

Corporate Control Activism

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Abstract

We identify a commitment problem that prevents bidders from unseating resisting and entrenched incumbent directors of target companies through proxy fights. We discuss potential solutions and argue that activist investors are more resilient to this commitment problem and can mitigate the resulting inefficiencies by putting such companies into play. This result holds even if bidders and activists have similar expertise and can use similar techniques to challenge the incumbents, and it is consistent with the evidence that most proxy fights are launched by activists, not by bidders. Moreover, we show that there is complementarity between shareholder activism and takeovers: Activists benefit from the possibility that companies in which they invest will become a takeover target, while bidders, who interpret the presence of an activist as a signal that the target is available for sale, are more likely start takeover negotiations when the target has an activist as a shareholder. Combined, the analysis sheds light on the interaction between M&A and shareholder activism.

KEYWORDS: Acquisition, Corporate Governance, Merger, Proxy Fight, Shareholder Activism, Takeover.

JEL CLASSIFICATION: D74, D83, G23, G32, G34

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1 Introduction

The separation of ownership and control in public corporations creates agency conflicts between insiders and shareholders (Berle and Means (1932)). In order to protect their private benefits of control,¹ corporate boards can resist takeovers that would otherwise create shareholder value, for example, by issuing shareholder rights plans (“poison pills”). With a de facto veto power,² the resistance to takeovers can be overcome only if the majority of directors are voted out in a contested election (“proxy fight”). In fact, the power of shareholders to unseat directors is often used by the courts as the basis for allowing boards to block takeovers in the first place (Gilson (2001)).

Shareholders, however, cannot vote out the incumbent directors unless an alternative slate is put on the ballot. Empirically, bidders rarely launch a proxy fight to replace all or part of the resisting target board. Fos (2016) finds that most proxy fights are launched by activist hedge funds.³ Activists often demand from companies they invest in to sell all or part of their assets (Brav et al. (2008), Becht et al. (2015)), and if needed, use proxy fights to force them to do so. Greenwood and Schor (2009) and Boyson et al. (2016) find that the probability of a takeover is several times higher if an activist hedge fund is a shareholder of the target. For example, in 2013, the private-equity firm KKR acquired Gardner Denver for \$3.7 billion after the activist hedge fund ValueAct Capital accumulated a 5% stake in the company and agitated for its sale. Commenting on the deal, KKR’s co-CEO, George Roberts, said: “We wouldn’t have bought Gardner Denver had not an activist shown up.”⁴ But, why did KKR need ValueAct to intervene? Could not KKR complete the buyout without the help of an activist? More generally, since bidders and activists can use similar techniques to challenge corporate boards (i.e., proxy fights), what is the relative advantage of activists? Do activists complement the effort of bidders to acquire companies, or do they compete away bidders’ rents?

¹Jenter and Lewellen (2015) provide evidence consistent with managers being reluctant to relinquish control due to career concerns. See also Walkling and Long (1984), Martin and McConnell (1991), Agrawal and Walkling (1994), Hartzell et al. (2004), and Wulf and Singh (2011)), who show that target CEOs typically suffer from poor career prospects following takeovers.

²Under most jurisdictions, including Delaware, merger proposals can be brought to a vote for a shareholder approval only by the board of directors. Alternatively, tender offers do not require a vote, but they are vulnerable to poison pills, which can be adopted on short notice and make a takeover virtually impossible.

³While proxy fights are also effective as threats, their observed frequency can suggest on their empirical relevance. Fos (2016) documents 632 proxy fights between 2003 and 2012, out of which only 5% were sponsored by corporations (i.e., potential bidders), 70% by activist hedge funds, and the rest by other shareholders.

⁴WSJ, 1/5/2013, “Activist Investors Gain in M&A Push.”

We study these questions by analyzing a simple dynamic bargaining model in which the identity of the target board is endogenized by an interim proxy fight stage. Initially, a bidder is negotiating with the incumbent target board. Circumventing the board by making a tender offer to target shareholders is not feasible. The board, whose private benefits of control are lost if the takeover succeeds, can reject the takeover even if doing so is not in the best interest of target shareholders. However, if the negotiations fail, a proxy fight to replace the board can be initiated either by the bidder or by an activist investor, who is a target shareholder. Winning a proxy fight is not trivial, as the challenger must convince the majority of target shareholders that replacing the incumbents with his nominees is in their best interest. If the proxy fight succeeds, the winning team obtains control of the target board, and a second round of negotiations between the bidder and the newly elected directors takes place. If no proxy fight is launched or if the proxy fight fails, the incumbent board retains control of the target and can use his veto power to block the takeover indefinitely.⁵

Our first result shows that although both bidders and activists can launch a proxy fight (and face the same costs of doing so), only activists can effectively challenge the resistance of the incumbent directors and facilitate the takeover. This result is consistent with the evidence that, unlike activists, bidders rarely launch proxy fights. The activist's relative advantage stems from their higher credibility when campaigning against the incumbents. To understand this observation, which is a novel aspect of our analysis, note that a proxy fight is not a referendum on the terms of the takeover, but rather a vote on the composition of the board. Once the bidder's nominees are elected to the board, the bidder, who is the counter-party to the transaction, will be tempted to abuse his control of the target board, exploit its access to private information, divert resources, and low-ball the takeover premium. *This is the commitment problem in takeovers.* Without a commitment to act in their best interests, target shareholders, who rationally anticipate this opportunistic behavior, are unlikely to elect the bidder's nominees to the board. By contrast, the activist buys a stake in the target with the expectation that the firm will be acquired. Unlike the bidder but similar to other shareholders of the target, the activist is on the sell-side and has incentives to negotiate the highest takeover premium possible. Therefore, shareholders trust the activist and are more likely to elect her nominees to the board, even without a commitment to act in their best interests. By credibly threatening to run a proxy fight, the activist can pressure the incumbent to sell the firm at a fair price. Making corporate assets available for sale is the added value of activist investors to the market

⁵The analysis focuses on takeovers, but our results can also be applied to divestitures and assets sales.

for corporate control.

Generally, the severity of the bidder's commitment problem depends on the legal and economic environment in which the bidder and the target operate (e.g., enforcement of fiduciary duties, competition for the target), as well as on actions that bidders can deliberately take in order to alleviate this problem (e.g., nominating truly independent directors, building reputation). Our analysis suggests that if a bidder happens to run a proxy fight and win the support of target shareholders, which is rare in practice, then either target shareholders do not have rational expectations or the commitment problem is resolved. We discuss the plausible "solutions" to the commitment problem and argue that they are either imperfect or costly. We also show that even if bidders have the ability to solve their commitment problem (through either channel), they may not have the incentives to do so - they can be better off by letting the activist pressure the incumbent to sell the firm.

Importantly, since activist investors inherently suffer from a weaker commitment problem, their relative advantage in pressuring incumbents to sell is likely to persist even if bidders can alleviate their own commitment problem. Our argument does not require activists to be perfectly aligned with other target shareholders; activists may have their own private benefits or suffer from short-termism. Our key observation is in relative terms: Since a bidder is a counter party to the transaction and the activist is not, the conflict of interest between the bidder and target shareholders is stronger than the conflict they might have with the activist. Our contribution should therefore be viewed as identifying the bidder's commitment problem in takeovers, discussing the potential solutions, and in particular, highlighting the role of activist investors in mitigating the inefficiencies caused by the bidder's commitment problem. The fact that most proxy fights are launched by activists and not by bidders is consistent with shareholder activism being the market solution for the bidder's commitment problem.

In order to study the implications of activist interventions on the M&A market, we endogenize the decision of the activist to become a target shareholder and the decision of the bidder to engage in takeover negotiations. We assume that initially the activist builds a position by trading with a market maker à la Kyle (1985). The bidder, who is uncertain about the synergistic value of the acquisition, observes the arrival of the activist (e.g., by tracking 13D filings) and then decides whether to perform due diligence and start takeover negotiations with the target board as described above.

Our second set of results highlights the complementarity between shareholder activism and takeovers. Activists profit from the possibility that companies in which they invest will become

a takeover target. At the same time, bidders perform due diligence only if they believe that the target is available for sale. Activists can leverage their advantage in putting companies into play and solicit offers by reassuring bidders that they will face a weaker opposition to the takeover, if the offer is fair. The ability to solicit deals amplifies the incentives of the activist to become a target shareholder in the first place.

The complementarity between shareholder activism and takeovers has several implications. First, a takeover is more likely when the target has an activist as a shareholder. Second, activist investors not only facilitate takeovers once the offer is on the table, but they can also increase the likelihood that a company becomes a takeover target in the first place. In fact, activists can affect corporate control outcomes even if ex-post their threat of running a proxy fight is not credible. Third, small regulatory changes, such as easing the access of shareholders to the ballot or modifying the rules that govern the filing of 13D schedules, can have an amplified effect on the aggregate volume of M&A. Fourth, policies and regulations that exclusively undermine shareholder activism, such as the legalization of two-tier “anti-activism” poison pills, might adversely affect M&A even if “standard pills” that prevent takeovers are already prevalent.⁶ Finally, the complementarity between shareholder activism and takeovers also arises when the activist starts her campaign after the announcement of a takeover but before its closing. The anticipation that an activist would show up on its own affects the incentives of bidders to start takeover negotiations.

Activists invest either because they believe the company is likely to become a takeover target (“selection effect”) or because they can facilitate its takeover (“treatment effect”). The aforementioned empirical literature is somewhat inconclusive about which effect is in play. We provide necessary and sufficient conditions under which the treatment effect exists in equilibrium. We show that the model’s comparative statics is sensitive to the existence of the treatment effect. This feature can be used to create identification strategies for empirical research. For example, if only the selection effect is in play, the volume of M&A decreases with the severity of the agency problems in target firms. This is intuitive, as with more private benefits of control the incumbents are more likely to resist takeover bids. However, when the treatment effect is in play, more resistance of incumbents to takeovers can result with a *higher* volume of M&A. Intuitively, the resistance to takeovers provides activist investors with more

⁶In 2014, the Delaware court allowed Sotheby’s to keep a unique two-tier poison pill that was purposely meant to block the activist hedge fund Third Point from increasing its ownership in Sotheby’s above 10%. See *THIRD POINT LLC v. Ruprecht*, Del: Court of Chancery 2014.

opportunities to profit from their ability to put firms into play, which increases their incentives to invest in these firms, and consequently, increases the benefit of potential bidders from a takeover. Based on this logic, the treatment effect can be identified by a positive relationship between the severity of agency problems in the cross section of target firms and the likelihood of a takeover.

We consider several extensions of the baseline model. First, in management buyouts the incumbent may be too motivated to sell the firm, even if the deal compromises shareholder value. In those cases, activist investors will challenge the deal by using their influence on target shareholders to either block the transaction or “force” the bidder to sweeten the bid. In other words, the activists compete away the rents of bidders from takeovers. Second, if in addition to pressuring the incumbent board to sell the firm the activist has the expertise to propose and execute policies that increase the standalone value of the target, this alternative form of activism increases (decreases) the probability of a takeover by a third party if the added value of the activist’s proposal is relatively small (large). Therefore, non-control activism can *complement* corporate control activism. Last, we consider scenarios in which the target board cannot block the takeover and prevent the bidder from making a tender offer directly to shareholders. We show that there is substitution between the ability of bidders to bypass the target board through tender offers and the ability and need of activists to unseat the board through proxy fights. In this regard, our model suggests that activists should play a smaller role in the market for corporate control in jurisdictions in which boards have weaker power to block deals, such as the U.K. today or the U.S. in the 1980s.

Our paper is related to the literature on takeovers and shareholder activism (for surveys, see Becht et al. (2003) and Edmans (2014), respectively). Unlike studies in which the bidder is also a target shareholder (e.g., Shleifer and Vishny (1986), Hirshleifer and Titman (1990), Kyle and Vila (1991), Burkart (1995), Maug (1998), Singh (1998), and Bulow et al. (1999)), our analysis emphasizes the benefit from separating the capacity to disentrench boards from the capacity to increase firm value through acquisitions, and implies that collaborations between activist investors and bidders are likely to fail, as they raise concerns that the activist is in fact on the buy-side of the transaction.⁷ Moreover, different from Burkart et al. (2000), Cornelli and Li (2002), Gomes (2012), and Burkart and Lee (2015), who study the interaction between

⁷For the same reason, diversified institutional investors, which often own large stakes both on the sell-side and on the buy-side of the transaction, are unlikely to be effective in exercising corporate control activism, even if they have the relevant governance expertise. See our discussion in Section 3.3.

bidders and target blockholders, we abstract away from the free-rider problem in tender offers of Grossman and Hart (1980). Instead, we focus on agency problems in the target firm and the ability of the target board to veto the takeover.⁸ Our focus on proxy fights as the primary mechanism by which the resistance of the board to a takeover can be overcome relates our paper to Shleifer and Vishny (1986), Harris and Raviv (1988), Bhattacharya (1997), Maug (1999), Yılmaz (1999), Bebchuk and Hart (2001), and Gilson and Schwartz (2001), who study proxy fights within and outside the context of takeovers. These papers, however, do not identify the commitment problem of bidders in takeovers or the ability of activist investors to mitigate its adverse consequences.

2 Setup of the baseline model

Consider a model with a bidder, an activist investor, passive investors (institutional or retail), and one public firm, the target. The target is run by its incumbent board of directors. We do not distinguish between the manager and other board members; we treat them as one. We normalize the total number of target shares to one. Each share carries one vote. According to its governance rules, a successful takeover of the target requires at least 50% of its voting rights. All agents are risk-neutral.

At the outset, the incumbent board owns $n \geq 0$ shares of the target, the activist owns $\alpha > 0$ shares, the bidder owns $m \geq 0$ shares, and all other shares are owned by passive investors. We assume that collectively passive investors hold more than 50% of the target voting rights, that is, $n + \alpha + m < 0.5$.

The incumbent board has private benefits of control which are lost if the firm is acquired or if shareholders elect a new board. These benefits may include excessive salaries, perquisites, investment in ‘pet’ projects, access to private information, pleasure of command, prestige, or publicity. We assume that compensation contracts cannot fully align the incentives of the incumbent board with the shareholders (Jenter and Lewellen (2015)), and that the enforcement of the board’s fiduciary duties is not sufficiently strong to eliminate the consumption of these private benefits. We denote the board’s private benefits by $B > 0$, and its private benefits *per share* by $b \equiv B/n$.

⁸Models in which the target board can resist a takeover offer have also been studied by Bagnoli et al. (1989), Baron (1983), Berkovitch and Khanna (1990), Hirshleifer and Titman (1990), Harris and Raviv (1988), and Ofer and Thakor (1987).

The standalone value of the target is $q > 0$. The bidder can create a net value of $\Delta > 0$ by taking over the target. If the bidder is a strategic acquirer (e.g., a corporation in a related industry) then Δ is the net operational or financial synergy with the target that results from the merger of the two companies, and if the bidder is a financial acquirer (e.g., a private equity firm) then Δ is the net operational improvement from a going private transaction or the net synergy from a merger with one of its portfolio companies. Parameter Δ can also include the bidder’s private benefits from acquiring the target. Under either interpretation, the bidder cannot increase the standalone value of the target without changing its ownership structure. To focus the analysis on agency problems as the key friction, we abstract from information asymmetries about q or Δ and assume that they are both commonly known. In Appendix C.3 we relax these assumptions, and show that the main results continue to hold and may even get stronger.⁹

Unlike the bidder, the activist cannot add value by acquiring the target. Therefore, the activist does not have incentives (or resources) to make a takeover bid. Moreover, consistent with Greenwood and Schor (2009) and Becht et al. (2015), who show that the positive abnormal returns around 13D filings by activist investors stem mostly from events in which the target is eventually acquired, we assume that the activist cannot affect the standalone value of the target. We relax this assumption in Section 5.2.

The bidder negotiates with the target board a cash offer to acquire all $1 - m$ target shares not held by the bidder. The bidder cannot bypass the incumbent board and make a tender offer directly to target shareholders, possibly because the target board can block these attempts using poison pills. In Section 5.3 we relax this assumption. As depicted by Figure 1, there are two rounds of negotiations, indexed by $j \in \{I, II\}$, which are separated by a proxy fight stage. In each round, the proposer is decided randomly and independently of the other round. With probability $s \in (0, 1)$ the proposer is the target board, and with probability $1 - s$ the proposer is the bidder. The proposer makes a take-it-or-leave-it offer to the other party. Parameter s can be interpreted as the bargaining power of the target firm.¹⁰ We denote by π_j the price per share paid by the bidder under an acquisition agreement that is reached in round j . If an agreement is reached, it must be approved by a majority of the target shareholders in a vote. Throughout, at any voting stage, target shareholders play undominated pure strategies. If the

⁹The existence of private information creates adverse selection and reduces the bidder’s credibility even further. However, in spite of this adverse selection, activists can still win proxy fight and relax the resistance of incumbents to takeovers.

¹⁰The Nash bargaining protocol can be microfounded using Rubinstein’s (1982) model of alternating offers.

agreement is approved by the majority of shareholders, each shareholder of the target receives π_j for each share he owns, and the bidder gets $q + \Delta - (1 - m) \pi_j$.

If no agreement is reached at the first round, or if shareholders vote down a proposed agreement, the bidder and the activist decide simultaneously whether to run a proxy fight to replace the incumbent board.¹¹ The ability (or incentives) to run a proxy fight is a key feature that distinguishes the activist from other passive investors. If a proxy fight is initiated, the challenger incurs a non-reimbursable private cost $\kappa > 0$, which captures administrative costs as well as the effort, time, and money that are needed in order to recruit nominees, coordinate with other shareholders, and campaign against the incumbent. For example, κ decreases with the fraction of the firm that is held by institutional investors or the governance expertise of the challenger. Target shareholders then decide whether to vote for the incumbent board or one of the rival teams. The team that receives the largest number of votes is elected and takes control of the target board.

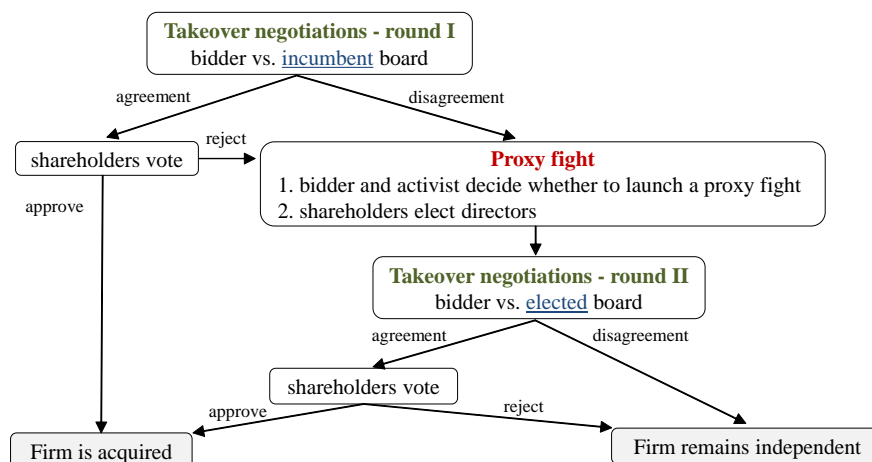


Figure 1 - Takeover negotiations and proxy fight

Winning the control of the target board has two implications for the rival team (bidder or activist). First, it gives the rival the right to negotiate on behalf of the target shareholders an acquisition agreement with the bidder in the second round. That is, the newly elected

¹¹We implicitly assume that the majority of directors stand for reelection. In 2013, only 11% of the S&P 500 companies had a classified board, down from 57% in 2003 (see sharkrepellent.net: “Governance Activists Set Their Sights on Netflix’s Annual Meeting” and “2003 Year End Review”.) Alternatively, winning a short slate proxy fight is sufficient to change the dynamic in the board and the ability of the incumbents to protect their private benefits of control. See Bebchuk et al. (2002) for a discussion on staggered board.

directors can redeem the poison pill, if such exists, and resume negotiations.¹² Second, the rival takes control of the operations of the target, and among other things, it can divert corporate resources as private benefits if the firm remains independent, for example, by exploiting the privileged access as a board member to the target’s proprietary information or through self-dealing transactions.¹³ We assume that the amount that can be diverted is limited and arbitrarily small. This assumption, which we relax in Appendix C.4, guarantees that if shareholders are indifferent between electing the rival (the bidder or the activist) and retaining the incumbent, they will choose the latter. Importantly, both the bidder and the activist cannot commit to act in the best interests of target shareholders once they obtain control of the board. Under this assumption, the newly elected directors maximize the value of the party with which they are affiliated, even if it conflicts with maximizing target shareholder value. In other words, agency problems matter.¹⁴

Once the proxy fight stage ends, a second round of negotiations between the bidder and the target board (which may now be populated with the newly elected directors) takes place. The second round has the same protocol as the first round. However, if no agreement is reached or shareholders reject the deal, the target remains independent and its standalone value is realized.

3 The commitment problem in takeovers

We start this section by solving the equilibrium of the model and identifying the bidder’s commitment problem in takeovers. We then discuss the different ways by which the bidder can alleviate or overcome this problem, and conclude by highlighting the role of activist investors in mitigating the inefficiencies caused by the bidder’s commitment problem.

3.1 Analysis

We consider the set of Subgame Perfect Equilibria in pure strategies and solve the game backward. All proofs and results not in the main text are given in Appendix A and the Online

¹²Provisions that make pills nonredeemable are illegal in most states, including New York and Delaware.

¹³See Atanasov et al. (2014) for a discussion on the various forms of tunneling, and Atanasov et al. (2010), Bates et al. (2006), and Gordon et al. (2004) for evidence on tunneling in the U.S.

¹⁴In Section B.3 we analyze the model under the assumption that the bidder can commit to act in the best interests of target shareholders, and calculate the value for the bidder from this commitment.

Appendix. We start by characterizing the second round of negotiations.

Lemma 1 *In the second round of negotiations, the target is acquired by the bidder unless the incumbent board retains control and $\frac{\Delta}{1-m} < b$. The expected shareholder value is*

$$\Pi_{SH} = \begin{cases} q + \mathbf{1}_{\{b \leq \frac{\Delta}{1-m}\}} \cdot [s \frac{\Delta}{1-m} + (1-s)b] & \text{if the incumbent board retains control,} \\ q + s \frac{\Delta}{1-m} & \text{if the activist controls the board,} \\ q & \text{if the bidder controls the board.} \end{cases} \quad (1)$$

Several observations follow from Lemma 1. First, if reelected, the incumbent board can block the takeover. Therefore, he would accept a takeover offer only if the premium is higher than b , his private benefits of control per share. The bidder's net profit if he pays π for each of the $1-m$ target shares is $q(1-m) + \Delta - (1-m)\pi$. Therefore, if $b \leq \frac{\Delta}{1-m}$, the bidder can afford to pay a premium of b , even if it means sacrificing the profit on his toehold. In this case, the entrenchment of the incumbent benefits target shareholders (at least ex-post) since it forces the bidder to offer a higher premium without endangering the deal. However, if $\frac{\Delta}{1-m} < b$, the bidder would rather walk away from the negotiations. In this case, the entrenchment of the incumbent board results with an inefficient outcome which is at the core of our analysis: a value-increasing takeover is rejected.¹⁵

Second, if the activist is elected to the board, the activist would negotiate a “fair” deal in which the bidder pays an expected premium of $s \frac{\Delta}{1-m}$. Indeed, the bidder would offer the lowest price that is acceptable to the activist and target shareholders, which is the standalone value of the target q . On the other hand, since $\alpha \geq 0$, the activist has incentives to maximize the value of her holdings, and therefore, she would ask for $q + \frac{\Delta}{1-m}$, the highest price the bidder would agree to pay for the target.

Third, if the bidder wins the proxy fight, he gains the authority to negotiate on behalf of target shareholders. Hence, the bidder sits on both sides of the negotiating table! Unlike the activist, the bidder is interested in acquiring the target for the lowest price possible (and perhaps diverting corporate resources). Therefore, regardless of the proposer's identity, the bidder would be tempted to offer target shareholders their reservation price, which is q . *This is the bidder's commitment problem in takeovers.* Target shareholders rationally expect the bidder, who is a counter party to the transaction, to abuse the power of the board. Therefore,

¹⁵If $n < (1-m)B/\Delta$ and $B < \Delta$ then $\frac{\Delta}{1-m} < b$, and a takeover is the efficient outcome.

they do not elect him to their board. Since running a proxy fight is both costly and inefficacious, the bidder does not run a proxy fight in any equilibrium of the subgame. This result holds regardless of the gains from the takeover, Δ , the cost of running a proxy fight, κ , the size of the bidder's toehold, m , the incumbent board's private benefits of control, b , and whether or not the activist is also running a proxy fight.

Proposition 1 *Suppose the first round of negotiations fails. Then:*

- (i) *The bidder never runs a proxy fight.*
- (ii) *The activist runs a proxy fight if and only if*

$$\frac{\kappa/s}{\alpha} \leq \frac{\Delta}{1-m} < b. \quad (2)$$

Whenever the activist runs a proxy fight, she wins.

Proposition 1 establishes our result that although both bidders and activists can launch a proxy fight and face the same costs of doing so, only activists can effectively challenge the resistance of incumbent directors and facilitate the takeover. Unlike the bidder, shareholders expect the activist to negotiate a premium of $s\frac{\Delta}{1-m}$ if they elect her to the board. Being on the sell-side gives the activist an advantage relative to the bidder when campaigning against the incumbent. Nevertheless, shareholders elect the activist only if she is expected to outperform the incumbent. If the incumbent is reelected, he negotiates a premium of $s\frac{\Delta}{1-m} + (1-s)b$ if $b \leq \frac{\Delta}{1-m}$ and blocks the takeover otherwise. Therefore, shareholders elect the activist only if $b > \frac{\Delta}{1-m}$, i.e., when the bidder cannot overcome the resistance of the incumbent by increasing the takeover premium. The activist, however, does not necessarily start a proxy fight even if she expects to win one. If the activist does not challenge the incumbent, the target remains independent and the value of her stake remains αq . If the activist runs a proxy fight, the value of her stake increases to $\alpha(q + s\frac{\Delta}{1-m})$. The activist runs a proxy fight if the increase in the value of her stake is higher than the cost of running a proxy fight, which holds if and only if $\frac{\kappa/s}{\alpha} \leq \frac{\Delta}{1-m}$. As expected, the activist is more likely to run a proxy fight when the target's bargaining power is strong, the number of shares owned by the activist is large, and the cost of running a proxy fight is low. Condition (2) is the intersection of the activist's incentives to run a proxy fight and the shareholders' incentives to support her in the challenge.

Proposition 2 *A unique equilibrium exists and has the following properties:*

- (i) *If $\min\{b, \frac{\kappa/s}{\alpha}\} \leq \frac{\Delta}{1-m}$ then the bidder reaches an agreement in the first round of negotiations with the incumbent board in which the bidder pays*

$$\pi^* = q + s \frac{\Delta}{1-m} + (1-s)b \cdot \mathbf{1}_{\{\frac{\Delta}{1-m} \geq b\}} \quad (3)$$

per share and acquires full control of the target.

- (ii) *If $\frac{\Delta}{1-m} < \min\{b, \frac{\kappa/s}{\alpha}\}$ then the target remains independent.*

Proposition 2 describes the equilibrium of the game. If $b \leq \frac{\Delta}{1-m}$ then regardless of the size of the activist's stake in the target, the bidder reaches an agreement with the incumbent board in the first round in which he pays $q + s \frac{\Delta}{1-m} + (1-s)b$. However, if $\frac{\kappa/s}{\alpha} \leq \frac{\Delta}{1-m} < b$ then all parties involved correctly anticipate that if the first round of negotiations fails, the activist would run and win a proxy fight, and then negotiate an acquisition agreement with an expected premium of $s \frac{\Delta}{1-m}$. Since the activist's threat of running a proxy fight is credible, any first round offer below $q + s \frac{\Delta}{1-m}$ is rejected by shareholders, and any offer above $q + s \frac{\Delta}{1-m}$ is rejected by the bidder. The incumbent board understands that the takeover is inevitable, and therefore accepts any offer higher than $q + s \frac{\Delta}{1-m}$ in order to avoid the adverse consequences of losing the proxy fight (e.g., embarrassment or the loss of reputation). As a result, the bidder reaches an agreement with the incumbent board in the first round in which he pays $q + s \frac{\Delta}{1-m}$. In all other cases, the incumbent board's entrenchment is too high ($\frac{\Delta}{1-m} < b$) and the threat of a proxy fight is not credible ($\frac{\Delta}{1-m} < \frac{\kappa/s}{\alpha}$). Therefore, the incumbent retains control of the board and successfully blocks the takeover.

3.2 Overcoming the commitment problem

The bidder's commitment problem stems from the assumption that the newly elected directors maximize the value of the party with which they are affiliated (i.e., the bidding firm) rather than the value of target shareholders. Our analysis suggests that if a bidder runs a proxy fight and wins the support of the target shareholders, which is rare in practice, then either shareholders do not have rational expectations or the commitment problem is resolved.¹⁶ In practice, the

¹⁶Our analysis does not imply that if a bidder wins a proxy fight, the offered takeover premium should drop. If the bidder believes that he can win a proxy fight and capture the target board even without resolving the

severity of the commitment problem depends on the legal and economic environment in which the bidder and the target operate, as well as on actions that the bidder can deliberately take in order to alleviate this problem. However, each of these “solutions”, which we discuss in detail below, is likely to be either imperfect or costly, and the extent to which bidders use these “solutions” is an empirical question. In fact, in Appendix B.3 we show that even if bidders have the ability to solve their commitment problem (through either channel), they may not have the incentives to do so - they can be better off by letting the activist pressure the incumbent to sell the firm.

3.2.1 Legal environment

Effective and strong investor protection laws can help shareholders enforce directors’ fiduciary duties, thereby committing the bidder not to abuse the power of the target board if it is given to him. For example, when evaluating whether directors have complied with their fiduciary duties in the context of M&A transactions, the Delaware court is likely to apply a stricter standard of review (Entire fairness rather than Business judgment) if a priori there is a particular concern that the target’s directors are conflicted with their shareholders. However, there is no guarantee that the courts or regulators would be able to tell apart related-party transactions that make economic sense from those which do not. Indeed, litigation and enforcement are often costly, uncertain, and limited to verifiable outcomes. In practice, there is a considerable variation in how different countries cope with corporate self-dealing (e.g., Djankov et al. 2008), suggesting that a perfect solution may not exist.

3.2.2 Competition

Competition for the target firm (whenever exists) can also limit the bidder’s ability to expropriate target shareholders. Low-balling the takeover premium while a superior competing bid is outstanding can be challenging (e.g., the Revlon Rule under the Delaware corporate law). Yet, by controlling the target board, the bidder can still exploit his access to the target’s private information and divert resources, thereby deterring competition. In fact, due to a bidder’s

commitment problem, perhaps because target shareholders are naive, he would low-ball the takeover premium in advance, anticipating his ability to abuse the power of the target board once it is given to him. If the bidder expects to capture the target board since he has already resolved his commitment problem, then by definition, the bidder cannot low-ball the takeover premium after winning a proxy fight. See Appendix B.1 for more details.

privileged access to the target’s private information, the competitors are likely to suffer from the winner curse. Overall, the commitment problem is likely to be weaker when there are competing bids for the target, although the problem cannot be entirely resolved.

3.2.3 Recruiting independent nominees

The bidder might consider recruiting independent nominees to represent him on the target board. However, finding “truly independent” nominees that are willing to represent the bidder not only requires time and effort, but may also be expensive as these individuals, if are truly independent, are likely to charge a higher compensation. Moreover, these nominees may also be vulnerable to side payments from the bidder. If the bidder can offer compensation contracts (explicit or implicit) that are unobserved by target shareholders, he will be tempted to incentivize the nominees to maximize the bidding firm value rather than the target firm value. Target shareholders are likely to remain suspicious.

3.2.4 Reputation

Serial acquirers or private equity funds, who repeatedly interact in the market for corporate control, might be able to develop reputation for not expropriating target shareholders. However, building and maintaining good reputation is costly (i.e., avoiding the temptation to extract value today), it depends on the presence of public histories of past outcomes, and it can create unintended distortions. Our analysis suggests that repeated bidders will suffer from the commitment problem, but to a lesser extent than one-time players.

3.2.5 Increasing the target’s standalone value

The commitment problem arises in our setup since the bidder cannot (or has no incentives to) create value unless he acquires more than 50% of the voting rights of the target. For example, a strategic bidder can realize the synergy only if the target is merged into the acquiring firm, and a private equity fund can execute the operational improvements only if the firm is taken private, insulating it from public markets. However, activist hedge funds, as well as other financial buyers, may have the expertise and incentives to propose and execute operational, financial, or governance related policies that increase the standalone value of the target, even if its ownership structure does not change. We show in Appendix B.2 that bidders who can increase the standalone value of the target are more resilient to the commitment problem in

takeovers. Intuitively, while the bidder may be tempted to low-ball the takeover offer once she gets control of the target board, these attempts are doomed to fail since target shareholders know that if they reject the offer, the bidder will inevitably implement the value-increasing proposal in order to maximize the value of his own stake in the target. Therefore, shareholders would not fear electing the bidder to the board in those cases. Nevertheless, the bidder can still abuse the power of the board to tunnel assets or extract value by other means, which may be of a particular concern if the bidder is a corporation in a related industry. In this respect, financial buyers such as activist hedge funds are more resilient than strategic buyers to the commitment problem in takeovers.¹⁷

3.2.6 Proxy fight combined with a tender offer

In the U.S., the bidder can run a proxy fight and at the same time make a tender offer that remains pending until after the director elections. However, the bidder can amend the terms of the tender offer without restriction, at least as long as any of the conditions to the tender offer remains unsatisfied.¹⁸ Even if the bidder can commit not to revise the tender offer, by doing so, he is exposed to the free-rider problem of Grossman and Hart (1980), which is costly.

Bebchuk and Hart (2001) propose amending the existing rules governing mergers to allow acquirers to bring a merger proposal directly to a shareholder vote without the approval of the board of directors. Under the proposed rules, the bidder can effectively commit to a certain acquisition price. Our analysis suggests that if a proposal of this nature is adopted, then the role of activist investors in the M&A market would be diminished.

3.3 The market solution: Corporate control activism

Our analysis highlights the role of activist investors in mitigating the inefficiencies caused by the bidder's commitment problem. The fact that most proxy fights are launched by activists, not by bidders, is consistent with shareholder activism being the market solution for the bidder's commitment problem.

The activist can put pressure on the incumbent only if target shareholders trust her to

¹⁷Consistent with this argument, Boyson et al. (2016) find that in 15% of the events in their sample the activist is also making a takeover bid to the target company.

¹⁸Since the tender offer is made prior to the proxy fight, typically it has a condition that the offer is valid only if the poison pill is redeemed. Therefore, the newly elected directors can always choose not to redeem the pill, thereby paving the way for the bidder to revise the offer.

act in their best interests if they elect her to the board. But can target shareholders trust an activist? Our argument does not depend on a perfect alignment of interests between the activist and other target shareholders. Importantly, it is the credibility of the activist *relative* to the bidder's, rather than its absolute level, that is at the core of our argument. In other words, it is only required that the activist has a higher credibility than the bidder and that the activist would resist the takeover to a lesser extent than the incumbent. In Appendix C.4 we show that the main results continue to hold even if the activist is expected to divert a non-trivial amount of corporate resources once elected to the board, or if she is biased toward selling the firm (e.g., because of short-termism or impatience).

Activists maintain their relative advantage in our model even if side-payments are possible. With side-payments, the bidder can compensate (i.e., bribe) the board for the loss of private benefits of control if such exist, and thereby overcome the resistance to the takeover without paying target shareholder a high premium. However, side-payments are illegal, they cannot be contracted or formalized, and they must be kept out of sight. They require pushing envelopes underneath the table, explicit communications, or tacit agreements of future favours or transfers, all of which entail the risk of being spotlighted, and hence, can result with destroyed reputation, litigation, and significant penalties or even jail time for all parties involved. When the bidder controls the board, it is often the same person who makes decisions on behalf of the bidder and target shareholders. In this case, no physical transfers or communications have to take place, and so the risk of anyone finding a “smoking gun” that can be used in courts as evidence for misconduct is small. However, this risk is much higher when the bidder has to bribe a third party, such as an activist investor, with whom the bidder does not necessarily have tight and close relationship.¹⁹ Since side-payments are riskier when the activist controls the board, they are less expected.²⁰ Therefore, target shareholders are likely to be more suspicious about the bidder's motives than the activist's.

¹⁹Even if the representative of the bidding firm on the target board is not the same person as the CEO of the bidding firm (or of whoever controls it), that person is likely to have a tighter relationship with the bidding firm (e.g., employment) than a third party such as an activist investor has, and therefore, tacit collusion is more likely when the bidder has the control of the board.

²⁰A similar argument can be made against the attractiveness of offering side-payments to the incumbent board. However, as long as side-payments impose risks and costs on the parties involved, the incumbent's resistance to the takeover (resulting from his private benefits) is harder to overcome, in which case, a deal is more likely when the target board is controlled by the activist.

3.3.1 When might corporate control activism be ineffective?

The relative advantage of activists when campaigning against the incumbents crucially depends on the belief of target shareholders that, unlike the bidder, the activist is truly on their side of the negotiating table. We discuss special situations in which target shareholders are likely to be suspicious about the activist's motives.

Collaborations between activist investors and bidders Our analysis implies that the resistance of incumbents to takeovers can be overcome only if the capacity to disentrench the board is separated from the capacity to increase value through acquisitions, and hence, collaborations between activist investors and bidders are likely to fail. As an example, consider the unsolicited bid of Valeant for Allergan in 2014. Valeant teamed up with the activist hedge fund Pershing Square, with the intention that the latter would build a toehold in Allergan and push for its sale to Valeant. The sophisticated maneuver failed. Our analysis suggests that by teaming up with Valeant, Pershing Square lost its credibility (with respect to Valeant's bid) since shareholders of Allergan could not trust Pershing Square to act in their best interests (rather than in Valeant's) once elected to the board. Without the trust of the shareholders of Allergan, Pershing Square was as ineffective as Valeant in pressuring the Allergan's board to accept Valeant's offer.²¹

Diversified investors Our analysis suggests that large institutional investors with diversified portfolios (e.g., Vanguard, Fidelity, State Street, and BlackRock) are unlikely to play an active role in takeovers, at least when the bidder is a public corporation. Matvos and Ostrovsky (2008) and Harford et al. (2011) find that in many cases large target shareholders also hold large positions in the acquiring firm. With ownership on both sides of the transaction, these investors lack the credibility that pure sell-side investors would have. Since the ability to win a proxy fight crucially depends on the credibility of the challenger, these investors are unlikely to be effective in relaxing the opposition of the board to the takeover, even if they own large stakes in the target and have the relevant governance expertise.

Empty voting In practice, hedge funds can decouple voting and cash-flow rights in common equity through the use of derivatives to hedge the cash-flow risk. Such decoupling can give rise

²¹ Allergan was eventually acquired by Actavis, however, from the perspective of Valeant, the takeover attempt failed. See NYT, 11/18/2014, "The Flaws in Valeant's Activist Deal Effort".

to the opposite preferences when voting for merger from the preferences of unhedged common equity holders (Hu and Black (2006, 2007) and Kahan and Rock (2007)). In principle, this practice can undermine the credibility of the activist when campaigning against the incumbent. However, according to SEC Rule 14a-9, omitting or making false and misleading statements of material fact in connection with any solicitation of proxies is prohibited. In particular, the activist would be required to disclose her net economic exposure to the target and the bidding firm (in the context of a takeover). Either way, Collin-Dufresne et al. (2016) document that activist investors rarely trade derivatives, putting into question the extent of empty voting as a common practice used by activists.

4 Activist’s position building and deal solicitation

Given the role of activist investors in mitigating the inefficiencies caused by the bidder’s commitment problem in takeovers, it is important to study the implications of interventions by activists on the M&A market. For this purpose, we extend the model in Section 2 by endogenizing the initial decision of the activist to become a target shareholder and the decision of the bidder to engage in takeover negotiations. We maintain the assumption that the bidder cannot commit to act in the best interests of the target shareholders once elected to the board.

4.1 Modified setup

Suppose that Δ is initially unknown and let $\zeta \in \{0, 1\}$ be a random variable with a common prior $\Pr[\zeta = 1] = \mu \in (0, 1)$. If $\zeta = 0$ then the firm is not a viable target and $\Delta \leq 0$ with certainty. If $\zeta = 1$ then the acquisition can create value and $\Pr[\Delta > 0 | \zeta = 1] > 0$. The cumulative distribution function of Δ conditional on $\zeta = 1$ is given by F , which is differentiable and has full support over the real line. We assume that $E[\Delta | \zeta = 1] \leq 0$. Intuitively, finding a corporate asset with which the bidder can create synergies is hard.²² This assumption guarantees that the bidder will not acquire the target without first performing due diligence, as we specify below.

The bidder and the activist are endowed with private information about ζ . The bidder perfectly observes ζ while the activist receives a private signal $y \in \{0, 1\}$ with precision $\phi \in$

²²The integration of companies often distracts management and employees, increases uncertainty, and requires additional compliance with regulation, all of which are detrimental to firm value, i.e., $\Delta < 0$.

$(0, 1]$ where

$$\Pr [y = 1|\zeta] = \begin{cases} 1 & \text{if } \zeta = 1 \\ 1 - \phi & \text{if } \zeta = 0. \end{cases} \quad (4)$$

If $y = 0$ then the activist infers with certainty that $\zeta = 0$, and if $y = 1$ then the activist updates her beliefs about $\zeta = 1$ from μ to $\hat{\mu} \equiv \frac{\mu}{1-\phi(1-\mu)}$.

At the outset, the bidder and the activist do not own shares of the target. The activist privately observes signal y and submits an order to buy $\alpha \geq 0$ shares from a risk-neutral and competitive market maker. Short sales are not allowed. The share price p is set equal to the expected value of the target conditional on the total order flows for the firm, denoted by z . The market maker cannot distinguish between orders that are generated by the activist or by liquidity traders. With probability $\frac{1}{2}$ liquidity traders submit an order to buy $L \in (0, \frac{1}{2})$ shares, and with probability $\frac{1}{2}$ they do not trade. We assume that purchasing up to $2L$ shares does not trigger a poison pill if such exists, and the activist cannot buy more than $2L$ shares of the target, because of either wealth constraints or the concern of triggering a poison pill. After trading, the activist's ownership in the target becomes public (e.g., by filing schedule 13D). The bidder observes ζ and α , and then decides whether to perform due diligence. Specifically, the bidder can pay c and learn the exact value of Δ . The cost c , which is privately observed by the bidder, is drawn from a continuous cumulative distribution G with full support on $[0, \infty)$ and is independent of all other random variables.²³ For simplicity, we abstract from the bidder's decision to build a toehold and assume $m = 0$. If the bidder performs due diligence, then Δ becomes public and the takeover negotiations unfold as in the baseline model.

4.2 Analysis

We solve for the Perfect Bayesian Equilibria of the extended model. Consider first the decision of the bidder to perform due diligence. Since the takeover on average does not create value, the bidder never acquires the target without first performing due diligence, irrespective of the activist's position in the target. If the bidder has performed due diligence, his expected profit is given by the following corollary of Proposition 2.

Corollary 1 *Suppose the bidder performed due diligence and the activist owns α target shares. Conditional on ζ , the expected shareholder value is $q + \zeta v(\alpha)$, the bidder's expected profit is*

²³The assumptions on the bidder's due diligence technology are made for simplicity. The main results continue to hold if instead the cost is $c(\lambda)$, where $c', c'' > 0$ and λ is the probability the bidder learns Δ .

$\zeta(w(\alpha) - v(\alpha))$, and the expected value created by the takeover is $\zeta w(\alpha)$, where

$$v(\alpha) = \int_b^\infty [s\Delta + (1-s)b] dF(\Delta) + \int_{\min\{b, \frac{\kappa/s}{\alpha}\}}^b s\Delta dF(\Delta) \quad (5)$$

and

$$w(\alpha) = \int_{\min\{b, \frac{\kappa/s}{\alpha}\}}^\infty \Delta dF(\Delta). \quad (6)$$

All three terms strictly increase in α when $\frac{\kappa/s}{\alpha} < b$ and are invariant to α otherwise.

Based on Corollary 1, if the bidder performed due diligence his expected net profit conditional on ζ and α is $\zeta \cdot (w(\alpha) - v(\alpha)) - c$. As a result, if the activist owns α target shares then the bidder performs due diligence if and only if $\zeta = 1$ and $c < w(\alpha) - v(\alpha)$. The expected takeover premium conditional on $\zeta = 1$ and α is given by

$$h(\alpha) \equiv G(w(\alpha) - v(\alpha))v(\alpha). \quad (7)$$

As we explain below, both $w(\alpha) - v(\alpha)$ and $v(\alpha)$ increase in α , and therefore, the incentives of the bidder to perform due diligence and the expected takeover premium increase with the size of the activist's stake in the target.²⁴

Let $\alpha^*(y)$ be the number of shares bought by the activist in equilibrium as a function of her private signal. If $y = 0$ then the activist expects any takeover attempt to fail and she does not invest in the target. If $y = 1$ and the activist owns α target shares then her expected profit is

$$\Pi(\alpha) = \alpha \left(q + \hat{\mu}h(\alpha) - \frac{p(\alpha) + p(\alpha + L)}{2} \right). \quad (8)$$

Generally, the activist's informational advantage stems from knowing whether the firm is likely to be a viable target and the fact she is becoming a target shareholder. The latter matters not only because the activist can pressure the incumbent board to accept a future takeover bid, but also because the anticipation of this pressure increases the incentives of the bidder to perform due diligence of the target. In other words, the activist can affect the takeover process even if ex-post her threat of running a proxy fight is not credible. Based on Proposition 1,

²⁴The analysis in the previous section microfounded $h(\alpha)$, the effect of the activist on firm value. However, the results in this section continue to hold even if $h(\alpha)$ stems from a different microfoundation, as long as $h(\alpha)$ is an increasing function. See Back et al. (2016) for a dynamic model of shareholder activism where the mapping from activist's ownership to firm value is exogenous.

the activist's threat of running a proxy would be credible with a positive probability if and only if $\frac{\kappa/s}{\alpha^*(1)} < b$. In equilibrium, the market maker sets the target share price equal to its standalone value plus the expected takeover premium, accounting for the potential effect of the activist on the takeover. In turn, the activist tries to disguise her trade as a liquidity and uninformed demand, and generally conceals the exact number of shares she buys from the market maker. These considerations affect the number of target shares that the activist purchases, and consequently, her ability to affect the takeover in equilibrium.²⁵

Proposition 3 *In any equilibrium, $\alpha^*(0) = 0$ and the bidder performs due diligence if and only if $\zeta = 1$ and $c < w(\alpha^*(1)) - v(\alpha^*(1))$. Given Δ and $\alpha^*(y)$, the takeover negotiations unfold as described by Proposition 2. Moreover,*

(i) *An equilibrium in which $\alpha^*(1) = 0$ exists if and only if*

$$2 - \frac{\mu h(0)}{\hat{\mu} h(L)} \leq \frac{h(2L)}{h(L)}. \quad (9)$$

The target share price is given by $p(z) = q + \mu h(0)$ for $z \in \{0, L\}$.²⁶

(ii) *An equilibrium in which $\alpha^*(1) > 0$ is unique and it exists if and only if $\frac{h(2L)}{h(L)} < 2$. In this equilibrium, $\alpha^*(1) = 2L$ with probability $\sigma^* \in [0, 1)$ and $\alpha^*(1) = L$ with probability $1 - \sigma^*$, where*

$$\sigma^* = 1 + \frac{\hat{\mu}}{2\mu} - \sqrt{\left(1 + \frac{\hat{\mu}}{2\mu}\right)^2 - \frac{2\hat{\mu}}{\mu} \max\left\{0, \frac{\frac{h(2L)}{h(L)} - 1 - \frac{1}{2} \frac{\hat{\mu} - \mu}{\hat{\mu}}}{\frac{h(2L)}{h(L)} - 1}\right\}}. \quad (10)$$

²⁵We impose two restrictions on the Perfect Bayesian equilibrium. First, if in equilibrium $\alpha^* > 0$ then the activist's expected profit (conditional on her private information) must be strictly positive. Intuitively, the activist would exercise her outside option if she cannot make a profit on her investment. Second, the market maker's off-equilibrium beliefs conditional on order flow z are bounded from above by the highest value that the activist would ascribe to the firm, which is obtained when $y = 1$ and $\alpha = \min\{z, 2L\}$.

²⁶The off-equilibrium beliefs that support the equilibrium are described in the proof in the Appendix.

The target share price is given by

$$p(z) = q + \hat{\mu} \times \begin{cases} 0 & \text{if } z = 0 \\ \frac{1-\sigma^*}{\hat{\mu}/\mu-\sigma^*} h(L) & \text{if } z = L \\ (1-\sigma^*) h(L) + \sigma^* h(2L) & \text{if } z = 2L \\ h(2L) & \text{if } z = 3L \text{ and } \sigma^* > 0. \end{cases} \quad (11)$$

Proposition 3 has several interesting implications. First, if $\frac{h(2L)}{h(L)} \geq 2$ then there is no equilibrium in which the activist becomes a target shareholder. Since $\frac{h(2L)}{h(L)} \geq 2$ implies $\frac{\kappa/s}{2L} < b$ (and sometimes $\frac{\kappa/s}{L} < b$), the activist could build a position and pressure the incumbent to sell the target, but she chooses not to. Why? When $\frac{h(2L)}{h(L)} \geq 2$ the marginal effect of increasing the activist's position on the expected takeover premium is very large. Unless it is fully priced, the activist cannot avoid the temptation of buying $2L$ target shares and using them to facilitate a takeover. However, the market maker realizes this temptation and prices the shares accordingly, leaving the activist with no profit in equilibrium. Without a profit, the activist refrains from investing in the target.

Can the activist ever profit from buying $2L$ shares in equilibrium? After all, the liquidity demand is either L or zero. While buying $2L$ shares fully reveals that the activist is becoming a target shareholder and her private information about Δ , the market maker cannot infer the exact number of shares that the activist purchased. This latter piece of private information, which is the source of the activist's profit, is valuable only if the activist can exert more pressure on the incumbent by increasing the size of her stake from L to $2L$. According to Proposition 3, there is an equilibrium in which the activist buys $2L$ shares with a positive probability (i.e., $\sigma^* \in (0, 1)$) if and only if $1 + \frac{1}{2} \frac{\hat{\mu}-\mu}{\hat{\mu}} < \frac{h(2L)}{h(L)} < 2$. That is, the marginal effect of the activist's stake on the expected takeover premium must be moderate.

Generally, when $\frac{h(2L)}{h(L)} < 2$ the equilibrium exhibits either a "selection effect", a "treatment effect", or both. Under the selection effect, the activist's threat of running a proxy fight is not credible, that is, $\frac{\kappa/s}{\alpha^*(1)} \geq b$. Since the activist has no informational advantage relative to the bidder, she cannot affect his decision to perform due diligence by sharing her information either. However, since $\phi > 0$, the activist has incentives to speculate: Knowing the firm is likely to be a target when $y = 1$ gives the activist informational advantage (relative to the market maker) that makes the purchase of shares a profitable investment. In these cases, the

activist invests in firms that are likely to be targets, but her investment has no real effect.

Under the treatment effect, the activist invests in firms that are likely to be targets, and by doing so, she increases the probability of a takeover. There are two effects. First, if $\frac{\kappa/s}{\alpha^*(1)} < \Delta < b$ then the activist can effectively pressure the incumbent to accept an offer that he would otherwise reject. Second, if $\frac{\kappa/s}{\alpha^*(1)} < b$, regardless of the value of Δ , the activist increases the likelihood that a takeover offer is made by *soliciting* a deal: The presence of the activist as a target shareholder signals the bidder that the incumbent is likely to be pressured by its shareholders to sell the firm, and therefore, the bidder has stronger incentives to perform due diligence and start takeover negotiations. We call this ex-ante effect the *solicitation effect*.

Interestingly, the solicitation effect increases the value of the activist's private information of her being a shareholder of the target, and thereby increases her incentives to become a shareholder in the first place. Due to this feedback, small changes to the environment can have a large effect on the equilibrium. For example, a small decrease in κ (e.g., a change in regulation that eases the proxy access) can have an amplified positive effect on the probability that the activist becomes a shareholder of the target and the probability of a takeover. Related, policies that undermine shareholder activism but do not affect bidders directly will still have a significant effect on takeovers. This implies that legalization of two-tier "anti-activism" poison pills will adversely affect M&A even if "standard pills" that prevent takeovers are already prevalent.

Corollary 2 *Suppose $\frac{h(2L)}{h(L)} < 2$ and consider the unique equilibrium with $\alpha^*(1) > 0$. Then:*

(i) *The equilibrium exhibits only treatment if and only if*

$$\frac{\kappa/s}{L} < b. \quad (12)$$

(ii) *The equilibrium exhibits both selection and treatment if and only if*

$$\frac{\kappa/s}{2L} < b \leq \frac{\kappa/s}{L} \text{ and } 1 + \frac{1}{2} \frac{\hat{\mu} - \mu}{\hat{\mu}} < \frac{h(2L)}{h(L)}. \quad (13)$$

(iii) *The equilibrium exhibits only selection if and only if*

$$b \leq \frac{\kappa/s}{2L}, \text{ or } \frac{\kappa/s}{2L} < b \leq \frac{\kappa/s}{L} \text{ and } \frac{h(2L)}{h(L)} \leq 1 + \frac{1}{2} \frac{\hat{\mu} - \mu}{\hat{\mu}}. \quad (14)$$

Corollary 2 identifies the regions in which the selection and the treatment effects appear in equilibrium. Interestingly, if $\frac{\kappa/s}{2L} < b \leq \frac{\kappa/s}{L}$ then treatment and selection can occur simultaneously, depending on the size of the position that the activist builds in the target: If the activist buys $2L$ shares then the treatment effect is in play, and if she buys L shares then the selection effect is in play. Nevertheless, as we discussed above, whether the activist actually chooses to buy $2L$ shares depends on the ratio $\frac{h(2L)}{h(L)}$, and in this respect, the appearance of the treatment effect in equilibrium is endogenous. Since the liquidity demand is smaller than L , but the activist can exert pressure on the incumbent only if she buys strictly more than L shares, thereby revealing her presence and private information, the result that in equilibrium the activist chooses to buy $2L$ shares demonstrates that activists can mitigate the inefficiencies caused by the bidder's commitment problem even though building a position is costly.

According to Proposition 3, the ex-ante probability of a takeover is²⁷

$$\theta^* = \mu \times \begin{cases} (1 - \sigma^*) \theta(L) + \sigma^* \theta(2L) & \text{if } \frac{h(2L)}{h(L)} < 2 \\ \theta(0) & \text{if } \frac{h(2L)}{h(L)} \geq 2 \end{cases} \quad (15)$$

where

$$\theta(\alpha) = G(w(\alpha) - v(\alpha)) \int_{\min\{b, \frac{\kappa/s}{\alpha}\}}^{\infty} dF(\Delta). \quad (16)$$

If $\alpha > 0$ then $\hat{\mu}\theta(\alpha)$ is the probability of a takeover conditional on the activist owning α target shares.

When the equilibrium exhibits selection, the activist has no real effect. Yet, the probability of a takeover is higher when the activist is present as a target shareholder than when she is not. To see why, suppose $\frac{h(2L)}{h(L)} < 2$. If $y = 0$ then the activist buys no target shares, and since $\zeta = 0$, a takeover never takes place. If $y = 1$ then the activist becomes a target shareholder and the conditional probability of a takeover is strictly positive. Intuitively, since $\phi > 0$ the activist uses her private information on ζ to speculate on a takeover of the target. Therefore, her presence is correlated with a higher expected synergy and a higher probability that the bidder makes an offer. This observation suggests that one should not conclude from the empirical evidence that targets are more likely to be acquired when they have activist as a shareholder (e.g., Greenwood and Schor (2009) and Boyson et al. (2016)) that activists are necessarily

²⁷When multiple equilibria exist, we assume that the equilibrium with higher ex-ante probability of takeover (or, equivalently the equilibrium with $\alpha^*(1) > 0$) is in play.

affecting the takeover process.

The next result shows that the comparative statics of θ^* with respect to b , the incumbent board's private benefits of control, can help to distinguish between the selection and the treatment effects in equilibrium.²⁸

Proposition 4 *If the equilibrium exhibits only selection then θ^* is strictly decreasing in b . If the equilibrium exhibits treatment then θ^* is non-monotonic in b .*

If the equilibrium exhibits only selection then either $b \leq \frac{\kappa/s}{2L}$, or $\frac{\kappa/s}{2L} < b \leq \frac{\kappa/s}{L}$ and $\sigma^* = 0$. Either way, $\theta^* = \mu\theta(0)$, and the probability of a takeover is decreasing in b . Intuitively, higher b implies that the bidder has a lower probability of reaching an agreement with the incumbent at favorable terms, and hence, weaker incentives to perform due diligence. This can be seen in Figure 2: At any point left to the dotted vertical line, the equilibrium exhibits only selection, and the probability of a takeover is decreasing in b . Since in the selection region the activist has no effect on the takeover, the same pattern holds if the activist is not present as a target shareholder. This can be seen by the black curve in Figure 2.

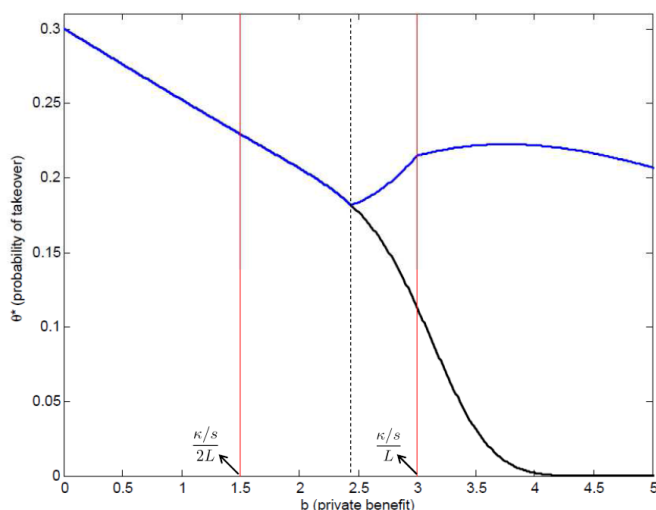


Figure 2 - The effect of b on the probability of a takeover, θ^*

$$L = 0.1, s = 0.75, \kappa = 0.225, \mu = 0.6, \phi = 0.5, \Delta \sim N(0, 5), c \sim \text{LogN}(-1.62, 0.13)$$

Interestingly, as shown by Figure 2, the probability of a takeover can *increase* with b when the equilibrium exhibits treatment. Indeed, starting at the dotted vertical line, the blue curve

²⁸We focus on local comparative statics of the equilibrium in which $\alpha^*(1) > 0$, where the equilibrium continues to exist upon a small change in the parameter.

in Figure 2 is increasing in b . To understand this result, note that all else being equal, higher b increases the takeover premium paid by the bidder conditional on reaching in agreement with incumbent. While the bidder's incentives to perform due diligence may decrease, the activist's incentives to buy shares of the target increase. Not only the activist expects a higher premium when the bidder negotiates the takeover with the incumbent, but also her threat of running a proxy fight becomes more credible (the interval $[\frac{\kappa/s}{2L}, b]$ expands), where both channels increase the value of the activist's private information. This can be seen in the left panel of Figure 3: the activist starts buying $2L$ shares with a positive probability when b reaches the dotted line. The right panel of Figure 3 shows that up to this point, the profit from buying $2L$ shares is lower than the profit from buying L . Since in this region $\frac{\kappa/s}{2L} < b \leq \frac{\kappa/s}{L}$, the equilibrium starts exhibiting treatment exactly at the dotted line. Since the bidder benefits from the activist's presence, the indirect effect of b on the bidder's incentives can be positive, and the overall probability of a takeover can increase. Therefore, contrary to the common wisdom, the probability of a takeover and the likelihood of an activist campaign can increase with the resistance of the incumbents, as such resistance creates more investment opportunities for the activist.²⁹

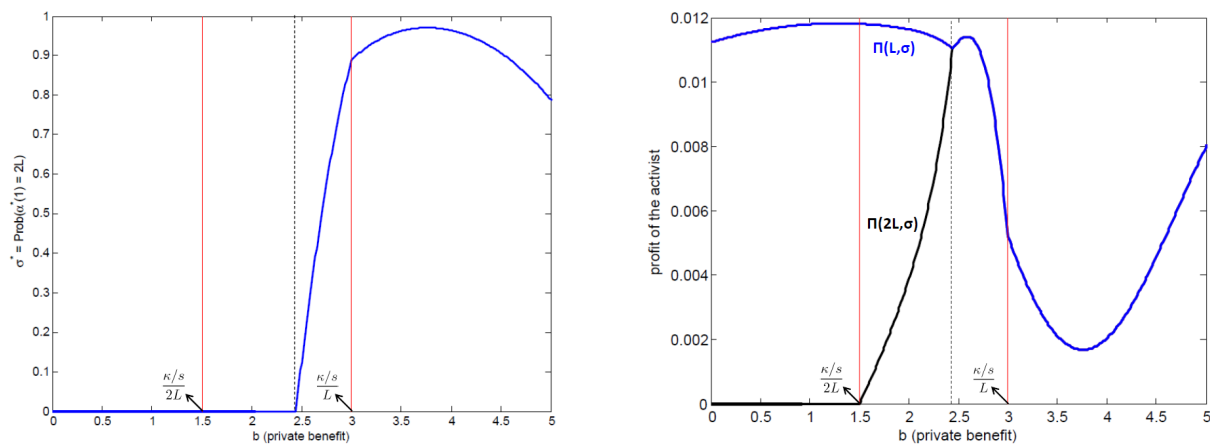


Figure 3 - The effect of b on σ^* and $\Pi(\cdot, \sigma^*)$

$$L = 0.1, s = 0.75, \kappa = 0.225, \mu = 0.6, \phi = 0.5, \Delta \sim N(0, 5), c \sim \text{LogN}(-1.62, 0.13)$$

²⁹In some cases, higher b increases the bidder's incentives to conduct due diligence even if the the size of the activist's stake does not change. Intuitively, if b is small, the bidder can reach an agreement even if the activist does not intervene, and the bidder pays a premium of $s\Delta + (1 - s)b$. If b is large, the bidder can reach an agreement only if the activist intervenes, in which case, he pays a lower premium of $s\Delta$.

4.2.1 Arbitrage activism - activist moves last

Our assumption that the bidder’s decision to perform due diligence is made *after* the activist’s position in the target is revealed is consistent with Boyson et al. (2016), who find that in 70% of the events in their sample a takeover bid is announced within 2 years of a hedge fund initiating an activist campaign. In 30% of the events, however, the activist enters *after* the announcement of an acquisition agreement but before closing. Nevertheless, the complementarity between shareholder activism and takeovers extends to these cases as well.

To see why, consider a variant of the model in which the activist (and the market) observes the decision of the bidder to perform due diligence before she decides if and how many target shares to buy (i.e., the bidder moves first). Since the activist “waits” with her investment decision until the bidder makes his own decision, we assume that with probability δ the activist has found an alternative investment and therefore cannot invest in the target. The emergence of this outside option is the activist’s private information.

If the bidder does not perform due diligence, he does not make an offer, the activist never buys shares of the target, and the target remains independent. The interesting case is when the bidder has performed due diligence of the target. In this case, the analysis is similar to Section 4.2 with the following two exceptions: the function $h(\alpha)$ is replaced by $v(\alpha)$, and the decision of the activist not to invest is not a bad signal on firm value. It can be shown that the activist can still profit from investing in the target since buying shares with the intent of pressuring the incumbent to accept the offer is still the activist’s private information. The anticipation that the activist will put pressure on the target board to accept the bidder’s offer once it is on the table increases the bidder’s incentives to perform due diligence and make the offer in the first place. In this respect, the complementarity between shareholder activism and takeovers extends to this setup.

5 Extensions

We consider several extensions of the baseline model. For simplicity, we assume $m = 0$. The formal results and their proofs are given in the Online Appendix.

5.1 Incumbent boards as motivated sellers

In management buyouts or when incumbents are promised large bonuses if the takeover succeeds (Grinstein and Hribar (2004) and Hartzell et al. (2004)), the agency problem between the incumbents and shareholders flips as the former are too motivated to sell the firm. If there is a concern that the interests of target shareholders are compromised, activist investors will challenge the deal with the intent of either blocking it or “forcing” the bidder to sweeten the bid (see Jiang et al. (2015)).

To stress this point, suppose that unless forced otherwise, the incumbent board would sell the firm for a zero premium. Unlike the incumbent, the activist would negotiate a premium of $s\Delta$. Therefore, target shareholders elect the activist whenever she runs a proxy fight. As in the baseline model, the activist would run a proxy only if $\frac{\kappa/s}{\alpha} \leq \Delta$. It follows that the target is always acquired by the bidder when $\Delta > 0$: If the activist owns α shares of the target and $\frac{\kappa/s}{\alpha} \leq \Delta$ then the bidder pays $q + s\Delta$, and in all other cases the bidder pays q . Unlike the baseline model, here the activist increases the expected premium the bidder is required to pay without increasing the likelihood that the incumbent board agrees to sell the firm. Therefore, the acquisition is less profitable from the bidder’s perspective.

Similar to the discussion in Section 4.2.1, the activist can make a profit by challenging the deal although she invests after the deal is announced. Different from that discussion, however, the anticipation that the activist will put pressure on the target board to reject the bidder’s offer or demand a higher premium weakens the bidder’s incentives to perform due diligence. Therefore, when the incumbent is a motivated seller, there is *substitution* between shareholder activism and takeovers.

5.2 Activist’s proposals

As described in Section 3.2.5, activist investors often have the capacity to propose ways to increase the standalone value of the target. Does it complement or substitute the activist’s ability to pressure the incumbent to sell the firm? To answer this question, suppose that the bidder can increase the value of the target by Δ only through its acquisition, while the activist can make a proposal that increases the value of the target by $\varepsilon \geq 0$, but only if it remains independent. The incumbent loses his private benefits if the target is acquired or the proposal is implemented. The proposal can be implemented by the incumbent or the activist, but without the activist, the incumbent is either unaware or does not have the expertise to

implement this proposal.

Suppose $\varepsilon < \min\{b, \kappa/\alpha\}$. Since $\varepsilon < b$, the incumbent would not voluntarily implement the activist's proposal. The activist's intervention can be interpreted as the removal of inefficiencies caused by the incumbent's consumption of private benefits. However, since $\varepsilon < \kappa/\alpha$, the activist does not have enough incentives to run a proxy fight if the sole purpose is implementing the proposal. Nevertheless, the analysis in the baseline model continues to hold with the exception that the activist's threat of running a proxy fight is credible if and only if $\frac{\kappa/\alpha}{s} - \frac{1-s}{s}\varepsilon < \Delta < b$, and in this region, the takeover premium is $s\Delta + (1-s)\varepsilon$. Intuitively, the upside from the takeover increases the incentives of the activist to run a proxy fight. Since the proposal increases the standalone value of the firm once the activist obtains control of the target board, it also increases the takeover premium that the activist can negotiate with the bidder. Similarly, the ability to increase the standalone value of firm increases the credibility of the activist's threat to run a proxy fight when the incumbent resists selling the firm. In this respect, corporate control activism and non-control activism are *complements*. Moreover, since the activist relaxes the resistance of the incumbent to the takeover, the bidder's expected profit is higher when the activist is present. In fact, it can increase with ε even conditional on the activist's presence, if increase in the likelihood of a takeover is first order relative to increase in premium once the takeover takes place. That said, if ε is sufficiently large, the bidder's expected profit would decrease with ε and the activist's stake, and a takeover is less likely when the activist is present than when she is not. In those cases, corporate control activism and non-control activism are *substitutes*.

5.3 Limited veto power and tender offers

In this section we relax the assumption that the target board has the full power to block the deal. Specifically, we assume that if at the end of the second round of negotiations no agreement is reached between whoever controls the target board and the bidder, with probability $\lambda \in [0, 1]$ the deal is blocked and the target remains independent, but with probability $1 - \lambda$ the bidder can make a tender offer directly to target shareholders. For simplicity, we focus on conditional tender offers for all target shares. The baseline model is a special case where $\lambda = 1$. Tender offers exhibit collective action problems such as free-riding: Target shareholders reject offers lower than their perception of the post takeover value of their shares (Grossman and Hart (1980)). Suppose $\Delta > 0$ and assume that the post takeover value of the minority shares under

the bidder's control is $q + \varphi\Delta$ where $\varphi \in [0, 1]$. The term $(1 - \varphi)\Delta$ can be interpreted as either the bidder's private benefits from the acquisition or the expected dilution of minority shareholders under the bidder's control.

Similar to the baseline model, the bidder never runs a proxy fight, but the activist runs a proxy fight if and only if $\frac{\kappa/s}{\alpha\lambda} \leq \Delta < b$. That is, the activist is more likely to run a proxy fight when λ is larger. In this respect, there is *substitution* between the bidder's ability to bypass the target board through tender offers and the activist's ability or need to unseat it through proxy fights. Intuitively, if λ is low then the bidder has an alternative mean by which he can overcome the resistance of the board, and hence, the activist has fewer incentives to run a proxy fight in order to facilitate the takeover. Therefore, one would expect activists to play a smaller role in the market for corporate control in jurisdictions in which boards have weaker power to block deals, such as the U.S. in the 1980s or the U.K.

6 Conclusion

This paper studies the role of activist investors in the market for corporate control. We identify a commitment problem that prevents bidders from unseating resisting and entrenched incumbent directors of target companies through proxy fights. Unlike bidders, activists are on the same side of the negotiating table as other shareholders of the target, and hence, enjoy higher credibility when campaigning against the incumbent board. Building on this insight, we demonstrate that although both bidders and activists can use similar techniques to challenge corporate boards (i.e., proxy fights), activists are more effective in relaxing the resistance of incumbent directors to takeovers. The fact that most proxy fights are launched by activists and not by bidders is consistent with shareholder activism being the market solution for the bidder's commitment problem.

Our analysis also highlights the complementarity between shareholder activism and takeovers. Activists benefit from the possibility that companies in which they invest will become a takeover target, while bidders, who interpret the presence of an activist as a signal that the target is available for sale, are more likely start takeover negotiations when the target has an activist as a shareholder. We show that since the model's comparative statics is sensitive to the existence of the treatment effect in equilibrium, our analysis can be used to create identification strategies of the treatment effect of shareholder activism in takeovers. Overall, the analysis sheds light on the interaction between M&A and shareholder activism.

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A Proofs of main results

Proof of Lemma 1. Generally, there are three scenarios to consider. The scenarios differ with respect to the composition of the target board after the proxy fight stage. Under all scenarios, target shareholders approve the acquisition agreement if it is brought to a shareholder vote if and only if the takeover offer is weakly higher than the standalone value of the firm, q . Moreover, the bidder will not agree to pay more than $q + \frac{\Delta}{1-m}$ per share.

In the first scenario, the incumbent board is reelected and retains control of the target. The incumbent board would agree to sell the firm if and only if the bidder offers at least $q + b$ per share. Therefore, if $\frac{\Delta}{1-m} < b$ no agreement is reached and the target remains independent under the control of the incumbent. If $\frac{\Delta}{1-m} \geq b$ then the incumbent board and the bidder reach an agreement in which the expected takeover premium is $s\frac{\Delta}{1-m} + (1-s)b$: with probability $1-s$ the bidder proposes to pay $q + b$, which is the lowest price that is acceptable by both the incumbent board and the shareholders, and with probability s the incumbent board propose to receive $q + \frac{\Delta}{1-m}$, which is the highest price that the bidder would agree pay for the firm.

In the second scenario, the activist wins the proxy fight and controls the target board. If no agreement is reached with the bidder, the target remains independent, and the activist's payoff per share is q , which is the value of the target as a standalone firm. Therefore, the activist would agree to sell the firm if and only if the offer is at least q . Since $\Delta > 0$, the bidder and the activist always reach an acquisition agreement that is also acceptable to target shareholders. With probability $1-s$ the bidder offers q , which is the lowest price that is acceptable by both the activist and the shareholders, and with probability s the activist asks for $q + \frac{\Delta}{1-m}$, which is the highest price the bidder would pay for the firm.

In the third scenario, the bidder wins the proxy fight and controls the target board. The argument is given in the main text. ■

The next result is a generalization of Proposition 1 for cases where the bidder commits to act in the best interests of target shareholders once elected to their board.

Proposition 5 *Suppose the first round of negotiations fails. Then:*

- (i) *The bidder runs a proxy fight if and only if he has committed to act in the best interests of target shareholders once elected to the target board, the activist does not run a proxy fight, and*

$$\frac{1}{1-m} \frac{\kappa}{1-s} \leq \frac{\Delta}{1-m} < b. \quad (17)$$

Whenever the bidder runs a proxy fight, he wins.

(ii) If the activist owns α shares of the target, the activist runs a proxy fight if and only if the bidder does not run a proxy fight and

$$\frac{\kappa/s}{\alpha} \leq \frac{\Delta}{1-m} < b. \quad (18)$$

Whenever the activist runs a proxy fight, she wins.

Proof. If the bidder has not committed to act in the best interests of target shareholders once elected to the target board, then the proposition reduces to Proposition 1, which is proved in the main text. Suppose throughout the rest of the proof that the bidder has made this commitment. If the incumbent board retains control of the target in the second round of negotiations, then shareholder value is $q + \mathbf{1}_{\{b \leq \frac{\Delta}{1-m}\}} \cdot [s \frac{\Delta}{1-m} + (1-s)b]$. If the activist or the bidder obtains control of the target board, an agreement will be reached in the second round and the expected shareholder value is $q + s \frac{\Delta}{1-m}$. Therefore, if $b \leq \frac{\Delta}{1-m}$ then neither the bidder nor the activist can win a proxy fight, and hence, they will not initiate one. Suppose $\frac{\Delta}{1-m} < b$ and the first round of negotiations failed. Shareholders will support whoever runs a proxy fight, knowing that in both cases an agreement will be reached in the second round of negotiations and that the expected shareholder value will be $q + s \frac{\Delta}{1-m}$. Therefore, if one player is going to run a proxy fight, the other player does not have incentives to run a proxy fight, since by doing so he will obtain the same profit but will in addition incur the cost κ . Consider the case in which the bidder runs a proxy fight. If the bidder runs a proxy fight then his expected profit is

$$q + \Delta - (1-m) \left(q + s \frac{\Delta}{1-m} \right) - \kappa - qm = \Delta(1-s) - \kappa.$$

If neither the bidder nor the activist runs a proxy fight, the firm will remain independent and the bidder's profit will be zero. Therefore, the bidder will run a proxy fight if and only if $\frac{\kappa}{1-s} \leq \Delta$. This completes part (i). Consider the case in which the activist runs a proxy fight. If the activist runs a proxy fight then her expected payoff is $\alpha \left(q + s \frac{\Delta}{1-m} \right) - \kappa$. If neither the bidder nor the activist runs a proxy fight, then the firm will remain independent, and the activist's payoff will be αq . Therefore, the activist will run a proxy fight if and only if $\frac{\kappa/s}{\alpha} \leq \frac{\Delta}{1-m}$. This completes part (ii). ■

The next result is a generalization of Proposition 2 for cases where the bidder commits to act in the best interests of target shareholders once elected to their board.

Proposition 6 *A unique equilibrium exists and has the following properties:*

- (i) If $\frac{\Delta}{1-m} \geq \min\{b, \frac{\kappa/s}{\alpha}\}$ then the bidder reaches an agreement in the first round of negotiations with the incumbent board in which he pays $q + s\frac{\Delta}{1-m} + (1-s)b \cdot \mathbf{1}_{\{\frac{\Delta}{1-m} \geq b\}}$ per share and acquires the target.
- (ii) If $\frac{1}{1-m} \frac{\kappa}{1-s} \leq \frac{\Delta}{1-m} < \min\{b, \frac{\kappa/s}{\alpha}\}$ and the bidder has committed to act in the best interest of target shareholders, then the bidder reaches an agreement in the first round of negotiations with the incumbent board in which he pays an expected price of $q + s\frac{\Delta+\kappa}{1-m}$ per share and acquires the target.
- (iii) If $\frac{\Delta}{1-m} < \min\{b, \frac{\kappa/s}{\alpha}, \frac{1}{1-m} \frac{\kappa}{1-s}\}$ and the bidder has committed to act in the best interest of target shareholders or if $\frac{\Delta}{1-m} < \min\{b, \frac{\kappa/s}{\alpha}\}$ and the bidder has not committed, then the target remains independent.

Proof. We start by proving that if $b \leq \frac{\Delta}{1-m}$ the bidder pays $q + s\frac{\Delta}{1-m} + (1-s)b$ and acquires the target after the first round of negotiations. Based on Proposition 5, if $b \leq \frac{\Delta}{1-m}$ then neither the bidder nor the activist will run a proxy fight. Therefore, both the bidder and the incumbent board expect that in the second round of negotiations they will reach an agreement with an expected premium of $s\frac{\Delta}{1-m} + (1-s)b$. For this reason, the bidder will not agree to pay more than this amount and the incumbent board will not accept less than this amount. If there are arbitrarily small waiting costs to either the bidder or the incumbent board, they will reach an agreement in the first round of negotiations in which the bidder pays a premium of $s\frac{\Delta}{1-m} + (1-s)b$.

Second, suppose $\max\{\frac{\kappa/s}{\alpha}, \frac{1}{1-m} \frac{\kappa}{1-s}\} \leq \frac{\Delta}{1-m} < b$ and the bidder has committed to act in the best interest of target shareholders. Based on Proposition 5, there is an equilibrium of the subgame in which the bidder runs a proxy fight and an equilibrium in which the activist runs a proxy fight. Consider the former equilibrium. We prove that the bidder pays an expected price of $q + s\frac{\Delta+\kappa}{1-m}$ and acquires the target in the first round of negotiations. If the first round of negotiations fails, the bidder will run a proxy fight and win. In the second round, the expected premium is $q + s\frac{\Delta}{1-m}$, and the bidder's expected profit is $\Delta(1-s) - \kappa > 0$. In the first round of negotiations, shareholders would reject any offer lower than $q + s\frac{\Delta}{1-m}$, and accept any offer higher than that amount. If the bidder is the proposer, he will offer $q + s\frac{\Delta}{1-m}$, and both the board and the shareholders will accept it. If the board is the proposer, he will offer $q + \frac{s\Delta+\kappa}{1-m}$, which leaves the bidder with a profit of $\Delta(1-s) - \kappa \geq 0$. Indeed,

$$q + \Delta - (1-m)p - qm = \Delta(1-s) - \kappa \Leftrightarrow p = q + \frac{s\Delta + \kappa}{1-m}.$$

The bidder will accept this deal. Overall, the expected takeover premium is $q + s \frac{\Delta + \kappa}{1-m}$, as required. Consider the latter equilibrium. Based on Lemma 1, all players expect that once the activist obtains control of the board, she will reach a sale agreement in which the bidder pays in expectation $q + s \frac{\Delta}{1-m}$ per share. The bidder realizes that any lower offer will be rejected by shareholders, who expect the activist to negotiate a higher offer at the second round. The bidder can afford to pay $q + s \frac{\Delta}{1-m}$, but he will not pay more than $q + s \frac{\Delta}{1-m}$, since he always has the option to pay that much in the second round when he negotiates with the activist. The incumbent board understands the bidder's incentives and that the takeover of the target is inevitable, and therefore, he will lose his private benefits of control. However, by accepting the offer $q + s \frac{\Delta}{1-m}$ the board can avoid the costly proxy fight. Therefore, the incumbent and the bidder reach an agreement in the first round of negotiations where the offer is $q + s \frac{\Delta}{1-m}$, as required.

Third, suppose either $\frac{\kappa/s}{\alpha} \leq \frac{\Delta}{1-m} < \min\{b, \frac{1}{1-m} \frac{\kappa}{1-s}\}$ and the bidder has committed to act in the best interest of target shareholders, or $\frac{\kappa/s}{\alpha} \leq \frac{\Delta}{1-m} < b$ and the bidder has not committed. Based on Proposition 5, the only equilibrium of the subgame is one in which the activist runs a proxy fight. Therefore, as in the second step above, the bidder reaches an agreement in the first round of negotiations with the incumbent board in which he pays $q + s \frac{\Delta}{1-m}$ per share and acquires the target.

Fourth, suppose $\frac{1}{1-m} \frac{\kappa}{1-s} \leq \frac{\Delta}{1-m} < \min\{b, \frac{\kappa/s}{\alpha}\}$ and the bidder has committed to act in the best interest of target shareholders. Based on Proposition 5, the only equilibrium of the subgame is one in which the bidder runs a proxy fight. Therefore, as in the second argument above, the bidder reaches an agreement in the first round of negotiations with the incumbent board in which he pays an expected price of $q + s \frac{\Delta + \kappa}{1-m}$ per share and acquires the target.

Fifth, suppose either $\frac{\Delta}{1-m} < \min\{b, \frac{\kappa/s}{\alpha}, \frac{1}{1-m} \frac{\kappa}{1-s}\}$ and the bidder has committed to act in the best interest of target shareholders, or $\frac{\Delta}{1-m} < \min\{b, \frac{\kappa/s}{\alpha}\}$ and the bidder has not committed. We prove that the target remains independent under the incumbent board's control. Based on Proposition 5, in both cases, neither the bidder nor the activist runs a proxy fight if the first round of negotiations fails. Since $\frac{\Delta}{1-m} < b$, the incumbent board and the bidder will not reach an agreement in the second round of negotiations. Therefore, in the first round of negotiations, the incumbent board will reject any offer lower than $q + b$, and the bidder will reject any offer higher than $q + \frac{\Delta}{1-m}$. Thus, the parties will not reach an agreement in the first round as well, and the target remains independent.

Finally, the statement of the proposition is the union of the arguments above subject to the assumption that if $\max\{\frac{\kappa/s}{\alpha}, \frac{1}{1-m} \frac{\kappa}{1-s}\} \leq \frac{\Delta}{1-m} < b$ and the first round of negotiations fails,

then the equilibrium in which the activist runs a proxy fight is selected. ■

Proof of Proposition 3. We first prove that in any equilibrium $\alpha^*(0) = 0$. If $y = 0$ then the activist infers that $\zeta = 0$ with certainty, and hence, $\Delta < 0$ with certainty. Based on Proposition 2, the probability of a takeover is zero and firm value is q . Since the share price cannot be smaller than q , regardless of the beliefs of the market maker (on or off the equilibrium path), the activist's expected profit from submitting any order $\alpha > 0$ is non-positive. Given our assumption that the activist does not buy shares if the expected profit is zero, $\alpha^*(0) = 0$.

Second, we prove that in any equilibrium the bidder performs due diligence if and only if $\zeta = 1$ and $c < w(\alpha^*(1)) - v(\alpha^*(1))$. Based on Corollary 1, if the bidder performed due diligence his expected net profit conditional on ζ and α is $\zeta \cdot (w(\alpha) - v(\alpha)) - c$. As a result, if the activist owns α target shares then the bidder performs due diligence if and only if $\zeta = 1$ and $c < w(\alpha) - v(\alpha)$. This condition reduces to $\zeta = 1$ and $c < w(\alpha^*(1)) - v(\alpha^*(1))$ because $\zeta = 1$ implies that $y = 1$, i.e, if the bidder has received $\zeta = 1$ then the activist must have bought $\alpha^*(1)$ shares in the target.

Third, consider an equilibrium in which the activist buys no shares regardless of the realization of y . The only order flows on the equilibrium path are $z = 0$ and $z = L$. In those cases, the market maker sets the price on $p(z) = q + \mu h(0)$. If $z \notin \{0, L\}$ then $p(z) \leq \Gamma(\max\{z, 2L\})$ where

$$\Gamma(\alpha) \equiv q + \frac{\mu}{1 - \phi(1 - \mu)} h(\alpha) \quad (19)$$

is the firm value from the activist's perspective if $y = 1$ and she owns α shares of the target. Note that $\Gamma(\alpha)$ is strictly increasing in α if $\alpha > \frac{\kappa/s}{b}$ and invariant to α if $\alpha < \frac{\kappa/s}{b}$. Suppose (9) does not hold. The worst off-equilibrium beliefs from the activist's perspective are set when $z \notin \{0, L\} \Rightarrow p(z) = \Gamma(\max\{z, 2L\})$. Suppose that is the case, and consider the following deviation of the activist: She buys L shares of the target if $y = 1$ and no shares otherwise. Her expected profit conditional on $y = 1$ is

$$\begin{aligned} \Gamma(L) - \frac{p(L) + p(2L)}{2} &= \Gamma(L) - \frac{q + \mu h(0) + \Gamma(2L)}{2} \\ &= \frac{1}{2} \left[2 \frac{\mu}{1 - \phi(1 - \mu)} h(L) - \mu h(0) - \frac{\mu}{1 - \phi(1 - \mu)} h(2L) \right] \end{aligned}$$

which is strictly positive if and only if (9) does not hold. Therefore, such equilibrium cannot exist. If (9) holds, then the same off-equilibrium beliefs sustain an equilibrium in which the activist never buys any shares. Indeed, given these off-equilibrium beliefs neither the above

deviation to buying L shares nor any other deviation to buying $\alpha' \notin \{0, L, 2L\}$ shares gives the activist strictly positive profit.

Fourth, we prove that in any equilibrium, if $\alpha^*(1) > 0$ then either $\alpha^*(1) = L$ or $\alpha^*(1) = 2L$. Suppose on the contrary there is an equilibrium in which the activist submits $\alpha^*(1) = \hat{\alpha} \in (0, 2L) / \{L\}$ with a positive probability. From the activist's perspective, the value of the firm conditional on $y = 1$ is $\Gamma(\hat{\alpha})$. The activist expects a total order flow of $\hat{\alpha}$ or $\hat{\alpha} + L$ with equal probabilities, and therefore, she expects to pay $\frac{p(\hat{\alpha}) + p(\hat{\alpha} + L)}{2}$. Since $\hat{\alpha} > 0$, by revealed preferences,

$$\Gamma(\hat{\alpha}) - \frac{p(\hat{\alpha}) + p(\hat{\alpha} + L)}{2} > 0. \quad (20)$$

We proceed in two steps. First, if $\hat{\alpha} \in (0, L)$ then $\hat{\alpha} < L < \hat{\alpha} + L$. Therefore, if $z \in \{\hat{\alpha}, \hat{\alpha} + L\}$ then the market maker must infer that the activist submitted an order to buy at least $\hat{\alpha}$ shares of the target. Since $\hat{\alpha} > 0$, the market maker also infers that $y = 1$.³⁰ Since $\Gamma(\alpha)$ is weakly increasing in α , conditional on $z \in \{\hat{\alpha}, \hat{\alpha} + L\}$, the market maker believes that the value of the firm is at least $\Gamma(\hat{\alpha})$, which implies $p(z) \geq \Gamma(\hat{\alpha})$ for $z \in \{\hat{\alpha}, \hat{\alpha} + L\}$. However, this condition contradicts (20). Second, if $\hat{\alpha} \in (L, 2L)$ then $\hat{\alpha} - L < L < \hat{\alpha}$. However, since submitting $\alpha \in (0, L)$ is never an equilibrium (by the first step), if $z \in \{\hat{\alpha}, \hat{\alpha} + L\}$ then the market maker must infer that the activist submitted an order to buy at least $\hat{\alpha}$ shares of the target. As in the first step, this conclusion creates a contradiction.

Fifth, consider an equilibrium such that if $y = 0$ the activist buys no shares, and if $y = 1$ she buys zero shares with probability ψ , L shares with probability $1 - \sigma - \psi$, and $2L$ shares with probability σ . Notice that if $\psi \in (0, 1)$ then the activist must be indifferent between buying no shares and buying a strictly positive number of shares, which is not possible in equilibrium since the activist must make a strictly positive profit if she buys a strictly positive number of shares. Therefore, $\psi \in \{0, 1\}$ in equilibrium. Hence, in equilibrium if $\sigma > 0$ or $\psi < 1$ then it must be $\psi = 0$, and if $\psi > 0$, it must be $\sigma = 0$ and $\psi = 1$. The latter case is addressed by the step number 2 above. Therefore, consider an equilibrium with $\psi = 0$. There are at most four possible order flows on the equilibrium path. First, if $z = 0$ then the liquidity demand is zero and the activist did not buy a stake because she received $y = 0$. In this case, firm value is q . Second, if $z = 3L$ and $\sigma > 0$ then the market maker infers that the activist bought $2L$ shares and $y = 1$, and therefore, $p(3L, \sigma) = \Gamma(2L)$. If $\sigma = 0$ then $z = 3L$ is off-equilibrium, and setting the off-equilibrium price as $\Gamma(2L)$, which is the highest possible and yielded by the off-equilibrium beliefs that $y = 1$ and the activist submitted $\min\{z, 2L\}$ shares, will ensure

³⁰Since $\alpha > 0$ is a weakly dominated strategy when $y = 0$, we restrict the off-equilibrium beliefs of the market maker and the bidder to be such that the activist observes $y = 1$ with probability one whenever $\alpha > 0$.

that if in equilibrium $\sigma^* = 0$, the activist will not deviate to choosing $2L$ with a positive probability. Third, suppose $z = L$. There are two events the market maker considers:

1. With probability $\frac{1}{2}\phi(1-\mu)$ the liquidity demand is L and the activist did not buy a stake because she received $y = 0$. In this case, firm value is q .
2. With probability $\frac{1}{2}[1-\phi(1-\mu)](1-\sigma)$ the liquidity demand is zero, the activist received signal $y = 1$, and she bought a stake L . In this case, firm value is $\Gamma(L)$.

Combined, the share price is

$$\begin{aligned} p(L, \sigma) &= \frac{\frac{1}{2}\phi(1-\mu)q + \frac{1}{2}[1-\phi(1-\mu)](1-\sigma)\Gamma(L)}{\frac{1}{2}\phi(1-\mu) + \frac{1}{2}[1-\phi(1-\mu)](1-\sigma)} \\ &= q + \frac{1-\sigma}{\frac{1}{1-\phi(1-\mu)} - \sigma} (\Gamma(L) - q). \end{aligned} \quad (21)$$

Fourth, suppose $z = 2L$. There are two events the market maker considers:

1. With probability $\frac{1}{2}[1-\phi(1-\mu)](1-\sigma)$ the liquidity demand is L , the activist received signal $y = 1$, and she bought a stake L . In this case, firm value is $\Gamma(L)$.
2. With probability $\frac{1}{2}[1-\phi(1-\mu)]\sigma$ the liquidity demand is zero, the activist received signal $y = 1$, and she bought a stake $2L$. In this case, firm value is $\Gamma(2L)$.

Combined, the share price is

$$\begin{aligned} p(2L, \sigma) &= \frac{\frac{1}{2}[1-\phi(1-\mu)](1-\sigma)\Gamma(L) + \frac{1}{2}[1-\phi(1-\mu)]\sigma\Gamma(2L)}{\frac{1}{2}[1-\phi(1-\mu)](1-\sigma) + \frac{1}{2}[1-\phi(1-\mu)]\sigma} \\ &= (1-\sigma)\Gamma(L) + \sigma\Gamma(2L) \end{aligned} \quad (22)$$

Given σ , the activist's expected profit conditional on $y = 1$ from buying L and $2L$ shares, respectively, is

$$\begin{aligned} \Pi(L, \sigma) &= L \left[\Gamma(L) - \frac{p(L, \sigma) + p(2L, \sigma)}{2} \right] \\ &= \frac{1}{2} \frac{\mu}{1-\phi(1-\mu)} L h(L) \left[\frac{\frac{\phi(1-\mu)}{1-\phi(1-\mu)}}{\frac{\phi(1-\mu)}{1-\phi(1-\mu)} + 1 - \sigma} - \sigma \left(\frac{h(2L)}{h(L)} - 1 \right) \right] \end{aligned} \quad (23)$$

and

$$\begin{aligned}\Pi(2L, \sigma) &= 2L \left[\Gamma(2L) - \frac{p(2L, \sigma) + p(3L, \sigma)}{2} \right] \\ &= \frac{\mu}{1 - \phi(1 - \mu)} L (1 - \sigma) (h(2L) - h(L)).\end{aligned}\tag{24}$$

Note that $\Pi(L, \sigma) > \Pi(2L, \sigma) \Leftrightarrow \Upsilon(\sigma) > \frac{h(2L)}{h(L)}$ where

$$\Upsilon(\sigma) = 1 + \frac{\frac{\phi(1-\mu)}{1-\phi(1-\mu)}}{\frac{\phi(1-\mu)}{1-\phi(1-\mu)} + 1 - \sigma} \frac{1}{2 - \sigma},\tag{25}$$

is strictly increasing in $\sigma \in [0, 1]$, where

$$\begin{aligned}\Upsilon(0) &= 1 + \frac{1}{2}\phi(1 - \mu) \\ \Upsilon(1) &= 2\end{aligned}$$

Therefore, there is a unique $\sigma^* \in [0, 1]$ such that $\Pi(L, \sigma) > \Pi(2L, \sigma)$ if and only if $\sigma > \sigma^*$. In particular, if there is an equilibrium in which the activist buys a positive number of shares when $y = 1$ then:

1. If $\frac{h(2L)}{h(L)} \leq 1 + \frac{1}{2}\phi(1 - \mu)$ then $\Upsilon(0) \geq \frac{h(2L)}{h(L)}$ and $\Upsilon(\sigma) > \frac{h(2L)}{h(L)}$ for all $\sigma \in (0, 1]$. Therefore, it must be $\sigma^* = 0$.
2. If $\frac{h(2L)}{h(L)} \geq 2$ then $\Upsilon(1) \leq \frac{h(2L)}{h(L)}$ and $\Upsilon(\sigma) < \frac{h(2L)}{h(L)}$ for all $\sigma \in [0, 1)$. Therefore, it must be $\sigma^* = 1$.
3. If $1 + \frac{1}{2}\phi(1 - \mu) < \frac{h(2L)}{h(L)} < 2$ then $\Upsilon(0) < \frac{h(2L)}{h(L)} < \Upsilon(1)$. Therefore, it must be $\sigma^* = \Upsilon^{-1}\left(\frac{h(2L)}{h(L)}\right) \in (0, 1)$, where

$$\Upsilon^{-1}\left(\frac{h(2L)}{h(L)}\right) = 1 + \frac{1}{2} \frac{1}{1 - \phi(1 - \mu)} - \sqrt{\frac{\left[1 + \frac{1}{2} \frac{1}{1 - \phi(1 - \mu)}\right]^2}{-\frac{2}{1 - \phi(1 - \mu)} \left[\frac{\frac{h(2L)}{h(L)} - 1 - \frac{1}{2}\phi(1 - \mu)}{\frac{h(2L)}{h(L)} - 1}\right]}}.\tag{26}$$

However, notice that $\Pi(2L, 1) = 0$, and hence, if $\frac{h(2L)}{h(L)} \geq 2$ then an equilibrium in which the activist buys a positive number of shares when $y = 1$ does not exist. Suppose $\frac{h(2L)}{h(L)} < 2$,

and note that in this region, $\Pi(L, \sigma^*) \geq \Pi(2L, \sigma^*)$ and $\sigma^* < 1$. Since $\sigma < 1 \Rightarrow \Pi(2L, \sigma) > 0$, both $\Pi(L, \sigma^*)$ and $\Pi(2L, \sigma^*)$ are strictly positive. It is left to show that conditional on $y = 1$ the activist cannot make an expected profit larger than $\Pi(L, \sigma^*)$ (recall $\sigma^* \in (0, 1)$ implies $\Pi(2L, \sigma^*) = \Pi(L, \sigma^*)$) by deviating to $\alpha \neq L, 2L$. We support the equilibrium with off-equilibrium beliefs of the market maker when he observes $z \notin \{0, L, 2L\}$ such that $y = 1$ and the activist submitted an order to buy $\min\{z, 2L\}$ shares. Therefore, if $z < 2L$ then $p(z) = \Gamma(z)$, and if $z \geq 2L$ then $p(z) = \Gamma(2L)$. If $\alpha \notin \{L, 2L\}$ then the activist's expected profit conditional on $y = 1$ is

$$\Gamma(\alpha) - \frac{p(\alpha) + p(\alpha + L)}{2} = \Gamma(\alpha) - \frac{\Gamma(\alpha) + \Gamma(\min\{\alpha + L, 2L\})}{2} \leq 0,$$

and so a deviation is not profitable, as required. Finally, the term in (10) gives $\Upsilon^{-1}(\frac{h(2L)}{h(L)})$ if $1 + \frac{1}{2}\phi(1 - \mu) < \frac{h(2L)}{h(L)} < 2$ and zero if $\frac{h(2L)}{h(L)} \leq 1 + \frac{1}{2}\phi(1 - \mu)$. ■

Proof of Proposition 4. If the equilibrium exhibits only selection then, either $b \leq \frac{\kappa/s}{2L}$, or $\frac{\kappa/s}{2L} < b \leq \frac{\kappa/s}{L}$ and $\sigma^* = 0$. Either way, $\theta^* = \mu\theta(0)$. Note that

$$\begin{aligned} \frac{\partial\theta(0)}{\partial b} &= \frac{\partial}{\partial b} \left[G \left((1-s) \int_b^\infty (\Delta - b) dF(\Delta) \right) \int_b^\infty dF(\Delta) \right] \\ &= - \left[\begin{aligned} &g \left((1-s) \int_b^\infty (\Delta - b) dF(\Delta) \right) (1-s) \left[\int_b^\infty dF(\Delta) \right]^2 \\ &+ G \left((1-s) \int_b^\infty (\Delta - b) dF(\Delta) \right) f(b) \end{aligned} \right] < 0, \end{aligned}$$

as required.

Next, suppose the equilibrium exhibits treatment. For example, suppose $\sigma^* = 0$ and $\frac{\kappa/s}{L} < b$. Then

$$\begin{aligned} \theta^* &= \mu G(w(L) - v(L)) \int_{\frac{\kappa/s}{L}}^\infty dF(\Delta) \\ &= \mu G \left((1-s) \left(\int_{\frac{\kappa/s}{L}}^b \Delta dF(\Delta) + \int_b^\infty (\Delta - b) dF(\Delta) \right) \right) \int_{\frac{\kappa/s}{L}}^\infty dF(\Delta) \end{aligned}$$

where

$$\begin{aligned} \frac{\partial\theta^*}{\partial b} &= \mu g \left((1-s) \left(\int_{\frac{\kappa/s}{L}}^b \Delta dF(\Delta) + \int_b^\infty (\Delta - b) dF(\Delta) \right) \right) \int_{\frac{\kappa/s}{L}}^\infty dF(\Delta) \\ &\quad \times (1-s) (bf(b) - (1 - F(b))) \end{aligned}$$

Therefore,

$$\frac{\partial \theta^*}{\partial b} > 0 \Leftrightarrow b > \frac{1 - F(b)}{f(b)},$$

as required. ■