Holdups, Renegotiation, and Deal Protection in Mergers*

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Abstract

We examine the contracting and negotiation process in mergers using an incomplete contracts framework. Our multi-period model allows for the arrival of new information and renegotiation after the signing of an initial merger agreement but before deal completion or termination. A properly designed initial contract solves the holdup problem during renegotiation and induces higher deal-specific effort, including the due diligence assessment of the deal. The contract grants an option to the target to terminate the merger, where the strike on the option compensates the acquirer's deal-specific effort without imposing excessive costs on the target for pursuing non-merger alternatives. The option strike can be implemented by the use of deal protection devices, such as a target termination fee and/or an acquirer lockup. Employing a large sample of stock mergers, we find evidence supporting model predictions for the renegotiation of contracts, deal outcomes and the use of deal protection devices.

Keywords: Holdup, renegotiation, merger, deal protection, termination fee, lockup.

***JEL* Classifications:** G34, C71, D8.

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Abstract

We examine the contracting and negotiation process in mergers using an incomplete contracts framework. Our multi-period model allows for the arrival of new information and renegotiation after the signing of an initial merger agreement but before deal completion or termination. A properly designed initial contract solves the holdup problem during renegotiation and induces higher deal-specific effort, including the due diligence assessment of the deal. The contract grants an option to the target to terminate the merger, where the strike on the option compensates the acquirer's deal-specific effort without imposing excessive costs on the target for pursuing non-merger alternatives. The option strike can be implemented by the use of deal protection devices, such as a target termination fee and/or an acquirer lockup. Employing a large sample of stock mergers, we find evidence supporting model predictions for the renegotiation of contracts, deal outcomes and the use of deal protection devices.

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I. Introduction

The outcome of a large-scale merger depends on the bilateral bargaining between the target and acquiring firms' executives and their advisors. After the signing of an initial merger agreement, but prior to the anticipated deal completion date, managers and investors continue to receive important new information regarding deal and firm values. During this time, significant effort and expense is also invested in plans to combine the firms, which also can reveal new information about expected synergies and risks.[1] Our paper shows that the arrival of post-signing information and the potential for deal renegotiation have significant impact on the ex-ante design of the merger contract and the final outcomes of mergers.

Given the length of time needed to complete a merger, and the fact that the parties cannot prevent renegotiation of the initial contract given new information, opportunistic behavior (a "holdup") is expected to arise during the bargaining process. Using an incomplete contracts framework, we build a multi-period model to demonstrate that, in order to solve holdup problems, the optimal contract imposes a cost for either side to terminate the merger. This provides a new rationale for the use of deal protection devices in initial merger agreements, including termination fees and lockup provisions.

A quandary within the incomplete contracts literature is that there are few empirical settings that provide an opportunity to test the otherwise abstract models by examining real contracts.[2] The process and features of mergers fit well with (but have not been examined within) this literature.[3] In this regard, our paper contributes to both the incomplete contracts and M&A literature, in that we derive testable implications that describe the M&A contracting environment in practice. Supporting

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[1] See D. Millard, *The Deal*, June 2010: "Many buyers with high success rates start the integration process right after the letter of intent and intertwine the integration and due diligence processes. While these integration costs are clearly lost in a failed deal, successful buyers argue the cost is worth the benefit of a successful integration. … if care is not taken in the assimilation process, much of the value creation involved in the deal can be lost."

[2] Recent exceptions are Kaplan and Stromberg (2004), who examine contracts and holdup problems between venture capitalists and entrepreneurs, and Iyer and Schoar (2008), who examine sales contracts based on field experiments.

[3] This literature was pioneered and developed by the work of Klein et al. (1978), Williamson (1979), and Hart and Moore (1988). See Tirole (1999) for a survey on incomplete contracts.

our model predictions, our empirical tests provide evidence on the renegotiation process, deal outcomes, and the determinants of the use of protection devices.

In our model, the acquirer exerts effort after the signing of the initial contract but before the completion or termination of the deal. In practice, much effort is expended during the time leading up to the deal closing. This takes the form both of completion of the due diligence process, and development of detailed plans regarding implementation of the merger.[4] Information generated during this process, as well as other changes in market conditions during this time, allow the bidder and target to improve the *precision* of prior information on the value of synergy, and can also reveal problems in the pending merger. The subsequent decision—whether to complete or terminate the deal based on posterior information (given the effort)—is more reliable than that based on prior information (and no effort). This effort is also "deal-specific" in the sense that the information obtained is only useful in evaluating the *current* transaction. At the same time, the target exerts effort to increase the expected value of its non-merger alternatives, including merging with another firm or remaining stand-alone.

Based on the new information, one or both firms may have the incentive to renegotiate the initial contract. For example, the target may behave opportunistically by demanding a higher offer price after information is revealed about synergies and non-merger alternatives. This "holdup" problem reduces the acquirer's *ex ante* incentive to exert deal-specific effort, which in turn lowers the expected merger synergy and payoffs of *both* firms. Similarly, the acquirer may behave opportunistically, depending on the effort expended by the target and the information revealed.

To solve the holdup problem, the ex ante optimal contract grants the target, and in some cases the acquirer, a 'call option' to forego the merger and instead pursue its best alternative. To prevent opportunistic behavior, the target must compensate the acquirer if the target terminates the deal (and vice versa if the acquirer terminates)—this is the strike price on the option. The optimal strike must

[4] Referring to the 2002 merger Hewlett-Packard , Compaq's CFO explained "we communicated a three-year product map on the first day after the merger closed … Over a million man hours were invested in planning this." (*The Deal*, July 2003)

balance between compensating the other party's deal-specific effort and not imposing excessive costs for pursuing a more valuable non-merger alternative. With the optimal strike, merger contract and rules of renegotiation in place, both merging parties exert *first-best* efforts, and renegotiation of the initial contract leads to efficient *ex post* outcomes—a transaction is completed if and only if the realized merger synergy is higher than the target's best non-merger alternative.

The results from our model provide guidance for our empirical tests, which are based on a sample of more than 1,100 U.S. stock mergers announced between 1994 and 1999. While not highlighted by previous literature, in over 15% of our sample, the initial contract is either renegotiated or terminated. We provide descriptive evidence on the reasons leading to renegotiation or termination, which include bad news about the acquirer or target, the arrival of a competing bid, or external factors such as adverse rulings by courts or regulatory agencies. In the event of deal termination, we observe that the payment or waiver of deal protection devices depends on the nature of the information revealed. Further, in 79% of the subsample of renegotiated or terminated deals, the final outcome of the merger agrees with the outcome predicted by our model. We also use multinomial regressions to show that variables related to the arrival of new information after the initial contracting have a significant impact on whether firms complete versus renegotiate or terminate the deal. These results support the hypothesis that, with optimal initial contracts, renegotiation ensures ex post efficiency.

Our second set of tests examines the use of deal protection devices in initial contracts. The strike price of the option-like contract in our model can be implemented by any of several protection devices. In fact, most deals in our sample are "protected" by one or more devices. The first device that helps to solve the target's holdup problem, used in 36% of our sample deals, is an *acquirer*'s lockup option. This allows the acquirer to purchase a fraction of either the target's stock (share lockup) or assets (e.g., a division or segment; asset lockup) at a specified price, and becomes valuable when, for example, a rival bidder enters the control contest. The second device, which closely resembles the strike price of the target's option, is a termination fee (TF hereafter) on the *target* side, or the amount the target must pay the acquirer upon a target initiated termination of the deal. In 56% of the deals, a target TF is included, while in 22% of deals an acquirer TF is included *in addition to* the target TF. In less than 25% of deals, neither a TF nor a lockup is used.[5]

A key implication of our model is that as the productivity of effort increases, or as effort becomes more deal specific, the use of deal protection devices is expected to increase to counteract a higher degree of holdup problem. We find that the use of deal protection devices is more common as the size of the acquirer increases, but becomes less likely as the acquirer becomes larger relative to the target. For more productive acquirers (proxied by the acquirer return on assets (ROA)), termination fees are more likely to be observed. Further, when the acquirer or target has been involved in similar acquisitions in the three year period prior to the current merger, suggesting that effort is *less* deal specific, termination fees on either side are less likely to be observed.

The final set of tests focuses on the size of target TFs, and examines our model's predictions on how the strike price of the target's option varies with deal and firm characteristics. We use cross-sectional regressions to examine the size of the target TF, defined to be the percentage of dollar TF over deal value, controlling for the use of other protection devices. Similar to our results above, TFs are larger for more productive acquirers, but lower when the acquirer has previously purchased similar targets (i.e. less deal specific effort). We also find weaker evidence that target TFs are larger when the target has more intangible assets. These results are consistent with the comparative static predictions on the relation between the option strike and expected degree of holdup problem in our model.

Our paper relates to and extends previous research on contracting in mergers. One strand of

[5] We also examine two additional deal protection devices. First, in more than 95% of the deals, the target professes that it will *not* solicit outside bids during negotiation with the acquirer ("no solicitation"). Interestingly, in most of these deals, an additional clause states that the target will enter into merger negotiations with *unsolicited* bidders, permitting the target to pursue more efficient outcomes ex post. Second, when the acquirer has a toehold (see, e.g., Betton and Eckbo 2000, Betton et al. 2009, and Goldman and Qian 2005), or target shares purchased before merger announcement, it participates in the appreciation of the target stock even if the merger fails, and thus the holdup problem becomes less severe.

prior literature argues that the *initial* bidder's search and investigation of a potential target before making a bid creates a positive externality for subsequent bidders, as they can free-ride on the information conveyed by the first bid.[6] Similar to our model, deal protection devices can compensate for this externality and induce an optimal level of search activity (see also Gilson and Black 1995 and Weston et al. 2004). Our model offers a different and not mutually exclusive reason for the use of deal protection devices, based on the key assumption that information revealed after the signing of a definitive contract leads to a potential holdup problem during renegotiation.[7] Our empirical evidence confirms that new information released prior to deal completion or termination indeed drives the renegotiation process and final outcome of mergers. Moreover, in some deals that attract competing bids we find that both the initial and the competing bidders use a target TF. Prior theories cannot explain the use of a target TF by *competing bidders*, since the competing bidders are already the beneficiary of the initial bidder's (ex ante) search costs.[8] In contrast, the use of a target TF by the all the bidders is consistent with our theory of resolving holdup problems, which should be present in the initial *and* subsequent merger deals for the same target. Further, the use of TFs by the *acquirer* is difficult to explain within a search cost framework that looks at information revealed about the *target*, while the kind of holdup problems we model can occur on either the target or acquirer side.

Second, several recent empirical papers examine determinants of the use of specific deal protection devices such as lockups (e.g., Burch 2001) or TFs (e.g., Bates and Lemmon 2003; Officer 2003; Boone and Mulherin 2007b). These papers reject the hypothesis that deal protection devices

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[6] Earlier work considering costly search includes Easterbrook and Fischel (1982), Bebchuk (1982), and French and McCormick (1984). Berkovitch et al (1989) and Berkovitch and Khanna (1990) argue that defensive strategies can serve as compensation to an *initial* bidder for the externality that their bid signals the existence of synergy gains to other bidders such that other potential bidders can free-ride on their information.

[7] To our knowledge, the only other paper to consider the role of effort in the time period between a definitive merger agreement and deal closing is Gilson and Schwartz (2005). They argue that "material adverse change" (MAC) clauses, which allow the acquirer to *costlessly* cancel the deal, encourage the target to take actions during this time that protect and enhance the expected value of the combined company. Our model has implications for both the MAC clauses, which are included in most deals, and deal protection devices that require payments and are used more often on the target side.

[8] Indeed, Bates and Lemmon (2003, p. 481) suggest that "the costs associated with information acquisition and leakage for follow-on offers will be relatively low as compared to initial offers."

reflect an agency problem in which self-interested target managers discourage competition in control contests. Bates and Lemmon (2003) further suggest that deal protection devices can be used to lock in a proportion of expected gains to the target when deal completion is still uncertain. In contrast, we build a unified theory demonstrating that a number of protection devices observed in practice can be used to solve holdup problems during friendly mergers. We also model and empirically examine the impact of new information, the renegotiation process, and the ex post efficiency of merger outcomes.

In the context of ours and other related papers, several complementary and non-mutually exclusive theories can be offered to explain the variety of complex provisions observed in merger contracts. Our application of holdup problems to the M&A setting adds an important piece to our understanding of contracting and renegotiation that cannot otherwise be entirely explained. The remainder of our paper is organized as follows. In Section II we first develop a general model to examine the merger process, and then derive closed-form solutions for the optimal contract and testable implications. Section III provides empirical evidence using our sample of stock mergers. Section IV concludes and the Appendix contain all the proofs.

II. The Model of a Friendly Merger

The incomplete contracts literature generally concerns a bilateral trade of a product, where there are *relationship-specific* efforts that generate more value inside the trade than outside the trade. The main problem is that opportunistic behaviors concerning the distribution of the benefits from relationship-specific efforts (holdup problem) may arise *after* the realizations of the value and costs of production are observed but *prior* to the completion of the trade.

A solution to the holdup problem is to design binding contracts; the task of designing contracts becomes straightforward if both the effort and the uncertainty in the value and cost of the product can be fully specified and verified by a third party. However, these assumptions are often unrealistic, and the resulting *incompleteness* of contracts and opportunistic behavior leads to under-investment in relationship-specific efforts by one or both sides, which in turn lowers the payoffs of both parties. In practice, the holdup problem can be solved by ex ante contracts which specify the sharing rule of the total expected surplus from trade and allow for renegotiation after the uncertainty in trade conditions is resolved. Our model of mergers is based on some of the main developments in this recent literature.[9]

II.1 Elements of the Model

The merger process between a risk-neutral acquirer and target is depicted in Figure 1. At t = 0, the merging parties decide whether and how to write a contract specifying the terms of a merger to be completed or terminated at a future date (t = 4); the *prior* signal on merger synergy is publicly observable. At t = 1, they make deal-specific effort choices that will affect the distributions of merger synergy (V) and the target's non-merger alternative (W). At t = 2, the *posterior* signal on merger synergy, s_P, as well as new information on V and W are observed, and at t = 3, renegotiation of the initial contract based on the new information (revealed at t = 2) take place. Finally, at t = 4, the final merger decision (to complete or terminate the deal) is made and payoffs to both firms are realized. As mentioned earlier, the multi-period sequence of events, which allows for the release of new information and renegotiation following the signing of the initial contract, is an important distinction of our model from previous theories of mergers.

The expected synergy of the merger, above and beyond the combined market values of both firms, is denoted by $V(e_A, s_P; \theta)$: e_A is the acquirer's *deal-specific* effort choice made at t = 1, s_P is the posterior signal on merger synergy observed at t = 2, and θ is a random, state variable following a cumulative distribution function (cdf) $F(\cdot)$ and its realization is also observed at t = 2. We assume that the mean of V is either positive $v_0 > 0$, or negative $-v_0$. The prior signal, available at t = 0 (without any

[9] There is also a strand of literature on the design of optimal legal remedies for breach of contracts (e.g., Shavell 1980; Rogerson 1984), which shows that the punishment for breaking a contract should not be excessive as it will induce over-investment in relationship-specific effort.

effort), is denoted $s_0 = (.5, .5)$, indicating that the mean of *V* is positive (v_0) or negative ($-v_0$) with equal probabilities. Hence, the prior signal is uninformative on the distribution of *V*.

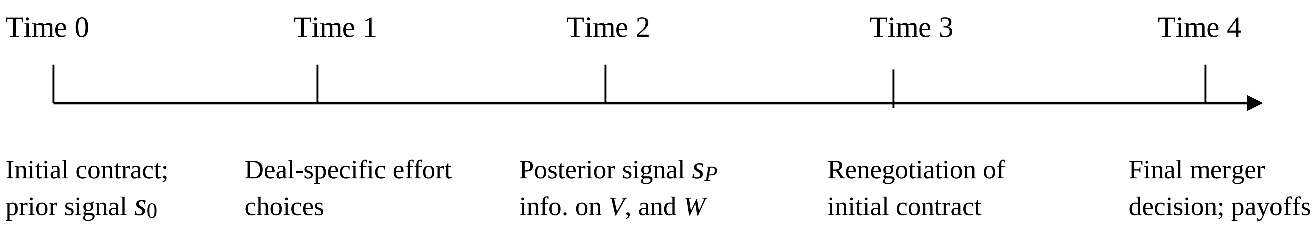

Figure 1 Merger Timeline

The acquirer's deal-specific effort, e_A, includes the discovery and evaluation of possible sources of merger synergy. In particular, such effort includes the development of business and operation plans for the combined firm, plans for implementing the merger, and remaining due diligence, each of which may also reveal potential problems in the merger. Accordingly, we assume that the acquirer's effort improves the *precision* of the prior signal, in that given an effort level e_A, the acquirer will observe a posterior signal (at t = 2), s_P, in the form of:

$$s_P \begin{cases} s_g = [0.5 + l(e_A), 0.5 - l(e_A)], & \text{with prob. } 0.5; \\ s_b = [0.5 - l(e_A), 0.5 + l(e_A)], & \text{with prob. } 0.5. \end{cases} \qquad (1)$$

From the ex ante (t = 0) point of view, conditional on the effort, the acquirer receives a *good* posterior signal s_g (a bad signal s_b) half of the time, indicating that the mean of merger synergy is more likely to be positive, or v_0 (negative, or $-v_0$). We also assume that $l(\cdot)$ is increasing in e_A, so that as the level of effort increases, the posterior signal becomes more precise about the mean value of synergy.

From the structure of both signals s_0 and s_P, it is clear that the acquirer's effort does *not* directly increase the mean of merger synergy (recall v_0 is a constant), or the probability of receiving a good posterior signal s_g.[10] Instead, it improves the *precision* of both the good and bad posterior signals, so that merger decisions based on posterior signals are more reliable than those based on the prior signal. The structure of the posterior signals also implies that there remains uncertainty about merger synergy at t = 3 (renegotiation stage); with risk neutrality, however, the value-maximizing decision would be to terminate the deal upon receiving s_b.[11] The specifications of V also imply that the target does not contribute to expected synergy. As our empirical results illustrate below, deal protection devices are used much more often on the target side. In most cases, it is the acquirer, the larger of the two merging firms, that investigates the prospects and perform due diligence of the pending merger. This indicates that the holdup problem on the target side is likely to be more severe than that on the acquirer side. We therefore focus on the acquirer's deal-specific effort in the model. However, our model can be extended to consider the case in which the target also exerts deal-specific effort to improve the precision of posterior signal; and hence there can be holdup problems on both sides.

Although the target does not contribute to merger synergy, its effort, e_T, made at t = 1 (before the posterior signal is observed), does improve the (expected) best alternative if *not* merging with the acquirer (above and beyond the current market value). We denote this non-merger alternative by $W(e_T, \omega)$, and it is increasing in e_T. The target's effort in exploring non-merger options is triggered by the initial merger talks, and includes remaining stand-alone and identifying other firms as merger partners.[12] The random state variable, ω, follows a cdf $G(\cdot)$, and its realization will be observed at t = 2. Finally, $C(e_A)$ and $C(e_T)$ denote the strictly increasing and convex cost functions of the efforts.

We first examine the First Best solution of the merger process. Following the incomplete

[10] The assumptions on the equal probabilities of having a positive or negative mean for both the prior and posterior signals are made without loss of generality. We can change the structure of these signals to reflect more optimistic or pessimistic views about merger synergy.

[11] This is true as long as e_A has an interior solution; the realization of θ only partially resolves the uncertainty about V.

[12] As stated above, the "no solicitation" clause should not prevent the target's effort in maximizing the expected value of non-merger alternatives, including searching for outside bids. Boone and Mulherin (2007a) find that in some deals the target solicits potential bids *prior to* committing to negotiating with a particular acquirer, but such effort from the target can extend beyond the signing of the initial agreement. The target can also continue to entertain unsolicited bids.

contract literature, this is equivalent to choosing optimal effort levels and maximizing the *ex ante* (t = 0) expected, joint surplus of the merging firms, net of costs of effort:

$$W^{FB} \equiv \underset{(e_A, e_T)}{Max}\left[\frac{1}{2} Surplus(s_g) + \frac{1}{2} Surplus(s_b) - C(e_A) - C(e_T)\right]; \qquad (2)$$

where $Surplus(s_g) \equiv \iint_{\theta\omega} \max[V(e_A, s_g; \theta), W(e_T, \omega)] dG(\omega) dF(\theta)$, and $Surplus(s_b) \equiv \int_{\omega} W(e_T, \omega) dG(\omega)$.

First, the term, *Surplus*(s_g), denotes the gross expected surplus between the two firms conditional on receiving the good posterior signal (s_g) on merger synergy (with probability 0.5); as the "max" operator inside the double integrals indicates, the First Best decision in this case is to complete the merger if and only if the realized value of the synergy, *V*, is larger than *W*, the target's best alternative. Second, the term *Surplus*(s_b) denotes the expected surplus between the two firms conditional on receiving the bad posterior signal (with probability 0.5); as discussed before, the two sides should terminate the merger and the total surplus comes from the non-merger alternative, *W*. Finally, the "Max" operator in (2) implies that optimal effort choices maximize the expected joint surplus from the efficient merger decision, net of costs. Once First Best effort choices e_A^{FB} and e_T^{FB} are made, lump sum transfers between the two firms can compensate for the cost of these efforts.

II.2 Solution to the Holdup Problem in Second Best

In second best situations, each of the merging firms seeks to maximize their respective expected payoffs from the merger. The goal of designing contracts at t = 0 is to ensure that both the acquirer and target's efforts and the total expected payoff are as close to the First Best level as possible. The following assumption clarifies what is contractible and verifiable in the model.

Assumption 1 *The following assumptions specify the contracting environment:*

a) *information on the* posterior *signals* s_g *and* s_b *is publicly observable and* verifiable*;*

b) *information on* state variables θ *and* ω *is* symmetric *to all parties at any point of time; they are observable at t=2 but* not verifiable (*e.g., by a court*)*;*

c) *any and all parts of the initial contract signed at t=0 can be renegotiated at t=2, following the realizations of V and W; as long as both sides agree to the entirety of the renegotiated contract, the initial contract will be voided (by the court);*

d) *the court can verify* who *initiates a termination of the initial merger contract at t=2, but cannot verify* why *the termination is initiated.*

Following the incomplete contracts literature, we assume a *symmetric* information structure (Assumptions 1a and 1b) to highlight the holdup problem on the acquirer's effort and its solutions. This assumption is also justified by the fact that during the friendly merger process, management teams from both firms hold extensive conversations and exchange information about each other. We also assume (Assumption 1a) that the posterior signal on the mean of merger synergy is verifiable by a court.[13] As stated before, the acquirer's effort improves the precision of the prior signal without affecting the probabilities of receiving the good or bad posterior signal. In particular, the bad posterior signal (s_b) implies that the mean of merger synergy is negative, and hence completing the deal would be a negative-NPV project for both sides.[14] Assuming both merging firms are profit-maximizing (there is no agency problem between managers and shareholders), mutually terminating the merger upon receiving s_b is the best decision in both the First Best and second best situations. Since the posterior signal is verifiable, the ex ante contract can specify that the target pursues its non-merger alternative (W), which only depends on its effort (e_T), *without* making any payment to the acquirer. As we observe from the merger documents of our sample, it is a standard practice that when the acquirer's stock price reaches a (pre-specified) termination range before the deal completion date, the deal is

[13] There can be additional holdup problems in the model. For example, if the posterior signal is *privately* observed by the acquirer, it can strategically disclose the information and try to 'hold up' the target's effort on the non-merger alternative *W*.

[14] In Section II.3 below, we make assumptions on the functional forms of $l(\cdot)$ and the distribution of θ, $F(\cdot)$, such that V will be negative regardless of the realization of θ upon receiving the bad posterior signal (s_b).

terminated and no transfer or payment is made (i.e., all deal protection devices are void).[15]

The more interesting case is when a good posterior signal (s_g) is received, which may or may not lead to the completion of the deal. Similar to prior research, we assume that the two state variables (θ and ω, affecting V and W) are *not* verifiable, and thus ex ante contracts *cannot* be written contingent on future realizations of these variables (Assumption 1b). This assumption is justified by the complex nature of the M&A process and frequency of legal disputes among merging firms and their shareholders. Assumption 1c states that renegotiation of the initial contract, following the release of new information on V and W, cannot be prevented. Finally, Assumption 1d, similar to Noldeke and Schmidt (1995) and different from Hart and Moore (1988), implies that both sides know that inclusion of a contract feature such as a deal protection device is enforceable at t = 3. However, the court may not understand why such a device is triggered.

If there is no ex ante contract, then the two sides can negotiate *after* the realizations of θ and ω to decide whether to merge and how to split the total surplus (e.g., via Nash bargaining). We show that efforts made at t = 1 without any contract signed at t = 0 (and sharing rules determined by ex post Nash bargaining) will be less than First Best levels, a result that is standard in the incomplete contracts literature. Prior research has also shown that in most cases the signing of a complete, state-contingent contract is not feasible. Hence, the question is whether any simple contract can induce the First Best efforts and merger outcome. In this regard, Aghion et al. (1994) provide the insight that one solution is to grant (ex ante) the right to make a "take-it-or-leave-it" offer and thus the *residual claim* of the total expected surplus to the party that will exert the relationship-specific effort. Under this sharing rule, the marginal value created by the relationship-specific effort will *not* be shared by the other party (and will be fully compensated), and hence the First Best effort choice is made. Within the canonical buyer-

[15] Gilson and Schwartz (2005) study material adverse change (MAC) and material adverse effect (MAE) clauses in friendly mergers. They focus on actions taken by the *target* before deal closing to prevent a fall in value of the combined firm due to failure to maintain factories, retain the workforce, or preserve relationships with customers and suppliers. Thus, their model has implications for the inclusion of closing conditions in acquisition agreements. Our model focuses a different problem and considers effort of both the acquirer and the target.

seller model, Noldeke and Schmidt (1995) then show that an option-like contract can implement this sharing rule. In their model, the seller has a *put* option to sell the product to the buyer for a fixed price (the strike on the option) when the cost of production is low relative to the market value of the product (and profits can be made).

We build on the Aghion et al. (1994) sharing rule and the Noldeke and Schmidt (1995) option-like contract to our M&A framework, as follows. The acquirer, who exerts deal-specific effort that improves the precision of information regarding the expected merger synergy, makes an offer to purchase the target's equity and/or assets and owns the residual claim of total surplus from the merger beyond the value of an 'option' granted to the target. The target's option allows it to walk away from the merger (at a cost), if doing so generates higher payoffs. Therefore, in our model the target has a *call* option with the underlying asset being the value of the target's best non-merger alternative (W).

It is important to note that the target's call option cannot be free, because without any cost of terminating the deal, it will behave opportunistically after the realizations of V and W. For example, the target can demand that the acquirer increases the target's share of the payoff (or merger synergy created by the acquirer's effort), or else it will withdraw from the merger. This holdup problem reduces the acquirer's incentive to exert costly effort at t=1. Therefore, the time 0 contract must have the target compensate the acquirer upon terminating the deal at t=3. This is the strike price (denoted by k) on the call option granted to the target. On the one hand, the strike must be high enough to motivate the acquirer's (First Best) effort; on the other hand, the strike cannot be too high or else the target loses the incentive to exert effort that increases W, which is also part of the total surplus of the two firms (recall that the acquirer has the residual claim on this total surplus).

We now formally describe the initial contract signed at t=0. Since the posterior signal on merger synergy is verifiable, this contract is contingent on this signal. When the bad signal is observed, the deal is terminated without further payments or transfer. When the good signal is observed, the contract includes the pair (p_0, k). First, p_0 is an initial constant payment to the target; a natural interpretation for p_0 is the initial offer premium (in dollars) paid by the acquirer to the target over the target's current market value. In our model of symmetric information, we focus on the holdup problem and treat p_0 as exogenous as in other incomplete contracts models.[16] Second, as stated above, the constant k is the strike price on the target's call option. Given the contingent option contract and (p_0, k), the target's expected payoff (at t = 0), is:

$$U_T = \underset{e_T}{Max}\left[\frac{1}{2}\int_{\omega}\max[W(e_T,\omega)-k,\, p_0]dG(\omega)+\frac{1}{2}\int_{\omega}W(e_T,\omega)dG(\omega)-C(e_T)\right]. \tag{3}$$

The target maximizes its expected payoff by choosing the effort e_T. The first term inside the bracket indicates the expected payoff conditional on receiving the good posterior signal on merger synergy. In this case, the target has the option-like contract with strike k; since k is a constant and merger synergy (V) is independent of e_T, the target's effort choice is independent of the acquirer's. The second term inside the bracket of (3) denotes the target's expected payoff when the bad posterior signal is received. In this case the target owns the entire non-merger alternative W.

The acquirer's expected payoff (at t=0), given the target's option and the sharing rule, is:

$$U_A = \underset{e_A}{Max}\frac{1}{2}\left[Surplus(s_g)-\int_{\omega}\max[W(e_T,\omega)-k,\, p_0]dG(\omega)\right]-C(e_A), \tag{4}$$

where the term $Surplus(s_g)$ is defined in (2) above, indicating the gross, joint surplus between the two firms conditional on receiving the good posterior signal (s_g) on synergy. In this case, the acquirer owns the residual claim of the total expected surplus, or the difference between $Surplus(s_g)$ and the value of the call option it has granted to the target. When a bad posterior signal is received (with probability 0.5), however, the deal is terminated and the acquirer's payoff is 0. From (4), the

[16] As shown in Hart and Moore (1988), any division of the Time 0 total surplus can be achieved by choosing p_0 appropriately, and it does not affect renegotiation or effort choices. In practice there are several forms of cash and/or stock-based contracts (with collars), offered by the acquirer to the target. We control for offer types in our empirical tests (Section III below).

acquirer's problem of choosing e_A to maximize his expected payoff depends on the target's effort choice e_T, which in turn depends on k.[17]

Next, we derive payoffs of merging firms *after* the realizations of V and W are observed (t=2; effort choices and costs of effort are sunk at this point) and the outcome of merger (t=4).

Lemma 1 *Given the time 0 contingent contract with an option-like component* (p_0, k)*,*

a) *when s_b is received the deal is terminated; the target's payoff is W and the acquirer gets 0;*

b) *conditional on s_g (with ex ante probability 0.5), the target's payoff at t=4 is given by:*

$$U_T = \begin{cases} p_0, & W-k < p_0; \\ W-k, & W-k \geq p_0; \end{cases} \tag{5}$$

and the acquirer's payoff at t=2 is given by:

$$U_A = \begin{cases} W-p_0, & V<W, \text{ and } W-k<p_0; \\ V-p_0, & V \geq W, \text{ and } W-k<p_0; \\ k, & V<W, \text{ and } W-k \geq p_0; \\ V-(W-k), & V \geq W, \text{ and } W-k \geq p_0. \end{cases} \tag{6}$$

Finally, the merger will be completed at t=4 if and only if $V \geq W$.

We focus on the case where the good posterior signal on synergy (s_g) is observed. The target's payoff (excluding the cost of effort) is described in (5). Whenever $W-k \geq p_0$, that is, when the value of the non-merger alternative is greater than the sum of the initial offer premium and the strike price on the call option (of termination), the target exercises the (in-the-money) option and receives exactly $W-k$. When the reverse is true, the target receives the constant payment p_0. The acquirer's payoff, denoted in (6), depends on whether the target exercises the option ($W-k \geq p_0$), and whether the merger is

[17] As discussed earlier, we consider only the holdup problem on the target side (and the call option granted to the target) in the model. In the case where there is also a holdup problem on the acquirer side (because the target also exerts deal-specific effort to improve merger synergy), the solution will be to also grant the acquirer an option to terminate the merger with a properly chosen strike. We numerically derive and verify the result that the strike on the acquirer's option increases with the degree of its holdup problem (relative to that on the target side) and the productivity of the target's effort in increasing deal synergy. Details are available upon request from the authors.

completed or not ($V > W$). Since the initial contract (specified in (4)) dictates that the acquirer holds the residual claim of the joint surplus [the term $Surplus(s_g)$], the sum of the merging firms' payoffs at t = 4 is equal to either V if the merger is completed or W if the merger is terminated.

The acquirer's payoffs when the target exercises its option (and receives $W - k$) are more straightforward (denoted in the bottom two rows of (6)), and we examine these first. When $V < W$ (third row of (6)), the merger is terminated and the acquirer receives the strike price (k) paid by the target. This case includes the possibility that the target receives another bid (after the signing of the initial contract) that is higher than the realization of V. As noted before, the payment of k must be made from the target and/or the outside bidder to the acquirer, or else the acquirer loses its incentive to exert First Best effort (e_A^{FB}). Notice that if $V > k$, the *acquirer* may want to complete the merger and deviate from the payoff of k specified in (6); since the target is guaranteed a payoff of $W - k$ by exercising the option, the acquirer must offer the same amount to convince the target to complete the deal, but this is not profitable because $V - (W - k) < k$ since $V < W$.

When $V > W > p_0 + k$ (last row of (6)), with a high realization of V the acquirer can raise the final offer to the target from p_0 to $W - k$, the amount that the target would receive from the non-merger alternative, and convince the target to complete the merger while capturing the residual claim of ($V - (W - k)$). Since $V > W$, $V - (W - k) > k$, so by sweetening the deal and completing the merger the acquirer does better than allowing the target to terminate the deal.

Next, the top two rows of (6) represent the acquirer's payoffs when the target's option is not exercised (and it receives the constant p_0). When $V > W$ but $W - k < p_0$ (second row of (6)), the merger is completed and the acquirer does not alter the initial offer of p_0 because the target's option is out-of-money and worthless. When $W > p_0$, the target may want to terminate the deal and earn W instead; however, the threat of termination is not credible, because it has to pay k to the acquirer to break up the deal, but since $W - k < p_0$, the target's payoff from merging with the acquirer is higher than that from terminating.

Finally, the case of $V < W$ and $W - k < p_0$ (first row of (6)) is more complicated. On the one hand, the merger should *not* be completed from an ex-post efficiency standpoint. On the other hand, the target's option is out-of-money so its threat of termination is not credible. According to the option contract and the sharing rule that the acquirer receives the residual claim of the total surplus, the target receives p_0 while the acquirer gets $W - p_0$. Unlike the previous three cases, where we have shown there will be no *ex post* bargaining and thus no deviation from the payoffs specified in Lemma 1, both sides may have an incentive to revise the initial contract in the current case (See Appendix A.1 for more details). For example, if $W > p_0$ the target has a strong incentive to renegotiate, because it is paying the acquirer an amount of $W - p_0$ even though the merger is terminated. When the opposite is true ($W < p_0$), the acquirer wants to renegotiate as it is paying the target an amount of p_0 while incurring a loss of $p_0 - W$ despite deal termination. In practice we typically observe the payoff pair of [0, W] when a deal is terminated. Effectively the acquirer withdraws the initial offer p_0 (and receiving 0) while imposing no penalty on the target to terminate the merger (and receiving W). An alternative interpretation of this payoff pair, observed in practice, is that the acquirer's initial offer (p_0) is *conditional* on the *success* of the merger.

It is important to point out that while the payoff pair of [$W - p_0$, p_0] based on Lemma 1 yields the *First Best* effort choices and the merger outcome is *ex post* optimal, a payoff pair such as [0, W] as a result of ex post bargaining is *not* (unless $W = p_0$, in which case these two pairs are identical). In other words, if the merging firms know at time 0 that the payoff pair of [$W - p_0$, p_0] will be renegotiated to [0, W] following realizations of V and W satisfying $V < W < p_0 + k$, the efforts (exerted at t = 1) are strictly *less* than the First Best levels. This is because the target's effort choice, based on (3) and a given strike price, is no longer independent of the acquirer's effort decision. We can solve for the effort levels under this alternative payoff structure and ex post bargaining (details are available from the authors upon request), and call them "third best."

To summarize, Lemma 1 provides the payoffs and merger outcome following the ex ante contingent option contract. If there is no ex post bargaining that leads to deviations of the payoffs specified in (5) and (6), then the merging firms provide *First Best* efforts and the merger outcome coincides with that of First Best as well. In Section III, we empirically test the outcome of renegotiation for a sample of merger deals and verify their consistency with model predictions, in particular those from Lemma 1.

Finally, we derive the optimal k^* that induces First Best efforts in second best. From the target's effort choice problem specified in (3), the first order condition yields its optimal effort choice as a function of k. We can equate this effort choice to that of the First Best effort choice, and find an optimal k^* that induces the target to provide First Best effort. Then, given that the optimal k^* from the target's problem in (3) induces First Best target effort, i.e., $e_T(k^*) = e_T^{FB}$, in the Nash equilibrium the acquirer's best response is to choose $e_A = e_A^{FB}$ in (4). Consequently, the First Best surplus is achieved in second best. The proposition below summarizes the analysis for deriving k^*.

Proposition 1 *There exists a* unique k^* *such that effort choices* e_A *and* e_T*, under the contingent option contract specified in Lemma 1, are the same as those in* First Best. *Moreover, any ex-ante division of the total surplus can be achieved by choosing the constant,* p_0*, properly.*

II.3 Equilibrium and Comparative Statics

Having derived the general procedure to solve for the optimal strike price k^* and effort choices, we next present a specific example of our model, and derive testable implications.

Assumption 2 *Conditional on* s_g*, the merger synergy is* $V = [0.5 + l(e_A)]v_0 + [0.5 - l(e_A)](-v_0) + \theta$*; the function* $l(\cdot)$ *takes on the form* $l(e_A) \equiv l_0 + l_1 e_A$*; the state variable* θ *follows a Uniform distribution.*

As discussed earlier, conditional on s_g, the merger synergy is more likely to be good [v_0 with probability $0.5+l(e_A)$], than bad [$-v_0$ with probability $0.5-l(e_A)$]. Given the linearity of $l(\cdot)$, we have $V=2l_0v_0+2l_1v_0e_A+\theta$. Let $l_A \equiv 2l_1v_0 > 0$, and, since $2l_0v_0 > 0$ is a constant, merger synergy V conditional on s_g can be rewritten as $V=l_Ae_A+\theta$, where l_A indicates the productivity of the acquirer's effort in improving the precision of the posterior signal. Without loss of generality, we can assume θ ~*Unif* [0, $\bar{\theta}$]. We can similarly derive V conditional on s_b, in which case the deal is terminated.

Assumption 3 *The non-merger alternative* $W=h_Te_T+\omega$*;* ω ~*Unif*$[0,\bar{\varpi}]$, *and is independent of* θ.

Assumption 4 *Cost of effort* $C(e_i)=e_i^2/2$, e_i = {e_A, e_T}; and $\bar{\varpi} \geq \max(h_T^2, l_A^2)$; *and* $\bar{\theta} \geq 2\max(h_T^2, l_A^2)$.

First, in Appendix A.2 we prove that when the acquirer's effort (target's effort) becomes relatively more important in increasing the total surplus W^{FB}, which can result from an increase in l_A or $\bar{\theta}$ or a decrease in $\bar{\omega}$ (an increase in h_T or $\bar{\omega}$ or a decrease in $\bar{\theta}$), the acquirer's *First Best* effort (the target's effort) increases in order to maximize W^{FB}. These results also help us understand our comparative statics for the second best contracts.

Proposition 2 *The First Best efforts and payoffs can be achieved by choosing the option contracts specified in Lemma 1, with the optimal strike* k^**:*

$$k^*=\frac{\bar{\theta}}{2}+\frac{l_A^2(\bar{\theta}-2h_T^2)}{2(2\bar{\varpi}-l_A^2-h_T^2)}.$$

Proposition 2 states that a properly chosen strike price on the target's option (second best contract) induces First Best efforts by solving the holdup problem. It is important to emphasize that in our model, the goal of designing time 0 contracts is to maximize the expected joint surplus, not the probability of completing the merger. In particular, when the merger synergy is expected to be low relative to that of the target's non-merger alternative, the contract should not force a merger with the acquirer or impose excessive costs to withdraw.

Corollary 1 *The optimal strike, k^**, increases *as $\bar{\theta}$ increases, or as l_A increases.*

As $\bar{\theta}$ (twice the mean of the state variable of merger synergy *V*) or l_A (the productivity of acquirer's deal-specific effort) increases, the acquirer's role in increasing total surplus becomes more important because merger synergy is expected to be higher. Therefore, in order to induce the efficient First Best efforts and outcome, the option contract should impose a higher cost, i.e. a higher k^*, on the target to withdraw from the merger, so as to compensate the acquirer's effort. A higher strike also increases the probability of merger completion, ceteris paribus, but this is optimal because merger (rather than the target's best non-merger alternative) is more likely to be the First Best outcome.

Corollary 2 *The optimal strike, k^**, decreases *as $\bar{\omega}$ increases, or as h_T increases.*

As $\bar{\omega}$ (twice the mean of the state variable of target's non-merger alternative *W*) or h_T (the productivity of target's effort) increases, the value of the target's non-merger alternative is expected to increase relative to merger synergy, and thus her role in increasing total surplus becomes more important. Therefore, the second best contract should impose lower costs on the target, or a lower k^*, to withdraw from the merger and induce First Best effort. A lower strike also decreases the likelihood of completion of the merger, but this is again optimal because the First Best outcome is now more likely coming from the target's best non-merger alternative. In the next section, we provide empirical tests to examine predictions of Corollaries 1 and 2.

III. Empirical Evidence

We conduct two sets of empirical tests to examine predictions of our model. First, our model highlights the importance of new information revealed after the signing of the initial contract, which can trigger renegotiation of the initial contract and lead to different outcomes of the M&A deal. Accordingly, we examine the impact of new information on deal outcome, reasons for contract renegotiation, and whether renegotiation leads to ex post efficient outcome predicted by the model (in particular, Lemma 1). Second, our model demonstrates that a properly designed, option-like contract can solve the holdup problem during renegotiation and induce First Best efforts in improving merger synergy and non-merger alternatives. We show that a critical element of the contract, the optimal strike on either merging firm's option to terminate the merger, can be implemented by a number of deal protection devices in practice. We examine and relate the likelihood of one or more deal protection devices used in a deal to the degree of the holdup problem and the relative importance of deal-specific efforts from the acquirer vs. the target. We also examine the comparative statics of the model (Corollaries 1 and 2) by regressing the size of the target TF, one of the deal protection devices, on measures of deal-specific efforts while controlling for the use of other devices.

III.1 Description of Sample and Deal Protection Devices

Our sample is based on all U.S. mergers announced between January 1994 and December 1999 that are included in the Security Data Corporation (SDC) database. To ensure accuracy, all information on deal protection devices and merger outcomes is obtained from SEC filings (which date back to 1994 electronically) and the Dow Jones Interactive company filings database. We exclude all-cash mergers in this period because many of these deals were *hostile* takeovers, in which a target's holdup opportunity would not exist.[18] This results in an initial sample of 1,583 stock merger deals. We exclude deals with transactions values under $10 million, and where the target or acquirer is not included on CRSP and Compustat in the fiscal year end prior to the announcement of an agreement. Unlike previous work, we also exclude deals that do *not* have an initial definitive agreement – without a formal agreement, there is no binding mechanism in place to prevent opportunistic behavior during negotiation. Not surprisingly, none of these deals are completed.

Our final sample of consists of 1,104 deals, with an average time between the definitive agreement and the deal outcome of 5.4 months. As mentioned earlier, target TFs are used in 56% of

[18] Hostile transactions are otherwise difficult to classify; see, e.g., Schwert (2000).

all deals. Figure 2 illustrates the distribution of all *non-zero* target TFs, as a fraction of deal size. TFs are economically large; for the non-zero observations, the mean target TF is 3.01% of deal size, or $55.32 million in dollar amount. Acquirer TFs are included in 22% of all deals – acquirer TFs are never observed without a target TF.[19] When they are present, acquirer TFs average $74 million, and are on average the same size as the target TF for those deals. As noted above, the use of TFs on the acquirer side is difficult to explain within a search cost framework, as the *acquirer* is not revealed as a potential target to another bidder.

Table 1 also shows that acquirer lockups, providing for the purchase of shares or assets of the target in the event the deal is not completed, are present in 36% of deals, and are more common after 1996. The use of an acquirer lockup can partially substitute for a TF, particularly when there are costs to imposing a large, cash TF on the target. For example, when the target is in the banking industry, acquirer lockups are used more frequently than target TFs, in part because committing to cash TFs is costly for targets which are required to maintain cash reserves to meet regulatory capital requirements. Target lockups, providing for the purchase of acquirer assets by the target, are less frequently used (less than 8% of deals).

We also manually search for "no solicitation" clauses in online SEC filings (forms 8-K or S-4) for each deal. Among the 960 deals for which we can find online filings, this clause is included in 948 deals. Moreover, for more than 96% of these deals, there is an additional clause immediately following the no solicitation clause, stating that while the target does not solicit bids itself, it can enter into merger negotiations with unsolicited bidders and provide private information to the rival bidders. Consistent with our model, the combination of these two clauses can help the target to commit not to hold up the acquirer, but we do not include them in our tests due to the lack of variation across deals. Our empirical results do not change when we exclude the few transactions without these provisions.

[19] Both target and acquirer TFs are used more often in deals announced in 1997 or later, possibly due to the outcome of several lawsuits filed by target shareholders in 1997 which favored the use of deal protection devices - see Coates and Subramanian (2000) for more details.

Finally, a toehold can solve the target's holdup problem by making the target's threat of termination less effective, and hence is a substitute for other deal protection devices. Very few acquirers in our sample of stock mergers have a positive toehold at the date of the initial agreement. When they do exist (31 deals), their average size is large (mean 20%, median 18.5%).

The last three columns of Table 1 report deal outcomes subsequent to the signing of the initial definitive agreement. We observe one of three possible outcomes, which we verify from 8-K and S-4 filings: the deal is completed *without* amendment of the initial agreement (84.6%), the deal is terminated without renegotiation (6.7%), or terms of the initial agreement are amended (8.7%). Thus, over 15% of our sample deals are not completed as originally contracted. Our subsample of terminated deals is smaller than that of Bates and Lemmon (2003) and Officer (2003), because we exclude deals without an initial definitive agreement, all of which are terminated.

III.2 Deal Outcomes

A key assumption of our model is that new information about the merger arrives after the initial contract is signed and effort choices are made and that this new information directly triggers renegotiation and affects the final outcome of the merger. Therefore, we provide empirical tests that examine the impact of information revealed after the definitive agreement on the deal outcome.[20]

For the deals that are renegotiated or terminated, we collect information from news articles and final merger agreements on reasons for the contract amendment or termination. Table 2-A shows that the reasons for renegotiation include adverse price changes, news about the target and/or the acquirer, a competing bid for the target, and exogenous factors such as rulings by regulatory agencies. Table 2-B shows similar explanations for deal terminations, and also shows whether the TF payments are made. In all 15 cases where the target receives a higher competing bid, the target initiates termination; in 12

[20] Empirical evidence (e.g., Mitchell and Pulvino 2001, 2002; Mitchell et al. 2004; Hsieh and Walkling 2005) shows that the release of new information after the deal announcement significantly affects the risk and returns of merger arbitrage. Existing evidence also illustrates that corporate insiders learn and update their knowledge about merger prospects from the market reaction to the announcement of the initial agreement (e.g., Luo 2005).

of these 15 cases, the target TF is paid by the winning bidder. On the other hand, in 6 out of 8 deals that are struck down by a court or regulator, both sides agree to terminate and the TFs are waived. The enforcement and waiver of TFs demonstrates efficient ex post bargaining: the TF payment from a rival bidder to the acquirer is economically sensible because it compensates for the initial bidder's deal-specific effort and resolves the holdup problem on the target side. Notably, when the target enters a new merger agreement, it frequently includes a target TF, suggesting the purpose of the TF is not solely to compensate the *initial* bidder for search costs in the event a rival bidder subsequently appears.

We also provide descriptive evidence related to the ex post efficiency of renegotiations in Table 3, which compares the actual outcome to the prediction of our model. Since our goal is to examine the outcome of renegotiation, we do not include deals that are completed without any revision of the initial contract (leaving us with 145 deals that are either renegotiated or terminated).[21] We include terminated deals because the decision to terminate follows an unsuccessful attempt to renegotiate.

Recall that the optimal contract in the model (Lemma 1) allows for renegotiation, which leads to an efficient final outcome of the merger. Specifically, at the time of deal termination or completion, a completed merger is ex post efficient if $V \geq W$, where V is the updated value of synergy and W is the target's non-merger alternative; otherwise the merger should be terminated. Since the (final) total offer price is the total payment that the acquirer is willing to pay the target to complete the merger and it often contains a *premium* over target price, it reflects the updated value of merger synergy. To measure the target's best possible non-merger alternative, we use the *maximum* of target's market value at the time of amendment (or termination) and the highest competing bid.[22]

Using this procedure, Table 3 shows that $V \geq W$ in 100 out of the 145 deals. Our model

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[21] We exclude an additional 25 terminated deals because the termination is caused by external factors such as the ruling of a court or regulatory agency.

[22] In our model, V denotes merger synergy *net* of the sum of the two firms' stand alone values, while W is the non-merger alternative *net* of the target's stand alone value prior to the initial deal announcement. In Table 3, we use *gross* values for merger synergy and non-merger alternative, which can be obtained from V and W through a linear transformation; hence our empirical measures are consistent with the model notations (see Appendix A.3 for the linear transformation).

predicts that these deals should be completed as a result of ex post efficient renegotiation. 78 of the 100 deals are in fact completed, suggesting that our model prediction has an accuracy of 78%. In some cases, the target receives an outside bid following the signing of an initial agreements, but in the end the (initial) acquirer revises its bid upward and the deal is completed. This corresponds to the case of $V > W > p_0 + k$ (last row of (5)) in Lemma 1.[23] Of the 22 deals where $V \geq W$ but the deal is not completed as predicted, only 3 involved competing offers; however, in each case the original bidder raised its offer price above the competing bid. Therefore, the 22 deals are not completed because of reasons 1 or 2 in Panel B of Table 2 – most often because of an unexpected loss reported by the acquirer (and therefore a decline in the acquirer stock price).

For the remaining 45 deals, we observe that $V < W$. According to our model, these should be terminated – 37 deals are in fact terminated, an accuracy of 82%. One reason for deviations of merger outcomes from those predicted by Lemma 1 lies in possibly inefficient ex post bargaining. Of the 8 deals not correctly classified in row (2) of Table 3, only one involved an outside bidder, and the deal was approved by the target board despite the fact that the acquirer's final offer was below that of the outside bid.[24] The less-than-perfect accuracy of our model prediction for the remaining 7 deals is likely due to the accuracy of our empirical measures for V and W. For these deals, we use the updated offer price/deal value to proxy for V and the market value of the target to proxy for W. However, there can be other considerations—e.g., potential liabilities (such as disputes with unions or customers) or uncollected revenues of the target firm—that are not included in the bids or deal values but can

[23] As an example of this calculation, Bethlehem Steel Corp. entered an agreement to acquire Lukens Inc. in December 1997. The agreed on price was $25 per target share, and the target termination fee was approximately $1 per target share. Following the signing of this agreement, Lukens received a competing bid of $28 per share from Allegheny Teledyne Inc. Bethlehem Steel eventually raised its bid to $30 per share (which is higher than *W*, $28, minus *k*, $1), and the deal was approved by Lukens' board of directors.

[24] Dominion Resources, Inc.'s acquisition of Consolidated Natural Gas Company in Feb. 1999 involved a competing bidder. The initial offer was $64.22 per target share and the target termination fee was approximately $2.08 per target share. After the signing of the initial agreement, Columbia Energy Group launched a competing bid of $70 per share. Dominion Resources, Inc.'s final offer was $66.60 per share, which is less than *W*, $70, minus *k*, $2.08, or $67.92. Management claimed the strategic benefits of the originally planned deal would be more beneficial to shareholders than that of the competing bidder, even though the competing bid was sufficiently high to pay the termination fee.

potentially change the relationship between (true) *V* and *W*. In these cases, we observe the target stock price remains slightly higher (up to $2.50 higher) than the offer price at the time of the amendment. There may also be non-monetary differences between bids (financing contingencies or requirements to sell certain assets for example), or differences in tax consequences to shareholders which are not accounted for in our measures of *V* and *W*. Overall, our model correctly predicts the final outcome in 79% of deals, and the observed outcomes are consistent with ex post efficiency following renegotiation of an initial contract.

To examine the impact of information revealed subsequent to the signing of an initial agreement, Table 4 reports multinomial logistic regressions for the factors explaining the deal outcome. The default outcome is *completed as initially contracted*, while the alternative outcomes are *terminated* (1) or *renegotiated* (2). The first set of explanatory variables uses information obtained after the announcement of an initial agreement but before deal completion or termination.

The dummy variable *compete* equals 1 if the target receives a competing bid, which has a substantial positive impact on the likelihood of deal termination or renegotiation. In Model 1 (Model 2), a competing bid increases the likelihood of deal termination by approximately 15.8% (15.5%), while the probability of renegotiation increases by approximately 40.3% (40.3%). The variables *Δ acquirer return SD* and *Δ target return SD* measure the change in the standard deviations of the acquirer and target daily stock returns over a three-month period before versus after the announcement of the initial agreement. An increase in one of these two variables implies that additional uncertainty regarding the firms and the merger arises after the deal is announced, and is associated with a higher probability that a deal is terminated. A one standard deviation increase in *Δ acquirer return SD* increases the probability of deal termination by 2.5% (2.3%) in model 1(model 2). A one standard deviation increase in *Δ target return SD* increases the probability of deal termination by 2.3% (2.2%) in Model 1 (Model 2).

We also use the acquirer and target cumulative abnormal stock returns from after the initial agreement date to the completion, termination, or renegotiation date as a measure of the information revealed during this period (*acquirer CAR* and *target CAR*). If the market reassesses the target stock (and merger synergy) downward following the initial announcement (a lower *target CAR*), the deal is more likely to be terminated or renegotiated. We test further in Model 2 whether the impact of the CAR is greater when the acquirer or target is expected to have a higher productivity of effort, proxied by the acquirer or target's pre-announcement industry adjusted return on assets (*ROA*); this provides weaker evidence (significant at the 10% level) that when there is bad news about the target (*negative target CAR* = 1), higher productivity acquirers are more likely to terminate, and when there is bad news about the acquirer *(negative acquirer CAR = 1)*, higher productivity targets are more likely to renegotiate. Overall, the variables measuring new information revealed after the initial agreement significantly affect the likelihood of whether the initial contract is completed versus terminated or renegotiated.

The second set of explanatory variables in these regressions controls for deal and firm characteristics observed prior to or at the time of the initial agreement, and includes variables considered in previous studies to be determinants of deal completion. When the log ratio of the acquirer's market capitalization to that of the target [*log(relative size)*] increases, the deal is less likely to be terminated. In Model (2), higher productivity targets (higher *target ROA*) are associated with less renegotiation, but more renegotiation when the *acquirer CAR* is negative (see above). We also control for whether the target is a bank (see DeLong 2001); all of our main empirical results are robust to tests performed only using non-bank mergers.

The third set of explanatory variables in Table 4 controls for the contract features, specifically the use of TFs and lockups as deal protection devices. The presence of an acquirer TF reduces the probability of termination by 2.3% in either model, but is not significantly related to the probability of renegotiation (recall that for our sample, an acquirer TF is never present without a target TF). *Target TF* is not significant in any specifications.[25] A *target lockup* (giving the target the ability to purchase acquirer stock or assets) reduces the probability of renegotiation (but not of termination) by 6.5% in both models. Thus, the deal protection devices appear to have only a weak affect, and only in cases where these devices are included on both sides of the transaction. The general lack of an observed relationship between the presence of deal protection devices and outcomes is consistent with our model: the goal of designing time 0 contracts is to maximize expected joint surplus in the presence of holdup problems, not to maximize the probability of completing the merger. When the merger synergy is expected to be low relative to that of the target's non-merger alternative, the contract should not force a merger with the acquirer or impose excessive costs to withdraw.[26]

III.3 The Use of Deal Protection Devices

Our remaining tests examine the use of deal protection devices (excluding the "no solicitation" clause) in initial merger agreements. Table 5 reports acquirer and target firm characteristics for the sample deals, sorted by their use of these devices. We first group deals by whether they are "protected" by either a TF or an acquirer lockup, or "unprotected" (Panel A); we then group deals by their use of TFs (Panel B) and by whether an acquirer lockup is used (Panel C). As mentioned above, 75% of all deals are protected by either a TF or an acquirer lockup. In 56% of deals, a target TF is used and in 22% of deals an acquirer TF is also used (again, there is no deal in which only an acquirer TF is used). 36% of deals have an acquirer lockup.

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[25] The difference in the impact of target TFs from previous literature is due to our exclusion of terminated deals that did not have an initial definitive agreement. When we add back these deals, our results are qualitatively similar to Bates and Lemmon (2003) and Officer (2003) – specifically, the use of a target TF *increases* the probability of deal completion.

[26] In a previous version of this paper, we examined additional contract features including Fixed Exchange Ratio (FEX) offers, in which each share of the target stock is exchanged for a fixed number of acquirer shares, and Fixed Payment (FP) offers, in which the total amount of the transaction is fixed but the exchange ratio floats. Relative to the FEX contract, the use of FP contract increases the probability of renegotiation but not of termination. Similar to the empirical work of Officer (2004), these results are consistent with Hart (2009) who argues that a rigid ex ante contract can provide reference points in renegotiation when there is payoff uncertainty.

Both the acquirer and the target are larger in the protected group than in the unprotected group (Panel A): the median market value of targets in the unprotected group ($86 million) is significantly less than that of the protected group ($211 million). Since the relative size of the merging firms' market values proxies for their bargaining positions in the stock-based merger, the holdup problem is not likely to be severe for relatively smaller targets. The protected deals contain many "mergers of equals"; when the size of the target is comparable to that of the acquirer, the target's contribution to merger synergy cannot be ignored, and the acquirer has an incentive to hold up the target. Thus, TFs are expected on both sides. When the acquirer is much larger than the target, the holdup problem likely exists on the target side only. Accordingly, TFs are expected only on the target side.

Table 5 also presents statistics on two other firm characteristics (prior to deal announcement), both of which are industry adjusted. First, high (low) book-to-market ratio firms (*B/M*) are more value (growth) oriented. On average, the sample acquirers (targets) are more likely to be growth (value) firms. This is not surprising given the time period of our sample coincides with the rise of growth firms, and firms take advantage of their highly valued equity to acquire (value) targets. Second, both the acquirers and targets on average have higher return on assets (*ROA*) in protected deals than in unprotected deals.

An alternative explanation for the presence of a TF is to compensate the first bidder for the costs of identifying a valuable target, in the event a competing bidder subsequently enters. Since the first bidder's information becomes public at the announcement of a deal, a competing bidder can free ride on the information produced by the first bidder. 15 deals in our sample are terminated due to a competing offer. Interestingly, we observe that the new contract with the competing bidder typically includes a target TF; these deals are described in Table 6. This suggests that compensation for search costs cannot entirely explain the use of deal protection devices such as TFs (see Weston et al., 2004). In contrast, the use of a target TF by all the bidders is consistent with our theory of resolving holdup problems, which should be present in the initial and subsequent merger deals for the same target.

The multinomial logistic regressions in Table 7 examine determinants of the use of deal protection devices (excluding the “no solicitation clause”) for our sample of deals with definitive agreements. Panel A considers the use of TFs and lockups to alleviate target holdup of the acquirer, while Panel B considers holdup concerns and the use of TFs on both sides (we do not observe the use of lockups on both sides). The regressions control for the presence of a toehold, which generally is not significant. As described above, banks are less likely to use TFs relative to lockups.

Larger acquirers (log of acquirer MV) are associated with increased use of these devices. As the target becomes smaller relative to the acquirer, indicating less bargaining power of the target, we are less likely to observe protection devices on either side. When the size of the acquirer and target are more equal [a decrease on log (relative size)], TFs on both sides are more likely (Panel B).

We proxy for the productivity of effort by the acquirer and target ROA; acquirer ROA is associated with greater use of TFs. An increase in target ROA, however, decreases the probability of TFs on both sides. A higher preannouncement standard deviation of returns of the acquirer, suggesting less productive effort in investigating the acquirer, lowers the probability of TFs on both sides (indicating holdups of the target are less important).

When effort is less deal specific, holdup problems are expected to be less severe. We measure deal specific effort using the variable *Acquirer's past deals* (as well as *target past deals* to consider holdups on both sides), indicating the number of prior acquisitions in the past 3 years by the acquirer (or target) of other firms in the same industry as the target (or acquirer).[27] Consistent with our predictions, prior acquisitions of similar firms are associated with a lower probability of deal protection devices. We also control for the correlation of pre-announcement stock returns of the target and acquirer, which is generally not significant.

[27] See for example General Signal Corp, 1994 10K, "Our failed bid for Reliance Electric, while disappointing, gave us insight, experience and $55 million in termination fees, which were used to enhance future earnings. In the failed merger process, we learned how to improve several existing businesses and some new tricks for acquiring companies."

Lastly, in Table 8 we provide additional tests of the predictions of our model (Corollaries 1 and 2) by studying the determinants of the size of target TFs, which is not examined in previous papers. As discussed above, our model describes the optimal strike of the target's option. Since the target TF is the most widely used device, we use Tobit regressions to explain target TF size, calculated as the dollar amount of the target TF over the initially announced deal size. We include our proxies for the productivity of effort and the deal specificity of effort. All other firm and deal characteristics are obtained prior to or at the announcement of the initial agreement. We also include dummy variables for lockups and toeholds as controls. As a substitute in resolving holdups, the use of an acquirer lockup (acquirer can purchase target assets) reduces the size of the TF. TFs for bank targets are also significantly lower.

Related to the predictions of our model, higher productivity of effort (higher *Acquirer ROA*) is associated with a larger TF. We also expect that less deal specific effort is associated with a lower TF; consistent with our previous results, our strongest finding is that when the acquirer has previously completed transactions involving similar targets, the TF size is lower. Further, when the target has more intangible assets (*Target intangible* increases), the acquirer's effort in the current deal becomes *more* deal specific, and thus the size of the target TF is expected to be larger. The results in Table 8 are weakly supportive of this.

We also include (Models 2 and 4) a measure for the degree of agency problems in the acquirer, *Acquirer CEO tenure*, as available from *Execucomp*. It has no significant impact on the size of target TF, challenging the agency problem-driven motive for using a target TF. Lastly, Delaware firms are known to design corporate charters to facilitate takeovers (e.g., Daines 2001); a properly designed target TF provides the correct incentives for both firms to complete the merger. We find that the size of the target TF increases if either merging firm is incorporated in Delaware (dummies =1).[28]

[28] We also consider regressions which control for the premium paid, but the premium variable is not significant and all other results are unchanged.

IV. Summary and Conclusion

Our paper is the first to utilize the incomplete contracts framework to examine the renegotiation process and holdup problems in mergers. We first develop a model demonstrating that the signing of an initial contract can solve holdup problems and induce higher deal-specific effort that includes due diligence assessment of the merger. This contract includes the granting of an option to the target to withdraw from the merger, where the strike price compensates the acquirer's deal-specific effort without imposing excessive costs on the target for pursuing non-merger alternatives. In practice, the optimal strike on target's option can be implemented by the use of deal protection devices including termination fees, lockups, and no-solicitation provisions.

Using a large sample of stock mergers from 1994 to 1999, we provide empirical evidence supporting our model predictions. First, understanding the nature of information revealed subsequent to the signing of the initial agreement is extremely important in explaining final deal outcomes. We document the frequency and reasons for renegotiation of the initial merger agreement, and provide evidence on the determinants of the deal outcomes which is consistent with ex post efficiency. Second, we examine the characteristics of determinants of the use of deal protection devices. We show that the use of one or more protection devices is more likely when a transaction requires more deal-specific effort on the part of the acquirer. An alternative search cost-based explanation does not appear sufficient to explain the use of these devices. Controlling for the use of other protection devices, we also find that the size of the target termination fee is larger when the holdup problem is likely to be more severe. Overall, our model and evidence demonstrate how efficient contracts can be designed and implemented in light of the complexities of the bargaining and renegotiation process in mergers.

Appendix A

A.1 Lemma 1: Ex post bargaining in the case of $V < W$ and $W - k < p_0$ **(conditional on** s_g**)**

We first consider the case $W > p_0$. As noted in Section II.2, the *target* requests a renegotiation because the deal should be terminated but she is paying the acquirer a net amount of $W - p_0$, while the acquirer may be compelled to do so since $V < W$ and W is the outcome of the target's effort, not the acquirer's. If $V << p_0 < W$ then the merger should definitely be terminated, while the payoff pair can be of the form $[0 + \varepsilon, W - \varepsilon]$, where ε is a small number/transfer so that the acquirer's payoff is strictly higher than 0. On the other hand, if $p_0 < V \cong W$, then the merger can be completed, since V is not much lower than W, and payoffs can take on the form $[V - p_0 - \varepsilon, p_0 + \varepsilon]$ with ε again being a small transfer. Notice in the second scenario a *suboptimal* merger outcome occurred ($V < W$ but the merger is completed), while under both scenarios, the target's payoff increases following ex post bargaining from her ex ante payoff specified in Lemma 1.

In the case of $V < W < p_0$, the *acquirer* requests a renegotiation because he incurs a loss of $p_0 - W$ while paying the target p_0; the target may feel compelled to do so because she cannot simply cut ties with the acquirer as her option is out-of-money. In this case, the merger is unlikely to be completed (which agrees with the efficient outcome), because doing so requires the acquirer to lower the initial offer of p_0 to V, a transaction that is highly unlikely to be approved by the target board and shareholders (unless V is very close to W). Hence the payoffs will look like $[0 + \varepsilon, W - \varepsilon]$, with the size of ε depending on how close is V to W. Notice that any non-negative payoff to the acquirer is an improvement over what he is receiving according to Lemma 1. ■

A.2 Proof of Proposition 1 (First best outcome via option-like contracts)

Take first order condition in (3) we obtain e_T as a function of k (p_0 drops out), and this function does not depend on e_A. Similarly, from the first order condition based on (4) we obtain e_A as a function of k, and does not depend on e_T. Then choose k such that e_T and e_A equal to the first best efforts defined from first order conditions in (2). Given the properties of the objective functions (continuous and twice differentiable), we obtain a unique k such that the efforts under the option-like contracts equate first best levels. ■

A.3 Efforts in First Best of the Benchmark Model: *The First Best efforts are,*

$$e_A^{FB} = \frac{l_A(\bar{\theta} - 2h_T^2)}{2(2\bar{\varpi} - h_T^2 - l_A^2)}, \text{ and } \qquad e_T^{FB} = \frac{h_T\left(4\bar{\omega} - \bar{\theta} - 2l_A^2\right)}{2(2\bar{\varpi} - l_A^2 - h_T^2)}.$$

Moreover, $\frac{\partial e_A^{FB}}{\partial l_A} > 0$, $\frac{\partial e_A^{FB}}{\partial \bar{\theta}} > 0$, $\frac{\partial e_A^{FB}}{\partial \bar{\omega}} < 0$; and $\frac{\partial e_T^{FB}}{\partial h_T} > 0$, $\frac{\partial e_T^{FB}}{\partial \bar{\theta}} < 0$, $\frac{\partial e_T^{FB}}{\partial \bar{\omega}} > 0$.

Proof: As shown in (1),

$$W^{FB} \equiv \underset{(e_A, e_T)}{Max}\left[\frac{1}{2}Surplus(s_g) + \frac{1}{2}Surplus(s_b) - C(e_A) - C(e_T)\right],$$

where $Surplus(s_g) \equiv \iint_{\theta\omega} \max[V(e_A, s_g; \theta), W(e_T, \omega)]dG(\omega)dF(\theta)$ denotes the gross surplus upon receiving the good posterior signal on merger synergy, while $Surplus(s_b) \equiv \int_0^{\bar{\varpi}} WdG(\omega)$ denotes the surplus upon receiving the bad posterior signal (and hence merger is terminated). In addition,

$$Surplus(s_g) = \int_\theta \left[\int_0^{\omega^*(e)} [V(e_A, s_g; \theta)]dG(\omega) + \int_{\varpi^*(e)}^{\bar{\varpi}} WdG(\omega)\right]dF(\theta)$$

$$where \quad W^*(e_T, \omega) = V(e_A, s_g; \theta) \Rightarrow \omega^*(e_T) = V(e_A, s_g; \theta) - h_T e_T.$$

Given the functional forms specified in Assumptions 2-4, we have:

$$Surplus(s_g) = \frac{\overline{\varpi}}{2} + h_T e_T + \frac{(l_A e_A - h_T e_T)^2 + (l_A e_A - h_T e_T)\overline{\theta}}{2\overline{\varpi}} + \frac{\overline{\theta}^2}{6\overline{\varpi}}.$$

Taking first order conditions w.r.t. e_A and e_T (and using the Leibniz' rule) yields the expressions above. Finally, the comparative statics on optimal effort levels can be derived based on Assumption 4. ■

A.4 Proof of Proposition 2

The expected utilities of the acquirer and the target are given by:

$$EU_A = \frac{1}{2}\left[\iint_{\theta\omega} \max[V(e_A, s_g; \theta), W]dG(\omega)dF(\theta) - \int_{\omega}[W(e_T,\omega) - k, p_0]dG(\omega)\right] - C(e_A),$$

$$EU_T = \frac{1}{2}\int_{\omega}\max[W(e_T,\omega) - k, p_0]dG(\omega) + \frac{1}{2}\int_{\omega} W(e_T,\omega)dG(\omega) - C(e_T).$$

If we redefine $V - p_0$ as $\tilde{V}$, and redefine $W - p_0$ as $\tilde{W}$, then:

$$EU_A = \frac{1}{2}\left[\iint_{\theta\omega}\max[\tilde{V}, \tilde{W}]dG(\omega)dF(\theta) - \int_{\omega}[\tilde{W} - k, 0]dG(\omega)\right] - C(e_A)$$

$$EU_T = \frac{1}{2}\int_{\omega}[\tilde{W} - k, 0]dG(\omega) + \frac{1}{2}\int_{\omega} W(e_T,\omega)dG(\omega) - C(e_T) + \frac{1}{2}p_0.$$

Since the newly defined $\tilde{V}$ and $\tilde{W}$ are simply linear transformation from *V* and *W*, they should take the same functional forms as *V* and *W* (specified in Assumption 2). For simplicity, we drop the notation "~" from $\tilde{V}$ and $\tilde{W}$ in the following proofs, while we keep the original definition for *V* and *W* in the main text. Given an option contract p_0 and *k*, the target chooses e_T to solve

$$\underset{e_T}{Max}\left[\frac{1}{2}\int_{\omega}\max[W(e_T,\omega) - k, 0]dG(\omega) + \frac{1}{2}\int_{\omega}W(e_T,\omega)dG(\omega) - C(e_T) + p_0\right].$$

The solution to the above problem is $e_T^{call} = \frac{(2\overline{\varpi} - k)h_T}{2\overline{\varpi} - h_T^2}$. By setting $e_T^{call} = e_T^{FB}$, we can solve for the optimal *k* that induces First Best effort:

$$k^* = \frac{\overline{\theta}}{2} + \frac{l_A^2(\overline{\theta} - 2h_T^2)}{2(2\overline{\varpi} - h_T^2 - l_A^2)}.$$

And since the first-order condition with respect to e_A is the same as that in first-best situation, the acquirer's optimal effort level in the second-best situation, e_A^{call}, is the same as e_A^{FB}. Therefore,

$$e_A^{call} = \frac{l_A(\overline{\theta} - 2h_T^2)}{2(2\overline{\varpi} - h_T^2 - l_A^2)}.$$

Thus, first-best effort levels are achievable in the second-best situation by properly choosing the strike price of the call option (termination fee), k^*. ■

References:

1. Aghion, P., Dewatripont, M., and Rey, P., 1994. "Renegotiation Design with Unverifiable Information," *Econometrica* 62 (2), 257-282.

2. Bates, T., and Lemmon, M., 2003. "Breaking Up is hard to do? An Analysis of Termination Fee Provisions and Merger Outcomes", *Journal of Financial Economics* 69 (3), 469-504.

3. Bebchuk, L. 1982. "The Case for Facilitating Competing Tender Offers: A Reply and Extension," *Stanford Law Review* 35, 23-50.

4. Berkovitch, E., Khanna, N., 1990. "How Target Shareholders Benefit From Value-Reducing Defensive Strategies in Takeovers," *Journal of Finance* 45, 137-156.

5. Berkovitch, E., Bradley, M., Khanna, N., 1989. "Tender Offer Auctions, Resistance Strategies, and Social Welfare," *Journal of Law, Economics, and Organization*, 5, 395-412.

6. Betton, S., and Eckbo, E., 2000. "Toeholds, Bid Jumps, and Expected Payoffs in Takeovers", *Review of Financial Studies* 13(4), 841-882.

7. ____, ____, and Thorburn, K., 2009. "Merger Negotiations and the Toehold Puzzle," *Journal of Financial Economics* 91, 158-178.

8. Boone, A., and Mulherin, H., 2007a. "How are firms sold?" *Journal of Finance* 62, 847-875.

9. ____, and ____, 2007b. "Do Termination Provisions Truncate the Takeover Bidding Process?" *Review of Financial Studies* 20, 461-489.

10. Burch, T., 2001. "Locking Out Rival Bidders: The Use of Lockup Options in Corporate Mergers," *Journal of Financial Economics* 60, 103-141.

11. Coates, J., and Subramanian, G., 2000. "A Buy-side Model of Lockups: Theory and Evidence", *Stanford Law Review* 53(2), 307-396.

12. Daines, R., 2001. "Does Delaware Law Improve Firm Value," *Journal of Financial Economics* 62, 525-58.

13. DeLong, G., 2001. "Stockholder Gains from Focusing vs. Diversifying Bank Mergers," *Journal of Financial Economics* 59, 221-252.

14. Easterbrook, F., and Fischel, D., 1982. "Auctions and Sunk Costs in Tender Offers," *Stanford Law Review* 35.

15. Fishman, M., 1989. "Preemptive Bidding and the Role of the Medium of Exchange in Acquisition," *Journal of Finance* 44, 41-57.

16. French, K., and McCormick, R., 1984. "Sealed Bids, Sunk Costs, and the Process of Competition," *Journal of Business* 57, 417-441.

17. Gilson, R., and Black, B., 1995. *The Law and Finance of Corporate Acquisitions*, the Foundation Press, Westbury, New York.

18. ____, and Schwartz, A., 2005. "Understanding MACs: Moral Hazard in Acquisitions," *Journal of Law, Economics, & Organizations* 21, 330-358.

19. Goldman, E., and Qian, J., 2005. "Optimal Toeholds in Takeover Contests," *Journal of Financial Economics* 77, 321-346.

20. Hart, O., and Moore, J., 1988. "Incomplete Contracts and Renegotiation," *Econometrica* 56, 755-85.

21. ____, 2009. "Hold-up, Asset Ownership, and Reference Points," *Quarterly Journal of Economics* 124, 267-300.

22. Holmstrom, B., and Kaplan, S., 2001. "Corporate Governance and Merger Activity in the U.S.: Making Sense of the 1980s and 1990s," *Journal of Economic Perspectives* 15.

23. Hsieh, J., and Walkling, R., 2005. "Determinants and Implications of Arbitrage Holdings in Acquisitions," *Journal of Financial Economics* 77, 605-648.

24. Iyer, R., and Schoar, A., 2008. "The Importance of Holdup in Contracting: Evidence from a Field Experiment," working paper, MIT.

25. Kaplan, S., and Stromberg, P., 2004. "Characteristics, Contracts, and Actions: Evidence from Venture Capitalist Analyses," *Journal of Finance* 59, 2173-2206.

26. Klein, B., Crawford, R., and Alchian, A., 1978. "Vertical Integration, Appropriable Rents, and the Competitive Contracting Process," *Journal of Law and Economics* 21, 297-326.

27. Luo, Y., 2005. "Do Insiders Learn from Outsiders? Evidence from M&As," *Journal of Finance* 60, 1951-1982.

28. Mitchell, M., and Pulvino, T., 2001. "Characteristics of Risk and Return in Risk Arbitrage," *Journal of Finance* 56, 2135-75.

29. ____, and ____, 2002. "Limited Arbitrage in Equity Markets," *Journal of Finance*, 57 (2), 551-584.

30. ____, ____, and Stafford, E., 2004. "Price Pressure around Mergers," *Journal of Finance* 59 (1), 31-63.

31. Noldeke, G., and Schmidt, K., 1995. "Option Contracts and Renegotiation: A Solution to the Hold-up Problem," *RAND Journal of Economics* 26 (2), 163-179.

32. Officer, M., 2003, "Termination Fees in Mergers and Acquisitions," *Journal of Financial Economics* 69, 431-67.

33. ____, 2004. "Collars and Renegotiation in Mergers and Acquisitions," *Journal of Finance* 59, 2719-2743.

34. Rhodes-Kropf, M. and S. Viswanathan, 2004. "Market Valuation and Merger Waves," *Journal of Finance* 59, 2685-2718.

35. ____, ____, and Robinson, D., 2005. "Valuation Waves and Merger Activity: The Empirical Evidence," *Journal of Financial Economics* 77, 561-603.

36. Rogerson, W., 1984. "Efficient Reliance and Damage Measures for Breach of Contract," *RAND Journal of Economics* 15 (1), 39-53.

37. Safieddine, A., and Titman, S., 1999. "Leverage and Corporate Performance: Evidence from Unsuccessful Takeovers," *Journal of Finance* 54 (2), 547-580.

38. Schwert, G., 2000, "Hostility in Takeovers: In the Eyes of the Beholder?" Journal of Finance 55 (6), 2599-2640.

39. Shavell, S., 1980. "Damage Measures for Breach of Contract," *Bell Journal of Economics* 11, 466-90.

40. Shleifer, A., Vishny, R., 2003. "Stock Market Driven Acquisitions," *Journal of Financial Economics* 70, 295-311.

41. Tirole, J., 1999, "Incomplete Contracts: Where Do We Stand?" *Econometrica* 67 (4), 741-781.

42. Weston, J.F., Mitchell, M., and Mulherin, J.H., 2004. *Takeovers, Restructuring, and Corporate Governance*, Pearson Education-Prentice Hall, New Jersey.

43. Williamson, O., 1979. "Transactions-cost Economics: The Governance of Contractual Relations," *Journal of Law and Economics*, 22 (2), 233-262.

Table 1
Merge Sample Description

This table summarizes the use of deal protection devices and deal outcomes for our sample of stock mergers with definitive agreements announced between 1994 and 1999. *Duration* measures the number of months from the signing of a definitive merger agreement to the deal completion or termination. *Acquirer (target) lockup* provides for the purchase of target (acquirer) assets in the event of deal termination. *Toehold* indicates that acquirer owns the target stock prior to the deal announcement.

Year	# deals	Average Duration (months)	Deal Protection Devices					Toehold	Deal Outcome		
			Termination Fees		Lockup		No Solicitation Clause*		# of deals completed as initially contracted	# of deals terminated w/o renegotiation	# of deals renegotiated
			Target	Acquirer	Acquirer	Target					
1994	120	5.7	54	14	33	3	67	6	99	9	12
1995	151	6.0	63	25	42	14	108	6	124	8	19
1996	150	5.4	58	35	31	8	137	5	126	7	17
1997	223	5.0	136	55	94	20	202	5	192	17	14
1998	248	5.2	168	64	106	27	229	5	218	13	17
1999	212	5.4	138	50	89	15	205	4	175	20	17
Total	1,104 (100%)	5.4	617 (55.9%)	243 (22.0%)	395 (35.8%)	87 (7.88%)	948* (98.7%)	31 (2.81%)	934 (84.6%)	74 (6.7%)	96 (8.7%)

*: Among 960 deals with documents available online, 948 (98.7%) contain a "no solicitation" clause in the initial merger agreement.

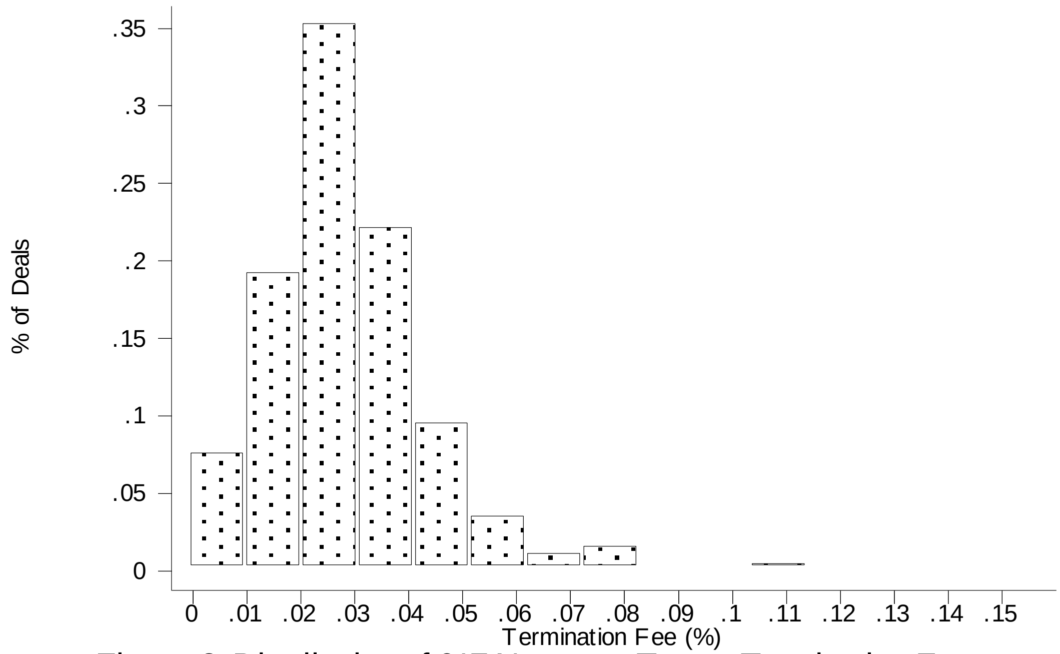

Figure 2: Distribution of 617 Non-zero Target Termination Fees

Table 2 – Reasons for Deal Renegotiation and Termination

A. Reasons for Deal Renegotiation

Reason	Frequency	# of deals completed
1. Price change	16	14
2. Good or bad news about firms	25	21
3. Competing bid	15	12
4. Price moves beyond collar or reaches termination condition, if any	6	6
5. Closing conditions not satisfied	3	2
6. Other reasons [a]	12	12
7. Unknown	23	23
Total	100 [b]	90

[a]: includes: tax consequences of merger changes; acquirer is acquired by another firm; to increase the size of board; to respond to regulatory review.
[b]: 96 deals have amendment; in 4 deals there are 2 reasons for amendment.

B. Reasons for Deal Termination

Reason	Fre-quency	Who initiated termination	# deals with target-TF in initial agreement	# deals with target and acquirer TF	TF paid or not upon termination
1. Price changes or A's price reached termination range	9	Acq.: 2, Target: 2; Mutual: 4; Unknown: 1	4	1	1 target-TF paid; 3 unknown
2. Bad news about firms	9	Acq.: 3, Target: 2; Mutual: 4	2	1	1 target-TF not paid; 1 unknown
3. Competing bid and/or target merged with other firm	15	Target: 15	15	6	12 target-TF paid; 1 target-TF not paid; [a] 2 unknown
4. Outside factors block merger [b]	15	Acq.: 2, Target: 1; Mutual: 9; Unknown: 3	9	5	1 acq.-TF paid; 1 target-TF not paid; 3 both TFs not paid; 4 unknown
5. Other reasons [c]	25	Acq.: 6, Target: 4; Mutual: 15	16	6	3 target-TF paid, 4 not paid; 4 both TFs not paid; 5 unknown
6. Unknown	10	Acq.: 1, Target: 3; Mutual: 3 Unknown: 3	5	3	1 target-TF paid; 1 acq.-TF paid; 3 unknown
Total	83	Acq.: 14; Target: 27; Mutual: 35; Unknown: 7	51	22	17 target-TF paid; 2 acq.-TF paid; 7 target-TF not paid; 7 both TFs not paid; 18 unknown

[a]: a lawsuit involved acquirer and target.
[b]: reasons include: merger blocked by court or regulatory agency; shareholders' failure to approve merger.
[c]:includes: tax consequences of merger; acquirer is acquired by another firm; potential regulation risk; market interest rate increases (acquisition becomes costly); acquirer cannot secure financing in time.

Table 3
Efficiency of Final Outcome of Renegotiation

This table estimates the precision of model predictions for the final outcome of renegotiation (amended or terminated). Based on the model, a merger is *ex post efficient* if it is completed when $V > W$ and terminated otherwise, where V is the value of synergy and W is the target's non-merger alternative. The *lower bound* of V is proxied by the offer price, while W is proxied by the maximum of target's market value and the highest outside competing bid (if any). V and W in our model are values net of firms' stand alone assets; in these calculations we use gross values including the firms' own stand alone asset values.

Comparing values	No. of deals	No. of deals with outcome correctly predicted by model	Precision of model prediction
(1) $V \geq W$	100 (T-TF used in 53 deals)	78[a] (T-TF used in 40 deals)	78%
(2) $V < W$	45 (T-TF used in 24 deals)	37[b] (T-TF used in 22 deals)	82%
Total	145	115	79%

Notes: (1) There are an additional 25 deals in the $V \geq W$ category, but they were terminated due to exogenous forces such as the ruling of a court or regulatory agency. These deals are excluded when we measure the precision of model prediction. (2) There are 9 deals that belong to both the contract amendment sample and the deal termination sample.

[a]: In some cases**,** the target receives an outside bid following the signing of the initial agreement, but the initial acquirer revises the bid upward and the deal is eventually completed. This *efficient* renegotiation process yields the First Best merger outcome, corresponding to the case of $V > W > p_0 + k$ (last row of (5)) in Lemma 1. Of the 22 deals where $V \geq W$ but the deal is not completed as predicted, only 3 involved competing offers; however, in each case the original bidder raised its offer price above the competing bid. The most frequently mentioned reason for the termination of the 22 deals is an unexpected loss reported by the acquirer (and therefore a decline in the acquirer stock price).

[b]: Of the 8 deals not correctly predicted by the model ($V < W$ but the original deal was completed), only one involved an outside bidder, and the deal was approved by the target board despite the fact that the acquirer's final offer was below that of the outside bid. For the remaining 7 deals the error in our model prediction is likely due to the inaccuracy of our empirical measures for V and W, in that there are other considerations not included in the bids and valuations and non-monetary differences of the bids.

Table 4
Determinants of Deal Outcome Following the Signing of Initial Agreement

This table reports multinomial logistic regressions for the 3 possible outcomes following the signing of the initial agreement. The dependent variable equals zero (default value) for deals *completed as initially contracted*, equals one for deals terminated, or equals 2 for deals *renegotiated*. *Compete* is a dummy that indicates there was a competing bid after the deal announcement. *ΔAcquirer return SD* (*ΔTarget return SD*) is the change in the acquirer's (target's) daily stock return standard deviation for a 3-month period before vs. after the announcement of initial agreement. *Acquirer CAR* (*Target CAR*) is acquirer's (target's) cumulative abnormal returns between the initial agreement date and completion date or withdrawn date. *Log (relative size)* is the log value of acquirer MV/ target MV measured one month prior to deal announcement. *Acquirer ROA* (*Target ROA*) is the industry-adjusted return on assets measured at the fiscal year end prior to deal announcement. *Acquirer TF* (*Target TF*) is a dummy variable that equals 1 if there is acquirer (target) TF clause in the agreement. *Acquirer Lockup* (*Target Lockup*) is a dummy variable that equals 1 if there is acquirer (target) lockup option in the agreement. P-values are in parentheses. ***, **, *: significant at the 1%, 5%, or 10% levels, respectively.

	Model 1		**Model 2**	
Outcome:	**(1) Terminated**	**(2) Renegotiated**	**(1) Terminated**	**(2) Renegotiated**
Compete	2.888 (0.000)***	2.839 (0.000)***	2.874 (0.000)***	2.843 (0.000)***
Δ acquirer return SD	35.430 (0.001)***	15.040 (0.114)	34.011 (0.001)***	13.470 (0.163)
Δ target return SD	26.761 (0.001)***	3.069 (0.666)	26.853 (0.000)***	2.366 (0.742)
Acquirer CAR	0.597 (0.270)	0.047 (0.916)	0.729 (0.198)	-0.099 (0.826)
Target CAR	-2.597 (0.000)***	-0.946 (0.021)**	-2.693 (0.000)***	-0.939 (0.023)**
Acq. ROA∗(Negative target CAR)			4.078 (0.055)*	1.189 (0.541)
Target ROA∗(Negative acq. CAR)			-1.729 (0.374)	2.377 (0.062)*
log (relative size)	-0.598 (0.000)***	-0.067 (0.518)	-0.580 (0.000)***	-0.079 (0.452)
log (Acquirer MV)	0.080 (0.358)	-0.069 (0.382)	0.076 (0.391)	-0.056 (0.478)
Acquirer ROA	1.769 (0.066)*	1.450 (0.132)	-1.575 (0.424)	0.512 (0.753)
Target ROA	-1.162 (0.061)*	-0.736 (0.199)	0.540 (0.774)	-2.484 (0.016)**
Target is bank	-1.261 (0.003)***	-0.465 (0.114)	-1.261 (0.003)***	-0.440 (0.138)
Acquirer TF	-0.985 (0.016)**	-0.249 (0.484)	-1.008 (0.014)**	-0.212 (0.554)
Target TF	0.141 (0.700)	-0.289 (0.325)	0.213 (0.566)	-0.308 (0.299)
Acquirer lockup	-0.384 (0.388)	-0.252 (0.410)	-0.352 (0.433)	-0.266 (0.389)
Target lockup	0.238 (0.684)	-1.335 (0.088)*	0.221 (0.707)	-1.340 (0.087)*
Constant	-2.056 (0.000)***	-1.295 (0.011)**	-2.076 (0.000)***	-1.382 (0.007)***
Predicted Prob.	0.030	0.082	0.030	0.080
Observations	N=954 Pseudo R^2=0.191		N=954 Pseudo R^2=0.199	

Table 5
Summary Statistics on the Use of Deal Protection Devices

This table reports mean (median) summary statistics for our sample of stock mergers grouped by the use of protection devices in the initial definitive agreement. In Panel A, in each *protected* deal either a TF or an acquirer's lockup is used, while neither a TF nor a lockup is used in *unprotected* deals. In Panel B, we group deals by TFs: In Group 1, TFs are included for both the acquirer and target; in Group 2, a TF is only included on the target side; in Group 3, TFs are not used on either side. In Panel C, we group the deals by whether an acquirer lockup is used or not. *Acq.TF* (*Target TF*) is the amount of TF on the acquirer side (target side), measured in $ millions. *Acq. MV* (*Target MV*) is the acquirer's (target's) market value of equity, measured in $ millions. *Acq. B/M* (*target B/M*) is the industry-adjusted book-to-market ratio for the acquirer (target). *Acq. ROA* (*Target ROA*) is the industry-adjusted return on assets for acquirer (target). All accounting data are obtained from Compustat for the fiscal year-end prior to the initial definitive merger agreement.

Panel A: Protected vs. Unprotected Deals

	Acq. TF ($ mil)	Target TF ($ mil)	Acq. MV ($ mil)	Target MV ($ mil)	Acq. B/M	Target B/M	Acq. ROA	Target ROA
Full Sample (N=1104)	21.32 (0)	30.97 (1.50)	7,495 (1,289)	1,246 (169)	-0.069 (-0.103)	0.044 (-0.008)	0.016 (0.003)	-0.014 (0.002)
Protected (N = 829)	28.39 (0)	41.25 (5.00)	8,196 (1,484)	1,316 (211)	-0.079 (-0.113)	0.0406 (0.0001)	0.023 (0.003)	-0.011 (0.002)
Unprotected (N = 275)	--	--	5,382 (786)	1,036 (86)	-0.036 (-0.083)	-0.054 (0.027)	-0.004 (0.003)	-0.021 (0.001)

Panel B: Sorting by Termination Fees

	Acq. TF ($ mil)	Target TF ($ mil)	Acq. MV ($ mil)	Target MV ($ mil)	Acq. B/M	Target B/M	Acq. ROA	Target ROA
1. TFs on both sides (N=242)	97.25 (15.50)	98.80 (20.00)	7,252 (1,206)	2,800 (511)	-0.046 (-0.072)	0.045 (0.016)	0.016 (0.006)	-0.014 (0.003)
2. Target TF only (N=375)	--	27.42 (7.50)	9,876 (1,830)	637 (170)	-0.076 (-0.116)	0.072 (0.010)	0.041 (0.015)	-0.019 (0.008)
3. No TFs (N = 487)	--	--	5,786 (1,111)	944 (107)	-0.075 (-0.109)	0.022 (-0.030)	-0.002 (0.001)	-0.009 (0.001)

Panel C: Sorting by Acquirer Lockups

	Acq. TF ($ mil)	Target TF ($ mil)	Acq. MV ($ mil)	Target MV ($ mil)	Acq. B/M	Target B/M	Acq. ROA	Target ROA
1. With Acq. Lock-up (N = 395)	23.27 (0)	34.10 (0)	11,658 (1,864)	1,444 (216)	-0.113 (-0.131)	-0.016 (-0.039)	0.033 (0.002)	0.007 (0.001)
2. No Acq. Lockup (N = 709)	20.23 (0)	29.23 (2.0)	5,181 (1,047)	1,135 (141)	-0.044 (-0.080)	0.078 (0.008)	0.007 (0.004)	-0.025 (0.003)

Table 6
Use of Termination Fees in Original Contracts and New Contracts with Competing Bidders

In our sample, 15 deals are withdrawn due to offers from competing bidders. We are able to locate the new merger agreements between the target and the competing bidder for 12 of these failed deals. This table presents the use of TF in merger agreements between the target and its original acquirer (denoted as (1)) and between the target and the new bidder (denoted as (2)).

Target Name		Acquirer Name	Agreement Date	Withdrawn date	Deal Value ($ mil)	Target TF ($ mil)	Target TF (% of Deal Value at Ann.)	Acq. TF ($ mil)	Acq. TF (% of Deal Value at Ann.)
Learning Co	(1)	Broderbund Software Inc	07/31/95	12/28/95	513.5	18	3.51%		
	(2)	SoftKey International Inc	12/06/95		604.5	18	2.98%		
Kansas City Power & Light Co	(1)	UtiliCorp United Inc	01/22/96	09/18/96	2,681.1	58	2.16%	58	2.16%
	(2)	Western Resources Inc	04/14/96		1,900.0	50	2.63%	35	1.84%
American Bankers Ins Group	(1)	American International Group	12/22/97	03/23/98	2,717.6	81.5	3.00%		
	(2)	Cendant Corp	03/23/98		2,678.1	94.9	3.54%		
Reliance Electric Co	(1)	General Signal Corp	08/30/94	11/21/94	1,704.0	55.2	3.24%		
	(2)	Rockwell international	11/21/94		1,600.0	10	0.63%		
First Interstate Bancorp	(1)	First Bank Sys	11/06/95	01/24/96	10,351.7	125	1.21%		
	(2)	Wells Fargo & Co	01/24/96		10,111.0	150	1.48%		
Santa Fe Pacific Gold Corp	(1)	Homestake Mining Co	12/09/96	03/10/97	2,654.9	65	2.45%	65	2.45%
	(2)	Newmont Mining Corp	03/10/97		2,348.7	15	0.64%	65	2.77%
Shared Technologies Fairchild	(1)	Tel-Save Holdings Inc	07/17/97	11/21/97	508.2	15	2.95%		
	(2)	Intermedia Communications	11/20/97		640.0	10	1.56%		
Hi-Lo Automotive Inc	(1)	Discount Auto Parts Inc	10/20/97	12/23/97	78.7	4.75	6.03%		
	(2)	O'REILLY AUTOMOTIVE	12/24/97		89.7	4.75	5.30%		
Avondale Industries Inc	(1)	Newport News Shipbuilding	01/19/99	06/03/99	474.1	15	3.16%		
	(2)	Litton Industries Inc	06/03/99		503.9	15	2.98%		
Cyprus Amax Minerals Co	(1)	ASARCO Inc	07/15/99	09/30/99	2,071.4	45	2.17%		
	(2)	Phelps Dodge Corp	09/30/99		3,297.4	45	1.36%		
Dime Bancorp Inc	(1)	Hudson United Bancorp	09/15/99	04/29/00	2,224.7	50	2.25%		
	(2)	North Fork Bancorporation	03/14/00		1,884.2	5	0.27%		
Warner-Lambert Co	(1)	American Home Products	11/04/99	02/07/00	76,064.2	1800	2.37%	1800	2.37%
	(2)	Pfizer Inc	02/06/00		73,045.3	500	0.68%	1800	2.46%

Table 7
Logistic Tests for the Use of Deal Protection Devices

Panel A reports a multinomial logistic regression, where the dependent variable represents the choice among 4 possible combinations of protection devices on the target side; the default outcome is no TFs or lockup. In Panel B, the dependent variable is the choice among 3 possible combinations of TFs used on both sides; the default outcome is no TFs on either side. *Acquirer return SD* (*Target return SD*) is the acquirer's (target's) monthly stock return standard deviation for a 12-month period before the announcement of initial agreement. *Acq. (Target) past deals* indicates the number of prior acquisitions in the past three years by acquirer (or target) of other firms in the same industry as the target (or acquirer). *Correlation* is the stock return correlation of the acquirer and the target in the 24-month period ending one month prior to deal announcement. All other variables are as defined in the previous tables. P-values are in parentheses. ***, **, *: significant at the 1%, 5%, or 10% levels, respectively.

	Panel A: default = no TFs or Lockups (Target holds up the acquirer)			*Panel B:* default = no TFs (holdup on both sides)	
	1. Both Target TF and Acq. Lockup	**2. Target TF only**	**3. Acq. Lockup Only**	**1. Target TF Only**	**2. Both Acq. TF and Target TF**
log (relative size)	-0.167 (0.056)*	-0.180 (0.014)**	-0.131 (0.157)	0.043 (0.545)	-0.696 (0.000)***
log (Acq. MV)	0.401 (0.000)***	0.163 (0.011)**	0.149 (0.076)*	0.152 (0.016)**	0.275 (0.000)***
Acq. ROA	2.555 (0.001)***	0.504 (0.299)	-0.002 (0.998)	1.499 (0.021)**	1.270 (0.055)*
Target ROA				-0.494 (0.302)	-1.042 (0.045)**
Acq. Return SD				-0.773 (0.538)	-3.648 (0.041)**
Target return SD	1.013 (0.495)	0.124 (0.918)	1.128 (0.533)	0.168 (0.890)	0.888 (0.560)
Acq. B/M				0.083 (0.808)	0.173 (0.639)
Target B/M	0.022 (0.945)	0.466 (0.028)**	-0.282 (0.414)	0.389 (0.067)*	0.421 (0.092)*
Correlation	0.687 (0.107)	0.209 (0.528)	0.715 (0.094)*	-0.094 (0.767)	0.358 (0.331)
Acq. Past Deals	-0.243 (0.003)***	-0.072 (0.240)	0.067 (0.245)	-0.131 (0.008)***	-0.265 (0.002)***
Target Past Deals				-0.320 (0.060)*	-0.414 (0.023)**
Toehold	-13.576 (0.132)	-0.514 (0.748)	-6.928 (0.078)*	-0.446 (0.809)	-1.277 (0.584)
Target is bank	0.308 (0.250)	-0.573 (0.008)***	2.653 (0.000)***	-1.283 (0.000)***	-1.504 (0.000)***
Post 1997	1.647 (0.000)***	1.082 (0.000)***	1.150 (0.000)***	1.036 (0.000)***	0.912 (0.000)***
Constant	-4.276 (0.000)***	-0.761 (0.089)*	-3.736 (0.000)***	-1.313 (0.003)***	-1.157 (0.024)**
	N=1089 Pseudo R^2=0.176			N=1089 Pseudo R^2=0.173	

Table 8
Determinants of Optimal Target Termination Fees (% of Deal Size)

Tobit regressions are reported, where the dependent variable is the target TF as percentage of deal value. *Target Intangible* is measured as target's total intangibles over target total assets at the fiscal year-end prior to the deal definitive agreement. *Acq. CEO tenure* indicates the number of years the acquirer CEO is in office at the time of the transaction announcement. All other variables are as defined in previous tables. P-values are in parentheses. ***, **, *: significant at the 1%, 5%, or 10% levels, respectively

	(1)	(2)	(3)	(4)
Acq ROA	0.010 (0.104)	0.026 (0.056)*	0.015 (0.042)**	0.031 (0.022)**
Acq past deals	-0.002 (0.001)***	-0.002 (0.007)***	-0.002 (0.002)***	-0.002 (0.003)***
Correlation	0.002 (0.543)	0.003 (0.578)	0.004 (0.400)	0.004 (0.405)
Target return SD	0.000 (0.995)	-0.006 (0.760)	0.006 (0.686)	-0.019 (0.351)
Target B/M	0.003 (0.167)			
Target intangible		0.019 (0.053)*	0.013 (0.120)	0.020 (0.038)**
Acq CEO tenure		0.000 (0.215)		0.000 (0.252)
Log(relative size)	0.001 (0.385)	0.002 (0.088)*	0.001 (0.311)	0.002 (0.017)**
Acq log(MV)	-0.000 (0.538)	-0.001 (0.602)	-0.001 (0.458)	-0.001 (0.171)
Target is bank	-0.018 (0.000)***	-0.019 (0.000)***	-0.016 (0.000)***	-0.017 (0.000)***
Toehold	-0.000 (0.986)	-0.010 (0.764)	-0.008 (0.761)	-0.009 (0.778)
Acq lockup	-0.008 (0.000)***	-0.006 (0.049)**	-0.010 (0.000)***	-0.007 (0.019)**
Post 1997	0.014 (0.000)***	0.010 (0.000)**	0.014 (0.000)***	0.009 (0.001)***
Delaware acq	0.005 (0.014)**		0.006 (0.011)**	0.008 (0.003)***
Delaware target	0.004 (0.042)**		0.004 (0.039)**	0.005 (0.053)*
Constant	0.008 (0.123)	0.008 (0.299)	0.005 (0.372)	0.010 (0.221)
Observations	971	575	835	530