

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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“I’d like to thank these funds [Carl Icahn, Nelson Peltz, Jana Partners, Third Point] for teeing up deals because they’re coming in there and shaking up the management and many times these companies are being driven into some form of auction.” Thomas H. Lee, a private equity fund manager.¹

1 Introduction

Corporate boards have the power to resist a takeover of their company, for example, by issuing a shareholder rights plan (“poison pill”).² In principle, directors should use this power in order to negotiate a higher takeover premium or to reject a coercive bid. In some cases, this is exactly what they do. However, since the separation of ownership and control creates agency conflicts between insiders and outsiders (Berle and Means (1932)), there is a concern that corporate boards abuse this power to protect their private benefits of control and block takeovers that would otherwise create a shareholder value.³ In those cases, 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 proxy fights to replace all or part of the resisting target board. Most proxy fights are launched by activist hedge funds (Fos (2016)),⁴ who often demand from companies they invest in to sell all or part of their assets (Brav et al. (2008), Becht et al. (2015)). Greenwood and Schor (2009) and Boyson et al. (2016) document hundreds of activist campaigns that resulted with a takeover bid by a third party. They also find that the probability of a takeover is several times higher if an activist hedge fund is a shareholder of the target, and argue a causal link. For example, in 2014, the board of PetSmart agreed to be bought out for \$8.7 billion after facing months-long pressure, which

¹The New York Times, “Will Credit Crisis End the Activists’ Run?”, 8/27/2007.

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.

³Jenter 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.

⁴Fos (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.

included the threat of a proxy fight from one of its largest shareholders, the activist hedge fund Jana Partners.⁵ 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, filed a schedule 13D, and agitated for its sale. Highlighting the important role played by the activist in the deal, KKR’s co-CEO, George Roberts, said: “We wouldn’t have bought Gardner Denver had not an activist shown up. They are a nicer form of what in the old days the green mailers and the hostile raiders used to do. They were great for our business.”⁶ Overall, this evidence suggests that shareholder activism plays an important role in the market for corporate control.

The goal of this paper is to shed light on the role of activist investors in the M&A market. In principle, both bidders and activists can use proxy fights to challenge corporate boards, which raises the question whether activists have any relative advantage in pressuring companies to sell. More generally, do activists complement the effort of bidders to acquire companies, or do they compete away their rents from takeovers? If so, what is the exact mechanism and what are the implications?

To study these questions, we analyze a simple dynamic bargaining model in which the identity of the target board, who is negotiating an acquisition⁷ agreement on behalf of target shareholders, is endogenized by an interim proxy fight stage. We make the following key assumptions: (i) the incumbent board has private benefits of control that are lost if the target is acquired; (ii) the target board can resist the takeover, and therefore, making an offer directly to target shareholders is not always feasible; (iii) if the first round of negotiations fails, both the bidder and the activist can launch a proxy fight, but in order to win they must convince the majority of target shareholders that replacing the incumbent directors with their nominees is in their best interest; and (iv) the new board can resume negotiations with the bidder for a last and final round.

In principle, the bidder can overcome the resistance of the target board to the takeover if the offer is made high enough to compensate the incumbent for the loss of his private benefits of control. However, if these private benefits are too large, the bidder might not be able to afford paying a higher premium, and replacing the board could be the only viable option.⁸ Our

⁵See The New York Times, “Under Pressure From Jana, PetSmart Says It Will Explore Potential Sale”, 8/19/2014; The New York Times, “Elliott and Jana, Activist Investors, Are Behind 2 Big Buyouts”, 12/15/2014; and The Deal Pipeline, “Jana Unveils Potential Board Slate for PetSmart”, 11/21/2014.

⁶Reuters, “Activism, Economy Weighed on M&A in 2013, Issues Could Linger”, 12/19/2013.

⁷We focus on takeovers, but our results can be applied to divestitures and assets sales.

⁸Assuming that bidders can never bypass the target board and go straight to shareholders by making a tender offer is not necessary for our main results. Our arguments only require that corporate boards can at

first result shows that although both bidders and activists face the same costs of launching a proxy fight, activists are significantly more likely to win them. Therefore, activists can use proxy fights more effectively than bidders to pressure entrenched incumbents to sell. This result, which holds even if activists have their own private benefits of control,⁹ suggests that the unique role of activist investors in the M&A market is making corporate assets available for sale.

To understand this result, 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 the target's proprietary information, divert resources, and low-ball the takeover premium. *This is the bidder's commitment problem in takeovers.* Target shareholders, however, rationally anticipate this opportunistic behavior and they 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. In other words, the activist suffers from a weaker commitment problem. If the incumbent is truly entrenched, shareholders will elect the activist's nominees to the board if they are on the ballot. As a result, the activist's threat to run a proxy fight is credible, and it can be used to pressure the incumbent to sell the firm.

In practice, the commitment problem of the bidder can be alleviated in different ways, but each way has its own deficiencies. For example, enforcement of directors' fiduciary duties requires litigation which is often costly, uncertain, and limited to verifiable outcomes. Recruiting truly independent nominees requires the bidder to invest time and effort in the search process and money for compensation. Even running a proxy fight combined with a tender offer is an imperfect solution: not only it exposes the bidder to the free-rider problem of Grossman and Hart (1980), but it also does not solve the commitment problem since the offer is conditional on the removal of the poison pill.¹⁰ Since the commitment problem cannot be easily overcome, activist investors, who suffer from this problem to a lesser extent, maintain their advantage in pressuring firms to sell. Indeed, our key observation is in relative terms: Since the bidder is the

least partially resist a takeover. See Section 3.2.1 for details.

⁹In fact, since activist hedge funds typically own 5-10% of the target, which is significantly higher than the ownership of an average CEO or director of a public company, our main result holds even if the activist has *more* private benefits of control than the incumbents.

¹⁰See Section 3.2.2 for details.

counter party to the transaction and the activist is not, the conflict of interests between the bidder and target shareholders is stronger than the conflict they might have with the activist. Importantly, our argument does not imply that bidders can never run a successful proxy fight. Instead, we suggest that the frequency of these events is significantly smaller than the frequency of campaigns in which the activist pushes the company to sell. This claim is supported by the fact that most proxy fights are launched by activists and not by bidders (Fos (2016)), and by the empirical evidence by Greenwood and Schor (2009) and Boyson et al. (2016).

In order to study the implications of activist interventions on the M&A market, we endogenize the ownership of the activist in the target and the decision of the bidder to perform due diligence and engage in takeover negotiations. Our analysis highlights the complementarity between shareholder activism and takeovers: Activists profit 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.¹¹

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. That is, the activist in our model is effectively soliciting offers by reassuring bidders that they will face a weaker opposition to the takeover, if the offer is fair. Because of that, 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.

In general, activists invest either because they believe the company is likely to become a takeover target (“selection”) or because they can facilitate its takeover by putting the company into play (“treatment”). While the empirical literature finds evidence that is consistent with the treatment effect, it is hard to rule out the possibility of a selection effect. We provide

¹¹The 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.

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 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.

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. Moreover, different from Burkart et al. (2000), Cornelli and Li (2002), Gomes (2012), and Burkart and Lee (2015), who study the interaction between 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.¹² 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), Yilmaz (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.

¹²Models 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).

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.

The standalone value of the target is $q \geq 0$. The bidder can create a net value of $\Delta > 0$ if he acquires 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.¹³ To focus the analysis on agency problems as the key friction, we assume that q and Δ are both commonly known. In Section E of the Online Appendix we relax these assumptions, and show that the main results continue to hold with information asymmetries. Also, to focus on the role of activist in the market for corporate control, we assume that activist cannot affect the standalone value of the target. In addition, to distinguish the activist from the bidder, we assume that the activist has no incentives or resources to make a takeover bid. We relax both assumptions in Sections C and D of the Online Appendix.

The bidder negotiates with the target board a cash offer to acquire all 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,¹⁴ or because overcoming the free-rider problem of Grossman and Hart (1980) is too costly. In Section 3.2.1 we relax this assumption. As depicted by Figure 1, there are two rounds of negotiations which are separated by a proxy fight stage. In each round, the proposer is decided

¹³A takeover can increase shareholder value but at the same time destroy value to other stakeholders (e.g., employees or customers). We assume that the target board, its shareholders, and the bidder do not internalize these externalities, and therefore, they have no effect on the equilibrium outcome.

¹⁴Corporate boards can adopt a poison pill on a short notice; it does not have to be in place prior to the takeover to deter bidders (“shadow pills”). Triggering a poison pill by moving forward with a tender offer significantly dilutes the bidder and is therefore extremely costly. Virtually all tender offers are conditioned on the redemption of a poison pill exactly for this reason. Moreover, a poison pill has never been intentionally triggered by a bidder, which is consistent with the pill being a powerful takeover deterrent.

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.¹⁵ We denote by π_j the takeover premium per share paid by the bidder if an acquisition agreement is reached in round $j \in \{1, 2\}$. Any acquisition agreement 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 agreement is approved by the majority of shareholders, each shareholder of the target receives $q + \pi_j$ for each share he owns and the target is acquired by the bidder.

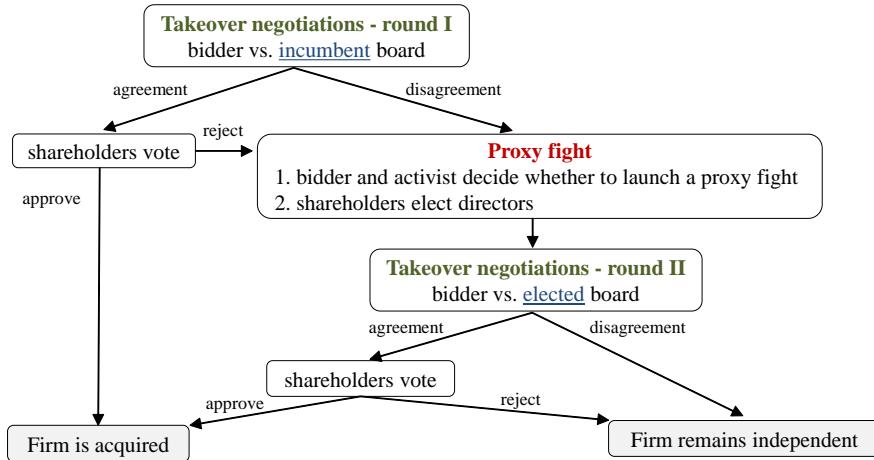


Figure 1 - Takeover negotiations and proxy fight

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.¹⁶ 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. Target shareholders then decide

¹⁵The Nash bargaining protocol can be microfounded using Rubinstein's (1982) model of alternating offers.

¹⁶We 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.

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. We assume that if shareholders are indifferent between electing the rival (the bidder or the activist) and retaining the incumbent, they will choose the latter.

Winning the control of the target board gives the rival team 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 directors can redeem the poison pill, if such exists, and resume negotiations.¹⁷ 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, the bidder and the activist cannot commit to act in the best interests of target shareholders once they obtain control of the board. We discuss this assumption in detail in Section 3.2. 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.

2.1 Payoffs

All agents are risk-neutral and have zero discount rate. We assume following payoff functions:

Incumbent: At the outset, the incumbent board owns $n \geq 0$ target shares and has private benefits of control $B_I > 0$ 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, including golden parachutes,¹⁸ cannot fully align the incentives of the incumbent board with the shareholders, which is consistent with the evidence by Jenter and Lewellen (2015). Moreover, we assume that the enforcement of the board’s fiduciary duties is not sufficiently strong to eliminate the consumption of these private benefits. We denote the incumbent board’s private benefits *per share* by $b \equiv B_I/n$.

Activist: The activist owns $\alpha \geq 0$ shares of the target. We endogenize α in Section 4. The activist also obtains private benefits $B_A \geq 0$ from controlling the target board as an independent firm. This assumption captures cases in which the activist is conflicted with other

¹⁷Provisions that make pills nonredeemable are illegal in most states, including New York and Delaware.

¹⁸Hartzell et al. (2004) point out that golden parachutes are often constrained due to IRS tax restrictions.

target shareholders. We do not rule out $B_A \geq B_I$, so the activist may even have larger private benefits than the incumbent board.

Bidder: The bidder has toehold of $m \geq 0$ target shares. Moreover, once taking control of the operations of the target, the bidder can potentially 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.¹⁹

Passive target shareholders: All other shares of the target are owned by passive investors, who have no private benefits and ability or incentives to run a proxy fight. We assume that collectively these investors hold more than 50% of the target voting rights: $n + \alpha + m < 0.5$.

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 this 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 the Appendix. We solve the game backward and start with the second round of negotiations.

Lemma 1 *The bidder reaches an acquisition agreement with the target board in the second round of negotiations unless the incumbent board retains control and $\frac{\Delta}{1-m} < b$, or the activist has control and $\frac{\Delta}{1-m} < \frac{B_A}{\alpha}$. Conditional on reaching an agreement, the expected takeover premium is*

$$\pi_2 = \begin{cases} s \frac{\Delta}{1-m} + (1-s)b & \text{if the incumbent board retains control,} \\ s \frac{\Delta}{1-m} + (1-s) \frac{B_A}{\alpha} & \text{if the activist controls the board,} \\ 0 & \text{if the bidder controls the board.} \end{cases} \quad (1)$$

¹⁹ See 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.

To understand Lemma 1, note that target shareholders would approve an acquisition agreement if and only if the offer is weakly higher than the standalone value of the firm, q . Suppose the incumbent board is reelected. Since it is the second and last round of negotiations, the incumbent can block the takeover. Therefore, the incumbent would agree to sell the firm only if the offer embeds a premium higher than b , his private benefits per share. On the other hand, the bidder makes a profit of $\Delta - (1 - m)\pi_2$ if he acquires the target by paying a premium of π_2 for each of the $1 - m$ he does not currently own. Therefore, the highest premium the bidder can afford to pay is $\frac{\Delta}{1-m}$. If $b \leq \frac{\Delta}{1-m}$ then the bidder can afford to pay a premium of b , and the incumbent would ask for $q + \frac{\Delta}{1-m}$ if he is the proposer. If the bidder is the proposer he would offer the lowest price that is acceptable to the incumbent board and target shareholders, which is $q + b$. 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. The incumbent and the bidder reach an agreement in which the expected takeover premium is $s\frac{\Delta}{1-m} + (1 - s)b$. By contrast, if $\frac{\Delta}{1-m} < b$ then the bidder cannot afford to compensate the incumbent for the loss of his private benefits of control. The bidder walks away from the takeover negotiations, no agreement is reached, and the target remains independent under the control of the incumbent. 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.²⁰ Overall, let

$$\pi_I(\Delta) \equiv \mathbf{1}_{\{b \leq \frac{\Delta}{1-m}\}} \cdot \left[s\frac{\Delta}{1-m} + (1 - s)b \right], \quad (2)$$

then the expected shareholder value under the incumbent's control is $q + \pi_I(\Delta)$.

The negotiations with the bidder are similar when the activist is elected to the target board. The only difference is that the target board under the activist's control has private benefits per share of $\frac{B_A}{\alpha}$ instead of b . Following the same logic as above, the expected shareholder value is $q + \pi_A(\Delta, \alpha)$ where

$$\pi_A(\Delta, \alpha) \equiv \mathbf{1}_{\{\frac{B_A}{\alpha} \leq \frac{\Delta}{1-m}\}} \cdot \left[s\frac{\Delta}{1-m} + (1 - s)\frac{B_A}{\alpha} \right]. \quad (3)$$

²⁰If $\frac{n}{1-m}\Delta < B_I < \Delta$ then a takeover is the efficient outcome under the incumbent's control even when the incumbent's private benefits are taken into account.

The dynamic of the negotiations in the second round changes when bidder wins the proxy fight. Since the bidder gains the authority to negotiate on behalf of target shareholders, effectively, 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. Therefore, regardless of the proposer's identity, the bidder would be tempted to offer target shareholders their reservation price q . Moreover, the bidder would be tempted to exploit his control of the target board to divert corporate resources as private benefits. *This is the bidder's commitment problem in takeovers.* Notice that this argument does not imply that if a bidder wins a proxy fight, the offered takeover premium should necessarily drop. If the bidder believes that he can win a proxy fight and capture the target board even without resolving the commitment problem, he would low-ball the takeover premium in advance (in the first round), anticipating his ability to abuse the power of the target board once it is given to him. This discussion completes the proof of Lemma 1.

Target shareholders, however, rationally expect the bidder to abuse the power of the board. Therefore, they do not elect the bidder to their board. Since running a proxy fight is both costly and ineffectual, 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 , the activist's private benefits of control, B_A/α , and whether or not the activist is also running a proxy fight. The next result shows that unlike the bidder, the activist can win 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*

$$\pi_A(\Delta, \alpha) - \pi_I(\Delta) \geq \kappa/\alpha. \quad (4)$$

If the activist runs a proxy fight, she wins the control of the target board and then reaches an acquisition agreement with the bidder in which the latter pays an expected takeover premium of $\pi_A(\Delta, \alpha)$.

Proposition 1 establishes our observation 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 $\pi_A \geq 0$ if they elect her to the board (to ease the exposition, hereafter we omit the arguments α and Δ from π_A and π_I). 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, that is, $\pi_A > \pi_I$. The activist, however, does not necessarily start a proxy fight even if she expects to win it. If the activist does not challenge the incumbent, the value of the activist's stake is $\alpha(q + \pi_I)$. If the activist runs and wins a proxy fight, the value of her stake increases to $\alpha q + \max\{\alpha\pi_A, B_A\}$, but she has to bear the cost κ . Notice that if $\pi_A > \pi_I$ then $\alpha\pi_A \geq B_A$, that is, if shareholders are willing to elect the activist to the board, it must be both feasible and in the best interests of the activist to negotiate a deal in which the bidder is expected to pay a premium π_A . The activist runs a proxy fight if and only if she can win the proxy fight and the increase in the value of her stake is higher than the cost of running a proxy fight, which gives condition (4). This discussion completes the proof of Proposition 1.

To gain more insight on condition (4), we consider two cases. First, if $\frac{\Delta}{1-m} < b$ then condition (4) can be rewritten as

$$\delta(\alpha) \leq \frac{\Delta}{1-m} < b \quad (5)$$

where

$$\delta(\alpha) \equiv \frac{B_A}{\alpha} + \frac{1}{s} \frac{\max\{0, \kappa - B_A\}}{\alpha}. \quad (6)$$

Since $\frac{\Delta}{1-m} < b$, the incumbent will not reach an agreement with the bidder if he is reelected to the target board. Therefore, shareholders would support the activist's effort to replace the incumbent and sell the target. Since the takeover takes place if and only if the activist is willing to run a proxy fight, the activist is complementing the effort of the bidder to acquire the target. Notice that condition (5) requires $\frac{B_A}{\alpha} < b$, that is, the activist's private benefit per share is smaller than the incumbent's. Moreover, notice that 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.

Second, if $b \leq \frac{\Delta}{1-m}$ then condition (4) can be rewritten as

$$b + \frac{1}{1-s} \frac{\kappa}{\alpha} < \frac{B_A}{\alpha} \leq \frac{\Delta}{1-m}. \quad (7)$$

In this case, the incumbent can reach an agreement with the bidder if he retains control of the target board, but under this agreement shareholders receive a takeover premium of π_I , which is smaller than the premium that the activist can negotiate, $\pi_A > \pi_I$. Shareholders would support the activist's attempt to replace the incumbent not because it is only the only way to sell the firm, but rather because they are concerned that the incumbent is selling the target for a price that is too low. Since the activist challenges the deal with the intent of "forcing" the bidder to sweeten his offer (Jiang et al. (2015)), the activist reduces the rents the bidder obtains from the takeover. Notice that condition (7) requires $b < \frac{B_A}{\alpha}$, that is, the activist is more biased against the takeover than the incumbent (and therefore, has a stronger bargaining power), but the bias is not too large to block the deal altogether. This case highlights that activists can play a positive role for target shareholders in our model even if they are more biased than incumbents.

If the incumbent is too entrenched to voluntarily sell the firm ($\frac{\Delta}{1-m} < b$) and the activist's threat of running a proxy fight is not credible ($\pi_A - \pi_I \leq \kappa/\alpha$), the incumbent is able to retain control, successfully block the takeover, and consume his private benefits. Proposition 2 states that in all other cases (captured by condition (8) below), the bidder reaches an acquisition agreement with the incumbent in the first round of negotiations.

Proposition 2 *A unique equilibrium exists. In equilibrium, the target is acquired if and only if*

$$\min \{b, \delta(\alpha)\} \leq \frac{\Delta}{1-m}. \quad (8)$$

If condition (8) holds then the bidder reaches an agreement in the first round of negotiations with the incumbent board in which the bidder pays a takeover premium per share of

$$\pi_1^*(\Delta, \alpha) = \begin{cases} \pi_A(\Delta, \alpha) & \text{if } \pi_A(\Delta, \alpha) - \pi_I(\Delta) > \kappa/\alpha \\ \pi_I(\Delta) & \text{else,} \end{cases} \quad (9)$$

and acquires full control of the target. If condition (8) does not hold, no proxy fight is initiated and the target remains independent under the incumbent's control.

If $\pi_A - \pi_I \leq \kappa/\alpha$ then the activist's threat of running a proxy fight is not credible, and consequently, she has no effect on the outcome of the takeover. Without the intervention of the activist, the bidder and the incumbent reach an agreement if and only if $b \leq \frac{\Delta}{1-m}$, in which

case the target is sold for a premium π_I . By contrast, if $\pi_A - \pi_I > \kappa/\alpha$ then all parties involved correctly anticipate that if the first round of negotiations fails, the activist would run and win a proxy fight, take control of the target board, and then negotiate an acquisition agreement with an expected premium of π_A . Since the activist's threat of running a proxy fight is credible, any first round offer below $q + \pi_A$ is rejected by shareholders, and any offer above $q + \pi_A$ is rejected by the bidder. The incumbent board understands that the takeover is inevitable, and therefore, accepts any offer higher than $q + \pi_A$ 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 the target is sold for a premium π_A . In these cases, the credible threat of the activist to run a proxy fight is sufficient to change the outcome of the takeover.

3.2 Discussion

Our analysis highlights three themes: (i) Entrenched incumbents can block takeovers of their companies; (ii) Bidders suffer from a commitment problem that harms their credibility, and consequently, limits their ability to challenge an entrenched target board; (iii) Activist investors do not suffer from the commitment to the same extent, and therefore, can more effectively use proxy fights to relax the resistance of incumbents to takeovers. Below we discuss the validity of these three assertions.

3.2.1 Limited veto power and tender offers

Assuming that bidders can never bypass the target board and go straight to shareholders by making a tender offer is not necessary for our main results. Our arguments only require that corporate boards can partially resist a takeover (through a poison pill or any other defense measure). In Appendix A.2, we consider a variant of the baseline model in which the bidder can overcome the resistance of the board (i.e., the poison pill) with a positive probability smaller than one. Moreover, we assume the bidder can overcome the free-riding problem of Grossman and Hart (1980) and make a tender offer to target shareholders. Similar to the baseline model, the bidder never runs a proxy fight because of the commitment problem. The activist runs a proxy fight if and only if condition (4) holds, with the exception that κ is replaced by κ/λ , where $\lambda \in [0, 1]$ is the probability that the target board can block the takeover. Intuitively, if λ is low then the bidder has an alternative mean by which he can overcome the resistance of the

board, and therefore, the activist has fewer incentives to run a proxy fight in order to facilitate the takeover. In other words, 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. 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.

3.2.2 Overcoming the commitment problem

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 at least partially resolved. Solving the commitment problem means that if the bidder is elected to the target board, target shareholders can trust him to maximize their value whenever he is negotiating on their behalf, which happens with probability s . Therefore, under commitment, shareholders expect to receive the “fair price” (which is $q + s\frac{\Delta}{1-m}$) if they elect the bidder to their board.

Proposition 3 *Suppose at the outset the bidder has the option to commit to act in the best of interests of target shareholders at no additional cost. If*

$$b \leq \frac{1}{1-m} \frac{\kappa}{1-s} \quad (10)$$

then regardless of the value of Δ , the bidder never makes this commitment.

If condition (10) holds, the bidder has no incentives to solve his commitment problem even if he could, and the analysis of the previous section does not change. There, the bidder's threat of running a proxy fight was not credible because target shareholders would never elect him to the board, while here it is not credible because when shareholders are willing to elect the bidder, the cost of running a proxy fight outweighs the benefit from replacing the incumbent. Note that conditions (10) and $\delta(\alpha) < b$ are not mutually exclusive (e.g., when s is sufficiently close to one). Therefore, it is possible that the activist's threat of running a proxy fight is credible while the bidder's threat is not, even though they face the same cost κ . Moreover, in Section B of the Online Appendix we show that the benefit from a commitment from the bidder's perspective is decreasing with α . Intuitively, the bidder is better off by letting the activist pressure the incumbent and thereby avoid the cost of running a proxy fight.

Below we discuss various solutions that can mitigate the bidder's commitment problem. We argue that these solutions are either imperfect or costly to implement. Therefore, even if condition (10) does not hold, activist investors maintain their relative advantage in pressuring companies to sell.

Legal environment Effective and strong investor protection laws can help shareholders enforce directors' fiduciary duties and commit the bidder not to abuse the power of the target board once 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 board members 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. Moreover, 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.

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. Seemingly, this tactic allows the bidder to commit to a takeover price. However, we argue that a proxy fight combined with a tender offer is not a perfect solution for the bidder's commitment problem for two different reasons:

1. It is well known that the free-rider problem in tender offers can result with inefficiencies and deter bidders from approaching targets (Grossman and Hart (1980)). In fact, this is the reason why Bebchuk and Hart (2001) view the arrangement of a proxy fight combined with a tender offer as imperfect. Therefore, even if this method could solve the commitment problem we identify this paper, it would create a new one.
2. Under this arrangement, the tender offer is made conditional on the redemption of the poison pill (and other conditions such as securing funds to finance the offer). But it is the target board members who ultimately decide whether to rescind the pill. So, if the bidder wins the proxy fight and takes control of the target board, the bidder has two options. First, redeem the pill and consume the takeover (if indeed target shareholders tender their shares). Second,

keep the pill in place, let the tender offer expire, and make a new offer. This is exactly the commitment problem: The bidder wishes he could commit to rescinding the pill after taking control of the board, but what forces him to do so? For example, the bidder can always argue that with the control of the board he also got access to private information about the target that was not available before (which is common in hostile situations), and this new information does not justify the price. In fact, as we noted above, anticipating this chain of events, the bidder will low-ball the offer in the first place, avoiding the need to reduce it if he wins the proxy fight. If shareholders have rational expectations, they would not elect the bidder to the board.²¹

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 (explicit or implicit) compensation contracts 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.

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 privileged access to the target’s private information, the competitors are likely to suffer from the winner’s 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.

²¹Bebchuk 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.

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 (e.g., private equity investors, serial acquirers) will suffer from the commitment problem, but to a lesser extent than one-time players.

3.2.3 Corporate control activism

The activist can put pressure on the incumbent to sell only if target shareholders can trust her to act in their best interests if they elect her to the board. In particular, shareholders must believe that (i) the activist would resist the takeover, if at all, to a lesser extent than the incumbent, and (ii) the activist is truly on their side of the negotiating table.

Activists are less biased against the takeover than incumbents The ownership in the target determines the relative weight that the incumbent or the activist would put on their private benefits of control. Therefore, larger ownership implies smaller bias against the takeover. There are two reasons why activists are less biased than incumbents, that is, $\frac{B_A}{\alpha} < \frac{B_I}{n}$:

1. Activists have smaller private benefits from controlling the target board ($B_A \leq B_I$). It is quite rare to find an activist staying on the board of a portfolio company for more than a year (partly because insider trading rules put restrictions on activists, who ultimately seek to exit and pursue other investment opportunities). The length of tenure does not allow activist hedge fund managers to consume as much private benefits as the incumbent from keeping the firm independent. Moreover, executives and directors of public companies are unlikely to find a good substitute if a takeover takes place and they are fired (e.g., Harford (2003)). By contrast, activist hedge fund managers hold a portfolio of 10-15 firms and their reputation depend on the aggregate performances of their portfolio.
2. Activists own a larger stake in the target ($\alpha \geq n$). In practice, activists typically own 8-9% of the target firm when they run a campaign (e.g., Brav et al. (2008)), while managers and directors typically own much less. For example, Murphy (2013) finds that the median percentage ownership of CEOs in S&P 500 firms is around 0.5%. For non-CEO executives the numbers are even lower, and directors typically earn annually no more than \$250K, a large

portion of which is in fixed salaries.

Activists are on the sell side of the negotiating table As target shareholders, activists have incentives to maximize the return on their investment by negotiating the highest takeover premium the bidder is willing to pay. This premise, however, relies on the assumption that the activist's economic ownership in the target is not offset by derivatives, that the activist has no ownership in the bidding firm, or an explicit or implicit agreement with the bidder that distorts her incentives (e.g., the collaboration between Pershing Square and Valeant during its unsolicited bid for Allergan in 2014).²² In all of these cases, the activist would lose her credibility, and therefore, her ability to pressure the incumbent to sell.²³

4 Activist's position building and deal solicitation

The analysis in the previous section suggested that activist investors play an important role in the M&A market. To study the implications of this insight, we extend the baseline model in several ways. Specifically, 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 $E[\Delta | \zeta = 1] \leq 0$, which guarantees that the bidder will not acquire the target without first performing due diligence. Intuitively, corporate asset with which the bidder can create enough synergies to compensate for transaction costs, distraction of management and employees, increased uncertainty, and additional regulations, are scarce.

²² According to SEC Rule 14a-9, the activist would be required to disclose her net economic exposure to the target and the bidding firm. Collin-Dufresne et al. (2016) document that activist investors rarely trade derivatives, putting into question the extent of empty voting (Hu and Black (2006, 2007), Kahan and Rock (2007)) as a common practice used by activists.

²³ Arguably, if the activist wins the control of the target board, the bidder may offer her side-payments (i.e., bribe) in return for a favorable treatment. However, such side-payments are outright illegal, and therefore, are less expected. Therefore, target shareholders are likely to be more suspicious about the bidder's motives than the activist's even if side-payments are considered.

At the outset, the activist privately observes signal $y \in \{0, 1\}$ on ζ where

$$\Pr[y = 1 | \zeta] = \begin{cases} 1 & \text{if } \zeta = 1 \\ 1 - \phi & \text{if } \zeta = 0 \end{cases} \quad (11)$$

and $\phi \in (0, 1]$. If $y = 0$ then the activist infers with certainty that $\zeta = 0$, and if $y = 1$ she updates her beliefs about $\zeta = 1$ from μ to $\hat{\mu} \equiv \frac{\mu}{1 - \phi(1 - \mu)}$. The activist does not own shares of the target initially, but she can submit an order to buy $\alpha \geq 0$ shares from a risk-neutral, competitive, and uninformed market maker. Short sales are not allowed. The share price, denoted by p , is set equal to the expected value of the target conditional on the total order flows. For simplicity, we assume that the market maker can condition the price on the order-flow if and only if the order is strictly larger than $\bar{\alpha} \in (0, 1)$. Intuitively, the stock is perfectly liquid (illiquid) for small (large) orders.²⁴ Alternatively, $\bar{\alpha}$ can also be interpreted as the disclosure threshold for regulations 13D or 13G. Moreover, we assume that buying up to $\bar{\alpha}$ shares does not trigger a poison pill if such exists. Empirically, $\bar{\alpha} \in [5\%, 10\%]$. We also assume that the activist has alternative investment opportunities with a decreasing marginal return. Specifically, the activist's alternative cost of buying α shares at a price p is $r(\alpha p)$ where $r', r'' > 0$, and $r(0) = r'(0) = 0$.

The bidder perfectly observes ζ and the number of shares bought by the activist. For simplicity, we abstract from the bidder's decision to build a toehold and assume $m = 0$. The bidder then decides whether to perform due diligence: he can pay $c \geq 0$ 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 it is independent of all other random variables. If the bidder performs due diligence, then Δ becomes public and the takeover negotiations unfold as in the baseline model.

Finally, we focus attention on cases in which the activist can facilitate the takeover: we assume $B_A(1 - s) \leq \kappa$, which guarantees that condition (7) does not hold for any α .

4.1 Analysis

We solve for the Perfect Bayesian Equilibrium in pure strategies of the extended model. We start with the following corollary of Proposition 2.

²⁴A previous version of the paper assumed the existence of liquidity traders a la Kyle (1985) and showed that similar results hold under this alternative formulation.

Corollary 1 Suppose the bidder performs due diligence and the activist owns α shares of the target. Conditional on ζ , the expected shareholder value is $q + \zeta v(\alpha)$, the bidder's expected profit is $\zeta(w(\alpha) - v(\alpha))$, and the expected value (net of any private benefits) created by the takeover is $\zeta w(\alpha)$, where

$$v(\alpha) = \int_b^\infty \pi_I(\Delta) dF(\Delta) + \int_{\min\{b, \delta(\alpha)\}}^b \pi_A(\Delta, \alpha) dF(\Delta) \quad (12)$$

and

$$w(\alpha) = \int_{\min\{b, \delta(\alpha)\}}^\infty \Delta dF(\Delta). \quad (13)$$

All three terms strictly increase in α when $\delta(\alpha) < b$, and are invariant to α otherwise.²⁵

Since the takeover on average does not create value, the bidder never acquires the target without first performing due diligence. According to Corollary 1, if the bidder performed due diligence then his expected net profit conditional on ζ and α is $\zeta \cdot (w(\alpha) - v(\alpha)) - c$. As a result, the bidder performs due diligence if and only if $\zeta = 1$ and $w(\alpha) - v(\alpha) > c$. This observation implies that the expected takeover premium conditional on $\zeta = 1$ and α is

$$h(\alpha) \equiv G(w(\alpha) - v(\alpha))v(\alpha). \quad (14)$$

Since $w(\alpha) - v(\alpha)$ and $v(\alpha)$ weakly increase in α , the expected takeover premium also weakly increases in α .

The decision of the activist to buy target shares depends on the share price p and her private information about Δ . If $y = 0$ then the activist expects any takeover attempt to fail for sure. Since the activist cannot profit from investing in the target, she does not buy any of its shares. By contrast, if $y = 1$ then a takeover is possible and investing in the target can be profitable. The next result characterizes the equilibrium, and in particular, the number of shares bought by the activist when $y = 1$.

Proposition 4 A unique equilibrium always exists.²⁶ The equilibrium satisfies the following:

²⁵ $v(\alpha)$ is generally non-monotonic in α : higher α increases the incentives of the activist to run a proxy fight and thereby expands the range in which the takeover takes place ($\delta(\alpha)$ decreases in α), however, conditional on running a proxy fight, higher α also reduces the bias of the activist against the takeover, and therefore, harms her ability to bargain a higher takeover premium (π_A decreases in α). In the proof of Corollary 1 we make a technical assumption that guarantees $v'(\alpha) > 0$. The monotonicity is necessary for the uniqueness of the equilibrium, but does not change the nature of the results.

²⁶ Uniqueness is guaranteed under the assumption that $r'' > 0$ is sufficiently large.

(i) The activist buys $\alpha^* \in (0, \bar{\alpha}]$ shares of the target if $y = 1$ and no share otherwise. Moreover, if $\alpha^* < \bar{\alpha}$ then α^* is given by the unique solution of

$$(\hat{\mu} - \mu) h(\alpha^*) + \alpha^* \hat{\mu} h'(\alpha^*) = r'(\alpha^* p(\alpha^*, \alpha^*)) p(\alpha^*, \alpha^*), \quad (15)$$

where $p(\alpha^*, \alpha^*)$ is given below by (16).

(ii) If the activist buys $\alpha \geq 0$ shares of the target, the share price is given by

$$p(\alpha, \alpha^*) = q + \begin{cases} \mu h(\alpha^*) & \text{if } \alpha \leq \bar{\alpha} \\ \hat{\mu} h(\alpha) & \text{if } \alpha > \bar{\alpha}. \end{cases} \quad (16)$$

(iii) For any $\alpha \geq 0$, the bidder performs due diligence if and only if $\zeta = 1$ and $c < w(\alpha) - v(\alpha)$. If the bidder performs due diligence then the takeover negotiations unfold as described by Proposition 2 given the actual stake of the activist in the target and the realization of Δ .

In equilibrium, the market maker expects the activist to buy α^* shares if and only if $y = 1$, which happens with probability μ . The activist buys less than $\bar{\alpha}$ shares in order to conceal her position from the market maker, and therefore, the latter sets the share price on $q + \mu h(\alpha^*)$ as long as $\alpha \leq \bar{\alpha}$. Off-equilibrium, if the activist buys more than $\bar{\alpha}$ shares, the market maker assumes $y = 1$ and prices the shares accordingly as given by (16). Given this price function, the activist chooses the number of shares that maximizes her expected profit conditional on $y = 1$, which is given by

$$\Pi(\alpha, \alpha^*) = \alpha (q + \hat{\mu} h(\alpha) - p(\alpha, \alpha^*)) - r(\alpha p(\alpha, \alpha^*)). \quad (17)$$

An equilibrium requires

$$\alpha^* \in \arg \max_{\alpha \in [0, \bar{\alpha}]} \Pi(\alpha, \alpha^*), \quad (18)$$

which is captured by condition (15). The left hand side of (15) is the marginal benefit from buying an additional share given that the activist already owns $\alpha^* < \bar{\alpha}$ shares. It has two components: (i) the incremental profit from buying an additional share $(\hat{\mu} - \mu) h(\alpha^*)$, and (ii) the real added value to all existing α^* shares by increasing the position of the activist in the target $\hat{\mu} h'(\alpha^*)$. The right hand side of (15) is the corresponding marginal cost. In equilibrium, the marginal cost and marginal benefit are equal.

4.1.1 Selection vs. treatment

Generally, the equilibrium exhibits either “selection” or “treatment”. Under the selection effect, the activist’s stake is too small so the threat of running a proxy fight is not credible, that is, $\delta(\alpha^*) \geq b$. 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 buys a stake that gives her enough incentives to challenge the board and sufficient credibility to get the support of shareholders when campaigning against the incumbent. Essentially, 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 $\delta(\alpha^*) < \Delta < b$ then the activist can pressure the incumbent to accept an offer that he would otherwise reject. Second, if $\delta(\alpha^*) < b$ then 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. Therefore, the activist can affect the takeover process even if ex-post her threat of running a proxy fight is not credible. 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.²⁷

The next result identifies the condition under which the equilibrium exhibits treatment.

²⁷In 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.

Proposition 5 *The equilibrium exhibits treatment if and only if*

$$\delta(\min\{\bar{\alpha}, \alpha_{selection}\}) < b. \quad (19)$$

where

$$\alpha_{selection} \equiv (r')^{-1} \left(\frac{\hat{\mu} - \mu}{q/h(0) + \mu} \right) \frac{1}{q + \mu h(0)}, \quad (20)$$

where $\alpha^* = \min\{\bar{\alpha}, \alpha_{selection}\}$ when the equilibrium exhibits selection.

As an immediate corollary of Proposition 5, the equilibrium is *more* likely to exhibit treatment if the activist is better informed (large ϕ), the target firm is smaller (small q), running a proxy fight is less costly (small κ), the stock is more liquid or the disclosure requirements are lenient (large $\bar{\alpha}$). All of these effects are intuitive. Also note that for sufficiently small values of b the equilibrium exhibits selection, and for sufficiently large values of b the equilibrium exhibits treatment, as one might expect. The effect of B_A is ambiguous: Higher B_A harms the credibility of the activist but also gives her more incentives to run proxy fight, if she can win. The latter effect dominates if B_A is small.

According to Proposition 4, the ex-ante probability of a takeover in equilibrium is

$$\theta^* = \mu G(w(\alpha^*) - v(\alpha^*)) \int_{\min\{b, \delta(\alpha^*)\}}^{\infty} dF(\Delta). \quad (21)$$

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, note that 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, $\theta^* > 0$. Intuitively, since the activist uses her private information on ζ to speculate on a takeover of the target, 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 affecting the takeover process.

The comparative statics of θ^* with respect to b can help to distinguish between the selection and the treatment effects in equilibrium. It is trivial to show that if the equilibrium exhibits selection ($b \leq \delta(\alpha^*)$) then the probability of a takeover is always strictly 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 by the fact that at any point left to the red vertical line, which marks the border of the selection region, the curve is downward sloping. 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 which depicts the probability of a takeover in the absence of an activist. However, the probability of a takeover can *increase* with b when the equilibrium exhibits treatment. Indeed, the blue curve in Figure 2 is upward sloping when b is to the right of the red vertical line.

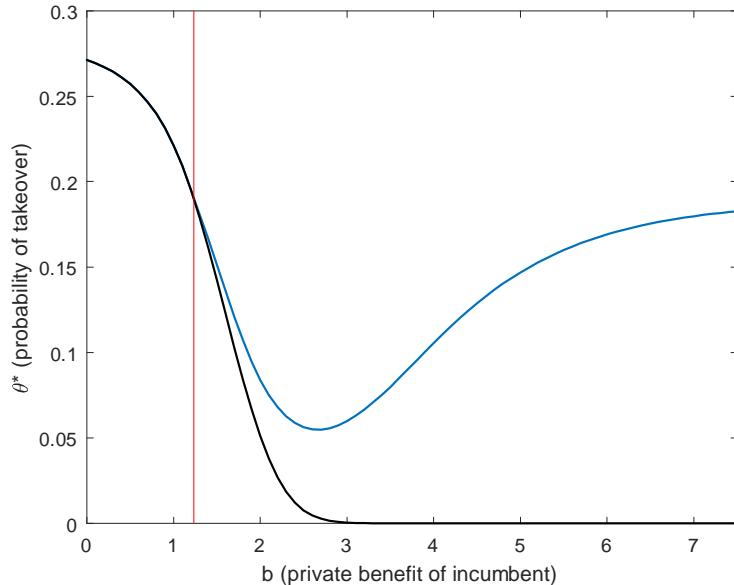


Figure 2 - The effect of b on the probability of a takeover, θ^* .²⁸

To understand this result, note that all else being equal, higher b increases the takeover premium paid by the bidder conditional on reaching an 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 $[\delta(\alpha^*), b]$ expands). Both of these channels increase the

²⁸The example in Figure 2 is generated under the assumptions that $B_A = 0.1$, $\kappa = 0.1$, $\phi = 0.5$, $\mu = 0.8$, $s = 0.95$, $q = 10$, $\Pr[\Delta > 0 | \zeta = 1] = 0.35$, $\Delta | \Delta > 0 \sim \log N(1, 0.42)$, $c \sim \log N(-3.7, 0.4)$, $\bar{\alpha} = 10\%$, $r(x) = (x/0.9)^{100}$. Under this example, the activist's stake is around 8% in equilibrium, which is unique.

value of the activist’s private information. 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.

4.2 Discussion

We discuss three extensions of the modified model.

4.2.1 Optimal incumbent resistance

The institutional and legal environment often leaves corporate insiders with opportunities to extract private benefits which are central to our analysis. In principle, shareholders can limit the extent of these private benefits by setting the compensation of directors, changing the corporate charter, choosing the state of incorporation, etc. In the Appendix, we show that the resistance of the board can play a positive role in our framework. While higher b could reduce the probability that the bidder initiates takeover negotiations, target shareholders might still prefer an incumbent with $b > 0$ over $b = 0$, since larger b increases the target bargaining power during the takeover negotiations.

4.2.2 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. Yet, in 30% of the events the activist enters *after* the announcement of an acquisition agreement but before closing. We conjecture that the complementarity between shareholder activism and takeovers extends to these cases as well. Intuitively, since buying shares with the intent of pressuring the incumbent to accept the offer is the activist’s private information, the activist can still profit from investing in the target after the bidder performed due diligence. 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.

4.2.3 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. In those cases, activists will put pressure on the incumbent to negotiate a higher price. Qualitatively, this case has the same intuition as the discussion of condition (7) in Section 3.1. To capture this case in the modified model, we require $B_A > \kappa / (1 - s)$. Under this assumption, the anticipation that the activist will put pressure on the target board to demand a higher premium weakens the incentives of the bidder to perform due diligence. In those cases, there could be *substitution* between shareholder activism and takeovers.

5 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 Appendix

A.1 Proofs of main results

Proof of Proposition 2. Suppose condition (8) holds and $\pi_A - \pi_I > \kappa/\alpha$. Notice that these conditions are not mutually exclusive. Based on Proposition 1, if the first round of the negotiations fails, the activist will run and win a proxy fight. Moreover, based on Lemma 1, in the second round of the negotiations the activist and the bidder will reach an agreement in which the bidder is expected to pay $q + \pi_A$. Therefore, in the first round of negotiations, the incumbent board will reject any offer lower than $q + \pi_A$. Similarly, the bidder will not agree to pay more than $q + \pi_A$ per share, since he can always wait for the second round of negotiations, and pay $q + \pi_A$ after the activist wins the proxy fight. Notice that $\pi_A \leq \frac{\Delta}{1-m}$. Overall, 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 π_A .

Second, suppose condition (8) holds and $\pi_A - \pi_I \leq \kappa/\alpha$. Based on Proposition 1, if the first round of the negotiations fails, the activist will not run a proxy fight. Therefore, if the first round of the negotiations fails, the incumbent retains control of the board. Moreover, note that if $\pi_A - \pi_I \leq \kappa/\alpha$ then it must be either $b \leq \frac{\Delta}{1-m}$ or $\frac{\Delta}{1-m} < \delta(\alpha)$. Since $\min\{b, \delta(\alpha)\} \leq \frac{\Delta}{1-m}$, it must be $b \leq \frac{\Delta}{1-m}$. Based on Lemma 1, if $b \leq \frac{\Delta}{1-m}$ then in the second round of the negotiations the incumbent and the bidder will reach an agreement in which the bidder is expected to pay $q + \pi_I$. Therefore, similar to the argument above, the bidder and the incumbent board will reach an agreement in the first round in which the bidder pays a premium of π_I .

Next, suppose condition (8) does not hold. Then, both conditions (5) and (7) are violated, and therefore, condition (4) is violated as well. Based on Proposition 1, the activist never runs a proxy fight. Therefore, if the first round of the negotiations fails, the incumbent retains control of the board. Based on Lemma 1, if $\frac{\Delta}{1-m} < b$ then the incumbent board and the bidder will not reach an agreement in the second round of negotiations, and the target would remain independent. Therefore, in the first round of negotiations, the incumbent board will reject any offer lower than $q + b$, and the bidder will not agree to pay more than $q + \frac{\Delta}{1-m}$ per share. Since $\frac{\Delta}{1-m} < b$, the parties will not reach an agreement in the first round as well, and the target remains independent in equilibrium. ■

Proof of Proposition 3. We show that if condition (10) holds then the bidder has no incentives to run a proxy fight under full commitment. If true, the value of the bidder from a commitment is zero. We proceed in several steps. First, the expected target shareholder value under the bidder's and the incumbent's control is $q + s \frac{\Delta}{1-m}$ and $q + \pi_I(\Delta)$, respectively.

Therefore, target shareholders prefer the bidder over the incumbent if and only if

$$s \frac{\Delta}{1-m} \geq \pi_I(\Delta) \Leftrightarrow \frac{\Delta}{1-m} < b.$$

So this condition is necessary. Hereafter suppose it holds. Next, there are two sub-cases. First, suppose the activist is not expected to run proxy fight. The value of the bidder from not running a proxy fight is zero. Indeed, based on Lemma 1, if $\frac{\Delta}{1-m} < b$ then the target remains independent under the incumbent's control. If the bidder runs a proxy fight, then he is elected by shareholders and makes a profit of $(1-s)\Delta - \kappa$. Therefore, the bidder runs a proxy fight only if $\frac{\kappa}{1-s} < \Delta$. However, if condition (10) holds, it cannot be both $\frac{\kappa}{1-s} < \Delta$ and $\frac{\Delta}{1-m} < b$. Therefore, it must be that the activist is expected to run and win proxy fight, which is the second case we consider. If the activist is expected to run and win a proxy fight, then the expected target shareholder value under the activist's control is $q + \pi_A(\Delta, \alpha)$. Note that it must be $\pi_A(\Delta, \alpha) > 0$, or else, shareholders would prefer the incumbent. However, if $\pi_A(\Delta, \alpha) > 0$ then $\pi_A(\Delta, \alpha) = s \frac{\Delta}{1-m} + (1-s) \frac{B_A}{\alpha}$. Therefore, if $B_A > 0$ then target shareholders will never elect the bidder, and the bidder has no incentives to run a proxy fight. If $B_A = 0$ then by running a proxy fight the bidder does not change the outcome but incurs an additional cost κ . Therefore, the bidder is strictly better off not running a proxy fight. ■

Proof of Corollary 1. Based on Proposition 2,

$$v(\alpha) = \begin{cases} \int_b^{\frac{B_A}{\alpha}} \pi_I(\Delta) dF(\Delta) + \int_{\frac{B_A}{\alpha}}^{\infty} \pi_A(\Delta, \alpha) dF(\Delta) & \text{if } b < \frac{B_A}{\alpha} - \frac{\kappa/(1-s)}{\alpha} \\ \int_b^{\infty} \pi_I(\Delta) dF(\Delta) & \text{if } \frac{B_A}{\alpha} - \frac{\kappa/(1-s)}{\alpha} \leq b < \delta(\alpha) \\ \int_b^{\infty} \pi_I(\Delta) dF(\Delta) + \int_{\delta(\alpha)}^b \pi_A(\Delta, \alpha) dF(\Delta) & \text{if } \delta(\alpha) < b \end{cases}$$

The assumption $B_A \leq \kappa/(1-s)$ implies $\frac{B_A}{\alpha} - \frac{\kappa/(1-s)}{\alpha} \leq 0$, and therefore, $v(\alpha)$ can be rewritten as in (12). The comparative statics of $w(\alpha)$ with respect to α is trivial. Based on (12), we can write

$$w(\alpha) - v(\alpha) = (1-s) \left[\int_{\min\{b, \delta(\alpha)\}}^{\infty} \Delta dF(\Delta) - b(1-F(b)) - \frac{B_A}{\alpha} [F(b) - F(\min\{b, \delta(\alpha)\})] \right],$$

and therefore

$$w(\alpha)' - v(\alpha)' = (1-s) \begin{cases} 0 & \text{if } b < \delta(\alpha) \\ \delta(\alpha) \frac{\max\{0, \kappa - B_A\}/s}{\alpha^2} f(\delta(\alpha)) + \frac{B_A}{\alpha^2} [F(b) - F(\delta(\alpha))] & \text{if } \delta(\alpha) \leq b \end{cases}$$

which is non-negative. Also, based on (12),

$$v'(\alpha) = \begin{cases} 0 & \text{if } b < \delta(\alpha) \\ \delta(\alpha) \frac{\max\{B_A, \kappa\}}{\alpha^2} f(\delta(\alpha)) - (1-s) \frac{B_A}{\alpha^2} [F(b) - F(\delta(\alpha))] & \text{if } \delta(\alpha) \leq b \end{cases}$$

Therefore, if $\delta(\alpha) \leq b$ then

$$v'(\alpha) > 0 \Leftrightarrow \delta(\alpha) \frac{f(\delta(\alpha))}{F(b) - F(\delta(\alpha))} > \frac{(1-s)B_A}{\max\{B_A, \kappa\}} \quad (22)$$

Recall that $\delta(\alpha)$ is a decreasing function of α and $\delta(\alpha) \in [\delta(\bar{\alpha}), b]$, where $\delta(\bar{\alpha}) > 0$. Therefore, $v'(\alpha) > 0$ as $\delta(\alpha) \rightarrow b$, i.e., when α is sufficiently small. Hereafter, we assume that $v'(\alpha) > 0$ for all $\alpha \in [0, \bar{\alpha}]$. This holds, for example, if s is sufficiently close to 1. ■

Proof of Proposition 4. We first prove that in any equilibrium $\alpha^*(0) = 0$. If $y = 0$ then $\Pr[\zeta = 0|y] = 1$ and $\Pr[\Delta < 0|y] = 1$. 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. Moreover, since $r(0) = 0$ and $r' > 0$, choosing $\alpha^*(0) > 0$ is strictly suboptimal.

Second, based on Corollary 1, if the activist owns α shares (which is observed by the bidder) then the bidder's expected profit conditional on ζ from performing due diligence is $\zeta(w(\alpha) - v(\alpha)) - c$. Therefore, the bidder performs due diligence if and only if $\zeta = 1$ and $c < w(\alpha) - v(\alpha)$.

Third, we prove $\alpha^* \leq \bar{\alpha}$. Suppose on the contrary $\alpha^* > \bar{\alpha}$. Then, on the equilibrium path the market maker observes that the activist bought α^* shares before the price is set, and hence, the market maker sets the price to be $q + \hat{\mu}h(\alpha^*)$. Indeed, the market maker infers that $y = 1$ and $\alpha = \alpha^*$. However, in this case, the activist's profit is strictly negative (given the alternative investment opportunity). So this cannot be an equilibrium.

Fourth, consider the share price. Since the market maker expects the activist to buy no shares if $y = 0$ and $\alpha^* \leq \bar{\alpha}$ shares if $y = 1$, the market maker sets the price to be $q + \mu h(\alpha^*)$ if the activist buys $\bar{\alpha}$ shares or less. Indeed, the market maker expects the takeover to take place if and only if $y = 1$ and $\zeta = 1$, which happens with probability μ . If the activist buys more than $\bar{\alpha}$ shares, which is an off-equilibrium event, then the market maker observes α and set the price to be $q + \mu(\alpha)h(\alpha)$ where $\mu(\alpha)$ is the off-equilibrium beliefs of the market that $\zeta = 1$ given that the activist decided to buy $\alpha > \bar{\alpha}$ shares. We assume $\mu(\alpha) = \hat{\mu}$, which guarantees that such deviation is not profitable.

Fifth, we prove $\alpha^* > 0$. Suppose on the contrary $\alpha^* = 0$, and consider a deviation of the activist to buying ε shares when $y = 1$. Suppose $\varepsilon \in (0, \bar{\alpha}) > 0$ such that $\delta(\varepsilon) \geq b$. Note that

such $\varepsilon > 0$ can be arbitrarily small. Then, $h(\varepsilon) = h(0)$. The profit from such deviation is

$$\begin{aligned}\Pi(\varepsilon, 0) - \Pi(0, 0) &= \varepsilon(q + \hat{\mu}h(\varepsilon) - p(\varepsilon, 0)) - r(\varepsilon p(\varepsilon, 0)) \\ &= \varepsilon(\hat{\mu} - \mu)h(0) - r(\varepsilon p(\varepsilon, 0)),\end{aligned}$$

where $p(\varepsilon, 0) = q + \mu h(0)$ must be the share price in this equilibrium when $\varepsilon < \bar{\alpha}$. Notice that

$$\frac{\partial [\Pi(\varepsilon, 0) - \Pi(0, 0)]}{\partial \varepsilon}|_{\varepsilon=0} = (\hat{\mu} - \mu)h(0) - r'(0)p(0, 0)$$

Since $r'(0) = 0$, we have $\frac{\partial [\Pi(\varepsilon, 0) - \Pi(0, 0)]}{\partial \varepsilon}|_{\varepsilon=0} > 0$, which implies that the activist has a profitable deviation to $\varepsilon > 0$, yielding a contradiction.

Sixth, we show $\alpha^* \in (0, \bar{\alpha}]$ is given by the unique solution of (15). Let $\Pi(\alpha, \alpha^*)$ be the profit of the activist if in equilibrium the market believes that the activist buys α^* shares if $y = 1$, and the activist in fact bought α shares. $\Pi(\alpha, \alpha^*)$ is given by (17) in the main text. Given α^* and the price function as given by (16), the activist never has incentives to buy strictly more than $\bar{\alpha}$ shares. Therefore, an equilibrium requires

$$\alpha^* \in \arg \max_{\alpha \in [0, \bar{\alpha}]} \Pi(\alpha, \alpha^*). \quad (23)$$

As a function of α , $\Pi(\alpha, \alpha^*)$ is continuous and bounded. Therefore, it always obtains a maximum on the interval $[0, \bar{\alpha}]$. Given the fifth step, we know that the maximum is strictly greater than zero. The maximum, however, does not have to be unique. Notice that

$$\frac{\partial \Pi(\alpha, \alpha^*)}{\partial \alpha} = \hat{\mu}h(\alpha) - \mu h(\alpha^*) + \alpha \hat{\mu}h'(\alpha) - r'(\alpha p(\alpha, \alpha^*))p(\alpha, \alpha^*)$$

and

$$\frac{\partial^2 \Pi(\alpha, \alpha^*)}{\partial^2 \alpha} = 2\hat{\mu}h'(\alpha) + \alpha \hat{\mu}h''(\alpha) - r''(\alpha p(\alpha, \alpha^*)) (p(\alpha, \alpha^*))^2.$$

We assume that $\frac{\partial^2 \Pi(\alpha, \alpha^*)}{\partial^2 \alpha} < 0$. This condition is guaranteed if $r'' > 0$ is sufficiently large (note that the term $2\hat{\mu}h'(\alpha) + \alpha \hat{\mu}h''(\alpha)$ is bounded over the range $[0, \bar{\alpha}]$). Under this assumption, $t(\alpha^*) \equiv \arg \max_{\alpha \in [0, \bar{\alpha}]} \Pi(\alpha, \alpha^*)$ is unique. Therefore, if $\frac{\partial \Pi(\alpha, \alpha^*)}{\partial \alpha}|_{\alpha=0} \leq 0$ then $t(\alpha^*) = 0$, if $\frac{\partial \Pi(\alpha, \alpha^*)}{\partial \alpha}|_{\alpha=\bar{\alpha}} \geq 0$ then $t(\alpha^*) = \bar{\alpha}$, and if $\frac{\partial \Pi(\alpha, \alpha^*)}{\partial \alpha}|_{\alpha=0} > 0 > \frac{\partial \Pi(\alpha, \alpha^*)}{\partial \alpha}|_{\alpha=\bar{\alpha}}$ then there is a unique $t(\alpha^*) \in (0, \bar{\alpha})$ such that $\frac{\partial \Pi(\alpha, \alpha^*)}{\partial \alpha}|_{\alpha=t(\alpha^*)} = 0$. Invoking the implicit function theorem on

$\frac{\partial \Pi(\alpha, \alpha^*)}{\partial \alpha}|_{\alpha=t(\alpha^*)} = 0$ implies

$$\begin{aligned}\frac{\partial t}{\partial \alpha^*} &= -\frac{-\mu h'(\alpha^*) - r''(tp(t, \alpha^*)) tp(t, \alpha^*) \frac{\partial p(t, \alpha^*)}{\partial \alpha^*} - r'(tp(t, \alpha^*)) \frac{\partial p(t, \alpha^*)}{\partial \alpha^*}}{\frac{\partial^2 \Pi(\alpha, \alpha^*)}{\partial^2 \alpha}|_{\alpha=t}} \\ &= \frac{1 + r''(tp(t, \alpha^*)) tp(t, \alpha^*) + r'(tp(t, \alpha^*))}{\frac{\partial^2 \Pi(\alpha, \alpha^*)}{\partial^2 \alpha}|_{\alpha=t}} \mu h'(\alpha^*)\end{aligned}$$

Notice that $p(t, \alpha^*) = q + \mu h(\alpha^*)$, and hence, $\frac{\partial p(t, \alpha^*)}{\partial \alpha^*} = \mu h'(\alpha^*) \geq 0$, which explains the second equality. Overall, since $\frac{\partial^2 \Pi(\alpha, \alpha^*)}{\partial^2 \alpha}|_{\alpha=t} < 0$ and $h'(\alpha^*) \geq 0$, then $\frac{\partial t}{\partial \alpha^*} \leq 0$. The equilibrium requires $t(\alpha^*) = \alpha^*$. However, since $t(\alpha^*)$ is a continuous and decreasing function, where $t(0) > 0$ (which can be proved using similar arguments to those in the fifth step), then a unique solution always exists. Note that if $t(\bar{\alpha}) > \bar{\alpha}$, then $\alpha^* = \bar{\alpha}$ is the equilibrium. ■

Proof of Proposition 5. Suppose the equilibrium exhibits selection, that is, $b \leq \delta(\alpha^*)$. Notice that $b \leq \delta(\alpha^*)$ implies $h(\alpha^*) = h(0)$, $h'(\alpha^*) = 0$, and $p^*(\alpha^*, \alpha^*) = p^*(0, 0)$. Therefore, either $\alpha^* = \bar{\alpha}$ or condition (15) must hold. In the latter case, (15) becomes $\alpha^* = \alpha_{selection}$. Therefore, $\alpha^* = \min\{\bar{\alpha}, \alpha_{selection}\}$. Moreover, it is necessary that either $b \leq \delta(\bar{\alpha})$ or $\delta(\bar{\alpha}) < b \leq \delta(\min\{\bar{\alpha}, \alpha_{selection}\})$, which is the same as requiring $b \leq \delta(\min\{\bar{\alpha}, \alpha_{selection}\})$.

Suppose $b \leq \delta(\min\{\bar{\alpha}, \alpha_{selection}\})$. If $\bar{\alpha} \leq \alpha_{selection}$ then $b \leq \delta(\bar{\alpha})$ implies $b < \delta(\alpha)$ for all $\alpha < \bar{\alpha}$ and the equilibrium must exhibit selection. Suppose $\bar{\alpha} > \alpha_{selection}$. Then, $b \leq \delta(\alpha_{selection})$ and by construction of $\alpha_{selection}$ we have $\frac{\partial \Pi(\alpha, \alpha_{selection})}{\partial \alpha}|_{\alpha=\alpha_{selection}} = 0$. Therefore, $\alpha_{selection}$ is an equilibrium as required. This proves that equilibrium exhibits treatment if and only if $\delta(\min\{\bar{\alpha}, \alpha_{selection}\}) < b$. ■

A.2 Limited veto power and tender offers

Suppose that if no acquisition agreement is reached at the second round of negotiations then with probability $\lambda \in [0, 1]$ the target remains independent and whoever controls the target board can consume his private benefits. However, with probability $1 - \lambda$ the bidder can make a tender offer directly to target shareholders. For simplicity, we focus on conditional offers for all target shares. The possibility of making a tender offer affects the analysis of the baseline model only if the bidder can partly overcome the free-riding problem of Grossman and Hart (1980), but not completely. That is, the bidder must make some profit, otherwise, the option of making a tender offer is never exercised. Target shareholders must also make a profit from the tender offer, otherwise, they are indifferent between keeping the firm independent and selling it via tender offer. For simplicity, we assume there are no additional costs that are associated with the tender, $m > 0$, and the free-rider problem exists. We prove the following result.

Proposition 6 *Under limited veto power, all the results in Section 3.1 continue to hold subject to the following two modifications:*

- (i) *If the second round of negotiation fails then the target remains independent with probability λ , and with probability $1 - \lambda$ the bidder makes a tender offer $q + \Delta$ which is accepted by target shareholders.*
- (ii) $\pi_A(\Delta, \alpha)$ *is replaced everywhere by $(1 - \lambda)\Delta + \lambda\pi_A(\Delta, \alpha)$, and $\pi_I(\Delta)$ is replaced everywhere by $(1 - \lambda)\Delta + \lambda\pi_I(\Delta)$.*

Proof. Suppose the second round of negotiation failed. With probability λ the target remains independent and with probability $1 - \lambda$ the bidder makes a tender offer to shareholders. Because of the free-rider problem, shareholders tender their shares if and only if the offer is higher than $q + \Delta$. Therefore, the bidder makes a tender offer of $q + \Delta$ per share, target shareholders tender their shares, the bidder takes over the target and makes a profit of $m\Delta$. This proves part (i).

All parties involved rationally expect that if the second round fails, the above dynamic would unfold. The bidder's profit from an agreement in which he pays a premium π is $\Delta - (1 - m)\pi$. This profit cannot be smaller than $(1 - \lambda)m\Delta$, the bidder's expected profit if the second round of negotiations fails. Therefore, the highest premium the bidder would be willing to pay is $\lambda\frac{\Delta}{1-m} + (1 - \lambda)\Delta$. Similarly, the incumbent will not agree to sell the firm for a premium lower than $\lambda b + (1 - \lambda)\Delta$. Therefore, the bidder and the incumbent can reach an agreement in the second round if and only if $b \leq \frac{\Delta}{1-m}$, exactly as in the baseline model. The negotiations between the bidder and the activist in the second round (if the latter controls the board) are the same as above with the exception that b is replaced by B_A/α . Finally, if the bidder controls the target board, then with probability $1 - \lambda$ he cannot consume his private benefits and he will make a tender offer. However, with probability λ he will consume his private benefits and offer shareholders the lowest price that is acceptable to them, which is q .²⁹ For all of these reasons, π_2 in Lemma 1 can be rewritten as $(1 - \lambda)\Delta + \lambda\pi_2$. Therefore, in the second round of negotiations, the expected shareholder value under the incumbent's control is

$$\begin{aligned} & q + 1_{\{b \leq \frac{\Delta}{1-m}\}} [s(\lambda\frac{\Delta}{1-m} + (1 - \lambda)\Delta) + (1 - s)(\lambda b + (1 - \lambda)\Delta)] + 1_{\{b > \frac{\Delta}{1-m}\}} (1 - \lambda)\Delta \\ &= q + (1 - \lambda)\Delta + \lambda\pi_I(\Delta). \end{aligned}$$

²⁹Implicitly, we assume that the bidder's private benefits are larger than $m\Delta$, and therefore, he has no incentives to make a tender offer to shareholders. Knowing this, shareholders will agree to any price higher than q if the bidder is already controlling their board. Alternatively, if the bidder could completely freeze out target shareholders and solve the free-rider problem, shareholders cannot expect any positive premium once the bidder takes control of their board.

Similarly, the expected shareholder value under the activist's and the bidder's control is $q + (1 - \lambda)\Delta + \lambda\pi_A(\Delta, \alpha)$ and $q + (1 - \lambda)\Delta$, respectively. This proves part (ii) as required. ■

A.3 Optimal level of b

Proposition 7 *Consider the setup of Section 4 and suppose that target shareholders can choose b at the outset, before the activist receives his signal and trades. Let b^* be the level of b that maximizes the expected target shareholder value. Then $b^* > 0$ if*

$$G\left((1-s)\hat{\Delta}\right)/g\left((1-s)\hat{\Delta}\right) > s\hat{\Delta} \quad (24)$$

where $\hat{\Delta} = \int_0^\infty \Delta dF(\Delta)$.

Proof. Suppose $b < \delta(1)$. Note that $0 < \delta(1) \leq \delta(\alpha)$ for all $\alpha \in [0, 1] > 0$. According to Corollary (1), the expected shareholder value is given by $q + \mu h(0)$ where

$$h(0) = G\left((1-s)\int_b^\infty (\Delta - b) dF(\Delta)\right) \left(\int_b^\infty [s\Delta + (1-s)b] dF(\Delta)\right)$$

Note that

$$\begin{aligned} \frac{\partial h(0)}{\partial b} &= G(w(0) - v(0)) [-bf(b) + (1-s)(1-F(b))] \\ &\quad - g(w(0) - v(0))v(0)(1-s)(1-F(b)) \end{aligned}$$

and

$$\lim_{b \rightarrow 0} \frac{\partial h(0)}{\partial b} = (1-s)(1-F(0)) \left[G\left((1-s)\hat{\Delta}\right) - g((1-s)\hat{\Delta})s\hat{\Delta} \right]$$

Therefore, $\lim_{b \rightarrow 0} \frac{\partial h(0)}{\partial b} > 0$ if and only if (24) holds. This implies that $b^* > 0$. Note that if $G(c) = 1 - e^{-\lambda c}$ (exponential distribution with parameter $\lambda > 0$) and $s < \frac{1}{2}$ then (24) holds. ■

Online Appendix for “Corporate Control Activism”

B The value of commitment

Suppose that before the first round of negotiations starts, the bidder can fully commit to act in the best interests of target shareholders if they elect him to their board. In this section we assume $B_A = 0$. The next result characterizes the equilibrium of the game.

Proposition 8 *Suppose the bidder is committed to act in the best interests of target shareholders once elected to the target board. A unique equilibrium exists. In equilibrium, the target is acquired if and only if*

$$\min \left\{ b, \frac{1}{s} \frac{\kappa}{\alpha}, \frac{1}{1-m} \frac{\kappa}{1-s} \right\} \leq \frac{\Delta}{1-m}. \quad (25)$$

If this condition holds then the bidder reaches an agreement in the first round of negotiations with the incumbent board in which the bidder pays an expected takeover premium per share of

$$\pi_1^* = \begin{cases} s \frac{\Delta}{1-m} + \mathbf{1}_{\{b \leq \frac{\Delta}{1-m}\}} \cdot (1-s)b & \text{if } \min\{b, \frac{\kappa/s}{\alpha}\} \leq \frac{\Delta}{1-m} \\ s \frac{\Delta + \kappa}{1-m} & \text{if } \frac{1}{1-m} \frac{\kappa}{1-s} \leq \frac{\Delta}{1-m} < \min\{b, \frac{\kappa/s}{\alpha}\} \end{cases} \quad (26)$$

and acquires full control of the target. If condition (8) does not hold, no proxy fight is initiated and the target remains independent under the incumbent’s control.

Suppose Δ is drawn from distribution F . The next result follows directly from a comparison between Proposition 2 (when $B_A = 0$) and Proposition 8.

Proposition 9 *The net expected value that the bidder obtains from a commitment to act in the best interests of target shareholders is*

$$R = \int_{(1-m) \min\{b, \frac{\kappa/s}{\alpha}, \frac{1}{1-m} \frac{\kappa}{1-s}\}}^{(1-m) \min\{b, \frac{\kappa/s}{\alpha}\}} [(1-s)\Delta - s\kappa] dF(\Delta), \quad (27)$$

which is decreasing in α and increasing in b .

Proof of Proposition 8. Under the assumption above, both the bidder and the activist can “promise” an expected premium of $s \frac{\Delta}{1-m}$. Therefore, target shareholders reelect the incumbent whenever $b \leq \frac{\Delta}{1-m}$, and are indifferent between electing the bidder or the activist when $\frac{\Delta}{1-m} < b$.

Therefore, the bidder and the activist will run a proxy fight only if the other party is not expected to do so. Subject to this constraint, the incentives of the activist to run a proxy fight are the same as in Proposition 1 part (ii), when $B_A = 0$. However, unlike part (i) of Proposition 1, here the bidder can win a proxy fight. The bidder's expected profit from running a proxy fight is $\Delta - (1 - m) (s \frac{\Delta}{1-m}) = \Delta(1 - s) - \kappa$, and therefore, the bidder will run (and win) a proxy fight if and only if the activist does not run a proxy fight and

$$\frac{1}{1-m} \frac{\kappa}{1-s} \leq \frac{\Delta}{1-m} < b. \quad (28)$$

We proceed in several steps. First, suppose $\frac{\Delta}{1-m} < \min\{b, \frac{\kappa/s}{\alpha}, \frac{1}{1-m} \frac{\kappa}{1-s}\}$. We prove that the target remains independent under the incumbent board's control. Based on the discussion above, neither the bidder nor the activist runs a proxy fight. 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 rejects any offer lower than $q + b$ and the bidder rejects 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.

Second, we prove that if $b \leq \frac{\Delta}{1-m}$ then the bidder pays $q + s \frac{\Delta}{1-m} + (1 - s)b$ and acquires the target after the first round of negotiations. Based on the discussion above, if $b \leq \frac{\Delta}{1-m}$ then neither the bidder nor the activist runs a proxy fight, and both the bidder and the incumbent expect to reach an agreement in the second round in which the bidder pays $s \frac{\Delta}{1-m} + (1 - s)b$. Therefore, the bidder will not agree to pay more than this amount and the incumbent board will not accept less than this amount. They will reach an agreement in the first round of negotiations in which the bidder pays a premium of $s \frac{\Delta}{1-m} + (1 - s)b$.

Third, suppose $\max\{\frac{\kappa/s}{\alpha}, \frac{1}{1-m} \frac{\kappa}{1-s}\} \leq \frac{\Delta}{1-m} < b$. In principle, there is an equilibrium of the subgame (that follows the failure of the first round) 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. 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 $q + s\frac{\Delta}{1-m}$.

Fourth, suppose $\frac{\kappa/s}{\alpha} \leq \frac{\Delta}{1-m} < \min\{b, \frac{1}{1-m} \frac{\kappa}{1-s}\}$. If the first round fails only the activist runs a proxy fight. Therefore, as in the third 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.

Fifth, suppose $\frac{1}{1-m} \frac{\kappa}{1-s} \leq \frac{\Delta}{1-m} < \min\{b, \frac{\kappa/s}{\alpha}\}$. If the first round fails only the bidder runs a proxy fight. Therefore, as in the third 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.

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.³⁰ ■

C 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.

To study these situations, consider the baseline model but suppose that the activist is absent (i.e., $\alpha = 0$) and a value of Δ can be created if the bidder's proposal is implemented. The

³⁰This selection is conservative in the sense that it gives an upper bound on the bidder's value from commitment, which is our main interest in this section.

proposal can be successfully implemented either by the incumbent or by the bidder, regardless of the target's ownership structure. In particular, the proposal can be implemented even if the target remains independent after the failure of the second round of negotiations. Either way, the incumbent loses his private benefits of control if the proposal is implemented.

The next result shows 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.³¹

Proposition 10 *Suppose the first round of negotiations fails. If the bidder can increase the standalone value of the target, he runs a proxy fight if and only if*

$$\frac{\kappa/m}{1-m} \leq \frac{\Delta}{1-m} < b, \quad (29)$$

and whenever the bidder runs a proxy fight, he wins.

Proof. If the second round of negotiations succeeded and the target is acquired by the bidder, then the bidder implements his proposal if it has not been implemented yet. Therefore, the post takeover target value is $q + \Delta$. If the second round of negotiations failed and the firm remains independent (that is, its ownership structure did not change), there are two cases. First, if the bidder controls the target board then he implements her proposal if it has not been implemented yet, and the target value is $q + \Delta$. Second, if the incumbent board retains control then he implements the proposal if and only if $b \leq \Delta$, and hence, the target value is $q + \mathbf{1}_{\{b \leq \Delta\}}\Delta$.

Consider the second round of negotiations. There are two cases. First, suppose that either the bidder controls the target board or the incumbent retains control and $b \leq \Delta$. The bidder's proposal is implemented whether or not the bid fails. For this reason, the bidder will not offer more than $q + \Delta$ per share. Moreover, target shareholders will not accept offers lower than $q + \Delta$, since they can always reject the bid and obtain a value of $q + \Delta$ once the proposal is implemented. Therefore, whether or not target is acquired, the bidder's payoff is $m(q + \Delta)$ and

³¹ Consistent 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.

the shareholder value is $q + \Delta$. Second, suppose incumbent board retains control and $b > \Delta$. If the negotiations fail, the proposal will not be implemented and the bidder's payoff would be mq . If the bidder acquires the firm, her payoff is $q + \Delta - (1 - m)\pi_2$, where π_2 is the offer made to target shareholders. Therefore, the bidder is willing to offer up to $q + \frac{\Delta}{1-m}$ per share. The incumbent board and the bidder will reach an agreement if and only if $b \leq \frac{\Delta}{1-m}$. If $\frac{\Delta}{1-m} < b$ then the takeover fails and the shareholder value is q . If $\Delta < b \leq \frac{\Delta}{1-m}$ then the incumbent and the bidder reach an agreement in which $\pi_2 \geq q + b > q + \Delta$. Therefore, target shareholders approve any agreement reached by the bidder and the incumbent, and target is acquired by the bidder. In this case, the expected shareholder value is $q + s\frac{\Delta}{1-m} + (1 - s)b$.

Consider the proxy fight stage. There are three cases to consider. First, if $b \leq \Delta$ then the bidder's payoff is $m(q + \Delta)$ whether or not she gets the control of the board. Therefore, she has no reason to run and incur the cost of a proxy fight. Second, if $\Delta < b \leq \frac{\Delta}{1-m}$ then the bidder always loses the proxy fight if he decides to start one. The reason is that shareholders know that if they elect the bidder they will get $q + \Delta$ whereas if they reelect the incumbent, the bidder will takeover the target and pay shareholders on average $q + s\frac{\Delta}{1-m} + (1 - s)b$, which is strictly higher. Anticipating his defeat, the bidder never runs a proxy fight in this region. Third, if $\frac{\Delta}{1-m} < b$ then the shareholder value is $q + \Delta$ if the bidder gets the control of the board, and q otherwise. Therefore, shareholders always elect the bidder if he runs a proxy fight. The bidder's payoff is $m(q + \Delta) - \kappa$ if he runs a proxy fight, and mq otherwise. Therefore the bidder runs a proxy fight only if $\kappa/m \leq \Delta$. Combining this condition with $b > \frac{\Delta}{1-m}$ yields (29).

Finally, consider the first round of negotiations.³² There are four cases to consider. First, if $b \leq \Delta$ then the target value is $q + \Delta$ whether or not the bidder acquires the target. Second, if $\Delta < b \leq \frac{\Delta}{1-m}$ then the bidder reaches an agreement in the first round of negotiations with the incumbent board in which he pays $q + s\frac{\Delta}{1-m} + (1 - s)b$ per share and acquires full control of the target. If $\frac{\Delta}{1-m} < b$ and $\Delta < \kappa/m$ then the target remains independent and the proposal is not implemented. If $\frac{\Delta}{1-m} < b$ and $\Delta \geq \kappa/m$ then the bidder reaches an agreement in the first round of negotiations with the incumbent board in which he pays on average $q + s(\Delta + \frac{\kappa}{1-m}) + (1 - s)\Delta$ per share and acquires full control of the target. ■

D Activist's proposals

As described in Appendix C, 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

³²This part is not discussed in the main text and only provided for completeness.

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. For simplicity, we assume $m = 0$ and $B_A = 0$.

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*. The formal result is given below.

Proposition 11 *Suppose the activist can make a proposal, then:*

- (i) *If the first round of negotiations fails, then the bidder never runs a proxy fight, while the activist runs a proxy fight if and only if $\kappa/\alpha \leq \varepsilon < b$ and $\Delta < b$, or $\varepsilon < \kappa/\alpha$ and $\varepsilon + \frac{\kappa/\alpha - \varepsilon}{s} \leq \Delta < b$. If the activist runs a proxy fight, she wins.*
- (ii) *Let $\Pi_B(\alpha, \varepsilon)$ be the bidder's expected profit. Then:*
 - (a) *If $\varepsilon < \min \{b, \kappa/\alpha\}$ then $\alpha > 0 \Rightarrow \Pi_B(\alpha, \varepsilon) \geq \Pi_B(0, \varepsilon)$ and $\lim_{b \rightarrow \varepsilon + \frac{\kappa/\alpha - \varepsilon}{s}} \frac{\partial \Pi_B(0, \varepsilon)}{\partial \varepsilon} > 0$.*
 - (b) *If $\varepsilon > b$ then for all $\alpha > 0$, $\Pi_B(\alpha, \varepsilon)$ is strictly decreasing in ε , $\Pi_B(\alpha, \varepsilon) < \Pi_B(0, \varepsilon)$, and takeover is less likely when the activist is present than when she is not.*

Proof. Consider the following three cases:

1. First, suppose $\max\{\varepsilon, b\} \leq \Delta$. If the incumbent retains control of the board and the firm remains independent, the incumbent implements the activist's proposal if and only if $\varepsilon \geq b$. Therefore, the reservation value of the incumbent in this case is $q + \max\{\varepsilon, b\}$ per share. Since $\max\{\varepsilon, b\} \leq \Delta$, an agreement in which the bidder pays an expected premium of $s\Delta + (1-s)\max\{\varepsilon, b\}$ is always reached under the control of the incumbent board. On the other hand, if the activist obtains control of the board, she will reach an agreement with the bidder in which the expected takeover premium is $s\Delta + (1-s)\varepsilon$. Therefore, the activist has no incentives to run a proxy fight. Overall, the expected firm value is $q + s\Delta + (1-s)\max\{\varepsilon, b\}$.
2. Second, suppose $\Delta < \varepsilon$ and $b \leq \varepsilon$. Since $\Delta < \varepsilon$ and $b \leq \varepsilon$, if the incumbent retains control of the board, the incumbent is willing to implement the activist's proposal but refuses to sell the firm. Since $\Delta < \varepsilon$, a takeover cannot increase the value of the firm even if shareholders extract all the surplus. Therefore, the activist has no incentives to run a proxy fight, and the value of the firm under the incumbent's control is $q + \varepsilon$.
3. Third, suppose $\max\{\varepsilon, \Delta\} < b$. Since $\max\{\varepsilon, \Delta\} < b$, if the incumbent retains control of the board, the incumbent refuses to sell the firm or implement the activist's proposal. Therefore, under the incumbent's control the firm value is q . Suppose the activist controls the target board. If $\varepsilon > \Delta$ then she would implement the proposal, and if $\varepsilon \leq \Delta$ then she would reach an acquisition agreement in which the bidder pays an expected premium of $s\Delta + (1-s)\varepsilon$. Therefore, under the activist's control firm value is $q + \varepsilon + s\max\{0, \Delta - \varepsilon\}$, and shareholders always elect the activist if she decides to run a proxy fight. The activist has incentives to run a proxy fight if and only if

$$\alpha[q + \varepsilon + s\max\{0, \Delta - \varepsilon\}] - \kappa \geq \alpha q,$$

which holds if and only if $\varepsilon \geq \kappa/\alpha$ or, $\varepsilon < \kappa/\alpha$ and $\Delta \geq \varepsilon + \frac{\kappa/\alpha - \varepsilon}{s}$. Part (i) follows from the intersection of this condition with $\max\{\varepsilon, \Delta\} < b$.

Consider the first round of negotiations. All parties involved anticipate the dynamic above if the first round fails. Therefore, if $\max\{\varepsilon, b\} \leq \Delta$ then the bidder pays $q + s\Delta + (1-s)\max\{\varepsilon, b\}$ and takes over the target after the first round of negotiations. If $\Delta < \varepsilon$ and $b \leq \varepsilon$ then the target remains independent and the activist's proposal is implemented. If $\max\{\varepsilon, \Delta\} < b$ then the bidder pays $q + \varepsilon + s\max\{0, \Delta - \varepsilon\}$ if $\varepsilon \geq \kappa/\alpha$ or, $\varepsilon < \kappa/\alpha$ and $\Delta \geq \varepsilon + \frac{\kappa/\alpha - \varepsilon}{s}$, and otherwise, the target remains independent but the activist's proposal is not implemented.

Integrating over all values of Δ , which is drawn from cdf $F(\cdot)$, firm value is $q + v(\alpha, \varepsilon)$ where

$$v(\alpha, \varepsilon) = \begin{cases} \varepsilon + s \int_{\varepsilon}^{\infty} (\Delta - \varepsilon) dF(\Delta) & \text{if } b \leq \varepsilon \\ v(0) + \int_{-\infty}^b [\varepsilon + s \max\{0, \Delta - \varepsilon\}] dF(\Delta) & \text{if } \kappa/\alpha \leq \varepsilon < b \\ v(0) + \int_{\min\{b, \varepsilon + \frac{\kappa/\alpha - \varepsilon}{s}\}}^b [\varepsilon + s(\Delta - \varepsilon)] dF(\Delta) & \text{if } \varepsilon < \min\{b, \kappa/\alpha\}, \end{cases}$$

which can be rewritten as

$$v(\alpha, \varepsilon) = \begin{cases} v(0) + \int_{\min\{b, \varepsilon + \frac{\kappa/\alpha - \varepsilon}{s}\}}^b [\varepsilon + s(\Delta - \varepsilon)] dF(\Delta) & \text{if } \varepsilon < \min\{b, \kappa/\alpha\} \\ \varepsilon + s \int_{\varepsilon}^{\infty} (\Delta - \varepsilon) dF(\Delta) & \text{if } \varepsilon \geq \min\{b, \kappa/\alpha\}. \\ +(1-s) \int_b^{\infty} \max\{0, b - \varepsilon\} dF(\Delta) \end{cases} \quad (30)$$

Moreover, the expected value created by the takeover and the activist's proposal is

$$w(\alpha, \varepsilon) = \begin{cases} \int_{\min\{b, \varepsilon + \frac{\kappa/\alpha - \varepsilon}{s}\}}^{\infty} \Delta dF(\Delta) & \text{if } \varepsilon < \min\{b, \kappa/\alpha\} \\ \int_{-\infty}^{\varepsilon} \varepsilon dF(\Delta) + \int_{\varepsilon}^{\infty} \Delta dF(\Delta) & \text{if } \varepsilon \geq \min\{b, \kappa/\alpha\}. \end{cases} \quad (31)$$

Consider part (ii) and note that $\Pi_B(\alpha, \varepsilon) = w(\alpha, \varepsilon) - v(\alpha, \varepsilon)$. If $\varepsilon < \min\{b, \kappa/\alpha\}$ then

$$\Pi_B(\alpha, \varepsilon) = (1-s) \left[\int_b^{\infty} (\Delta - b) dF(\Delta) + \int_{\min\{b, \varepsilon + \frac{\kappa/\alpha - \varepsilon}{s}\}}^b (\Delta - \varepsilon) dF(\Delta) \right].$$

Clearly, $\Pi_B(\alpha, \varepsilon) \geq \Pi_B(0, \varepsilon)$ for $\alpha > 0$ where the inequality is strict if $b > \varepsilon + \frac{\kappa/\alpha - \varepsilon}{s}$. Suppose $b > \varepsilon + \frac{\kappa/\alpha - \varepsilon}{s}$, and note that

$$\frac{\partial \Pi_B(\alpha, \varepsilon)}{\partial \varepsilon} = \left(\frac{1-s}{s} \right)^2 (\kappa/\alpha - \varepsilon) f\left(\varepsilon + \frac{\kappa/\alpha - \varepsilon}{s}\right) - (1-s) \int_{\varepsilon + \frac{\kappa/\alpha - \varepsilon}{s}}^b dF(\Delta)$$

and $\lim_{b \rightarrow \varepsilon + \frac{\kappa/\alpha - \varepsilon}{s}} \frac{\partial \Pi_B(\alpha, \varepsilon)}{\partial \varepsilon} > 0$. This completes part (ii.a). To see part (ii.b), suppose that $\varepsilon > b$. Then,

$$\Pi_B(\alpha, \varepsilon) = (1-s) \times \begin{cases} \int_{\varepsilon}^{\infty} (\Delta - \varepsilon) dF(\Delta) & \text{if } \alpha > 0 \\ \int_b^{\infty} (\Delta - b) dF(\Delta) & \text{if } \alpha = 0. \end{cases}$$

Since

$$\varepsilon > b \Rightarrow \int_{\varepsilon}^{\infty} (\Delta - \varepsilon) dF(\Delta) < \int_b^{\infty} (\Delta - b) dF(\Delta)$$

and $\int_{\varepsilon}^{\infty} (\Delta - \varepsilon) dF(\Delta)$ is strictly decreasing in ε , $\Pi_B(\alpha, \varepsilon)$ is strictly decreasing in ε and $\Pi_B(\alpha, \varepsilon) < \Pi_B(0, \varepsilon)$ for all $\alpha > 0$ as required in the statement. Moreover, takeover probability

is $1 - F(\varepsilon)$ if the activist is present and $1 - F(b)$ if the activist is not present, where the former decreases in ε and is larger than the latter since $\varepsilon > b$, concluding the proof. ■

E Hidden values

In reality, corporate boards often have private information about the standalone value of the target q , and bidders often have private information about the expected synergy Δ . The baseline model abstracts from these information asymmetries and the resulting adverse selection in order to focus on agency problems as the key friction. This section shows that the asymmetric information can in fact exacerbate the commitment problem of bidders in takeovers and sometimes enhance the ability of the activist to resolve it. For simplicity we assume $m = 0$ and $B_A = 0$.

E.1 Uncertainty about q

Incumbent boards often justify their resistance to takeovers by claiming that the fundamental value of the target under their control is higher than the proposed takeover offer, even if the offer represents a significant premium relative to the unaffected stock price. Essentially, they claim that based on their private information the target is undervalued by the market as a standalone firm. In this section we solve the baseline model under the assumption that $q \in \{q_L, q_H\}$ is uncertain, $q_H > q_L \geq 0$, and q is privately observed by whoever controls the target board, including the activist and the bidder if they win a proxy fight. We denote the prior by $\tau = \Pr[q = q_H]$. We also assume that the identity of the proposer, the value of the offer, and the counter-party response (i.e., accept or reject) are made public in each round. We focus attention on Perfect Bayesian Equilibria in pure strategies. Therefore, any equilibrium is either pooling or fully separating.

Lemma 2 *Suppose no information about q is revealed in the first round of negotiations, and consider the second round of negotiations.*

(i) *If the bidder controls the target board then:*

- (a) *If $\Delta \geq E[q] - q_L$ then the bidder offers shareholders $E[q]$ and takes over the target with probability one.*
- (b) *If $\Delta < E[q] - q_L$ then the bidder offers shareholders q_H and takes over the firm if and only if $q = q_H$.*

(ii) If the target board has private benefits of control per share $\beta \in \{0, b\}$ and the bidder makes an offer to the target board then:

- (a) If $\Delta \geq \beta + \frac{1-\tau}{\tau} (q_H - q_L)$ then the bidder offers $q_H + \beta$ and the board accepts the offer with probability one.
- (b) If $\beta \leq \Delta < \beta + \frac{1-\tau}{\tau} (q_H - q_L)$ then the bidder offers $q_L + \beta$ and the board accepts the offer if and only if $q = q_L$.
- (c) If $\Delta < \beta$ then the takeover always fails.

(iii) If the target board has private benefits of control per share $\beta \in \{0, b\}$ and the target board makes an offer to the bidder then:

- (a) If $\Delta \geq \beta + (1 - \tau) (q_H - q_L)$ then the target board asks for $E[q] + \Delta$ regardless of his type and the bidder accepts the offer.
- (b) If $\beta \leq \Delta < \beta + (1 - \tau) (q_H - q_L)$ then the target board asks for $q_L + \Delta$ if $q = q_L$ and the bidder accepts the offer. If $q = q_H$ the target remains independent.
- (c) If $\Delta < \beta$ then the takeover always fails.

Proof. Suppose information about q is not revealed in the first round. The proxy fight stage does not reveal any information about q , since q is only observed by this stage by the incumbent.

Consider part (i) and suppose the bidder controls the target board. There is no information asymmetry between the bidder and the target board (since it is controlled by the bidder), but target shareholders still need to approve the deal. We proceed in four steps. First, we show that the takeover succeeds with a strictly positive probability in any equilibrium. To see why, suppose on the contrary that the takeover always fails. Therefore, no offer $\pi' \in [q_H, q_H + \Delta]$ is on equilibrium path, because otherwise it would be accepted by shareholders. However, since $\Delta > 0$, if $q = q_H$ then the bidder strictly prefers an off-equilibrium offer $\pi'_H \in (q_H, q_H + \Delta)$ over his equilibrium offer since the former would be accepted by shareholders and generate a profit, creating a contradiction.

Second, consider a pooling equilibrium where the takeover always takes place. Shareholders accept the pooling offer only if it is higher than $E[q]$. The bidder has incentives to make the pooling offer when $q = q_L$ only if it is smaller than $q_L + \Delta$. Therefore, a pooling equilibrium exists if and only if $E[q] \leq q_L + \Delta$. In this case, the target is taken over for sure. Notice that the only pooling equilibrium that survives the Grossman and Perry (1986) criterion is the one in which the pooling offer is $E[q]$.

Third, consider a separating equilibrium. There are three sub-cases to consider:

1. The bidder makes different offers depending on q and the takeover always takes place. However, the bidder has incentives to deviate to offering the lower offer even if $q = q_H$. So this equilibrium cannot exist.
2. The takeover takes place if and only if $q = q_L$. Suppose the bidder offers π^* when $q = q_L$. However, the bidder has incentives to deviate by offering π^* also when $q = q_H$. So this equilibrium cannot exist.
3. The takeover takes place if and only if $q = q_H$: if $q = q_L$ the bidder does not take over the firm and if $q = q_H$ the bidder offers π_H and the offer is accepted by shareholders. This is an equilibrium only if $\pi_H = q_H$, because if $\pi_H > q_H$ then whenever $q = q_H$ the bidder is strictly better off by deviating to an offer $\pi' \in (q_H, \pi_H)$ which would be always accepted by the shareholders, and if $\pi_H < q_H$ then shareholders would reject π_H . Therefore, $\pi_H = q_H$. Moreover, this can be an equilibrium only if shareholders reject any offer lower than q_H . However, off-equilibrium beliefs that support this equilibrium and satisfy the Grossman and Perry (1986) criterion exist if and only if $E[q] > q_L + \Delta$.

Fourth, overall, if the off-equilibrium beliefs are required to satisfy the Grossman and Perry (1986) criterion, then the unique outcome is as described in part (i) of the proposition's statement. In this case, target shareholder expected value is $E[q]$.

Consider part (ii). Suppose the target board has private benefit of control per share $\beta \in \{0, b\}$ and the bidder makes an offer to the target board ($\beta = 0$ if the activist controls the board and $\beta = b$ if the incumbent retains control). Since $\beta \geq 0$ shareholders approve any offer that is approved by the target board. If $\Delta < \beta$ then a takeover can never succeed, because otherwise either the bidder or the target board (or both) make negative profit on the equilibrium path. In this case, in equilibrium, the bidder makes an offer strictly smaller than $q_L + \beta$, which is always rejected by the target board. Suppose that $\Delta > \beta$.³³ If the bidder offers $q_H + \beta$ then the takeover succeeds for sure. If the bidder offers $q_L + \beta$ the takeover succeeds with probability $1 - \tau$, only when $q = q_L$. The bidder prefers the higher offer if and only if

$$\begin{aligned} E[q] + \Delta - q_H - \beta &\geq (1 - \tau)(q_L + \Delta - q_L - \beta) \Leftrightarrow \\ \Delta &\geq \beta + \frac{1 - \tau}{\tau}(q_H - q_L). \end{aligned}$$

Note that the bidder does not have any incentive to make any other offer. Hence if $\Delta \geq \beta + \frac{1 - \tau}{\tau}(q_H - q_L)$ the offer is pooling and shareholder value is $q_H + \beta$, if $\beta \leq \Delta < \beta + \frac{1 - \tau}{\tau}(q_H - q_L)$ the offer is separating and shareholder value is $E[q] + (1 - \tau)\beta$, and if $\Delta < \beta$ the takeover never takes place and shareholder value is $E[q]$.

³³If $\Delta = \beta$ then the equilibrium can have the properties of parts (ii.b) or (ii.c).

Consider part (iii). Suppose the target board has private benefit of control per share $\beta \in \{0, b\}$ and the target board makes an offer to the bidder. Note that shareholders approve any offer asked by the target board since $\beta \geq 0$. If $\Delta < \beta$ then a takeover can never succeed, because otherwise either the bidder or the target board (or both) make negative profit on the equilibrium path. In this case, in equilibrium, the target board always asks a sufficiently high offer that is rejected by the bidder. This equilibrium can be supported by off-equilibrium beliefs that $q = q_L$ upon observing any off-equilibrium path offer $\pi'' \geq q_L + \beta$, which satisfy the Grossman and Perry (1986) criterion. Suppose $\Delta > \beta$.³⁴ We proceed in three steps:

1. First, we show that in any equilibrium the takeover succeeds with a strictly positive probability. Suppose not. Then, no offer $\pi' \in [q_L + \beta, q_L + \Delta]$ is on the equilibrium path, because otherwise it would be accepted by the bidder and the shareholders. However, in any such equilibrium if $q = q_L$ then the target board strictly prefers any off-equilibrium offer $\pi' \in (q_L + \beta, q_L + \Delta)$ over the equilibrium offer since the former would be accepted by the bidder and shareholders, creating a contradiction.
2. Second, suppose the target board makes a pooling offer where the takeover always takes place. Then, he must ask the bidder to pay no more than $E[q] + \Delta$. The board has incentives to make this offer when $q = q_H$ only if it is higher than $q_H + \beta$. Therefore, the pooling equilibrium exists if and only if

$$E[q] + \Delta - q_H - \beta \geq 0 \Leftrightarrow \Delta \geq \beta + (1 - \tau)(q_H - q_L).$$

When it exists, the pooling equilibrium requires that the off-equilibrium beliefs are such that higher offers are rejected by the bidder. Notice, however, that the only pooling equilibrium that survives the Grossman and Perry (1986) criterion is the one in which the pooling offer is $E[q] + \Delta$.

3. Third, suppose the target board makes a separating offer. Then, the takeover cannot take place with probability one, because otherwise the target board making the lower equilibrium offer strictly prefers making the higher equilibrium offer. Moreover, the takeover takes place if and only if $q = q_L$, because otherwise if $q = q_L$ then the target board strictly prefers making the equilibrium offer that is made when $q = q_H$. Therefore, it must be that the target board is asking from the bidder no more than $q_L + \Delta$ when $q = q_L$ and this offer is accepted, and when $q = q_H$ his offer is rejected by the bidder. Moreover, the target board has no incentive to ask for the separating offer when $q = q_H$ if and only if the separating offer is smaller than $q_H + \beta$. In addition, since the bidder

³⁴If $\Delta = \beta$ then the equilibrium can have the properties of parts (iii.b) or (iii.c).

accepts any offer equal to or smaller than $q_L + \Delta$ under any off-equilibrium beliefs, the separating offer made when $q = q_L$ is at least $q_L + \Delta$, and since the bidder has to make nonzero profit in equilibrium, it cannot be strictly larger than $q_L + \Delta$. Hence, the separating offer is $q_L + \Delta$. Therefore, the separating equilibrium exists if and only if

$$q_L + \Delta \leq q_H + \beta.$$

This equilibrium, however, survives the Grossman and Perry (1986) criterion if and only if $E[q] + \Delta - q_H - \beta < 0$.

We conclude, if $\Delta \geq \beta + (1 - \tau)(q_H - q_L)$ the offer is pooling and shareholder value is $E[q] + \Delta$, if $\beta \leq \Delta < \beta + (1 - \tau)(q_H - q_L)$ the offer is separating and shareholder value is $E[q] + (1 - \tau)\Delta$, and if $\Delta < \beta$ the takeover never takes place and shareholder value is $E[q]$. ■

Lemma 3 *Suppose the first round of negotiations fails and no information about q is revealed. Then:*

(i) *The bidder never runs a proxy fight.*

(ii) *If the activist owns α shares of the target, the activist runs a proxy fight if and only if $\Delta \in \Gamma(\alpha)$ where*

$$\Gamma(\alpha) = \left\{ \Delta : \frac{\frac{1}{\tau} \frac{\kappa/\alpha}{s} - \frac{1-\tau}{\tau} \frac{1-s}{s}}{\frac{1-\tau}{\tau} \cdot \mathbf{1}_{\{0 \leq \Delta < b\}} + \mathbf{1}_{\{(1-\tau)(q_H - q_L) \leq \Delta < b + (1-\tau)(q_H - q_L)\}}} \begin{bmatrix} (q_H - q_L) \cdot \mathbf{1}_{\{\frac{1-\tau}{\tau}(q_H - q_L) \leq \Delta\}} \\ -b \cdot \mathbf{1}_{\{b \leq \Delta\}} \end{bmatrix} \leq \Delta < b + \frac{1-\tau}{\tau} (q_H - q_L) \right\} \quad (32)$$

Whenever the activist runs a proxy fight, she wins.

Proof. Suppose no information about q is revealed in the first stage. Based on part (i) of Lemma 2, shareholder value under the bidder's control is $E[q]$. Therefore, electing the bidder to the board is a weakly dominated strategy, and strictly dominated if extraction of value is possible. Based on parts (ii) and (iii) of Lemma 2, the expected shareholder value under the incumbent's control is

$$s \begin{bmatrix} E[q] + (1 - \tau) \Delta \cdot \mathbf{1}_{\{\Delta \geq b\}} \\ + \tau \Delta \cdot \mathbf{1}_{\{\Delta \geq b + (1 - \tau)(q_H - q_L)\}} \end{bmatrix} + (1 - s) \begin{bmatrix} E[q] + (1 - \tau) b \cdot \mathbf{1}_{\{b + \frac{1-\tau}{\tau}(q_H - q_L) > \Delta \geq b\}} \\ + ((1 - \tau)(q_H - q_L) + b) \cdot \mathbf{1}_{\{\Delta \geq b + \frac{1-\tau}{\tau}(q_H - q_L)\}} \end{bmatrix},$$

and the expected shareholder value under the activist's control, if she chooses to run a proxy fight, is

$$s \begin{bmatrix} E[q] + (1 - \tau) \Delta \cdot \mathbf{1}_{\{\Delta \geq 0\}} \\ + \tau \Delta \cdot \mathbf{1}_{\{\Delta \geq (1 - \tau)(q_H - q_L)\}} \end{bmatrix} + (1 - s) \begin{bmatrix} E[q] \\ + (1 - \tau) (q_H - q_L) \cdot \mathbf{1}_{\{\Delta \geq \frac{1 - \tau}{\tau} (q_H - q_L)\}} \end{bmatrix}.$$

The activist runs a proxy fight if and only if the increase in value under her control is greater than κ/α , which holds if and only if $\Delta \in \Gamma(\alpha)$. ■

Remark: Based on Lemma 3, note that

$$\begin{aligned} \lim_{b \rightarrow \infty} \Gamma(\alpha) &= \left\{ \Delta : \frac{\frac{1}{\tau} \frac{\kappa/\alpha}{s} - \frac{1 - \tau}{\tau} \frac{1 - s}{s} (q_H - q_L) \cdot \mathbf{1}_{\{\frac{1 - \tau}{\tau} (q_H - q_L) \leq \Delta\}}}{\frac{1 - \tau}{\tau} \cdot \mathbf{1}_{\{0 \leq \Delta\}} + \mathbf{1}_{\{(1 - \tau)(q_H - q_L) \leq \Delta\}}} \leq \Delta \right\} \\ &= \begin{cases} \left[\min \left\{ \frac{\kappa/\alpha}{s} \frac{1}{1 - \tau}, (1 - \tau) (q_H - q_L) \right\}, \infty \right) & \text{if } \frac{\kappa/\alpha}{s} \frac{1}{1 - \tau} \leq q_H - q_L \\ \left[\min \left\{ \frac{\kappa/\alpha}{s}, \frac{1 - \tau}{\tau} (q_H - q_L) \right\}, \infty \right) & \text{if } \frac{\kappa/\alpha}{s} \frac{1}{1 - \tau} \frac{1 - s}{\tau} \leq q_H - q_L < \frac{\kappa/\alpha}{s} \frac{1}{1 - \tau} \\ \left[\frac{\kappa/\alpha}{s} - (1 - \tau) \frac{1 - s}{s} (q_H - q_L), \infty \right) & \text{if } q_H - q_L < \frac{\kappa/\alpha}{s} \frac{1}{1 - \tau} \frac{1 - s}{\tau} \end{cases} \end{aligned}$$

This demonstrates that if $q_H - q_L$ is large then $\lim_{b \rightarrow \infty} \Gamma(\alpha) \subset \left[\frac{\kappa/\alpha}{s}, \infty \right)$ and if $q_H - q_L$ is small then $\left[\frac{\kappa/\alpha}{s}, \infty \right) \subset \lim_{b \rightarrow \infty} \Gamma(\alpha)$. Thus, adverse selection can either increase or decrease the incentives of the activist to run a proxy fight. Finally, note that

$$\lim_{s \rightarrow 0} \Gamma(\alpha) = \begin{cases} \left[\frac{1 - \tau}{\tau} (q_H - q_L), b + \frac{1 - \tau}{\tau} (q_H - q_L) \right) & \text{if } \frac{\kappa/\alpha}{1 - \tau} + b \leq q_H - q_L \\ \left[\min \left\{ b, \frac{1 - \tau}{\tau} (q_H - q_L) \right\}, b \right) & \text{if } \frac{\kappa/\alpha}{1 - \tau} \leq q_H - q_L < \frac{\kappa/\alpha}{1 - \tau} + b \\ \emptyset & \text{if } q_H - q_L < \frac{\kappa/\alpha}{1 - \tau} \end{cases}$$

This demonstrates that unlike the baseline model, here the activist may run a proxy fight even if $\Delta > b$. Intuitively, the activist who is less biased against the takeover can overcome the adverse selection problem while the incumbent cannot.

To conclude, the existence of private information reduces the bidder's credibility even further since it creates adverse selection and additional opportunities for the bidder to abuse the power of the target board once it is given to him. The existence of private information, however, has an ambiguous effect on the activist. On the one hand, private information increases the activist's incentives to run a proxy fight since the activist can extract information rents from the bidder once she gets access to the target's private information. On the other hand, private information creates adverse selection which decreases the probability of reaching an acquisition agreement with the bidder, thereby weakening the activist's incentives to run a

proxy fight. The latter effect dominates the former if $q_H - q_L$ is large.

E.2 Uncertainty about Δ

In this section we solve the baseline model under the assumption that $\Delta \in \{\Delta_L, \Delta_H\}$ is uncertain, $\Delta_H > \Delta_L > 0$, and Δ is privately observed by the bidder. We denote the prior by $\psi = \Pr[\Delta = \Delta_H]$. We also assume that the identity of the proposer, the value of the offer, and the counter-party response (i.e., accept or reject) are made public in each round. We focus attention on Perfect Bayesian Equilibria in pure strategies. Therefore, any equilibrium is either pooling or fully separating.

Lemma 4 *Suppose the first round of negotiations fails and no information about Δ is revealed in the first stage or in the proxy fight stage. Consider the second round of negotiations. Then:*

- (i) *If the bidder controls the target board then the bidder offers shareholders q and takes over the target with probability one.*
- (ii) *If the target board has private benefit of control per share $\beta \in \{0, b\}$ and the bidder is the proposer then:*
 - (a) *If $\beta \leq \Delta_L$ then the bidder offers $q + \beta$ and the board accepts the offer.*
 - (b) *If $\Delta_L < \beta \leq \Delta_H$ then the bidder offers $q + \beta$ when $\Delta = \Delta_H$ and the board accepts the offer, and when $\Delta = \Delta_L$ the takeover fails.*
 - (c) *If $\Delta_H < \beta$ then the takeover always fails.*
- (iii) *If the target board has private benefit of control per share $\beta \in \{0, b\}$ and the target board is the proposer then:*
 - (a) *If $\beta \leq \frac{\Delta_L - \psi \Delta_H}{1 - \psi}$ then the target board asks for $q + \Delta_L$ and the bidder accepts the offer with probability one.*
 - (b) *If $\frac{\Delta_L - \psi \Delta_H}{1 - \psi} < \beta \leq \Delta_H$ then the target board asks $q + \Delta_H$ and the bidder accepts the offer if and only if $\Delta = \Delta_H$.*
 - (c) *If $\Delta_H < \beta$ then the takeover always fails.*

Proof. Suppose information about Δ is not revealed in the first round or in the proxy fight stage. There are three cases. First, suppose the bidder controls the target board. There is no information asymmetry between the bidder and the target board, but target shareholders still need to approve the deal. Shareholders will approve any offer higher than q regardless

of their beliefs about Δ . Since $\Delta_L \geq 0$, regardless of the realization of Δ the bidder offers shareholders q and the offer is accepted. In this case target shareholder value is q . Notice that this argument holds for any set of shareholder beliefs about Δ .

Second, suppose the target board has private benefit of control per share $\beta \in \{0, b\}$ and the bidder is the proposer. Notice that regardless of his beliefs about Δ , the target board rejects any offer below $q + \beta$ and accepts any offer above $q + \beta$. Therefore, the bidder has incentives to offer $q + \beta$, provided that her expected profit is non-negative. This completes part (ii).³⁵

Third, suppose the target board has private benefits of control per share $\beta \in \{0, b\}$ and the target board is the proposer. Since $\beta \geq 0$ shareholders approve any offer that is asked by the target board. If $\Delta_H < \beta$ then a takeover can never succeed, because otherwise either the bidder or the target board (or both) make negative profit on the equilibrium path. In this case, in equilibrium, the target board makes an offer strictly larger than $q + \Delta_H$, which is always rejected by the bidder. Suppose $\Delta_H > \beta$.³⁶ If the board asks for $q + \Delta_L$ then the takeover succeeds for sure, and the board's expected profit is $\Delta_L - \beta$. If the board asks for $q + \Delta_H$ then the takeover succeeds with probability ψ , only when $\Delta = \Delta_H$, and the board's expected profit is $\psi(\Delta_H - \beta)$. The board prefers the former over the latter if and only if

$$\Delta_L - \beta \geq \psi(\Delta_H - \beta) \Leftrightarrow \beta \leq \frac{\Delta_L - \psi\Delta_H}{1 - \psi},$$

where $\frac{\Delta_L - \psi\Delta_H}{1 - \psi} < \Delta_L < \Delta_H$. Note that the target board does not have any incentive to make any other offer. This completes part (iii). ■

Lemma 5 *Suppose the first round of negotiations failed and no information about Δ was revealed. Then:*

- (i) *The bidder never runs a proxy fight, and no information about Δ is revealed.*
- (ii) *If the activist owns α shares of the target, the activist runs a proxy fight if and only if $b \in \Lambda(\alpha)$ where*

$$\Lambda(\alpha) = \left\{ b : 0 \leq b \leq \frac{\max\{\psi\Delta_H, \Delta_L\} - \psi\Delta_H \cdot \mathbf{1}_{\left\{\frac{\Delta_L - \psi\Delta_H}{1 - \psi} < b \leq \Delta_H\right\}} - \Delta_L \cdot \mathbf{1}_{\left\{b \leq \frac{\Delta_L - \psi\Delta_H}{1 - \psi}\right\}} - \frac{\kappa/\alpha}{s}}{\frac{1-s}{s} [\mathbf{1}_{\{b \leq \Delta_L\}} + \psi \cdot \mathbf{1}_{\{\Delta_L < b \leq \Delta_H\}}]} \right\}$$

Whenever the activist runs a proxy fight, she wins.

Proof. Based on part (i) of Lemma 4, shareholder value under the bidder's control is q regardless of their beliefs about Δ . Therefore, electing the bidder to the board is a weakly

³⁵Note that if $\Delta_H = \beta$ then the equilibrium can have the properties of parts (ii.b) or (ii.c).

³⁶If $\Delta_H = \beta$ then the equilibrium can have the properties of parts (iii.b) or (iii.c).

dominated strategy, and strictly dominated if extraction of value is possible. This also implies that the bidder's decision not to run a proxy fight is not informative about Δ .

Based on parts (ii) and (iii) of Lemma 4, the expected shareholder value when the target board's private benefits are $\beta \in \{0, b\}$ is

$$\begin{aligned}\Pi_{SH}(\beta) &= q + s \left[\psi \Delta_H \cdot \mathbf{1}_{\left\{ \frac{\Delta_L - \psi \Delta_H}{1 - \psi} < \beta \leq \Delta_H \right\}} + \Delta_L \cdot \mathbf{1}_{\left\{ \beta \leq \frac{\Delta_L - \psi \Delta_H}{1 - \psi} \right\}} \right] \\ &\quad + (1 - s) \beta \left[\mathbf{1}_{\{\beta \leq \Delta_L\}} + \psi \cdot \mathbf{1}_{\{\Delta_L < \beta \leq \Delta_H\}} \right].\end{aligned}$$

Therefore, the activist runs a proxy fight if and only if

$$\Pi_{SH}(0) - \Pi_{SH}(b) \geq \kappa/\alpha,$$

which holds if and only if $b \in \Lambda(\alpha)$. Since $\kappa > 0$, whenever the activist runs a proxy fight, she is elected by shareholders. ■

References

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