% of all campaigns reach a proxy contest even though the proxy stage has a 67% success rate. Using a more narrow definition of success, I estimate the overall success rate of activism as 19.11%, significantly lower than previous studies.

The results support two main arguments. First, the private nature of activist-target negotiations makes it impossible to assess the costs of monitoring from publicly available information. This paper is the first attempt in the literature to estimate these costs using a structural approach. Second, the high costs and low success rate of activism suggest that its net gains are substantially lower than previously thought.

I am extending the analysis in this paper in several directions. First, I am investigating the effects of uncertainty and learning on tactic choices and campaign outcomes in a Bayesian learning model. Second, I am quantifying the impact of special side relationships between the activist and the target firm (such as debt and private placement contracts, consulting agreements, etc.) in offsetting monitoring costs and providing additional incentives for effective monitoring.

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## Appendix A: SEC Schedule 13D

The Securities and Exchange Act of 1934, rules 13d-1 to 13d-6, contains the filing requirements for large shareholders. Schedule 13D is commonly referred to as a "beneficial ownership report" and must be submitted to the US Securities and Exchange Commission within 10 days by any investor who acquires ownership of 5% of the voting stock of a public company. Any material changes in the facts contained in the original filing (such as a change in beneficial ownership by more than 1%, a change in the investment intent or the preferred method of communicating with the firm) requires a prompt amendment.

Schedule 13D consists of seven sections:

1. *Security and Issuer* - Basic information regarding the type and class of security and the contact information of the beneficial owner
2. *Identity and Background* - Background information such as the type of investment business the owner engages in and related investment vehicles managed by the owner
3. *Source and Amount of Funds or Other Considerations* - The source of the owner's investment capital (usually working capital funds)
4. *Purpose of Transaction* - This is the most important portion of the 13D filing for the purposes of this study. It describes the beneficial owner's investment intent, main demands and level of engagement with the firm.
5. *Interest in Securities of the Issuer* - Expands on section 4
6. *Contracts, Arrangements, Understandings or Relationships with Respect to the Securities of the Issuer* - Any special relationships between the beneficial owner and the company
7. *Materials to Be Filed as Exhibits* - This is the second most important section. It contains any exhibits that may be filed along with the form such as letters to the management or board of the firm as well any agreements between the two parties. Exhibits can also elaborate on the Purpose of Transaction (Section 4).

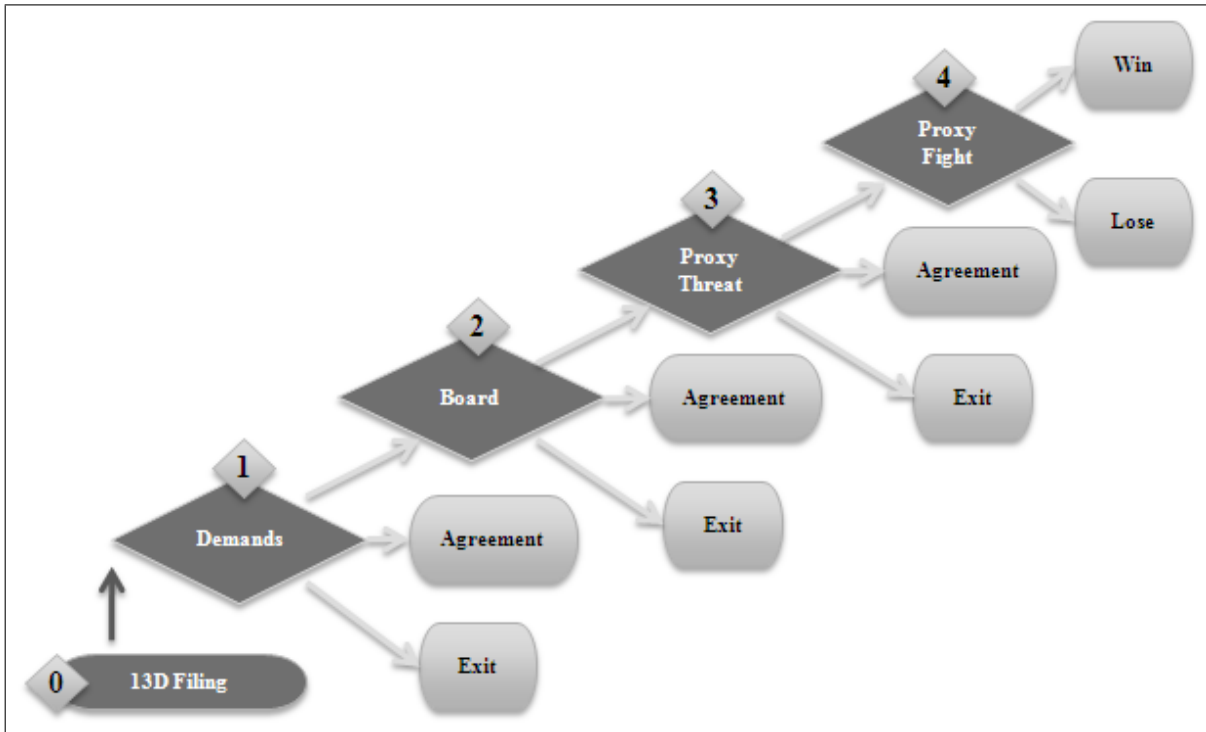
Item 4 lists 10 specific actions of a large shareholder that would require disclosure:

- (a) The acquisition by any person of additional securities of the issuer, or the disposition of securities of the issuer;
- (b) An extraordinary corporate transaction, such as a merger, reorganization or liquidation, involving the issuer or any of its subsidiaries;
- (c) A sale or transfer of a material amount of assets of the issuer or any of its subsidiaries;
- (d) Any change in the present board of directors or management of the issuer, including any plans or proposals to change the number or term of directors or to fill any existing vacancies on the board;

- (e) Any material change in the present capitalization or dividend policy of the issuer;
- (f) Any other material change in the issuer's business or corporate structure including but not limited to, if the issuer is a registered closed-end investment company, any plans or proposals to make any changes in its investment policy for which a vote is required by section 13 of the Investment Company Act of 1940;
- (g) Changes in the issuer's charter, bylaws or instruments corresponding thereto or other actions which may impede the acquisition of control of the issuer by any person;
- (h) Causing a class of securities of the issuer to be delisted from a national securities exchange, or to cease to be authorized to be quoted in an inter-dealer quotation system of a registered national securities association;
- (i) A class of equity securities of the issuer becoming eligible for termination of registration pursuant to Section 12(g)(4) of the Act; or
- (j) Any action similar to any of those enumerated above.

Note: Schedule 13G is an alternative SEC filing for the 13D which must be filed by anyone who acquires beneficial ownership in a public company (i.e. owns more than 5% of a company). The 13G filing is considered a more passive version of the 13D, and has fewer reporting requirements. Activist practices are not permitted by 13G filers unless they re-file a 13D.

**Figure 1.** A Sequential Definition of the Activist Process



**Table 1.** Distinct Activist Campaigns by Stage: 2000-2007

Year	Negotiations	Board Seat	% Total	Proxy Contest	% Total
2001	103	16	15.53%	11	10.68%
2002	147	26	17.69%	12	8.16%
2003	176	21	11.93%	16	9.10%
2004	179	30	16.76%	16	8.94%
2005	271	42	15.50%	32	11.81%
2006	321	73	22.74%	40	12.46%
2007	386	89	23.57%	60	15.54%

**Table 2.** Probability of Continuation Based on the Full and CRSP-Compustat Merged Samples

Stage	Full Sample		CRSP-Compustat Merge	
	Targets	% Total	Targets	% Total
13D Filing	956	100.00%	747	100.00%
Demand Negotiations	303	31.69%	260	34.81%
Board Representation	189	19.76%	161	21.55%
Proxy Threat	71	7.42%	66	8.84%
Proxy Fight	43	4.39%	40	5.35%

**Table 3.** Most Active (Hostile) Hedge Funds (2000-2007)

Most Active Hedge Funds	Targets	Most Hostile Hedge Funds	Targets
Loeb Partners Corp, Third Point LLC	115	Steel Partners II LP	7
Millenium Partners, Millenco LLC	61	Opportunity Partners (P. Goldstein)	6
Farallon Capital	48	Joseph Stillwell	6
Steel Partners II LP	48	Carl C. Icahn	6
VA Partners LLC	43	Lawrence B. Seidman	6
Hummingbird Management	39	Financial Edge Fund LP	6
Blum Capital Partners LP	27	Barington Equity Partners	5
Carl C. Icahn	27	Ramius LLC	5
Prides Capital Partners LLC	26	Jana Partners LLC	4
Barington Equity Partners	23	Loeb Partners Corp, Third Point	4
Chap Cap Partners	21	Pirate Capital LLC	4
Ramius LLC	20	Newcastle Partners LP	4

**Table 4.** Duration of the Distinct Stages of the Activist Process, 2000-2007

	$\leq 2$ quarters	$\leq 4$ quarters	$\leq 6$ quarters	$\leq 8$ quarters
Demand Negotiations	56.22%	77.42%	88.48%	94.47%
Board Representation	52.00%	72.67%	87.33%	91.33%
Proxy Threat	63.77%	84.06%	94.20%	95.65%
Proxy Contest	67.32%	88.97%	97.44%	98.19%
Exclusions: campaigns with fewer than two Schedule 13D filings, large ownership stocks ( $\geq 29.99\%$ ).				

**Table 5.** Hedge Funds' Capital Investment by Stage (Millions USD)

	Initial Filing		Negotiations		Board Seat		Proxy Contest	
	<i>Initial</i>	<i>Max</i>	<i>Initial</i>	<i>Max</i>	<i>Initial</i>	<i>Max</i>	<i>Initial</i>	<i>Max</i>
<i>25%</i>	2.75	4.49	4.23	6.11	3.10	5.48	4.11	6.44
<i>50%</i>	9.97	15.63	13.18	22.52	10.56	24.81	13.57	21.41
<i>75%</i>	39.68	64.21	59.73	83.45	38.28	76.06	40.27	58.77
<i>Mean</i>	55.84	82.97	73.48	90.26	54.26	104.66	65.42	95.86

**Table 6.** Most Common Activist Demands

Primary Activist Demand	Number of Targets	Percent of Total
Sale of company to a third party	194	31.85%
Dividends/ repurchases/ excess cash	97	15.93%
Restructuring/ spin-off	81	13.30%
Against proposed deal as target	73	11.99%
Bid to acquire/ take private	67	11.00%
CEO removal or 'poison pill' termination	30	4.93%
Recapitalization/ debt restructuring	27	4.43%
Excessive executive compensation	23	3.78%
Additional disclosure	17	2.79%

**Table 7.** Activist Campaigns Ending in Agreement

Stage	Successes	Total	Successful Campaigns, %
Demand Negotiations	15	225	6.67%
Board Representation	76	159	47.80%
Proxy Threat	34	71	47.89%
Proxy Contest	43	64	67.19%
Overall Success Rate			19.11%

Exclusions: campaigns with fewer than two Schedule 13D filings, large ownership stocks ( $\geq 29.99\%$ ). Success is defined as the successful execution of the activist's original set of demands.

**Table 8.** Costs of Activism in Millions of US Dollars: 2000-2007

Tactic	Mean	95% Interval		Scale $\sigma$
Demand Negotiations	\$2.73M	\$0.33M	\$6.94M	10.0417
Board Representation	\$1.97M	\$0.48M	\$4.02M	2.9866
Proxy Contest	\$5.81M	\$2.67M	\$10.10M	1.6900

Costs represent minimum thresholds and are estimated by binary logit models (continuation=1, exit=0). Bias-corrected bootstrap confidence intervals. Stage-specific scale  $\sigma$  identifies the model coefficients.

**Table 9.** Goodness of Fit Measures for the Stage-Specific Binary Logit Models

Tactic	Correctly Classified	Goodness of fit	$R^2$
Demand Negotiations	62.65%	0.5097	0.15
Board Representation	65.27%	0.4917	0.48
Proxy Contest	70.69%	0.5412	0.34

Correctly classified proportion of activist decisions at each distinct stage (continuation=1, exit=0). Hosmer-Lemeshow goodness of fit ( $\text{Prob} > \chi^2$ ). McKelvey and Zavoina  $R^2$ .

**Table 10.** Stage-Specific Logistic Regressions

Stage	Covariates	Coefficient	St. Error
Demand Negotiations N=271 p=0.0295	Marked to market investment (inverse)	-0.969**	(0.414)
	Expected gross return	0.100**	(0.049)
	Constant	-0.404	(0.255)
Board Representation N=142 p=0.0123	Marked to market investment (inverse)	-2.446***	(0.897)
	Expected gross return	0.335**	(0.160)
	Constant	-0.078	(0.380)
Proxy Contest N=58 p=0.0000	Marked to market investment (inverse)	-6.245***	(1.844)
	Expected gross return	0.591*	(0.311)
	Constant	0.373	(0.936)

Results from stage-specific binary logistic regressions. Marked-to-market investment is the inverse of the activist's current stake; expected gross return equals the expected firm value if the campaign is successful scaled by the current market value. Expected firm value is estimated in terms of the firm's gap from the industry's q ratio. Clustered standard errors. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 11.** Gross and Net Raw Deal Returns, Percentage

	Raw Deal Returns, %				Net Deal Returns, %			
	25%	50%	75%	Mean	25%	50%	75%	Mean
Demand Negotiations	-18.77	0.00	32.32	14.19	-22.61	-0.83	30.16	10.03
Board Representation	-17.76	8.05	47.61	92.37	-25.61	-1.76	31.95	49.79
Proxy Contest	-27.13	0.04	27.71	13.88	-33.16	-6.39	20.56	9.62
Average	-18.89	1.31	4.07	55.69	-28.59	-2.10	23.83	19.04

**Table 12.** Stage-Specific Logistic Regressions with Activist Fixed Effects

Stage	Covariates	Coefficient	St. Error
Demand Negotiations N=271 p=0.0005	Marked to market investment (inverse)	-1.142**	(0.513)
	Expected gross return	0.111**	(0.054)
	Number ongoing campaigns	-0.220	(0.171)
	Indicator: Active HFs	-1.470***	(0.501)
	Indicator: Hostile HFs	1.751***	(0.498)
	Constant	-0.034	(0.329)
Board Representation N=142 p=0.0007	Marked to market investment (inverse)	-2.202***	(0.766)
	Expected gross return	0.314**	(0.150)
	Number ongoing campaigns	-0.476***	(0.178)
	Indicator: Active HFs	-0.058	(0.429)
	Indicator: Hostile HFs	1.378***	(0.416)
	Constant	0.210	(0.476)
Proxy Contest N=58 p=0.0000	Marked to market investment (inverse)	-13.425***	(2.892)
	Expected gross return	1.754**	(0.823)
	Number ongoing campaigns	-1.071***	(0.409)
	Indicator: Active HFs	-5.817***	(1.296)
	Indicator: Hostile HFs	5.592***	(1.284)
	Constant	0.097	(1.755)

Results from stage-specific binary logistic regressions. Marked-to-market investment is the inverse of the activist's current stake; expected gross return equals the expected firm value if the campaign is successful scaled by the current market value. Expected firm value is estimated in terms of the firm's gap from the industry's q ratio. Active HFs is an a 1/0 variable for the 12 hedge funds with the most campaigns in 2000-2007; hostile HFs is a 1/0 variable for the 12 hedge funds with the most proxy contests in the sample period. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1