Hedge Fund Activism vs. Hostile Takeover Bids*

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We compare hedge fund activism and hostile tender offers in a unified framework where any investor who acquires an equity stake to improve firm value faces a dual free-rider problem: Neither do dispersed shareholders sell their shares unless the price fully reflects the anticipated value improvement nor do those who retain their shares participate in the costs. We show that activism and tender offers are polar approaches to this problem, and in terms of profitability, react contrarily to changes in the marginal return to effort. Activists can hence contribute to a more efficient control allocation by brokering takeovers, along the extensive margin (takeover activity) as well as the intensive margin (ownership concentration), partially obviating tender offers. We also show that pre-campaign coordination between bidders and activists reduces hold-up problems, and that allowing activists to disentangle votes and cash flow rights improves their incentives and ultimately serves to unify both sets of rights in the hands of bidders.

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> It is our contention that sizeable profits can be earned by taking large positions in 'undervalued' stocks and then attempting to control the destinies of the companies in question by:
>
> a) trying to convince management to liquidate or sell the company to a 'white knight'; b) waging a proxy contest; c) making a tender offer and/or; d) selling back our position to the company."
>
> —Excerpt from the "Icahn Manifesto," 1976

1 Introduction

Hostile takeovers have long been considered the quintessential disciplinary governance mechanism, but a similarly confrontational strategy has lately come to prominence by way of activist hedge funds that buy into poorly run firms and use the threat of hostile tactics to pressure management into accepting specific proposals to improve shareholder value. This paper compares these two governance mechanisms within a unified framework to highlight the common frictions that they face as well as their differences.

Several observations motivate such a comparison:

i. Hostile bidders and activist hedge funds follow the same blueprint: They identify firms in which the separation of ownership and control has led to poor management, and buy an equity stake to have the influence to improve firm value. The key difference is that bidders acquire a majority stake and thereby full control, whereas activists invest in a minority stake and "work" towards obtaining the influence needed to achieve their objectives.[1]

ii. Activist hedge funds are mired in the same controversies as the "raiders" of the 1980s. Critics question whether their activities are socially valuable. In particular, they are accused of chasing short-term gains at the expense of the firms' long-term interest and necessitating wasteful defensive tactics. Concerns have also been raised over activist strategies that disentangle votes and economic interests. These strategies amount to deviations from the one-share-one-vote rule, an issue that has also been discussed in the context of takeovers.[2]

[1] Buying (temporarily) into firms with the explicit purpose of shaping corporate decisions distinguishes hedge fund activism from institutional shareholder activism by long-term shareholders, such as pension funds, who engage managements on occasion (Kahan and Rock, 2007). It is the reason some observers refer to hedge fund activism as "raider-like" or "offensive" (e.g., Orol, 2008; Cheffins and Armour, 2011).

[2] On criticism regarding short-termism and adverse effects of disciplinary threats, see e.g., Coffee and Paglia (2014) and Goodwin et al. (2014) for activism, and Stein (1988) and Enriques et al. (2013) for takeovers. For the debate on deviations from the one-share-one-vote rule, see e.g., Hu and Black (2006, 2007, 2008) for activism, and Grossman and Hart (1988), Bennedsen and Nielsen (2004), and additional references in Burkart and Lee (2008) for takeovers.

iii. A significant percentage of activist campaigns pursues the sale of the target as their objective. Further, the number of campaigns and the returns to activism correlate positively with mergers and acquisitions (M&A) activity (Greenwood and Schor, 2009; Becht et al., 2014). The interaction of activism and takeovers has historical roots in the 1980s when targets were "put in play" by activist blockholders, whose credo is summed up in our opening quote, and who together with the raiders are the main antecedents of today's activist hedge funds (Orol, 2008; Carlisle, 2014).[3]

iv. Concurrent with the upsurge of hedge fund activism since the mid-1990s in part due to relaxed shareholder communication laws (Sharara and Hoke-Witherspoon, 1993; Bradley et al., 2010; and Fos, 2013), there has been a rise in M&A activity but a decline in tender offers (Betton et al., 2008, Fig. 9). A possible link between these patterns is that hedge fund activism is a catalyst for mergers and, by the same token, a substitute for tender offers as a disciplinary takeover mechanism.[4]

Figure 1 about here

Our theoretical framework compares bidders and activists on equal footing: Both bear private costs to increase a firm's share value, and face fully rational, atomistic shareholders in a market without noise traders. Further, the activist's sole objective is to broker a sale of the target firm to said bidder so that tender offers and activism are different means to the *same* end. We also restrict all gains to the appreciation of equity stakes, including toeholds, as activist hedge funds typically extract no private benefits of control. By framing our analysis squarely within the market for corporate control and limiting both strategies to the same source of profit, we isolate comparative advantages that reside purely in their *modi operandi*.

This framework lays bare that activists and bidders face one and the same friction. The lack of coordination among passive shareholders that gives management discretion to act against their interest (Berle and Means, 1932) also subjects *any* active investor who seeks to discipline management to a *dual* free-rider problem: On one hand, passive shareholders free-ride on the investor's

[3]Orol (2008) describes several links between activism and takeovers in practice. For example, he quotes a CEO who describes activist funds and private equity firms as "co-dependent": "The [private equity firms] encourage the hedge fund guys to put companies in play and the activists take positions in companies and pressure for auctions enabling private equity firms to get a hold of divisions or entire companies they might otherwise not have been able to." In another takeover-related strategy called "deal-jumping," activists engage firms with already announced merger plans to (block the proposed deal and) bargain or "shop" for higher bids. Jiang et al. (2015) document the impact of such campaigns. Our analysis sheds light on the value of this strategy to the extent that the activist spares a rival bidder from having to resort to a tender offer.

[4]Several observers have noted the apparent "substitution" of hedge fund activism for hostile takeovers in the data, and have pointed to legal developments that have made tender offers more difficult but activism easier (e.g., Fos, 2013; Davidoff, 2013).

effort to improve firm value, which mutes her incentives. On the other hand, if the investor attempts to resolve this problem by buying more shares, she faces the second manifestation of the free-rider problem, namely that she must pay a price that reflects the anticipated share value appreciation (Grossman and Hart, 1980).

The following description by an activist fund manager illustrates how the two facets of the free-rider problem concretely manifest themselves in practice (Orol, 2008, 62-63):

> [I]nvestors who jump in the stock after the activist has made its case in its original 13D will typically bump up the stock price, making it difficult for the original [activist] to buy additional stock at cheap prices as the campaign proceeds...
>
> [Chapman] likes to call these passive investors who buy into the stock immediately after he files a 13D "free-riders" or "remora," an animal that has a large sucking disk on its head for attaching to larger fish or sharks...
>
> Even if investors buy the stock and stick around for however long it takes for the [activist] to succeed in its efforts, those shareholders share the benefit of the activism without spending anywhere near the time, money, and energy on the subject company as the activist does.[5]

We find takeovers and activism to be polar approaches to this dual problem. As is well known, the bidder's equity gains from a successful takeover are limited to the appreciation of her toehold, as tendering shareholders extract the full value increase through the bid price (Grossman and Hart, 1980). From an ex ante perspective, her optimal effort choice is therefore to maximize the net value of her toehold. However, ex post she optimally maximizes the net value of her controlling stake, which includes all tendered shares. As a result, a takeover compels the provision of *unrecompensed effort*, and is frustrated when the divergence in ex ante and ex post incentives is too large.

The activist faces the same free-riding shareholders and so the same problem that acquired shares induce her to provide unrecompensed effort. But activism does not build on majority control. On the contrary, the point of the campaign is to compensate for the lack of it. The activist hence optimally limits her share

[5] A Schedule 13D filing must be submitted to the U.S. Securities and Exchange Commission by anyone who acquires ownership of more than 5% of any publicly traded security in a public company. As part of these filings, an investor must disclose not only her identity but also *her investment objective*. The free-rider problem is a key issue in the regulatory debate on whether to lower the disclosure threshold: "[A] high-profile activist investor that files a 13D... would quickly attract many 'free-rider' copycat investors. That, in turn, would lead to short-term spikes in stock prices, making it more difficult for the activist to obtain a sufficiently large stake at affordable prices (while the stock is undervalued). Without a significant stake, the activist would have no leverage in negotiations with corporations" (Orol, 2008, 152). Empirically, the "spike" in stock prices following a 13D filing is stronger when the stated investment objective is activist and more confrontational (Brav et al., 2008; Klein and Zur, 2009).

purchase, balancing the benefit of gaining influence from additional voting rights against the cost of unrecompensed effort. The downside is that the endogenous limit on her stake caps her effort incentives, and when the value she creates under these incentives is too small, activism does not materialize.

Caught between Scylla and Charybdis of the free-rider problem, these strategies surrender to opposite evils. Bidders improve incentives by buying majority stakes, and thereby accept that they "overwork." Activists avoid this by buying small stakes, and thereby improve incentives less and "underwork." The central result of this paper is that, in terms of profitability, these two strategies respond differently to changes in marginal returns to effort: A higher marginal return drives a larger wedge between the bidder's ex ante and ex post incentives, but leverages the activist's limited effort. Consequently, the bidder's profit from a tender offer *de*creases in her ability, while the activist's profit from a campaign *in*creases in both her and the bidder's ability. Therefore, although activists and bidders face the exact same frictions, campaigns and tender offers are profitable in opposite parameter regions, with some overlap where they coexist as feasible intervention modes.

Two features of activism are key to its comparative advantage. We refer to the first feature as the *inversion of conditionality*: while bidders buy control to work, activists work to attain control. The nature of the dual free-rider problem is such that when effort is more valuable, buying control is costlier but working for it is more lucrative. The second central feature is that activism is *transitory*. A campaign shifts the dual free-rider problem from the bidder onto the activist. Although this constrains the activist's stake and effort, these constraints are not inherited by the bidder. Hence, the activist's optimal response to the dual free-rider problem, unlike the bidder's, does not distort post-takeover value creation. Thus, transitory engagement with a limited stake is what makes activists viable control brokers, even though they also face the free-rider problem and further introduce campaign costs, which represent a social deadweight loss.

When activism emerges, it is Pareto-improving and increases welfare along the extensive and intensive margin. It facilitates takeovers that would otherwise not occur and replaces tender offers with control sales that lead to higher post-takeover (ownership concentration and hence) firm values. Furthermore, there is a supply-demand relationship between the market for corporate control and activism: Exogenous increases in the surplus from takeovers raise the "demand" for activism. Conversely, exogenous decreases in the cost of activism raise the "supply" of targets, causing a rise in total takeover activity but a simultaneous decline in tender offers.

Building on these results, we further analyze two controversial tactics that have been used by activists. The first concerns pre-campaign alliances between bidders and activists that walk a thin line between activism and insider trading.[6]

[6] A highly publicized collaboration involved pharmaceutical company Valeant and the hedge fund Pershing Square. With financial backing from Valeant, Pershing Square accumulated a 9.7 percent toehold in Allergan and then pushed for a sale of the company to Valeant. Valeant and Pershing Square were indeed accused of insider trading. Allergan eventually sold itself to another firm, Actavis, but Valeant and Pershing Square are said to have earned about $2.6

The second concerns the unbundling of cash flow and voting rights, which drive a wedge between the economic interest and voting power of activist hedge funds.

As regards the first concern, we show that takeover-driven campaigns are susceptible to hold-up problems between bidders and activists. The gains from a campaign are determined in the negotiation of the ensuing control sale. At this time the costs of the campaign are sunk so that the activist may be unable to recoup them if she has too little bargaining power. Further, bidder and activist cannot fix the terms beforehand, as a price agreement without the other shareholders is void and contingent side transfers violate the equal treatment of target shareholders. This exposes the activist to hold-up risk that can frustrate the "relationship-specific investment" that a campaign constitutes. The bidder can mitigate the problem by "conceding" a toehold to the activist that makes the campaign more effective and balances out the threat points in the ex post bargaining. In practice this may involve "tipping off" an activist, who then buys a "Trojan Horse" stake in the target firm to launch a campaign for a control sale. While "insider trading" is inherent to this strategy, our analysis shows that such alliances also serve as a solution to the inefficient lack of explicit contracts between bidders and activists.

The second concern is familiar to the takeover literature. Burkart et al. (1998) show that deviations from one-share-one-vote can facilitate tender offers at the expense of post-takeover incentives. Indeed, in our model, deviations reduce unrecompensed effort, which promotes takeover bids but lowers post-takeover firm value. We show that no such trade-off arises in the case of activism. Although unbundling drives a wedge between the activist's voting power and economic interest, her economic interest per se may in fact increase. Since the activist's investment weighs gains in influence against losses from unrecompensed effort *on the margin*, she is inclined to buy more cash flow rights if they carry more voting rights. Moreover, since her involvement is transitory, this unbundling does not distort the bidder's post-takeover incentives. On the contrary, it serves to unify ownership and control in the hands of the bidder.

Unbundling only accentuates the fundamental difference between activism and tender offers. The defining quality of an activist campaign – as that of unbundling – is to exert influence beyond the control vested in the equity stakes. By contrast, the point of a tender offer is to acquire a majority stake from dispersed shareholders to decrease the separation of ownership and control. The divergent impact of unbundling therefore resides in the inversion of conditionality.

We conclude the summary of our results with a couple of remarks. First, we abstract from freeze-outs, which have been shown to eliminate the free-rider problem in tender offers (Yarrow, 1985; Amihud et al., 2004), though only if the terms are immune to legal uncertainty (Müller and Panunzi, 2004). The analogous assumption for activists is that they, if hypothetically in possession of a majority stake, cannot force other shareholders to sell their shares, at least not

billion on their toehold from the Actavis deal (see, e.g., De La Merced et al., 2014; and Benoit and Hoffman, 2014). In a recent comment on the Valeant-Pershing Square collaboration, SEC Chair Mary Jo White urged against such "toehold deals" (Gandel, 2015).

without a judicial review that may award damages to minority shareholders. At the same time, we assume that, if the activist has a minority stake, a successful campaign results in a control sale that is binding for all shareholders. These governance assumptions capture differences in the judicial review of control sales with and without a controlling shareholder (see Section 3.1). Crucially, however, they do *not* imply that the activist can sidestep the free-rider problem: she confronts it at the campaign stage, while the bidder confronts it at the transaction stage.

Second, our analysis and results carry over to other forms of activism than brokering a takeover. Indeed, if a successful activist could implement the same value improvements as a bidder, the profitability of campaigns and tender offers would still react contrarily to changes in the marginal return to effort due to the inversion of conditionality. Similarly, this distinguishes activism from tender offers also if the same party had a choice between these two forms of intervention. Our model brings out this difference in a stark manner because it shows that a costly activist campaign can add value by merely brokering (rather than obviating) a takeover.

The dual free-rider problem combines the incentive problem of a blockholder in an otherwise widely held firm (Jensen and Meckling, 1976) with the free-rider problem that impedes the acquisition of ownership from dispersed shareholders (Grossman and Hart, 1980). Our modeling of this problem follows in the tradition of Shleifer and Vishny (1986) and Burkart et al. (1998).

Shleifer and Vishny consider a blockholder who engages in costly monitoring and afterwards pursues either a tender offer or an activist campaign. Building on Burkart et al., we examine *post*-takeover effort as opposed to *pre*-takeover effort. The change in timing is crucial to the unrecompensed effort problem that drives the contrast between activism and tender offers and underlies all our results. Also, Shleifer and Vishny's analysis of the two governance mechanisms focuses on the *signaling* effect of a bid relative to a campaign. By contrast, we assume symmetric information, and allow share purchases also for the purpose of a campaign, thereby analyzing the same set of decisions (equity purchase and effort) and frictions (dual free-rider problem) under either governance mechanism. Furthermore, we consider an activist who is distinct from the bidder but also aims for said bidder to gain control of the target firm. That is, activism does not obviate a takeover – playing up the question of whether it can improve the outcome without escaping the free-rider problem or saving on takeover costs.

Apart from Shleifer and Vishny, the tender offer literature confines minority blockholders in target firms to passive sellers as opposed to active monitors (Burkart et al., 2006; Ekmekci and Kos, 2015). Conversely, the large literature on active (minority) blockholders abstracts from takeovers and concentrates on the effects of multiple blockholders on monitoring (Winton, 1993; Noe, 2002), the impact of stock market liquidity on monitoring (Kahn and Winton, 1998; Maug, 1998; Aghion et al., 2004; Faure-Grimaud and Gromb, 2004; and Back, Li, and Ljungqvist, 2014), "voice" and "exit" as alternative strategies to discipline managers (Edmans, 2009; Admati and Pfleiderer, 2009; and Edmans and Manso, 2011), and adverse consequences of blockholder intervention (Burkart et al, 1997;

and Pagano and Roell, 1998).[7]

Consistent with the categorization of investor activism and hostile takeovers into different literatures, theoretical accounts of the emergence of activist hedge funds have focused on differences to institutional shareholder activism, that is, a comparison between different kinds of minority blockholders (e.g., Kahan and Rock, 2007; and Brav et al., 2008). By contrast, the present paper proposes an integrated theory and comparison of activism and hostile takeovers. Thus, it offers a complementary view on the rise in hedge fund activism that takes its cue from the market for corporate control.

Last, parts of our analysis relate to existing results on control sales (Bebchuk, 1994), tender offers versus proxy fights (Bebchuk and Hart, 2001), risk arbitrage (Cornelli and Li, 2002), risk aversion and shareholder monitoring (Admati et al., 1994), and empty voting (Brav and Matthews, 2011). We discuss these papers subsequently where most relevant.

2 Tender offers

2.1 Model setup

Our tender offer model follows Burkart et al. (1998) but replaces diversion with effort as the post-takeover moral hazard problem. A widely held firm faces a potential acquirer, henceforth the bidder.

Bidder.—If the bidder gains control, she generates a value improvement

$$V(e_b) \equiv \theta_b e_b + \zeta$$

where $e_b \geq 0$ is the bidder's post-takeover effort, $\theta_b \geq 0$ a measure of her ability, and ζ a value improvement realized irrespective of effort. When exerting effort, the bidder bears private cost

$$C(e_b) \equiv \frac{c}{2} e_b^2 + \underline{c}$$

where c parametrizes the marginal cost of effort and $\underline{c}$ the fixed cost of administrating the takeover. All parameters are common knowledge, but effort is unobservable.

Takeover rules.—For a successful takeover the bidder must accumulate at least 50 percent of the votes, and all shares carry the same number of votes. For now, tender offers are the only admissible mode of takeover. When confronted with a tender offer, the incumbent management is assumed to remain passive. The bidder owns an initial stake (toehold) t_b, which we assume to be less than .25 of all shares (for reasons that will become apparent later).[8]

[7] To see how theories of tender offers and active blockholders have evolved without much overlap, compare, e.g., the surveys by Burkart and Panunzi (2008) and Edmans (2014).

[8] Independent of our model, this is a generous upper bound in light of prevalent ownership disclosure laws. For example, in the U.S. (UK), a shareholder must disclose her holdings once they exceed 5 percent (3 percent) along with any control intentions.

Sequence of events.—The tender offer game unfolds as follows:

In stage 1, the bidder makes a take-it-or-leave-it, conditional, restricted tender offer (r_b, p_b) where r_b is the fraction of shares she offers to acquire and p_b the per-share cash price, subject to her holding a final stake s_b greater or equal than 50 percent.

In stage 2, the target shareholders noncooperatively decide whether to tender their shares. Shareholders are assumed to be homogeneous and do not perceive themselves as pivotal for the tender offer outcome. More specifically, we follow the convention in tender offer models exploring the free-rider problem and assume a mass 1 of outstanding target shares that are (apart from the toehold) dispersed among an infinite number of shareholders whose individual holdings are both equal and indivisible.[9]

In stage 3, the takeover fails if the fraction of shares tendered is less than $.5 - t_b$. Otherwise, the bidder gains control and pays the bid price and the fixed cost $\underline{c}$. Once in control, she decides on her effort e_b.

We conclude the model description with a parametric restriction which ensures that the bidder wants to generate value once she is in control. Define $\Delta_{s_b} \equiv \max_{e_b} s_b V(e_b) - C(e_b)$ with the implied firm value and effort costs denoted by V_{s_b} and C_{s_b}. Then:

Assumption 1. $\Delta_{.5} > 0$.

Given this assumption, the only reason a takeover may not take place is the free-rider problem. Note that the assumption implies that even takeover bids restricted to 50% create a surplus: $V_{.5} - C_{.5} > 0$.

2.2 Dual free-rider problem and unrecompensed effort

Once in control, the bidder's effort maximizes the value of her post-takeover stake net of effort cost, $s_b V(e_b) - C(e_b)$. Our assumptions on $V(.)$ and $C(.)$ ensure that equilibrium effort is uniquely pinned down by the first-order condition $e_b = \frac{\theta_b}{c} s_b$. Optimal effort increases with the bidder's productivity and post-takeover stake, and decreases with the marginal cost parameter.

Since shareholders are atomistic, each of them accepts the tender offer at stage 2 only if the bid price exceeds the expected post-takeover share value: $p_b \geq E[V(e_b)]$. Shareholders that expect a conditional offer to fail are indifferent between tendering and retaining. Breaking the indifference in favor of retaining supports failure as an equilibrium regardless of the price (Burkart et al., 2006). To avoid the co-existence of success and failure as equilibrium outcomes, we assume that shareholders tender unless the price is strictly lower than the expected post-takeover security benefits. Consequently, the bidder acquires r_b shares with certainty in a successful bid.[10] Under rational expectations, the

[9] Relaxing these assumptions weakens Grossman and Hart's (1980) result that the target shareholders extract all the gains in security benefits on tendered shares (Bagnoli and Lipman, 1988; Holmström and Nalebuff, 1992).

[10] If bids were unrestricted, any equilibrium in which the takeover succeeds would feature r_b (randomly chosen) shareholders tendering such that $p_b \geq E[V(e_b)]$ is exactly binding. Hence,

free-rider condition then reduces to $p_b \geq V(e_b)$. Since e_b increases with s_b and hence with r_b, the supply of tendered shares is upward-sloping: the shareholders' reservation price increases with the number of shares acquired by the bidder. As in Burkart et al. (1998), the more shares the bidder buys, the more value she is expected to create – which induces shareholders to hold on to their shares unless the bid price increases.

The bidder's optimization problem at stage 1 is hence

$$\begin{aligned} \underset{r_b, p_b, e_b}{\text{maximize}} \quad & s_b V(e_b) - C(e_b) - r_b p_b && (1) \\ s.t. \quad & p_b \geq V(e_b) && (2) \\ & r_b \geq .5 - t_b && (3) \\ & s_b V'(e_b) = C'(e_b) && (4) \\ & s_b = t_b + r_b && (5) \end{aligned}$$

where (2) is the free-rider condition, (3) the majority constraint, (4) the post-takeover incentive constraint, and (5) the bidder's post-takeover equity stake.

Lemma 1 (Burkart et al., 1998)**.** *In a successful tender offer, the bidder acquires $.5 - t_b$ shares, the smallest fraction needed for control.*

Proof. For any e_b and r_b, the objective function decreases in p_b. Hence, p_b is optimally set to its lower bound via (2): $p_b = V(e_b)$. Substituting this into the objective function reduces the latter to $t_b V(e_b) - C(e_b)$. Further substituting (4) for e_b and differentiating with respect to r yields $-\frac{r_b}{c}\theta_b^2 < 0$. Hence, it is optimal to set r_b to its lower bound given by (3). □

Target shareholders extract the full post-takeover gains on any tendered share through the bid price. This confines the bidder to gains from her toehold while she bears all the effort cost.[11] Yet she sets post-takeover effort in accordance with her final stake, which includes all tendered shares. From an ex ante perspective, the bidder ends up "overworking" – and more so, the more shares she acquires. Hence, she is better off acquiring as few shares as needed to gain control. Even so, a takeover may not always be profitable for the bidder.

Proposition 1. *For $t_b > \underline{c}/\zeta$, there exists a unique $\overline{\theta}_b > 0$ such that tender offers are feasible if and only if $\theta_b \leq \overline{\theta}_b$. Otherwise, no tender offer takes place.*

Proof. By Lemma 1, the bidder's ex ante profit is $\Pi^b_{.5} \equiv t_b V(\frac{\theta_b}{2c}) - C(\frac{\theta_b}{2c}) = (t_b - .25)\frac{1}{2c}\theta_b^2 + t_b\zeta - \underline{c}$. Given $t_b < .25$, $\Pi^b_{.5} < 0$ for all $\theta_b \geq 0$ unless $t_b\zeta > \underline{c}$. In this case, $\Pi^b_{.5} > 0$ if and only if $\theta_b < \overline{\theta}_b \equiv \sqrt{\frac{(t_b\zeta - c)2c}{.25 - t_b}}$. □

allowing for restricted offers does not alter the set of equilibria, and spares us assumptions on how shareholders coordinate to tender precisely r_b shares.

[11] The takeover literature has identified various sources of bidder gains in tender offers. Our analysis focuses on toeholds for comparative purposes because they constitute the main source of gains for activists (e.g., Becht et al. 2009; Brav et al. 2010). Brav et al. (2010) report that the median activist toehold in their sample is 6.3%.

For $t_b < .25$, the bidder captures less than a quarter of the value she creates. In the case of a quadratic optimization program (as here), this is the range where the unrecompensed effort is so high that it poses a potential obstacle to a takeover: any increase in the bidder's ex post incentives to create value decreases her ex ante profit. As a result, more able bidders fare worse, and may find a bid unprofitable. Indeed, the only source of bidder gains is her share t_b of the *exogenous* value improvement ξ, which is why the takeover is frustrated for all θ_b if $t_b\zeta \leq \underline{c}$.

Figure 2 about here

There are three fundamental reasons for why a tender offer fails. First, the lack of coordination among shareholders causes them to demand a price that reflects the full value improvement generated by the bidder but none of her private costs ((2)). From the bidder's point of view, the price is thus too high. Second, the inflated price notwithstanding, the bidder has to buy *at least* $.5 - t_b$ shares to gain control ((3)). Third, the bidder can at the offer stage not commit to work *less* than her post-takeover stake incentivizes her to do, nor will the remaining minority shareholders share the effort costs ((4)).

We can also use the optimization constraints (2)-(4) to expose the intuition behind Proposition 1: Because dispersed shareholders free-ride on others' efforts, anyone's incentive to improve value is limited by the size of her individual stake ((4)). This problem can in principle be solved by concentrating ownership. However, all the gains on shares acquired for this purpose are extracted by the free-riding shareholders, so that anyone seeking a larger stake must provide unrecompensed effort ((2)). We refer to this dilemma – lack of incentives versus unrecompensed effort – as the dual free-rider problem. The specific governance mechanism of a takeover is defined by the acquisition of a majority stake ((3)). It thus mitigates the first problem but exacerbates the second, and more so when the marginal return to effort is high.

In a richer framework, the bidder may want to acquire all shares because taking the firm private or tax considerations yield private benefits. Even so, the unrecompensed effort problem persists. In fact, it is taken to its extreme: Owning all shares induces the bidder to exert the highest feasible post-takeover effort, but as in a partial bid, she is not recompensed because the resulting improvements in security benefits are extracted by the target shareholders through the bid price. Thus, even if private benefits made a partial acquisition inferior, they need not suffice to make the full acquisition profitable because they would have to offset the unrecompensed effort problem when at its most severe. Since the optimality of partial bids is hence not crucial for our qualitative results, we have chosen the more parsimonious model without such private benefits.

Corollary 1. *$\overline{\theta}_b$ is increasing in t_b and c.*

The range of θ_b for which tender offers are feasible increases with t_b and c. A larger toehold t_b increases the bidder's share in the exogenous value improvement

and mitigates the endogenous unrecompensed effort problem by reducing the number of additional shares the bidder must acquire to gain control. The impact of the marginal cost parameter c is the exact inverse to that of her ability θ_b. A higher c decreases the bidder's ex post incentives, which reduces unrecompensed effort and hence increases her ex ante profit.

3 Investor activism

3.1 Model extension

Suppose the same widely held firm faces an activist investor, henceforth the activist, in addition to the bidder. For clarity of exposition, we will first analyze the case where tender offers are infeasible ($\theta_b > \overline{\theta}_b$). This allows us to cleanly uncover why activism can work and to identify the source of its advantage (Section 3.2). Thereafter, we turn to the case where tender offers and activism co-exist as feasible forms of intervention (Section 3.3).

Activist.—The activist intends to campaign for a sale of the firm to the aforementioned bidder. If launched, the campaign succeeds with probability

$$q(e_a) = v_a \theta_a e_a$$

where $e_a \geq 0$ is the activist's effort, $\theta_a \geq 0$ a measure of her ability, and v_a her equity voting rights. Under one-share-one-vote, v_a equals the activist's equity stake s_a at the time of the campaign. Although $q(.)$ depends explicitly on voting rights, our reduced-form specification is agnostic as to how a campaign success comes about and does not presume an actual vote. Activists often proceed from informal communication, over consent solicitations or shareholder proposals, to proxy fights depending on the management's resistance (Gantchev, 2013).[12] The management may be more willing to agree to demands before an escalation if the threat of hostile tactics is larger, which in turn may increase with the activist's voting power.[13]

[12] A possible microfoundation would be a shareholder voting game with noise voters (e.g., Maug and Rydqvist, 2009; Brav and Matthews, 2011; Esö et al., 2014) with the added feature that these (a priori passive or indecisive) voters are responsive to the activist's campaign effort. Alternatively, campaign effort could produce a signal on the probable outcome of a proxy vote that may convince management to accept the activist's demands without going to a noisy voting stage where defeat is costly for management (e.g., reputation). We intentionally abstract from such specifics, since all that matters for our purposes is that activist effort increases the success probability of a campaign. Our reduced-form specification is essentially a continuous-effort version of the "jawboning" strategy in Shleifer and Vishny (1986).

[13] For example, in 2012, TPG/Axon engaged SandRidge Energy with a consent solicitation, successfully forcing the CEO to resign and capturing four of eleven board seats. In 2013, Relational Investors in cooperation with the institutional investor CalSTRS submitted a Rule 14a-8 shareholder proposal and started a public relations campaign that successfully led to a split-up of Imken. Though, activist campaigns also fail. In a sample of 611 activist campaigns with well-specified objectives, Brav et al. (2010) find that 31.3 percent and 21.1 percent were, respectively, successful and partially successful in achieving their objective, leaving 47.6 percent of failed campaigns.

When exerting effort, the activist bears the private cost

$$K(e_a) \equiv \frac{k}{2}e_a^2 + \underline{k}$$

where k parametrizes the marginal cost of effort and $\underline{k}$ the fixed cost of a campaign.[14] All parameters are common knowledge, but effort is observable only to the activist.

The activist has accumulated an initial stake $t_a < .25$ prior to disclosing her intent. After the disclosure but before launching a campaign, the activist can purchase additional shares in the open market. Subsequently, we exclude "solutions" in which the activist merely sells her toehold to the bidder, since this would be equivalent to the tender offer game with a larger bidder toehold. To emphasize the point that "doubling the toehold" is not the role of activism, we impose that $t_a + t_b \leq \bar{t}$.

Governance rules.—If $s_a \geq .5$, the activist can effect a control transfer without any effort, but neither she nor the bidder can freeze out minority shareholders, that is, force them to sell their shares at the same price. This rule protects minority shareholders from potential expropriation by controlling shareholders. If $s_a < .5$, the activist can induce a control sale only by mobilizing additional votes and pressuring the incumbent management into merger negotiations, which requires effort. But in this case, we assume that a majority vote, or the merger agreement, is binding for all shareholders.

Sequence of events.—The activism game unfolds as follows:

In stage -3, the activist discloses her intent and can purchase r_a shares in the open market at the market price p_a. As the target shareholders in a tender offer, open-market traders are homogeneous and atomistic price-takers, who do not perceive themselves as pivotal to the success of a campaign. (Equivalently, we could assume a competitive market maker who enters a short sale position to accommodate the activist's purchase.) To level the playing field, we abstract from "noise traders" who would otherwise provide activists, but not bidders, with an exogenous source of speculative trading gains.

In stage -2, the activist decides whether to launch a campaign, and if so, pays the fixed cost $\underline{k}$ and chooses her effort e_a.

In stage -1, if the campaign fails, the game ends. Otherwise the activist negotiates a sale of the company. We assume for now that the activist has full bargaining power and makes a take-it-or-leave-it offer (r_m, p_m) to the bidder.[15] (We consider alternative settings later.)

In stage 0, if the bidder rejects the activist's offer, the game ends. Otherwise the bidder gains control, pays the acquisition price and the fixed cost $\underline{c}$ of administrating the takeover, and then decides on her effort e_b. If $s_a < .5$, the control

[14] The costs of an activist campaign can be substantial. Using a sample of 1,492 hedge fund campaigns between 2000 and 2007, Gantchev (2013) estimates the average cost of a campaign at $10.5 million, or about one-third of the average gross return.

[15] If the offer is pro-rated among all shareholders, $r_m < 1$ can be interpreted as a restricted cash bid or as a cash-equity bid in which shareholders receive cash plus $1 - r_m$ shares in the post-merger company.

sale is pro-rated among all shareholders. If $s_a \geq .5$, minority shareholders are not obliged to sell their shares.

Judicial standards of review.—Our model assumes that the legal treatment of control sales depends on whether there is a controlling owner ($s_a \geq .5$) or not ($s_a < .5$). Under Delaware law control sales without a controlling owner fall under the *business judgement rule*, whereby courts do not second-guess well-informed, good-faith board decisions made under a reasonable decision-making process. If the sale process is *initiated* by the board possibly out of self-interest, it may trigger a heightened standard of review, but such *Revlon duties* typically do not apply when the target firm is "put in play," as e.g., by an activist investor (*Lyondell Chemical Co. v. Ryan*). A control sale negotiated under the pressure of a shareholder campaign, as in our model, is hence likely to be upheld.

The sale of a firm whose board is controlled by a majority owner usually falls under the *entire fairness doctrine*. (This may be especially true if the majority stake was acquired for the purpose of "flipping" the firm to a particular bidder.) In order to protect minority shareholders, entire fairness is a stricter standard that puts the burden of proof on the board to demonstrate that the transaction under review is "inherently fair" to all shareholders. Such transactions are hence more likely to be challenged in court. As Müller and Panunzi (2004, Section V) show, the possibility of rescissory damages that award minority shareholders the equivalent of the post-merger share value fully restores the free-rider problem, although the majority owner can single-handedly transfer control.

In the absence of a controlling owner, even if the courts determined a breach of fiduciary duty in the sale process, the judicial decision would likely enjoin or amend the transaction in such a way that benefits all (activist and non-activist) shareholders alike, in which case no strict *sub*set of shareholders can extract the post-merger value, and a transaction in which all shareholders extract that value would preclude the bidder's participation (at least in our model). In summary, our results are robust to governance rules under which (*i*) activist-driven control sales reviewed under the business judgment rule are *certain* to be upheld against challenges by passive target shareholders, whereas sales by a majority-controlled board reviewed under the entire fairness doctrine are not, or (*ii*) both types of transaction are susceptible to legal risk but only the latter can lead to rescissory damages exclusive to non-activist (minority) shareholders.[16]

Apart from the empirical support for our governance assumptions, we should clarify their importance for our analysis. On one hand, they are *necessary* for activists to be valuable as takeover brokers. If controlling shareholders could force a sale on minority shareholders without *any* legal risk, bidders could fully resolve the free-rider problem through a "freeze-out" merger.[17] Disciplinary takeovers would always succeed, obviating the need for takeover-driven activism.

[16] Nowadays, virtually all major M&A transactions in the U.S. attract shareholder litigation. In 2013, lawsuits were filed against 97.5 percent of deals with a transaction value greater than $100 million (Cain and Solomon, 2014).

[17] For this reason, it is standard in the tender offer literature to abstract from "freeze-outs," or to assume that they are not immune to legal challenges (c.f. Müller and Panunzi, 2004).

Conversely, if activists could not broker a control sale that is binding for all shareholders, they would not relieve the bidder of the free-rider problem. In this case, activism would not reduce any frictions in the control transaction, which is the source of all value in our model, but add costs.[18] On the other hand, the governance assumptions are not *sufficient* for activists to be valuable. Even if the activist can remove the free-rider problem from the control transaction, she does not eliminate it but merely shifts it to the campaign stage. Indeed, as we will show, her optimization problem at the campaign stage is isomorphic to the bidder's optimization problem at the tender offer stage.

3.2 Brokering control change

As established before, the bidder's optimal effort is determined by the post-takeover incentive constraint (4). When a campaign has succeeded, the activist's take-it-or-leave-it-offer to the bidder in stage -1 maximizes the value of the activist's stake subject to the bidder's incentive constraint (4) and participation constraint $s_b V(e_b) - C(e_b) - r_m p_m \geq 0$.

Lemma 2. *In a successful control sale, the bidder acquires $r_m = 1 - t_b$ shares if $s_a < .5$, and otherwise only the activist's stake $r_m = s_a$. In either case, $p_m = \Delta_{s_b}/r_m$.*

Proof. For any r_m, the activist's payoff increases in p_m. Hence, she optimally sets p_m to make the bidder's participation constraint bind which, subject to (4), yields $p_m = \Delta_{s_b}/r_m$. In the case of $s_a \leq .5$, the activist chooses r_m to maximize the total value that will be pro-rated among all target shareholders: $r_m p_m + (1 - r_m)V_{s_b}$. Substituting for p_m, this becomes $(1 + t_b)V_{s_b} - C_{s_b}$. By the envelope thorem, $s_b V_{s_b} - C_{s_b}$ is increasing in s_b and thus in r_m (since $s_b = r_m + t_b$), which implies that $(1 + t_b)V_{s_b} - C_{s_b}$ is increasing in r_m as well. So, $r_m = 1 - t_b$. For $s_a > .5$, minority shareholders tender if and only if $p_m \geq V_{s_b}$. Substituting for p_m, this inequality becomes $t_b V_{s_b} - C_{s_b} \geq 0$, which is violated for $\theta_b > \overline{\theta}_b$ (see Proposition 1), the case under consideration here. Thus, minority shareholders do not join the control sale. Therefore, the activist still maximizes $r_m p_m + (1 - r_m)V_{s_b}$ subject to $r_m \leq s_a$. Since it remains optimal to maximize r_m, $r_m = s_a$. □

With all the bargaining power, the activist negotiates a price that extracts the entire surplus Δ_{s_b} – value improvement *net* of effort costs – from a control sale. Because this surplus increases with the bidder's post-takeover stake s_b, the activist wants her to acquire as many shares as possible. However, the dispersed, free-riding shareholders compare the negotiated price with the security benefits *gross* of effort costs, and since the latter is always larger, do not tender

[18] If we had opted for a model where a successful activist can implement value improvements without the bidder, activist campaigns could add value even without the possibility of brokering a control sale that is binding for all shareholders. Such a model would generate the same qualitative results regarding the comparative advantages of activism and tender offers.

unless they are obliged to by the merger agreement or majority vote following a successful campaign.

Bebchuk (1994).—The inefficiencies identified by Bebchuk for the sale of a majority stake ($s_a \geq .5$) do not apply here for two reasons. First, the activist is not a controlling shareholder in the usual sense: she enjoys no private control benefits and her only source of gains are the sale proceeds. Second, the bidder will *in*crease the security benefits rather than extract more private benefits. For these reasons, the distinction between market rule and equal opportunity rule is immaterial in our setting, since shareholders prefer to retain their shares rather than sell them at the same terms as the activist. The source of inefficiency in Lemma 2 is that, even though the takeover surplus increases in the fraction of shares sold, minority shareholders do not participate in the sale due to the free-rider problem.

Bebchuk and Hart (2001).—Under our assumed governance rules, a control sale with $s_a < .5$ implies that the activist campaign has led to a collective decision that is binding for all shareholders. A simple and realistic interpretation of this outcome is that the activist has pressured the board into recognizing that fiduciary duty compels it to negotiate a merger with the bidder. Another possibility is a proxy vote regarding the control sale as proposed by Bebchuk and Hart. As they point out, it is crucial that the vote be a "necessary and sufficient condition" for the control sale, sufficiency implying that the vote is binding. Otherwise it cannot overcome the free-rider problem. Our assumptions invoke the same sufficiency condition. But this does not per se restore efficiency in our setting where waging a proxy fight requires costly activism which, as we analyze further below, exposes the *activist* to the free-rider problem.

At stage -2, the activist must only pay the fixed campaign costs $\underline{k}$ but needs no effort to succeed if she has acquired sufficiently many shares at stage -3 so that $s_a \geq .5$. As it turns out, such a strategy does not improve upon a tender offer.

Lemma 3. *Activism cannot add value by flipping a majority stake ($s_a \geq .5$).*

Proof. For any $r_a \geq .5 - t_a$, the activist's payoff (gross of $\underline{k}$) is $s_a p_m - r_a p_a$. By Lemma 2, $p_m = \Delta_{s_b}/r_m$ and $r_m = s_a$ for $s_a > .5$. Any shareholder who believes the activist succeeds in acquiring (at least) $.5 - t_a$ shares only sells if $p_a \geq V_{s_b}$. Hence, the activist's payoff can be rewritten as $\Delta_{s_b} - r_a V_{s_b}$, which is exactly the profit a bidder would make from a tender offer in which she owned a toehold of size $t_a + t_b$ and bought r_a shares. Consequently, the activist could make the same profit by only selling her toehold to the bidder. □

For $s_a \geq .5$, the highest price the activist can negotiate in a control sale is the expected post-takeover *surplus* Δ_{s_b} (net of effort costs) per share. Shareholders that do not sell their shares instead expect to receive the post-takeover *share value* V_{s_b} (gross of effort costs), which is always larger. That is, the open-market

price exceeds the per-share price the activist can negotiate in a control sale. The activist may be able to pay this "premium" out of the gains she expects from her own toehold in a control sale. Even so, this two-stage process does not mitigate the free-rider problem, because at no stage do dispersed shareholders sell shares at a price below V_{s_b}. That is, they extract the same surplus as in the ordinary tender offer. This makes the strategy equivalent to selling the toehold to the bidder who then stages a tender offer. Few would consider such a block trade activism.[19]

Cornelli and Li (2002).—In practice tender offers sometimes induce risk arbitrageurs to buy target shares in the secondary market in the hope that the takeover will succeed. Cornelli and Li show that such arbitrage activity itself can mitigate the free-rider problem. If arbitrageurs buy non-atomistic stakes that sum up to a control majority, there is a mixed-strategy equilibrium in which they tender their shares with positive probability even for bid prices below the post-takeover share value.[20] This collective "flipping" is profitable because of the presence of *noise* traders, which allows arbitrageurs to buy shares without fully facing the free-rider problem themselves. The absence of noise traders in our model precludes such arbitrage by subjecting any potential buyer equally to the free-rider problem. Yet what matters more is a fundamental difference in approach: Risk arbitrageurs use *trading* to raise the success probability of a *tender offer*, whereas takeover-driven activists exercise *influence* to bring about a *negotiated control sale*.[21]

Since the activist adds no value by simply being a pass-through for a majority stake, her involvement is valuable only if she can induce a control sale at a price below V_{s_b} through a "collective" decision, such as a binding shareholder vote or merger agreement. But campaigning for such an outcome requires effort. A successful campaign results in the sale of the whole firm for $(1-t_b)p_m = \Delta_1$, of which the activist receives a share s_a. At stage -2, she hence exerts effort to maximize $s_a\mathcal{V}(e_a) - K(e_a)$ where $\mathcal{V}(e_a) \equiv q(e_a)p_m$ is the expected share value under activist effort e_a. The first-order condition is $e_a = \frac{v_a\theta_a s_a}{k}p_m$. Optimal effort increases with the activist's influence v_a, ability θ_a, economic interest s_a, and the expected price p_m in a control sale, and it decreases with the cost parameter k. We assume k large enough such that $q < 1$ under this effort.

At stage -3, dispersed shareholders sell shares in the open market only if the price they receive exceeds the expected share value: $p_a \geq \mathcal{V}(e_a)$. The activist's

[19] Lemma 3 relies on our assumption that a controlling shareholder cannot unilaterally force minority shareholders out of the firm (without being possibly liable for rescissory damages). It is worth mentioning that even if she could, the "flipping" strategy would be equivalent to a "freeze-out" takeover executed by the bidder, again leaving no *distinct* role for activism.

[20] This builds on earlier results that the presence of non-atomistic shareholders weakens the free-rider problem (see fn. 9).

[21] According to Orol (2008, 28), "many successful [activists] come from a 'risk arbitrage' background," having "transformed themselves" so as to bring about mergers more proactively.

open-market share purchase problem can hence be written as

$$\begin{aligned} \underset{r_a, p_a, e_a}{\text{maximize}} \quad & s_a \mathcal{V}(e_a) - K(e_a) - r_a p_a && (6) \\ s.t. \quad & p_a \geq \mathcal{V}(e_a) && (7) \\ & r_a < .5 - t_a && (8) \\ & s_a \mathcal{V}'(e_a) = K'(e_a) && (9) \\ & s_a = t_a + r_a && (10) \end{aligned}$$

This is nearly identical to the bidder's constrained optimization problem (1)-(5) in Section 2.2. Most importantly, the free-rider condition (7) and the incentive constraint (9), are the exact analogues of (2) and (4) in the bidder's problem. Like the bidder, the activist cannot extract any gains on the shares acquired from the target shareholders, nor on the shares that they retain. Thus, she – like the bidder – only captures gains on her toehold (see Figure 3). In other words, she can*not* evade the free-rider problem by working for control instead of buying it. Moreover, the campaign adds further costs.

The activist can nonetheless improve the outcome because her problem (6)-(10) has a *qualitatively* different solution than the bidder's problem (1)-(5) due to some fundamental differences. (For expositional purposes, we will highlight those differences in bold.)

Figure 3 about here

Proposition 2. *The activist acquires $\frac{t_a}{2}$ additional shares in the open market.*

Proof. For any e_a and r_a, the objective function decreases in p_a. Hence, p_a is optimally set to its lower bound via (7): $p_a = \mathcal{V}(e_a)$. Substituting this into the objective function reduces the latter to $t_a \mathcal{V}(e_a) - K(e_a)$. Further substituting $v_a = s_a$ and (9) for e_a yields $f(s_a) \equiv \frac{1}{k} p_m^2 \theta_a^2 \left[t_a s_a^3 - \frac{1}{2} s_a^4 \right] - \underline{k}$. Since $s_a \geq t_a$, $f''(s_a) = \frac{6}{k} p_m^2 \theta_a^2 (t_a - s_a) s_a < 0$, and the unique maximum of f with respect to s_a is pinned down by the first-order condition $\frac{1}{k} p_m^2 \theta_a^2 [3t_a - 2s_a] s_a^2 = 0$ and $s_a = t_a + r_a$, which yields the result. □

In a tender offer the bidder buys enough shares to gain control but avoids buying any more shares due to unrecompensed effort. Even though the activist is subject to the same free-rider problem, she voluntarily purchases additional shares. This is because the expected share price appreciation $\mathcal{V}$ under the activist depends on her equity stake s_a through her effort incentives and her **voting power** v_a. Hence, she buys shares not to increase economic ownership but to "buy influence," which increases the returns on her initial stake.[22] No

[22] This is consistent with the fact that activists with "hostile" intentions acquire larger stakes (Brav et al., 2010). If the stakes were driven only by financial considerations, one would expect them to be larger in cases where changes are easier to elicit from management.

such motive exists for the bidder as a takeover is defined by control through a majority stake.[23]

Still, buying shares exposes the activist to unrecompensed effort. By limiting her open-market purchase, she optimally weighs the benefit of influence against this cost. Without the free-rider condition (7), the activist would buy more shares, since she is about to improve their value. Without the incentive constraint (9), she would avoid "overworking" and buy shares even at $p_a = \mathcal{V}(e_a)$, using the additional voting power to increase the value of her toehold. The *duality* of the free-rider problem is thus key to the result that the activist engages the firm with a *limited stake size*.[24]

We now turn to the activist's decision to launch a campaign.

Proposition 3. *There exists a unique $\underline{\theta}_a > 0$ such that activism is feasible if and only if $\theta_a \geq \underline{\theta}_a$.*

Proof. By Proposition 2, $s_a = v_a = \frac{3}{2}t_a < .375$, so (8) holds and $e_a = \frac{\theta_a}{k}\frac{9}{4}t_a^2 p_m$ by (9). With (7) optimally binding, the activist's expected profit from a campaign is $t_a\mathcal{V}(\frac{\theta_a}{k}\frac{9}{4}t_a^2 p_m) - K(\frac{\theta_a}{k}\frac{9}{4}t_a^2 p_m) = \theta_a^2\frac{27}{32k}t_a^4 p_m^2 - \underline{k}$. This is positive only if θ_a is positive and sufficiently large. □

Although faced with the exact same frictions, activism is feasible only if the activist's ability is above a *lower* bound $\underline{\theta}_a$, while a tender offer is feasible only if the bidder's ability is below an *upper* bound $\overline{\theta}_b$. This contrast is due to the absence of the **majority requirement** (3) for activists. The majority stake leads the bidder to provide unrecompensed effort, so much that any increase in incentives reduces her profit and can frustrate a bid. By limiting her stake, the activist constrains her effort to a low level which is privately optimal, but if too low may not recoup the fixed costs of a campaign. At this effort level, however, her profit increases with her ability θ_a.

The absence of the majority constraint (3) in the activist's optimization problem is by no means an artefact of willful assumptions but *defines* the difference between the two governance mechanisms. A takeover is the acquisition of a majority stake, while activism connotes a minority stake (else it would be redundant). More fundamentally, it implies an **inversion of conditionality** between control and effort: bidders buy control to work, while activists work to control. What the analysis shows is that this inversion amounts to picking opposite evils under the dual free-rider problem: takeovers raise incentives but induce unrecompensed effort, while activism avoids unrecompensed effort but

[23] The insight that the activist buys shares to gain influence does not hinge on our particular specification of $q(.)$ whereby the marginal return to effort increases with voting power. (Possible justifications for this assumption are that the activist can more effectively exert pressure on the management or that she is more credible when lobbying other shareholders for support.) The result obtains for any specification with $\partial q/\partial v_a > 0$, that is, when the success probability for any given effort increases with voting power, irrespective of the cross-derivative. In fact, the activist is *more* eager to buy shares if voting power does *not* increase effort incentives.

[24] In the sample of Brav et al. (2010), the maximum stake accumulated by the median hedge fund during a campaign is 9.5 percent.

increases incentives less. The crux is that profits at these effort levels react contrarily to variations in the marginal return to effort.

The activist's marginal return to effort also depends on bidder characteristics that affect the surplus from the takeover that she campaigns for.

Proposition 4. *There exists a unique* $\underline{\theta}_b \geq 0$ *such that activism is feasible if and only if* $\theta_b \geq \underline{\theta}_b$.

Proof. As shown in the proof of Proposition 3, the activist's expected campaign profit is $\theta_a^2 \frac{27}{32k} t_a^4 p_m^2 - \underline{k}$. By Lemmas 2 and 3, $p_m = \frac{\Delta_1}{1-t_b}$. The result follows from $\Delta_1 = \max_{e_b} \theta_b e_b + \zeta - \frac{c}{2} e_b^2 - \underline{c} = \frac{\theta_b^2}{2c} + \zeta - \underline{c}$ being increasing in θ_b. □

Contrary to tender offers (Proposition 1), activism requires that the bidder's ability θ_b exceeds a lower bound. The reasons for this difference are best explained in two steps:

First, any gain ultimately stems from the bidder's ability to create value. Hence, activism cannot be viable unless it **relieves the bidder** of the free-rider problem, which is achieved through the control sale following a successful campaign. Since the bidder is fully compensated for the effort cost, the bidder is willing to enter a transaction where she acquires all the shares and subsequently exerts first-best effort. As a result, target shareholders (including the activist) extract through the sale price the first-best takeover surplus, which is increasing in the bidder's ability θ_b.

Second, activism does not eliminate the free-rider problem, but confronts it at the campaign stage rather than at the transaction stage. The activist's marginal return to effort at the campaign stage increases in the control sale price and hence in the bidder's ability θ_b. Despite facing the free-rider problem, the higher marginal return to effort translates into a higher profit for the activist because she limits the unrecompensed effort problem. Specifically, the activist limits the stake she acquires to cap her incentives, but since all shares are sold to the bidder following a successful campaign, this does not affect the bidder's post-takeover incentives. That is, **transitory engagement** with a **limited stake** is how the activist adds value as a takeover broker.

Corollary 2. $\underline{\theta}_b$ *is increasing in* c *and decreasing in* t_b.

Proof. It is straightforward to show that $\partial \Delta_1 / \partial c < 0$ and $\partial \Delta_1 / \partial t_b > 0$, which in combination with $\partial \Delta_1 / \partial \theta_b > 0$ (Proposition 4) proves the result. □

A larger toehold t_b reduces the shares the bidder acquires in the control sale but does not affect the takeover surplus. Since all the surplus goes to the selling shareholders, this translates into a higher per-share sale price and higher proceeds for the activist for a given toehold t_a.

On balance, tender offers also have advantages. First, a campaign may fail, and even if successful, the costs are a deadweight loss. (By contrast, unrecompensed effort involves no deadweight loss *per se* but a redistribution of rents.) Second, a bidder in control may have access to gains that do not require effort

or do not accrue in the form of equity appreciation, notably private benefits of control that are unavailable to the activist. The exogenous improvement ζ plays this role in our model, because it partly accrues to a successful bidder *without effort*. It would be easy to incorporate control benefits in the model.

Propositions 1 and 4 distill these comparative advantages into a key observation: activism and tender offers are contrarily affected by (changes in) θ_b and c, and hence are effective governance mechanisms at *opposite* ends of the distribution of parameters that determine the (first-best) post-takeover value. Last, the bidder ability cutoff $\overline{\theta}_b$ below which tender offers are feasible may be smaller or larger than the bidder ability cutoff $\underline{\theta}_b$ above which activism is feasible. For example, $\underline{\theta}_b$ is decreasing in θ_a, since activist and bidder abilities both increase the returns to activism. By contrast, $\overline{\theta}_b$ is independent of θ_a. Thus, there exist θ_a low enough such that $\underline{\theta}_b > \overline{\theta}_b$, in which case either tender offers or activism (or neither) is feasible. Conversely, there exist θ_a high enough such that $\underline{\theta}_b \leq \overline{\theta}_b$, in which case tender offers and activism can co-exist.

Admati, Pfleiderer, and Zechner (1994).—In our model the activist merely brokers a control change, leaving real changes to be implemented by the bidder after the control sale. In practice activists sometimes pressure the *incumbent* management into enacting those changes, thereby acting as active blockholders rather than control brokers. Since the incentives to effect change are constrained by the block size, it would seem always more efficient to (use a successful campaign to) bring about a takeover. As Admati, Pfleiderer, and Zechner stress, this is not true in the presence of risk aversion, in which case the incentive benefits of ownership concentration must be balanced against the loss of diversification, thus introducing a trade-off between "takeover" activism and "large shareholder" activism. Irrespective of the type of activism, however, the inversion of conditionality relative to tender offers always holds.

3.3 Acquisition mode and depth in the control market

To examine what happens when both forms of intervention are feasible, we slightly modify the activism game: If the activist does not bring about a control change – be it because she does not launch a campaign, her campaign fails, or her control sale offer is declined – the game moves to stage 1 and the tender offer game, studied in Section 2, ensues. The formal analysis retraces the same steps as before, and is for expositional convenience relegated to the Appendix. Here we restrict ourselves to describing the main effects.

With a tender offer as a fallback, both the bidder and the activist have improved outside options, which tightens their participation constraints and in turn affects prices and incentives. To be more specific, reconsider first the price negotiations for a control sale at stage -1 when the bidder has the (outside) option of a tender offer with a profit of $\Pi^b_{.5}$. The negotiated price still extracts all surplus from a control sale, but the increased outside options reduce this surplus. As a result, the price falls to $p^*_m = (\Delta_1 - \Pi^b_{.5})/(1 - t_b)$. Moving back to stage -2, this is turn lowers the marginal return to activist effort.

This mitigates the unrecompensed effort problem, but the positive effect on the activist's expected profit is second-order compared to the reduction in the control sale price. Consequently, the returns to activism fall. Moreover, the activist can also fall back on the outside option of a tender offer and "free-ride" on a toehold gain of $t_a V_{.5}$ instead of launching a campaign. Overall, activism becomes less likely: when $\underline{\theta}_b \leq \theta_b \leq \overline{\theta}_b$, a campaign requires the activist's ability to exceed a threshold level θ_a^* that is higher than the previously derived $\underline{\theta}_a$.

Along the boundary defined by θ_a^*, the optimal form of intervention "switches" in response to parameter changes, which hence affect the relative incidence of tender offers, investor activism, and control sales.

Proposition 5. *Lowering k promotes activism and control sales, but reduces the incidence of tender offers.*

Proof. See Appendix. □

Regulatory changes that make it easier for activists to mobilize support and coordinate efforts (in "wolfpacks") have been shown to correlate with subsequent increases in activism (Fos, 2013). Our model suggests that there should be a parallel increase in negotiated mergers and acquisitions. Moreover, this increase represents in part a *deepening* of the market for corporate control, i.e., control changes that would otherwise not have taken place, and in part a *substitution* of tender offers whose incidence consequently decreases.

Figure 4 about here

More generally, our model predicts a supply-demand relationship between activism and takeovers. Proposition 5 in essence describes that a rise in activism increases the *supply* of targets in the market for corporate control. Comparative statics on parameters that affect the surplus from takeovers, such as an increase in exogenous synergies ζ or an upward shift in the distribution of bidder ability θ_b, raise the *demand* for activism. Both effects imply comovement of activism and M&A activity.

We now turn to the welfare implications of activism on all target shareholders (and follow the convention of excluding the incumbent management).

Proposition 6. *For given toeholds t_b and t_a, activism is Pareto-improving.*

Proof. See text below. □

For the bidder and the activist, the result follows from revealed preference: Neither a control sale nor a campaign materialize unless they are preferred by both, regardless of whether the alternative is a tender offer or the status quo. Dispersed shareholders receive the same price in a control sale and have the same outside option as the activist, but do not share the campaign costs. Hence, whenever the activist gains from a campaign, dispersed shareholders do so *a fortiori*.

The welfare gains can arise at the extensive or the intensive margin. In the deepening region ($\theta_b > \overline{\theta}_b$), activism facilitates control changes that otherwise would not occur. In the substitution region ($\theta_b \leq \overline{\theta}_b$), successful activism induces full mergers instead of restricted tender offers, a consolidation of ownership that leads to greater post-takeover value creation.

Arguably, the looming threat of a hostile bid can make the incumbent management more susceptible to activist demands. In this case, the feasibility of a tender offer would not only tighten the participation constraints of both bidder and activist, but it would also raise the marginal return to activist effort. In our model, this positive "by-product" of a (potential) tender offer would reinforce the substitution effect, that is, tender offers would more likely be made obsolete by activism.

4 Bidder-activist collaboration

We now turn to the impact of bargaining power and toeholds on the distribution of takeover gains, which in turn affects the incentives of activist and bidder and their relationship.

The bidder's bargaining power determines through the negotiated price the fraction of the value Δ_1 (net of effort cost) created under a control sale that the bidder extracts. Defining this fraction as δ, the bidder's expected payoff is

$$\mathrm{E}(\Pi^b) = q(e_a)\delta\Delta_1 + [1 - q(e_a)]\,\mathbf{I_b}\Pi^b_{.5} \tag{11}$$

and the expected takeover surplus is

$$\mathrm{E}(\Delta_{s_b}) \equiv q(e_a)\Delta_1 + [1 - q(e_a)]\,\mathbf{I_b}\Delta_{.5} \tag{12}$$

where $\mathbf{I_b} = 1$ if a tender offer is feasible and $\mathbf{I_b} = 0$ otherwise.

Lemma 4. *For given toeholds t_b and t_a, increasing the bidder's bargaining power lowers total surplus, but first raises and then lowers the bidder's expected profit .*

Proof. See Appendix. □

When the bidder has more bargaining power, the returns to activism decrease and hence the activist's incentives to wage a campaign. This reduces efficiency since activism is an attempt to raise total surplus from $\mathbf{I_b}\Delta_{.5}$ to Δ_1. For this reason, the bidder's expected profit is non-monotonic in her own bargaining power: While her share of the surplus from a control sale rises, the probability that such a sale takes place declines.

The key to Lemma 4 is that activist and bidder de facto collaborate to obtain ownership from the target shareholders and raise post-takeover value. This collaboration is subject to a variant of the hold-up problem: The campaign is effectively an *ex ante relationship-specific* investment by the activist, which is frustrated if the bidder has too much bargaining power in the *ex post* negotiation.

Bidder and activist could resolve this problem through a contract that fixes the terms of the potential control sale prior to the activist campaign. But forbidding the other shareholders, who are in the majority, to later revise these terms or to instruct management to maximize the sale price on their behalf violates their formal rights. Alternatively, leaving the price to be determined when everyone is "at the table" but agreeing on a side payment for the activist violates the equal treatment requirement in takeovers.

Without the possibility to contract on such payments, bidder and activist may instead attempt to coordinate ex ante through the size of their toeholds. Toeholds influence activism through two channels: First, a larger toehold confers more influence on the activist, both directly and by inducing her to buy more shares on the open market post-disclosure. Second, when tender offers are feasible, the toeholds determine the outside options in the control sale negotiation, similar to the role that property rights play in the incomplete contract literature.

To study this issue, suppose a latent bidder (secretly) discloses her takeover intentions to an activist in hope of an "informal cooperation." The sum of their toeholds is, by assumption, subject to the constraint $t_a + t_b \leq \bar{t} \leq .25$.

Lemma 5. *The socially optimal toehold allocation is either* $t_b = \min\{t_b | \mathbf{I}_b = 1\}$ *or* $t_b = 0$.

The post-takeover firm value depends only on the ultimate ownership structure, which is independent of toeholds both in control sales and in tender offers. However, toeholds affect the incentives to intervene, which is why the socially optimal allocation depends on the relative efficiency of tender offers and activism: it either leaves the bidder with the minimum toehold such that a tender offer is still feasible or it maximizes activism by allocating the entire toehold to the activist. The proof of Proposition 7 provides an example for each case.

Proposition 7. *The bidder's optimal toehold* t_b^* *decreases in her bargaining power, and may deviate from her socially optimal toehold.*

Proof. See Appendix. □

A comparison of (11) and (12) shows that the bidder faces a similar trade-off, but her profit from either intervention mode differs from the social gains. As a result, the bidder's preferred toehold allocation generally deviates from the social optimum. Specifically, if her bargaining power is low, she gains little from activism and prefers to maximize her tender offer profits by retaining the largest possible toehold. As her bargaining power and thus her gains from a control sale increase, so does her interest in the activist having a larger toehold. Rebalancing the toeholds counteracts the adverse impact of her increased bargaining power on the activist's incentives. In addition, it empowers the latter with voting rights, both of which raise the success probability of a campaign. Though, the bidder may support activism too much: Since she does not extract the entire tender offer surplus, she may stake the whole toehold on activism even if the

expected surplus from activism is less than the tender offer gains lost to free-riding target shareholders. Below is an example for each case:

Example 1 (Bidder has no bargaining power)**.** If the activist has full bargaining power, the bidder only receives her outside option in a control sale such that her expected profit reduces to $\mathrm{E}(\Pi^b) = \mathbf{I}_b \Pi^b_{.5}$. In this case the bidder wants to maximize the likelihood of a tender offer as well as her profit conditional on a tender offer, both of which increase in her own toehold. Consequently, her privately optimal toehold allocation is $t_a = 0$, which is never socially optimal. Here, t_a is inefficiently low because the bidder does not internalize the gains to the activist.

Example 2 (Bidder's tender offer profit is small)**.** Assume $\bar{t} = .25$, $\underline{c} = \underline{k} = 0$, and ζ infinitesimal. We show in the proof of Proposition 7 that the toehold the bidder needs to profit from a tender offer approaches $\bar{t}$ as $\zeta \to 0$. This implies that even with a maximum toehold $t_b = \bar{t}$, the bidder's profit in a tender offer is virtually zero. In this case, the bidder may leave the entire toehold to the activist, even if the latter's success probability $q(.)$ remains so low that the expected surplus from activism $q(.)\Delta_1$ falls short of the tender offer surplus $\Delta_{.5}$. Here, t_a is inefficiently high because the bidder internalizes neither the activist's effort costs nor the forgone tender offer gains of the target shareholders.

The result that the bidder's optimal toehold decreases in her bargaining power suggests that powerful bidders may prefer activists in taking the lead in acquiring a toehold. A plausible interpretation of such a toehold concession is that a prospective bidder tips off an activist, who then acquires a toehold and launches a campaign for a control sale to said bidder. (This is a concession when, for example, stock illiquidity makes toeholds "scarce.") According to our analysis suggests, such collaboration is more likely when a tender offer is less attractive and to the bidder is thus a means to avoid an outright hostile takeover. The main practical obstacke to this "Trojan Horse" strategy is a possible breach of insider trading laws.[25] While such legal concerns are warranted, our analysis points out that the strategy may help overcome the lack of explicit contracts between bidders and activists rather than merely be an incident of speculative rent-seeking.

5 Unbundling and alignment

A recurring question in the takeover literature – and more broadly in corporate governance – is to what extent cash flow rights and control rights should be bundled or separated.[26] As we show in this section, the aforementioned differences

[25] At the same time, no such legal concern seems to exist when institutional investors invite an activist campaign (e.g., when CalSTRS teamed up with Relational Investors in 2013 to pressure Imken into a spin-off) or when investors communicate with each other about a planned campaign to form a "wolfpack."

[26] See e.g., Grossman and Hart (1988), Harris and Raviv (1988), Dekel and Wolinsky (2012), and the references in Burkart and Lee (2008). Recently, a literature has emerged around the

between activism and tender offers imply that the two governance mechanisms are also differently affected by the possibility of unbundling ownership and control.

5.1 Dual-class shares

One way to introduce unbundling in tender offers is to let (superior) voting shares carry $r_b(1+\varepsilon)$ voting rights per r_b cash flow rights, with $\varepsilon > 0$ capturing the deviation from the one-share-one-vote rule. For ease of exposition, we denote with p_b^v the price per voting right. Suppose for now that the bid is restricted to such superior voting shares. The bidder's optimization problem is then

$$\begin{aligned}
\underset{r_b, p_b^v, e_b}{\text{maximize}} \quad & s_b V(e_b) - C(e_b) - r_b(1+\varepsilon)p_b^v && (13)\\
s.t. \quad & r_b(1+\varepsilon)p_b^v \geq r_b V(e_b) && (14)\\
& r_b(1+\varepsilon) \geq .5 - t_b && (15)\\
& s_b V'(e_b) = C'(e_b) && (16)\\
& s_b = t_b + r_b && (17)
\end{aligned}$$

which differs from the earlier problem (1)-(5) only with respect to the free-rider condition (14) and the control constraint (15) which now reflect the wedge between voting rights and cash flow rights.

Lemma 6 (Burkart et al., 1998)**.** *Increasing ε raises takeover probability but lowers post-takeover firm value.*

Proof. As in Lemma 1, the objective function decreases in r_b. Hence, it is optimal to set r_b to its lower bound given by (15): $r_b = \frac{.5-t_b}{1+\varepsilon}$. Since this decreases in ε, the bidder's expected payoff and hence the takeover probability increase in ε. At the same time, it implies that s_b and hence, by (16), e_b decrease, which in turn implies a lower post-takeover value. □

The bidder does not benefit from increasing her economic interest in the firm due to the unrecompensed effort problem, but needs the majority of voting rights. A dual-class share structure allows her to get the necessary votes while leaving more of the economic interest with the target shareholders. This facilitates a takeover but undermines her post-takeover incentives, creating a trade-off between overcoming the ex ante and the ex post free-rider problem.[27] Note that it is indeed optimal for the bidder to restrict her bid to superior voting shares.

issue of unbundling by activist hedge funds, e.g., Hu and Black (2006, 2007, 2008) and Brav and Matthews (2011).

[27] Burkart et al. (1998) identified this trade-off with respect to deviations from one-share-one-vote in a tender offer model with dissipative post-takeover diversion. The same trade-off appears in Burkart and Lee (2015) where the bidder has private information and exerts post-takeover effort. The focus of their analysis is on how unbundling helps to resolve the information asymmetry.

Still, unbundling does not always ensure that a bid is profitable. For example, consider the limit at which the bidder's post-takeover effort is commensurate with her initial minority stake t_b. The value increase under such weak incentives may not cover the fixed costs $\underline{c}$, so that the takeover is nonetheless frustrated. In this case the bidder finds herself in the dilemma that defines the dual free-rider problem: She either provides unrecompensed effort or creates too little value, making no profit in either case.

5.2 Empty voting

We now introduce unbundling in the baseline activism game in which tender offers are infeasible and the activist has full bargaining power (Section 3.1). In parallel to above, the activist can buy $(1+\varepsilon)r_a$ voting rights with r_a cash flow rights attached, for a price of p_a^v per voting right. As above, $\varepsilon > 0$ measures the degree of unbundling: εr_a of the acquired voting rights are void of cash flow rights, and hereafter referred to as *empty votes*.

We assume that the activist's empty votes "expire" in stage 0, i.e., at the time of the control sale. In practice, empty voting is implemented by buying shares in conjunction with *derivatives* that partly neutralize the equity interest, or through *record-date capture* whereby shares are borrowed to register for an upcoming shareholder vote but returned before the actual vote, such that effectively only the votes are being borrowed. These strategies endow an activist with a temporary increase in voting power that ends with the derivative contract or the shareholder vote.[28]

Lemma 7. *The price of empty votes is zero.*

Proof. Suppose the bidder purchases $r_a(1+\varepsilon)$ voting rights with only r_a cash flow rights attached at a per-vote price p_a^v. Selling shareholders receive $r_a(1+\varepsilon)p_a^v$ in cash and retain εr_a cash flow rights. Each individual shareholder perceives her selling decision as non-pivotal to the expected share value under the campaign, $\mathcal{V}(e_a)$, and therefore sells only if $r_a(1+\varepsilon)p_a^v + \varepsilon r_a \mathcal{V}(e_a) \geq r_a(1+\varepsilon)\mathcal{V}(e_a)$. Under the lowest acceptable price, this constraint is binding and yields $p_a^v = \frac{\mathcal{V}(e_a)}{1+\varepsilon}$. Buying $r_a(1+\varepsilon)$ voting rights thus costs the bidder $r_a(1+\varepsilon)p_a^v = r_a\mathcal{V}(e_a)$, which is the exact same price she would pay under the free-rider condition (7) without the empty votes. □

It is the essence of the free-rider problem that dispersed shareholders find it (individually) too costly to (coordinate to) exercise their formal control rights. Consequently, they do not value the votes *per se*. The difficulty in gaining control is that the voting rights are tied to cash flow rights, which are costly to acquire because the shareholders want to free-ride on the value improvement. This problem disappears once the two rights are disentangled: In fact, giving away their votes to an active investor allows passive shareholders to perfectly free-ride. That is, the free-rider behavior that makes dispersed shareholders

[28] The assumption of temporary empty votes is realistic but not crucial for the results.

"bargain" so hard over cash flow rights also makes them willing to give up their voting rights for free.[29]

Given Lemma 7 we can reformulate the activist's share purchase problem (6)-(10) as the vote purchase problem

$$\begin{aligned}
\underset{r_a, p_a^v, e_a}{\text{maximize}} \quad & s_a \mathcal{V}(e_a) - K(e_a) - r_a(1+\varepsilon)p_a^v && (18)\\
s.t. \quad & r_a(1+\varepsilon)p_a^v \geq r_a \mathcal{V}(e_a) && (19)\\
& r_a(1+\varepsilon) < .5 - t_a && (20)\\
& s_a \mathcal{V}'(e_a) = K'(e_a) && (21)\\
& s_a = t_a + r_a && (22)\\
& v_a = t_a + (1+\varepsilon)r_a && (23)
\end{aligned}$$

where all conditions are modified to reflect the wedge between voting rights and cash flow rights, and (23) is added to account for the activist's voting power separately from her economic interest (22).

Lemma 8. *When ε increases, the activist acquires more voting rights and more cash flow rights in the open market.*

Proof. See Appendix. □

While it is not surprising that unbundling causes the activist to obtain more voting rights, it is perhaps that she also acquires more *cash flow* rights. As shown in Lemma 2, the activist's open-market purchase weighs the benefit of influence against the cost of unrecompensed effort. That is, she is willing to exert more effort if it comes with more influence, which implies that she will buy more cash flow rights if they carry more voting rights. As a result, her effort and profit increase.

This result is noteworthy in light of concerns that empty voting leads to a greater misalignment of interests. Indeed, the ratio $\frac{v_a}{s_a} = 1 + \varepsilon$ increases with ε, that is, ownership decreases *relative* to control. At the same time, unbundling induces activists to acquire more ownership in *absolute* terms. Thus, the activist's interests become in fact *more* aligned.[30] This result mirrors existing arguments in the governance literature that deviations from one-share-one-vote may encourage ownership concentration (see, e.g., Burkart and Lee, 2008).

Figure 5 about here

Proposition 8. *Unbundling of voting rights and cash flow rights by the activist raises takeover probability without affecting post-takeover firm value.*

[29] Using data from the U.S. and the U.K., Christofferson et al. (2007) document that share borrowing spikes on voting record dates, especially when the vote is close, but the price of the votes is virtually zero.

[30] This holds only when the activist accumulates an *interior* level of voting power ($v_a < .5$), which is the case considered in Lemma 8. If the activist were to acquire a voting majority, she would do so with increasingly fewer cash flow rights as ε increases.

A key advantage of activism is that the activist's stake is not part of the post-takeover ownership structure. By the same token, unbundling by the activist for the purpose of the campaign is not inherited by the post-takeover firm. That is, empty voting is transitory, and ironically, a means to achieve a permanent consolidation of ownership and control.

Proposition 8 accentuates the fundamental character of activism. Even without unbundling activists seeks to exert control above and beyond the formal authority vested in their equity stakes – through costly campaigns. However, these efforts are constrained by the dual free-rider problem. Unbundling mitigates this problem by allowing them to leverage their influence explicitly, and by Lemma 7, at "zero cost" precisely because the target shareholders are free-riders. By contrast, unbundling is less "natural" for bidders, whose defining characteristic is to consolidate ownership in order to exercise control. Thus, the differential impact of unbundling is also fundamentally rooted in the inversion of conditionality.[31]

Brav and Matthews (2011).—One concern with empty voting is that active investors with "negative" stakes in the firm may push through decisions that harm other shareholders. Bravs and Matthews show that an activist hedge fund may *endogenously* build up a negative interest by short-selling the stock in the secondary market and then use empty voting to profit from the short position. Though, this requires a mixed strategy in which the activist sometimes plays the opposite strategy and takes a long position to improve firm value. In either case, such strategies can only be profitable in the presence of noise traders.[32] The absence of noise traders in our model precludes such strategies. Also, appropriate disclosure rules on conflicts of interest can prevent the abuse of empty voting (as argued in the legal literature on this issue) without necessarily undermining the positive effects of unbundling that our analysis uncovers.

6 Concluding remarks

We provide a theory of outside governance that compares hedge fund activism ("market for corporate influence") and hostile takeovers ("market for corporate control") in a unified framework where *any* investor who seeks votes to affect corporate decisions faces the dual free-rider problem that target shareholders

[31] Another advantage of unbundling by the activist, which our analysis does not cover, is that a dual-class exchange offer can create a "pressure-to-tender problem" among target shareholders, as a result of which a bid may succeed even in the case of a value-decreasing bidder (Bebchuk, 1985). By contrast, an activist campaign serves to facilitate a *negotiated* control sale, which even with unbundling can hence not be exploited by a value-decreasing bidder – unless she can somehow convince target shareholders to *collectively vote* for selling their shares at a loss, which seems rather doubtful.

[32] This builds on a large literature on active blockholders in which the assumption of noise traders dilutes the free-rider condition and thereby allows for profitable activism. For example, the strand of the literature that studies the effect of liquidity on blockholder incentives rests on this premise.

neither contribute to the cost of interventions nor sell their shares unless the price fully reflects the anticipated value appreciation.

A general prediction of our theory is that activist campaigns are more profitable than tender offers when the marginal return to the intervention is higher. To the extent that the marginal return increases with target size, our theory predicts that large firms are more likely to be targeted by activist investors than by raiders (controlling for other factors such as financing constraints). This may be borne out by data as activist hedge funds continue to attract capital, and the recent campaigns at Procter & Gamble, Apple, and General Motors suggest that they do not shy away from targeting even the largest firms.

It is important to note that our theory speaks to the value of activism *relative* to tender offers and *conditional* on the assumption that either intervention in principle improves firm value. It therefore cannot put to rest concerns about potentially adverse effects of control contestability or myopic gains at the expense of long-term value. If the presumption is that the outside investor's intervention is value-destroying, some (but not all) results that activists are more "effective" mean that they are more "counterproductive." At the same time, our theory proposes an explanation for how hedge fund activists can create social value that is rooted in the nature of their strategy. Indeed, they need not even possess per se the know-how to improve firm value, but can do so by using their alternative approach to the free-rider problem as intermediaries in the market for corporate control.

Figures

Figure 1: 13D Filings, Hostile Tender Offers, and Mergers & Acquisitions

Note: The figure displays the number of 13-D filings, hostile tender offers, and total M&A activity, by year, from 1994 to 2007. The large drop in M&A activity around the year 2000 reflects the burst of the dot-com bubble.
Data source: The numbers for the 13D filings are taken from Bebchuk et al. (2013, Table I). The numbers for hostile tender offers and M&A deals are from the SDC Platinum database. The numbers for hostile tender offers include all tender offers classified as "hostile" and "unsolicited."

Figure 2: Unrecompensed effort problem

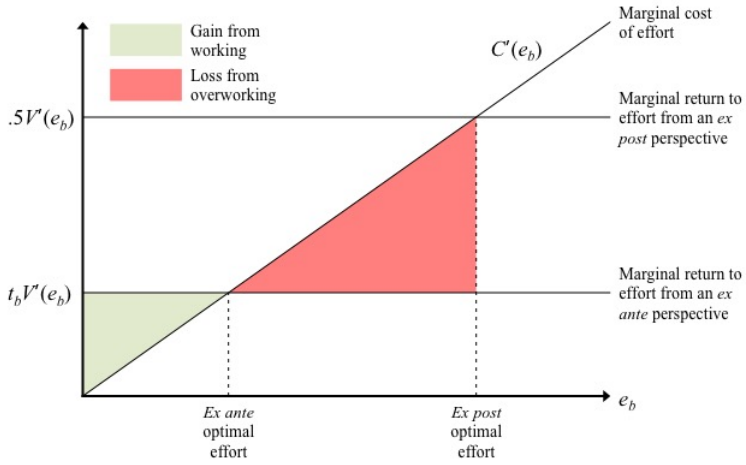


Figure 3: Dual free-rider problem

Figure 4: Market for corporate control

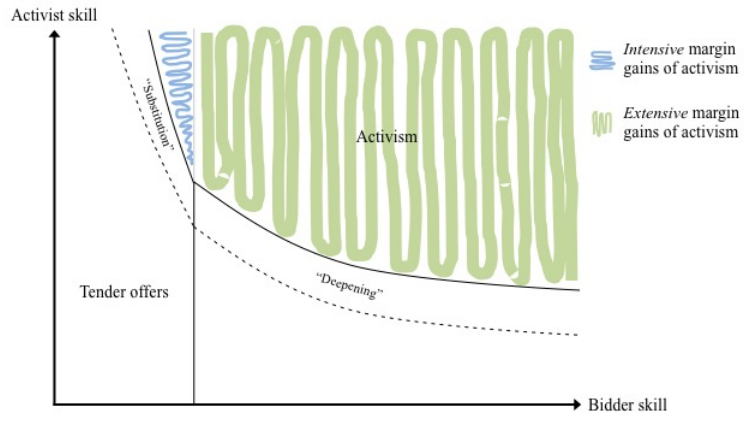
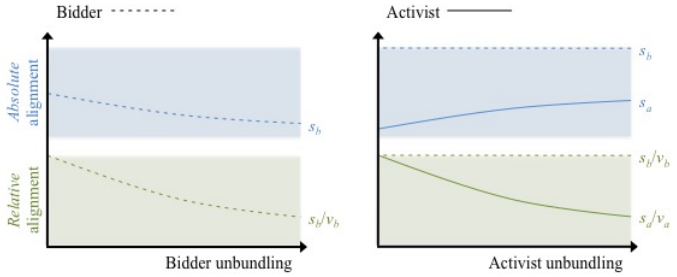


Figure 5: Dual-class shares vs. empty voting



Appendix

Proof of Proposition 5

We solve the game by backward induction.

Control sale.—From the proof of Proposition 1, the bidder's profit in a tender offer is $\Pi^b_{.5} = (t_b - .25)\,\frac{1}{2c}\theta_b^2 + t_b\zeta - \underline{c}$. When $s_a < .5$, this changes her participation constraint in a control sale to $\Delta_1 - r_m p_m \geq \Pi^b_{.5}$. Hence, $p^*_m = (\Delta_1 - \Pi^b_{.5})/r_m$, which is strictly lower than p_m in the case without tender offers. We disregard the case $s_a \geq .5$, which can again be shown to lie on an out-of-equilibrium path.

Activist effort.—In stage -2, the activist chooses her effort e_a to maximize $s_a\left[q(e_a)p^*_m + (1 - q(e_a))V_{.5}\right] - K(e_a)$ where $V_{.5}$ is her per-share payoff from the tender offer that ensues if the campaign fails. Again, an interior maximum is pinned down by the first-order condition, which yields

$$e^*_a = \frac{v_a \theta_a s_a}{k}\left(p^*_m - V_{.5}\right). \tag{24}$$

Since $p^*_m > V_{.5}$, the possibility of a tender offer reduces (but does not eliminate) activist effort for a given stake s_a.

Open-market purchase.—Given the possibility of a tender offer, the free-rider condition is $p_a \geq [q(e^*_a)p^*_m + (1 - q(e^*_a))V_{.5}]$. With the free-rider condition optimally binding, the activist chooses her stake s_a in stage -3 to maximize $t_a\left[q(e^*_a)p_m + (1 - q(e^*_a))V_{.5}\right] - K(e^*_a)$ subject to $s_a < .5$. Substituting (24) into the objective function yields

$$t_a\left[\frac{\theta_a^2 s_a^3}{k}\left(p^*_m - V_{.5}\right)p_m + \left(1 - \frac{\theta_a^2 s_a^3}{k}\left(p^*_m - V_{.5}\right)\right)V_{.5}\right] - \frac{1}{2}\frac{\theta_a^2 s_a^4}{k}\left(p^*_m - V_{.5}\right)^2 - \underline{k}.$$

The first-order condition yields $s^*_a = \frac{3}{2}t_a$, which is the same as before. (Under the quadratic formulation, the impact of the changed outside options on influence buying and overworking offset each other.) Thus, the possibility of a tender offer indeed reduces activist effort.

Campaign decision.—The activist launches a campaign only if

$$\begin{aligned} t_a\left[q(e_a^*)p_m^* + (1-q(e_a^*))V_{.5}\right] - K(e_a^*) &\geq t_a V_{.5} \\ t_a q(e_a^*)\left(p_m^* - V_{.5}\right) - K(e_a^*) &\geq 0. \end{aligned}$$

Substituting $s_a^* = \frac{3}{2}t_a$ and $e_a^* = \frac{9}{4}\frac{\theta_a t_a^2}{k}\left(p_m^* - V_{.5}\right)$ yields

$$\theta_a^2 \frac{27}{32k} t_a^4 \left(p_m^* - V_{.5}\right)^2 \geq \underline{k}. \tag{25}$$

If tender offers are impossible ($\theta_b > \overline{\theta}_b$), the activist launches the campaign if $\theta_a^2 \frac{27}{32k} t_a^4 p_m^2 \geq \underline{k}$ (proof of Proposition 4). Since $p_m > p_m^* > V_{.5}$, the likelihood of activism decreases when tender offers are a feasible alternative. Finally, neither p_m^* nor $V_{.5}$ depend on k. So it follows directly from (25) that the likelihood of activism (tender offers) falls (rises) with k. ■

Proof of Lemma 4

Let $\delta \in (\underline{\delta}, \overline{\delta})$ be the fraction of the total post-control net value Δ_1 appropriated by the bidder. When a tender offer is feasible, the outside option of the bidder is $\Pi_{.5}^b$ and that of target shareholders is $(1-t_b)V_{.5}$. Hence, the boundaries $\underline{\delta}$ and $\overline{\delta}$ are defined by $\underline{\delta}\Delta_1 = \mathbf{I}_b \Pi_{.5}^b$ and $\overline{\delta}\Delta_1 = \Delta_1 - \mathbf{I}_b(1-t_b)V_{.5}$, where $\mathbf{I}_b = 1$ if $\theta_b \leq \overline{\theta}_b$ and $\mathbf{I}_b = 0$ otherwise. The sharing rule $\delta \in [\underline{\delta}, \overline{\delta}]$ maps one-to-one into control sale prices $p_m^\delta \in P$ with $P = (V_{.5}, p_m^*)$ for $\theta_b \leq \overline{\theta}_b$ and $P = (0, p_m)$ otherwise.

The expected takeover surplus $E(\Delta_{s_b})$ depends on p_m^δ only through the probability of activism. It follows from the proof of Proposition 5 that both the success probability of a campaign and the likelihood of a campaign strictly increase in p_m^δ for $\theta_b \leq \overline{\theta}_b$. The same conclusion obtains from the proof of Proposition 3 for $\theta_b > \overline{\theta}_b$. Thus, decreasing p_m^δ makes activism less likely (successful), and hence reduces $E(\Delta_{s_b})$.

For $\theta_b \leq \overline{\theta}_b$, the bidder's expected payoff is bounded from below by $\Pi_{.5}^b$, so we can restrict attention to his gains above this lower bound: $\mathrm{E}(\Pi^b) - \Pi_{.5}^b$. Substituting for $q(e_a)$ from the proof of Proposition 5, we get

$$\begin{aligned} \mathrm{E}(\Pi^b) - \Pi_{.5}^b &= q(e_a)\left[\Delta_1 - (1-t_b)p_m^\delta\right] + \left[1 - q(e_a)\right]\Pi_{.5}^b - \Pi_{.5}^b \\ &= q(e_a)\left[\Delta_1 - \Pi_{.5}^b - (1-t_b)p_m^\delta\right] \\ &= \frac{27}{8}\frac{\theta_a^2 t_a^3}{k}\left(p_m^\delta - V_{.5}\right)\left[\Delta_1 - \Pi_{.5}^b - (1-t_b)p_m^\delta\right]. \end{aligned}$$

This is a concave parabola in p_m^δ with its roots at $p_m^\delta = \frac{\Delta_1 - \Pi_{.5}^b}{1-t_b} = p_m^* = \sup P$ and $p_m^\delta = V_{.5} = \inf P$.

For $\theta_b > \overline{\theta}_b$, substituting $q(e_a)$ from the proof of Proposition 3 yields

$$\begin{aligned} \mathrm{E}(\Pi^b) &= q(e_a)\left[\Delta_1 - (1-t_b)p_m^\delta\right] \\ &= \frac{27}{8}\frac{\theta_a^2 t_a^3}{k} p_m^\delta \left[\Delta_1 - (1-t_b)p_m^\delta\right]. \end{aligned}$$

This is a concave parabola in p_m^δ with its roots at $p_m^\delta = \frac{\Delta_1}{1-t_b} = p_m = \sup P$ and $p_m^\delta = 0 = \inf P$. ■

Proof of Proposition 7

Socially optimal toehold allocation.—Conditional on $\mathbf{I}_b$, expected takeover surplus strictly increases in $q(e_a)$, which in turn increases in t_a. Hence, the optimal allocation is either $t_a = \max\{t_a|\mathbf{I}_b = 0\} = \bar{t}$ or $t_a = \max\{t_a|\mathbf{I}_b = 1\}$, which can be backed out of the bidder's participation constraint. From the proof of Proposition 1, it follows that $\max\{t_a|\mathbf{I}_b = 1\} = \bar{t} - \underline{t}_b$ with

$$\underline{t}_b \equiv \frac{\underline{c} + \frac{1}{8c}\theta_b^2}{\zeta + \frac{1}{2c}\theta_b^2}.$$

The following two examples show that either may be the social optimum depending on parameters:

Example (Tender offer requires large bidder toehold)**.** Assume ζ infinitesimal, $\bar{t} = .25$, and $\underline{c} = \underline{k} = 0$. Then $\lim_{\zeta\to 0} \underline{t}_b = .25$ and $\lim_{\zeta\to 0}(\bar{t} - \underline{t}_b) = 0$. That is, keeping the tender offer feasible implies that the activist's toehold and hence her (effort and) success probability are infinitesimal *for any* θ_b and θ_a. The resulting expected takeover surplus is thus close $\Delta_{.5}$. Now consider $t_a = \bar{t}$ instead. At this point, the expected takeover surplus is (by the proof of Proposition 3)

$$q(e_a)\Delta_1 = \frac{\theta_a^2}{k}\frac{27}{8}\bar{t}_a^3\Delta_1^2$$

where $p_m = \Delta_1$ since $t_b = \bar{t} - t_a = 0$ and the activist has all the bargaining power. Clearly, there exist θ_a and θ_b large enough such that this expression exceeds $\Delta_{.5}$. In particular, note that $\Delta_1 - \Delta_{.5}$ is increasing in θ_b.

Example (Activism with low skill)**.** Assume $\underline{k} = 0$ and θ_a infinitesimal. Also, with a slight abuse of notation, let $q(t_a)$ denote the activist's optimal effort for a given toehold t_a. Despite her low skill, the activist always launches a campaign since there is no fixed cost, but $\lim_{\theta_a\to 0} q(t_a) = 0$ for any t_a. Hence, $q(\bar{t})\Delta_1 < q(\bar{t}-\underline{t}_b)\Delta_1 + \left[1 - q(\bar{t} - \underline{t}_b)\right]\Delta_{.5}$ for small enough θ_a. A similar example can be constructed with a high marginal cost k of activism. ■

Proof of Lemma 8

For any e_a and r_a, the objective function decreases in p_a^v. Hence, p_a^v is optimally set to its lower bound via (19): $p_a^v = \frac{\mathcal{V}(e_a)}{1+\varepsilon}$. At this price the objective function reduces to $t_a\mathcal{V}(e_a) - K(e_a)$, and after substituting (21), yields $\frac{1}{k}p_m^2\theta_a^2\left(t_a s_a - \frac{1}{2}s_a^2\right)v_a^2 - \underline{k}$. Finally substituting for s_a and v_a using (22)-(23) yields

$$\frac{1}{k}p_m^2\theta_a^2\left[t_a\left(t_a + r_a\right) - \frac{1}{2}\left(t_a + r_a\right)^2\right]\left[t_a + (1+\varepsilon)r_a\right]^2 - \underline{k}$$

Maximizing this with respect to r_a yields the first-order condition $r_a^2 + \frac{1}{2(1+\varepsilon)} t_a r_a - \frac{1}{2} t_a^2 = 0$, which has the positive solution

$$r_a = \left[\sqrt{\frac{1}{16\left(1+\varepsilon\right)^2} + \frac{1}{2}} - \frac{1}{4(1+\varepsilon)} \right] t_a.$$

Note that this yields $r_a = \frac{t_a}{2}$ for $\varepsilon = 0$. To see that r_a increases with ε, define $z \equiv \frac{1}{16(1+\varepsilon)^2}$ and rewrite the solution as $\sqrt{z + 1/2} - \sqrt{z}$, which can easily be shown to decrease in z and hence increases in ε.

Note that the mass of voting rights acquired by the bidder,

$$(1+\varepsilon) r_a = \left[\sqrt{\frac{1}{16} + \frac{(1+\varepsilon)^2}{2}} - \frac{1}{4} \right] t_a,$$

also increases with ε. ■

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