"She is Mine": Determinants and Value Effects of Early Announcements in Takeovers

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Abstract

Some bidders voluntarily announce a merger negotiation before the definitive agreement. We propose an "announce-to-signal" explanation to these early announcements: they allow bidders to signal to target shareholders high synergies so as to overcome negotiation frictions and improve success rates. We show that there exists a separating equilibrium where high-synergy bidders announce early, while low-synergy bidders remain in private negotiations. Consistent with signaling, we show that negotiation frictions predict earlier announcements. Early announced transactions are associated with higher expected synergies, offer premium, completion rates, and public competition. However, bidder announcement returns do not suggest overpayment in these transactions.

Keywords: Mergers and Acquisitions, Early announcement, Signal, Negotiation frictions

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"I hope you get your invitation. It is here for you.

Listen to the conversation, playing pretty tunes.

Sorry I can't wait for you. I couldn't stand to stay.

You have to get right out of here. You have to get away"

– She Is Mine

The Psychedelic Furs (An English Band)

1 Introduction

How do managers choose the timing of takeover announcements? Existing literature largely views takeover announcements as a pure response to legal obligations. While it is true that the majority of the deals are announced upon the signature of a definitive agreement, as is required by the securities laws[1], managers can in fact exert considerable discretion in regard to when a deal should be made public. Some firms choose to voluntarily announce a consideration of bid *before* a definitive merger agreement is reached. For example, on December 17, 2010, Cumulus Media announced its intention to acquire all of the outstanding interests of Citadel Broadcasting Corporation for approximately $2.1 Billion, together with details of payment methods. The definitive agreement was, however, signed three months later and no rumors had emerged before the first announcement of the deal.[2] In general, it is considered very costly for firms to disclose confidential information such as a merger negotiation since it reveals private information to potential competitors and leads to a stock price runup of the target (Schwert (1996)). A natural question to ask is why do managers choose to release the material nonpublic facts voluntarily?

In this paper, we propose a signaling-based explanation to the announcement made by the bidder

[1] For example, the US Securities Exchange Act (Rule 10b-5, Exchange Act) mandates that the bidder and target issue a press release announcing the deal once a merger agreement has been executed, except in cases when (1) the company trades in its own securities, (2) the company leaks the details of negotiations into the market, or (3) disclosure is necessary to correct previous misstatements. In these cases, a company is required to disclose merger negotiations before an agreement is signed.

[2] See the 8-K filings of Cumulus Media dated 2010-12-17 and 2011-03-10 on the SEC website (`https://www.sec.gov/`).

before the conclusion of a definitive merger agreement (hereafter, early announcement). We first develop a simple model of deal negotiation with frictions. The model posits that an early announcement allows the bidder to voluntarily and timely signal to the target shareholders the strategic importance of the transaction when negotiation frictions hinder a high synergy bidder's success rates. We derive a separating equilibrium: a credible signal enables the uninformed target shareholders to perceive the bid as highly synergetic, and consequently render support to these high synergy bidders so their rate of winning improves; on the contrary, low synergy bidders always remain in private negotiations. By claiming "she is mine" early, the high synergy bidder aligns himself with the target shareholders. Such an announcement is an "invitation" to the target and a "pretty tune" to the market, as in the lyrics cited at the beginning of the paper. The model also allows us to disentangle the sources of the signaled synergy: we separate the synergies into two parts, one "common" part that stems from the target management entrenchment, and a bidder-specific part. We show that while early announcements signal both the bidder-specific synergy *and* target entrenchment, they do not merely signal target entrenchment alone. That is, early announcements are not simply the same device as traditional hostile bids that are utilized to replace entrenched target managers.

An example of such an "announce-to-signal" move is from Central Pacific Financial Corp (CPF)'s attempt to acquire CB Bancshares in 2003. After a lengthy private negotiation between the two parties, CPF issued a press release on April 16, 2003, before any agreement had been reached with the target, to make the proposed business combination public. In their SEC S-4 filing, CPF explicitly explained that their purpose to publicize the deal early was "*to ensure that CB Bancshares' stockholders were aware of the offer*". Shortly after this press release, an agreement was signed between the parties and the merger proceeded in a more friendly way.

We examine empirically the determinants of early announcements as conjectured in the signaling model.[3] This analysis focuses on a sample of transactions announced between January 1, 1990 and

[3] We manually check "early announcements" to exclude leakage announcements, target strategic alternative announce-

December 31, 2013. Our model predicts that negotiation frictions increase the early announcement propensity. Specifically, we use hand-collected variables from SEC filings to depict the private phase of the takeover process (see, e.g., Boone and Mulherin (2007); Aktas, de Bodt, and Roll (2010); Masulis and Aziz Simsir (2016)). The considered variables are the length of the private phase negotiations (i.e., the elapsed time between the initiation of the takeover process and the public announcement); whether the sale process is competitive or not (i.e., auction versus one-on-one negotiation); and whether the takeover process is initiated by the target or not. In addition, we also use the solicitation variable reported in Thomson Reuters SDC as an additional proxy for negotiation frictions. Negotiation frictions are expected to be more likely when the private phase of the takeover process is abnormally long, the sale process is competitive, the deal is initiated by the bidder, and the deal is unsolicited by the target.

The empirical results confirm our conjecture. We show that a bidder is more likely to announce a deal early when the private negotiation is lengthy, when the target is negotiating with several bidders, when the bidder is the initiator of the takeover process, or when the deal is classified as unsolicited. Specifically, the explicit competition in the private phase and bidder initiation increase early announcement likelihood by 1 percent, while unsolicited moves increase the same likelihood by 4 percent. These effects are economically substantial given that, on average, only 7% of the sample firms make an early announcement.

Moreover, given that target resistance is a manifestation of entrenchment, we use institutional ownership in the target as a proxy for target entrenchment.[4] Consistent with our model, we find statistically significant evidence that negotiations involving a widely held target (a proxy for a greater potential agency problem) are more likely to be disclosed before the conclusion of a definitive agreement. Alternatively, high institutional ownership might also proxy for less need for costly public signaling,

ments and SDC misreports. See the sample description in Section 4.

[4] Brav, Jiang, Partnoy, and Thomas (2008), Boone and White (2015), Appel, Gormley, and Keim (2016), among others, show that institutional ownership affects corporate governance and firm policy.

as the bidder could approach the large shareholders directly (an assumption that we preclude in the model). Though we cannot disentangle these two interpretations of institutional ownerships, they are both consistent with our hypothesis.

Next, we test a crucial ingredient of our model that high synergy bidders have stronger incentives to announce early compared with low synergy bidders. We show this is indeed the case by comparing announcement abnormal returns. First, we compute cumulative abnormal returns (CARs) for both early and late announced transactions. We show that bidder and deal CARs in early announced transactions are 1.4% and 1.9% higher than in late announced transactions, respectively, both statistically significant at 1%. To account for different information content, as well as different arbitrage activities surrounding early and late announcements, we further compute CARs for the subsample of early announced deals on the day of merger agreement (agreement CARs).[5] We find that early-announced targets in these deals capture significantly positive CARs on the agreement day in the order of 5.1%. Once we combine the early announcement CARs and the merger agreement CARs for the subsample of early announced deals, and compare these "adjusted CARs", we continue to find significantly higher returns for early announcements. Specifically, bidder, target and deal-level CARs are on average significantly higher by 1.5%, 4.7% and 2.8%, respectively, for early announced transactions. The same relationship holds in a regression framework with extensive controls for various deal, bidder, and target characteristics.

Furthermore, we document that the offer premium in early announced transactions is significantly higher than in late announced transactions, consistent with our model's conjecture. Moreover, the initial offer price in early announced transactions is 16% more likely to be upward revised. On average, bidders in early announced deals pay 12% higher premium based on the 4-week target share price prior

[5] Arbitrageurs are specialist investors who trade the shares of the target (and the bidder in stock-finance deals) upon the public announcement of an M&A transaction. They speculate about the completion of the transaction, and gain the spread between the offer price and the announcement stock price in case of completion (see, e.g., Mitchell and Pulvino (2001); Mitchell, Pulvino, and Stafford (2004)). As the information content between the early announcement and the announcement following a definitive merger agreement is different, it is likely that the intensity of arbitrage activity to be different between these two dates as well.

to the announcement, translating into an additional \$130 million paid. [6] This is a substantial cost that is likely to deter low synergy bidders from mimicking the signal. Taken collectively, the results for the bidder CARs and for the offer premium indicate higher expected synergies in early announced deals rather than overpayment in that subsample. Moreover, it confirms our model conjecture that early announcements are not simply driven by entrenched target managers: Prior research typically finds that target entrenchment predicts lower premium and target returns (e.g Hartzell, Ofek, and Yermack (2004)), as well as acquirer returns (e.g. Bates, Becher, and Lemmon (2008)); Similarly, Jennings and Mazzeo (1993) document a negative relation between deal premium and target resistance. The opposite of our findings is consistent with the signaling of higher *bidder-specific* synergies.

Additionally, we test the relation between early announcements and deal completion. Our model states that in equilibrium, early announced deals should have higher consummation rates due to higher shareholder support. We empirically confirm that early announcements are significantly associated with a 3% higher deal consummation rate. Lastly, we also find that early announcements are followed by 3% higher likelihood of receiving a competing bid in the public phase.

These findings also help rule out CEO overconfidence and jump bidding as two potential alternative explanations. First, CEO overconfidence has been shown to be associated with lower announcement returns (Malmendier and Tate (2008)), while early announced transactions are relatively more value creating. Second, while both signaling and jump bidding (Fishman (1988)) predict higher transaction premium and higher completion rates, we show that in the early announced transactions, more competing bids are received in the public phase, hence early announcements are not primarily used as a preemptive device. Our bid premium result is more in line with Dimopoulos and Sacchetto (2014) who show that high takeover premia are mainly driven by target resistance rather than preemptive intentions.

[6] $130 = 12\% \times 1,083$ where 1,083 (in \$million) is the unconditional mean of the target capitalization 4 weeks before the merger announcement.

Our paper complements a rich stream of literature on merger methods and strategic choices. Close to our paper, Schwert (2000) studies hostile takeovers, and Offenberg and Pirinsky (2015) look into tender offers. Our finding is consistent with Schwert (2000)'s main message that strategic disclosure of bids can be optimal for either the bidder or the target, so what gets characterized as "hostility" in Schwert's study or "early announcements" in the present study is really just a strategic choice to make M&A information public. However, in our period of analysis (i.e., 1990 onwards), "hostile bids" in the traditional sense are almost completely eradicated by state business combination laws and by the diffusion of poison pills or other anti-takeover defenses (Schwert (2000); Andrade, Mitchell, and Stafford (2001); Bertrand and Mullainathan (2003); Betton, Eckbo, and Thorburn (2008)). In our sample, takeover competition emerges mostly in the private phase of the takeover process and target firms bargain with potential bidders in a friendlier environment (Boone and Mulherin (2007)). Early announcements, as we uncover, can therefore be regarded as a new form of publicity reminiscent of the 1980s. However, early announced transactions differ from hostile bids in that early announcements involve a signaling aspect, so only the best-fit bidders are able to credibly signal (i.e. the transaction synergy is specific to the signaling bidder), whereas in a hostile takeover the potential gains do not necessarily stem from synergies specific to the bidder (e.g. synergies from replacing entrenched managers). Schwert (2000) shows in particular that hostile takeovers are economically indistinguishable from friendly takeovers, while we uncover that early announced deals are different in terms of deal characteristics (premium, value creation, and completion rate). Early announcements also differ from tender offers in that most early announced deals are structured as a merger, which does not benefit from faster completion times as in Offenberg and Pirinsky (2015).[7] Another important difference with respect to Offenberg and Pirinsky is that the authors focus on the public phase of the takeover process, while our focus is primarily on the private phase.

Our study therefore complements a recent stream of literature that examines the private phase

[7] In our sample, completion time for early-, late announcements, and tender offers are 134, 139 and 74 days, respectively.

of the takeover process using background information collected from SEC filings. Especially, we contribute to the literature focusing on the efficiency of the private takeover process and add to the understanding of "how firms are sold". Eckbo (2014) acknowledges the existence of transaction efficiency, as revealed by a high degree of standardization and professionalization of the private takeover process. For example, Boone and Mulherin (2007) document that the post-1990's M&A process is more competitive than initially thought, as half of the targets are sold via auctions and the remaining half in one-on-one negotiations. Bid premium is similar in these two types of transactions, indicating that targets choose optimally the selling method. Aktas, de Bodt, and Roll (2010) show the existence of latent competition in friendly one-on-one negotiations, leading to a competitive bid premium in those transactions. Masulis and Aziz Simsir (2016) show firms optimally choose deal initiations. Aktas, de Bodt, Bollaert, and Roll (2016) show that deal initiation and negotiation length are affected by CEO's personal traits. Fich, Cai, and Tran (2011), and Hartzell, Ofek, and Yermack (2004) find deal initiation and selling methods affect target CEO compensation. In the present paper, we link the private-phase negotiation characteristics to the announcement timing decision, and emphasize that bidders optimally use early announcement as a strategic device to overcome negotiation frictions and attenuate potential transaction inefficiencies.

To the best of our knowledge, this is the first paper that suggests the merger announcement timing as a signaling device. Earlier papers that examine signaling in a takeover context typically focus on public auctions (Liu (2012)) or tender offers (Burkart and Lee (2010)), contrasting with our private negotiation setting.[8] For example, in Liu (2012)'s theoretical model, bidders in a two-stage auction signal by paying the above reservation-price; in Burkart and Lee (2010), bidders signal through dilution, debt financing or toeholds. This paper suggests another signaling incentive that arises from negotiation concerns rather than financing concerns or deterring competition. Related prior research

[8] Other related literature on signaling in corporate finance includes, among many others, Ross (1977), Leland and Pyle (1977), Bhattacharya (1979), Constantinides and Grundy (1989), Brennan and Hughes (1991), Hennessy, Livdan, and Miranda (2010), and Morellec and Schuerhoff (2011).

that also investigates merger announcement timing includes a study from Luo (2005). His paper however explores "announce-to-learn" hypothesis, not signaling. Even though learning and signaling are not incompatible, they provide for distinct implications. Critically, learning assumes that investors have more complete information, while signaling assumes that managers possess superior information about a deal. Our analysis enables us to make testable predictions as to what determines earlier announcements. Moreover, the learning hypothesis is silent about why market reactions and expected synergies are systematically higher for early-announced transactions.

Lastly, we caution against common practice in M&A research of examining market reactions on the official (or agreement) announcement date only. Mulherin and Aziz Simsir (2015) show that such practices may lead to biased estimates of abnormal returns due to omitted events such as merger rumors or "strategic alternative" announcements. We find that omitting the early announcements can lead to 2.8% lower deal abnormal returns as in conventional studies.

The paper proceeds as follows. In Section 2, we construct a model that captures signaling with early announcements. Section 3 describes the legal background of merger announcements and develops testable hypothesis. Section 4 is devoted to the sample description, and Section 5 presents the empirical results. Section 6 examines alternative explanations and reports on the robustness tests. Section 7 concludes.

2 Model

In this section, we present a stylized model that captures signaling under negotiation frictions. Section 2.1 describes the model setup and assumptions. Section 2.2 shows the signaling equilibrium. Section 2.3 provides additional discussions of the model.

2.1 Setup

Suppose that there are two types of bidders, H and L, in a competitive takeover market. They each value the synergy with the target as V_s^i ($i \in [H, L]$). V_s is the present value of the synergy created by merging with the target, and we assume that $V_s^H > V_s^L$.

The manager of a bidding firm must be assumed to possess insider information about the bidder type in the sense of Ross (1977), but the target or the market does not know about this information (i.e., the synergy is specific to the bidder itself). In addition, we must assume that a manager's compensation scheme is dependent on the acquisition synergy and that this incentive is known by investors. As a consequence, a manager in a competitive market has incentives to signal his type if failure to do so jeopardizes his compensation.

Let X denote the premium that must be paid in a transaction, where X is a function of synergy and the bidder's action S. S is a binary variable that takes value of one if the bidder signals, and zero otherwise. Therefore, S is equivalent to the early announcement in our empirically setting. Consistent with early announcements that we will further describe in Section 4, we define S as the action of breaking up in private negotiations (prior to a definitive agreement) with the target manager and disclosing the deal premium X directly to target shareholders. Therefore, signaling comprises two simultaneous actions: $\{S = 1, X\}$. We assume that X takes the form of $X(i, S) = a \cdot V_s^i + a \cdot S \cdot (V_s^H - V_s^i)$, where $0 < a \leq 1$. To see it more concretely: $X(H, 1) = X(H, 0) = X(L, 1) = a \cdot V_s^H \equiv X^H$ and $X(L, 0) = a \cdot V_s^L \equiv X^L$. That is, an H-bidder can always offer a higher premium regardless of his action, while an L-bidder offers a low premium ($X^L < X^H$) in private negotiations but has to revise the premium up to X^H if he chooses to signal. This calibration captures an important aspect in signaling: when bidders signal, they must offer a unified premium independent of their true type.[9] Otherwise, the market can infer their type directly from the offered premium so the action S itself is

[9] If L bidder signals, he will have no incentive to offer $X(L, 1)$ above $X(H, 1)$ since any incremental premium represents a pure monetary loss to L.

no longer credible.

Additionally, let p denote the probability of deal completion. We assume that p is a function of target management resistance (R) and offer premium (X): First, under private negotiations, a higher level of target management resistance leads to lower deal completion probabilities (i.e. $\partial p/\partial R < 0$); On the other hand, if a deal negotiation is made public, investors in the target can alter p to increase the chance of completion when their payoffs, X, are higher (i.e. $\partial p/\partial X > 0$). We also assume that early announcement helps reduce target management resistance (i.e. $R(S = 1) < R(S = 0)$). Therefore, we can express p in a reduced form: $p = p^S$ if $S = 1$, and $p = p^{NS}$ if $S = 0$, where $p^S > p^{NS}$.[10]

We assume that the bidding manager's compensation is given by:

$$M = \delta_0 V_0 + \delta_1 \begin{cases} p^S(V_s - X) - C \ \textit{if } S = 1, \text{ and} \\ p^{NS}(V_s - X) \ \textit{if } S = 0 \end{cases}$$

where V_0 is the stand-alone bidder firm value; δ_0 and δ_1 are nonnegative weights; and C is the costs of early announcement imposed on the bidding manager (such as communication costs). The above equation states that the bidding manager is incentivized by both increasing the current firm value and by realizing synergies through an acquisition. For illustrative purpose, we can suppress the first term by setting $\delta_0 = 0$ for now without altering the major conclusion. This allows us to focus on the main tradeoff between costs of signaling and benefits of higher probability of completion. It is straightforward to show that allowing for $\delta_0 > 0$ will not change this tradeoff.

2.2 Equilibrium

We can now establish a signaling equilibrium in the sense of Spence (1974) and Ross (1977). Suppose the bidder sends out the signal by making an early announcement ($S = 1$), we shall assume that the market perceives the bidder to be type H; If no early announcement is made ($S = 0$), the market

[10] $p^S > p^{NS}$ because p is decreasing in R and increasing in X, while $R(S = 1) < R(S = 0)$ and $X(S = 1) > X(S = 0)$.

perceives the bidder to be type L.

For this to be an equilibrium, we must show that the signal is accurate, that is, bidders H will signal and will have no incentive to change his signal. First, we can write an H type bidder's compensation as:

$$M_H = \begin{cases} p^S(V_s^H - X^H) - C \ \textit{if } S = 1 \\ \\ p^{NS}(V_s^H - X^H) \ \textit{if } S = 0 \end{cases}$$

and an L type bidder's compensation as:

$$M_L = \begin{cases} p^S(V_s^L - X^H) - C \ \textit{if } S = 1 \\ \\ p^{NS}(V_s^L - X^L) \ \textit{if } S = 0 \end{cases}$$

Now, an H type manager will have no incentive to give a false signal that his firm is of type L if:

$$p^S(V_s^H - X^H) - C > p^{NS}(V_s^H - X^H), \tag{1}$$

That is, $(p^S - p^{NS}) \cdot V_s^H > (p^S - p^{NS}) \cdot X^H + C$.

This result suggests that H type will signal truthfully if his marginal gain by increasing the likelihood of realizing synergies, $(p^S - p^{NS}) \cdot V_s^H$, outweighs his marginal cost of signaling, $(p^S - p^{NS}) \cdot X^H + C$.

In the same way, for an L type to have no incentive to falsely signal that he is of type H, we require that

$$p^S(V_s^L - X^H) - C < p^{NS}(V_s^L - X^L), \tag{2}$$

That is, $(p^S - p^{NS}) \cdot V_s^L < p^S \cdot X^H - p^{NS} \cdot X^L + C$. L type remains in private negotiations if the marginal costs of signaling, $p^S \cdot X^H - p^{NS} \cdot X^L + C$, exceeds the benefit of a higher likelihood of

realizing synergies, $(p^S - p^{NS}) \cdot V_s^L$.

Requirements (1) and (2) set the necessary conditions for this signaling equilibrium to exist. Actually, there exists a separating equilibrium where only H type bidder will make early announcements while L type bidders will always remain in private negotiations. Appendix A gives the proof of this separating equilibrium.

2.3 Discussion: What Does the Bidder Signal?

As is clear, a separating equilibrium implies that bidders utilize early announcements to signal their high synergy, and that this synergy is *bidder-specific*. A more trivial point is that signaling simultaneously implies some form of target entrenchment. This is because the model assumes that the target manager resists the bid regardless of the premium offered in private negotiations. This allows us to make two additional observations:

First, signaling is essentially used to remove some form of transaction inefficiencies in the private phase of negotiation. By "inefficiency", we refer to the synergy loss if a high synergy bid fails to materialize due to target entrenchment. To see this point, it is straightforward from the model that $p(X = X^H) > p(X = X^L)$ when $R = 0$. In the absence of entrenchment (and thus p is solely dependent on X), it is never optimal for a high synergy bidder to announce early since early announcement induces deadweight costs, C, for these bidders.

Second, while target entrenchment is a necessary condition for signaling, it is *not* a sufficient condition. To see this, assume that target entrenchment represents a "entrenchment synergy", V^E, available to all bidders (e.g. synergy from replacing the target management). Type E bidders have no bidder-specific synergy other than V^E, while type H bidders possess specific synergy, V_s^H, on top of V^E. In Appendix A, we show that an H bidder can always set a premium package (X^E, X^H) such that only H is able to utilize the signal while E bidders have no incentive to signal. The intuition is that signaling of entrenchment alone does not help a bidder improve his success rates. A higher synergy

bidder (if any) can always jump in and outbid the bidder who only shares the common synergies such as those from replacing the target manager.

Hence, we conclude that an early announcement signals bidder-specific high synergy *and* target entrenchment, however, it does not *merely* imply entrenchment.

3 Merger Process and Hypothesis Development

In this section, we outline the merger timeline and link early announcements to the private merger process. We also derive testable hypotheses based on the model in the previous section.

3.1 Merger Process

Acquisitions go through a private phase which lasts from the deal initiation until the first public announcement, and a public phase which starts with the public announcement till deal resolution (i.e., the deal is either completed or withdrawn, see Figure 1). The secrecy of the private phase is protected by securities laws in the United States. The securities laws do not require bidders to disclose confidential nonpublic information until a definitive takeover agreement is reached except when insider trading or company leakage is detected.[11] Once a takeover agreement has been reached, the bidder and target must then make an announcement stating either that the bidder will commence a tender/exchange offer or that the target will solicit proxies for approval of a one-step merger.

Bidding parties, however, can decide to voluntarily disclose deal negotiations at earlier stages. These earlier announcements can occur following initial contacts but before a formal due diligence process (for example, before the signature of a confidentiality agreement); or they can happen during an on-going negotiation of a merger agreement (for example, after a confidentiality/standstill agreement is signed or even during a "no-shop" period[12]). Figure 1 shows a typical merger timeline and the early

[11] This usually happens when rumors or unusual trading activities become substantial so the confidentiality of the merger negotiation can no longer be maintained. See section 2.02, New York Stock Exchange (NYSE) Listed Company Manual and Rule IM 4120-1, NASD Manual.

[12] A no-shop period is a period provided by an exclusivity agreement during which the target commits to an exclusive

announcements that we define in this paper.

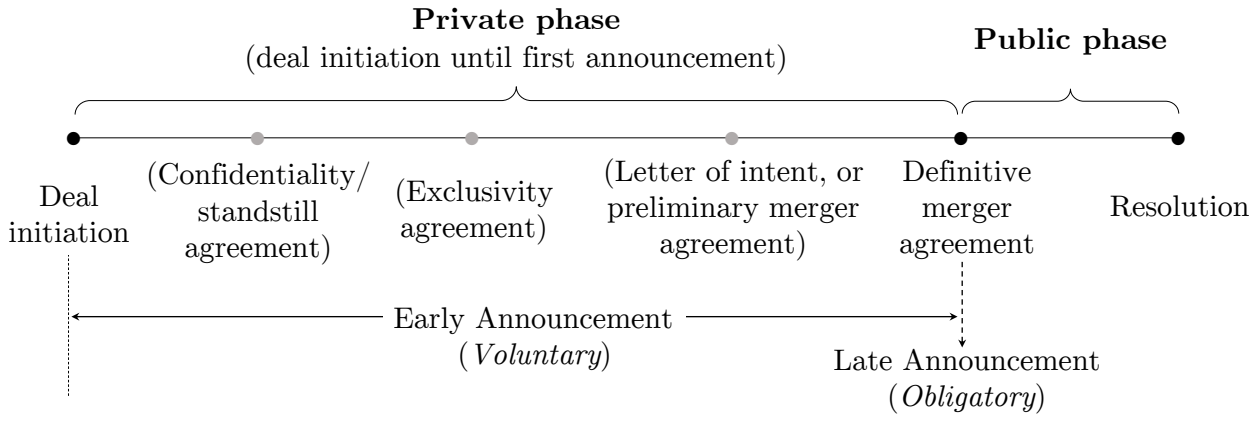

Figure 1. A typical merger process

Clearly, the actual timing of announcement is dependent on the private phase negotiation process. In this phase, the target manager may bargain aggressively by launching auctions (Boone and Mulherin (2007)) or simply using threats (Aktas, de Bodt, and Roll (2010)). Our model in Section 2 highlights that if a bidder perceives the deal as strategically important but faces target resistance, he will have incentives to convey his privately owned information (i.e. high deal synergy) to the public in exchange for shareholders' support. For example, early announcements before a confidentiality agreement might be used to impel the target to facilitate exchanges of confidential information. Announcements after a confidentiality/standstill agreement may signify frictions that hinder future progress into a final agreement.

We tentatively collect early announcement timing along the timeline illustrated in Figure 1. Among all early announcements, we find that about 44% are announced before a confidentiality/standstill agreement is executed. About 12% of the signaling bidders later enter into an exclusivity (or "no-shop") agreement with the target. Conditional on an exclusivity agreement, 56% of early announcements are made prior to the exclusivity agreement, while 39% are made during the "no-shop" period.[13]

negotiation with the bidder. Not all negotiations involve a no-shop period.

[13] We collect the dates of confidentiality/exclusivity agreement from the merger filings on the EDGAR database. Not

3.2 Hypothesis

Our model helps generate several testable hypotheses that we describe below. First, bidders who perceive themselves to have a relatively low probability of winning due to target resistance are more likely to signal to public. The low probability of winning extends naturally to those bidders who are already in negotiation frictions. As a result, we hypothesize that:

Hypothesis 1A. Bidders in negotiation frictions are likely to announce a deal early.

Moreover, as we discuss in Section 2.3, early announcement is partly driven by target entrenchment. Therefore, transactions involving an entrenched target such as those with low institutional ownership (Brav, Jiang, Partnoy, and Thomas (2008); Appel, Gormley, and Keim (2016)) are more likely to be disclosed earlier. In addition, the presence of a blockholder or large shareholders reduces the need for public signaling since the bidder can directly approach large shareholders to gather support (a possibility that we preclude in the model). Therefore, early announcements as a signaling strategy are more likely to be present in a widely held target.

Hypothesis 1B. Less concentrated ownership in the target firm increases the likelihood of early announcements.

Second, in the separating equilibrium of the signaling game, only high synergy bidders will make early announcements. Even though our model depicts a simple dichotomous case of bidder types, in reality, we expect on average higher abnormal deal returns for early disclosed transactions:

Hypothesis 2. Early announced deals are associated with higher expected synergies, and consequently with higher deal-level abnormal returns than late announced deals.

The central assumption, as well as the equilibrium outcome of the model asserts that early announcements raise the transaction premium, but facilitate deal completion. Therefore, our model also directly predicts higher premium paid and higher deal consummation rates in early announced deals:

all filings contain the exact signature dates of these agreements. Of all early announced transactions, we are able to identify 126 (47%) reported agreement dates.

Hypothesis 3. Early announcements are associated with higher premium.

Hypothesis 4. Early announcements are associated with higher deal consummation rates.

Finally, while our model implicitly assumes that all potential bidders are aware of the target, in reality, it is possible that early announcements signal a potential "for sale" target to those unaware potential bidders. Therefore, competition following the early announcement might increase with other potential bidders participating in the bidding process:

Hypothesis 5. Early announcements are associated with higher public-phase competition.

4 Data and Descriptive Statistics

4.1 Sources and Variables

Our sample of transactions is from the Thomson Financial SDC Mergers and Acquisitions Database. From all transactions (both completed and uncompleted) announced between January 1990 through December 2013, where bidders and targets are from United States, we exclude recapitalizations, self-tender offers, exchange offers, repurchases, partial equity stake purchases, acquisitions of remaining interest, and privatizations, as well as deals in which the target or the acquirer is a government agency. Because we examine market reactions, we also require the bidder and target to be public listed firms. This leaves us with a sample of 7,689 transactions. We further apply filters as follows:

1. The deal value is disclosed in the SDC and exceeds $10 million.

2. Bidders own 50% or more of the target shares after the transaction.

3. We exclude cases where the target is in bankruptcy as reported by the SDC.

4. We require the date of definitive agreement to be available in SDC.

5. We require bidder and target financial information to be available in Compustat, and stock price information to be available from CRSP database.[14]

[14] Filters 1 through 5 eliminate 1,795, 83, 76, 811 and 889 observations, respectively.

The final sample consists of 4,035 deals over the period 1990–2013.

Accurately defining early announcements is crucial to our empirical analysis. We primarily rely on the SDC reported date of announcement and date of definitive agreement to construct the key variable "Early", an indicator for early announced deals. Based on the SDC reported dates, 12% of all transactions are announced before a definitive merger agreement. However, since we examine voluntary early disclosure rather than forced disclosure such as in a rumor case, we perform the following scrutiny: First, we require the gap between the first announcement and the definitive agreement date to be no fewer than 3 days. The reason is that some deals are announced at the weekend or public holidays while the merger agreement is signed on the next working day. Such earlier announcements bear no economic meaning under our examination. We exclude 107 cases (or 3%) as "early" due to this requirement.[15] Second, we exclude rumor announcements by reading the SEC filing's background section (14A or S-4 for mergers and 14D for tender offers, following Boone and Mulherin (2007)), SDC "history event" and "original date announced" fields (following Mulherin and Aziz Simsir (2015)), and news search on Factiva. We exclude 24 such cases (or 0.6%). We further exclude 41 cases (or 1%) in which the early announcement is the target's announcement of seeking strategic alternatives or the announcement is from the target side only. Finally, we also find there are 35 (or 0.9%) misreports from the SDC because the first public announcement is already the signature of a definitive merger agreement. After these exclusions, we have 269 early announced transactions in our sample. This represents approximately 7% of all takeover announcements. The relatively low proportion of early announcements is consistent with the notion that early announcement is an expensive device to use. Table 1 summarizes our criteria.

[INSERT TABLE 1]

We gather some deal characteristics including payment methods, transaction value, deal premium,

[15] To avoid this rather arbitrary choice of day gap, we perform all analysis that requires the "agreement - announcement" date gap to be at least 2, 4 or 5 days. No conclusion is altered.

offer prices, the bidder and target primary SIC industry codes, tender offer, hostility and unsolicited bids from SDC. Private phase deal characteristics, including negotiation length, auctions (i.e. negotiations with multiple bidders) and target-initiation, are hand collected from SEC filings (the background section in 14A or S-4 for mergers and 14D for tender offers) on the EDGAR database from 1994.[16] Furthermore, we gather institutional ownership in target firms from Thomson-Reuters Institutional Holdings Database (formerly known as CDA/Spectrum).

The cumulative abnormal returns (CARs) are calculated with a one-factor market model, whose parameters are estimated over a 200-day window ending 31 days before the event date. We require 200 non-missing returns in the estimation window. We use the value-weighted CRSP index as a proxy for the market portfolio and cumulate abnormal returns over an event window of three days centered around the announcement date. For deal announcement CARs, we use the bidder and target market value of equity (i.e., price times shares outstanding) four days prior to the announcement as weights.

Definitions of all variables are reported in Appendix B.

4.2 Early Announcements

Table 2 presents information about the contents of early announcements. It is interesting to note that though all of these announcements are made by the bidder, about 29% announcements are simultaneously confirmed by the target firm on the same day. This confirms our previous remark that early announced deals are not necessarily hostile bids, because these joint announcements usually disclose an ongoing negotiation rather than a hostile attitude of bidding intention. A large majority of announcements (88%) provide highly confidential information about proposal terms such as offer price and methods of payment. 66% of bidders describe in detail the transaction rationale or deal synergies. Finally, some small proportion (10%) of announcements explicitly mention negotiation frictions in

[16] Companies began filing through EDGAR in 1994–95. As a result, our empirical test sample that relies on EDGAR–based variables (auction, target initiation, negotiation length) starts from 1994 and consists of fewer observations.

their press release.

[INSERT TABLE 2]

Average (median) days elapsed between the first deal announcement and the second agreement announcement are about 80 (55) days. Early announcements are observed in various industries with the retail industry witnessing the highest percentage of 12%.

4.3 Descriptive Statistics of Early and Late Announcements

Our first hypothesis asserts that bidders' perceived probability of winning or negotiation frictions are determinants of early announcements. Panel A of Table 3 first shows the four proxies that we use to measure frictions. As is clear, among early announcements, about 2% of deals are classified as unsolicited in SDC, while only 0.1% are unsolicited among late announcements. The difference in means and medians is highly significant at the 1% level. Unsolicitation implies the higher likelihood of target resistance. Thus, early announced deals are characterized by bidders' lower perceived probability of winning the bid. We further use a hand collected variable "target initiated" to measure frictions. In contrast to unsolicitation, more deals are initiated by the target in the late announcements (45%) than in the early announcements (31%). We also measure bidders' probability of winning by whether a target is auctioned among several bidders in the private phase of the takeover process. However, the difference is not significant in the univariate comparison. Lastly, we capture potential frictions by the negotiation length, defined as the time between the initiation of the takeover process and the deal announcement. We find that on average a negotiation lasts about 6 months in the "early announcement" subsample, which is significantly longer than the average length of 4 months in the "late announcement" subsample.

Panel A of Table 3 also shows that the proportion of tender offers in early announcements does not differ significantly from that in late announcements. Hostile deals are more presented in the

early sample: p-value suggests the difference is highly significant at 1%. This is not a surprising result as hostile bids bear some common features as what we term "negotiation frictions". Toehold is higher in the early announced sample: on average, the bidder accumulates 3% of the target shares in early announcement, higher than the average of 0.4% in the late announcement sample.[17] Early announced deals have higher relative size. Premium paid in these deals is significantly higher than in late announced deals, consistent with our conjecture. Institutional ownership in the target is significantly lower in early announced transactions than in the late subsample. We also construct an M&A liquidity index to capture latent takeover competition in the target industry (Aktas, de Bodt, and Roll (2010)). We find that higher latent competition deters early announcements, consistent with our argument that potential competition makes early announcement costly.

Panel B of Table 3 shows that early announcing bidders are smaller in size and have lower Tobin's Q. To the extent that size reflects a firm's ability to exert its market power, and that Tobin's Q reflects investors' anticipation of a firm's asset scarcity (similar to Market-to-Book measure as in Rhodes-Kropf and Robinson (2008)), these two characteristics suggest a lower bargaining power from early announcing bidders. Finally, Panel C of Table 3 shows that targets have lower Tobin's Q and more leverage in the early subsample. Average runups are similar between early and late announcement subsamples, confirming that early announcements are not driven by merger rumors.

[INSERT TABLE 3]

5 Results

In this section we present the results of the empirical tests of the five hypotheses outlined above.

[17] To account for the possibility that these early announcements are simply follow-ups of a significant toehold purchase, we manually check all 13D (13G) filings within 6 months up to the early announcement date. We find only 9 cases of significant toehold purchases from the bidder among our early sample. Our empirical results remain similar if we exclude these 9 observations.

5.1 Determinants of Early Announcements

Table 4 shows the estimates from probit models that predict whether a deal is announced early in our sample. Because probit coefficients are difficult to interpret, we report the marginal effects of the predictor variables calculated at their mean values.[18] In all regressions, we control for "M&A liquidity" to account for latent competition in the target industry. To account for deals that are hostile or structured as a tender offer, which are likely to drive an early announcement and correlate with our measures of negotiation frictions, we include these two deal characteristics in our regressions as well. We further control for deal relative size, payment methods, toehold and diversifying merger, as well as various acquirer and target characteristics. Year and industry fixed effects are always included in our specifications. Standard errors are two-way-clustered both on announcement year and on industry to account for the possibility that error terms are correlated within a certain year or within an industry.[19] Note that since we include narrowly defined industry dummies, the probit model requires within-industry variations of the dependent variable (i.e. early announcements), otherwise deals from that industry will be dropped. This leads to fewer observations than the whole sample.

Our first empirical prediction asserts that a bidder chooses to announce early when he faces negotiation frictions that decrease his success rates. We first proxy for the potential friction by the negotiation length. In column 1, we show that the negotiation length positively predicts the early announcement. On average, one additional month of negotiation increases the early announcement propensity by 0.3%, statistically significant at 1%. In an untabulated analysis, we also run the same regression by including a quadratic term of negotiation length because we might reasonably assume this relationship to be nonlinear. We find that the propensity of announcing early is accelerated by an abnormally lengthy negotiation, with the accelerating point of negotiation length at 4 months,

[18] The interpretation of these reported marginal effects are similar to the least squares coefficients in a linear probability model. See Greene (1993, p. 639).

[19] Industries are classified at 4-digit SIC industry level.

right above the mean negotiation length for an average transaction (statistically, this means that the quadratic negotiation length has a positive coefficient, and that the coefficient is significant at 1%). This finding is consistent with Hypothesis 1A: the impatient bidder resorts to target shareholders after lengthy negotiations.

In column 2, we use the variables "auction" and "target initiated" to proxy for frictions. Boone and Mulherin (2007) first use auctions to show competition in the M&A market. We argue that a bidder has less bargaining power or faces lower success rates when the target is negotiating with multiple parties. Masulis and Aziz Simsir (2016) formally show target initiated deals are related to the target's economic weakness. We thus assume that bidders possess more bargaining power in target initiated deals. Consistent with Hypothesis 1A, we find that the auction is positively related to the likelihood of a deal being announced early: competitive private negotiations increase the early announcement probability by approximately 1%, with z-statistic of 2.38. In the contrary, a target initiated deal decreases the same probability by 1%, with z-statistic of 2.54.

In column 3, we examine the SDC-reported variable "unsolicited". Opposite to target initiation, unsolicitation puts the bidder in an unfavorable position which lowers his probability of winning. We find that the measure of unsolicitation strongly predicts an early announcement: compared to other bids, unsolicited bids are 6% more likely to be announced early, with z-statistic of 1.91.

In column 4, we test Hypothesis 1B: we expect a low ownership concentration in target firms involved in early announced transactions. We use institutional ownership to proxy for ownership concentration. Since institutional investors are usually among the largest shareholders in public firms, lower institutional ownerships imply a lower ownership concentration. Estimated coefficient of institutional ownership in column 4 has a negative sign and is highly significant. This indicates when concentration increases, an early announcement is less likely, consistent with Hypothesis 1B.

Finally, we combine all friction proxies and institutional ownership in the same regression. In

column 5, we find that the signs of estimates remain unchanged and all coefficients remain significant at conventional levels.

Before proceeding to other tests, we note that deal hostility is a significant predictor of early announcements. As implied by column 5, hostility raises the propensity of early announcement by 11% with z-statistic of 6.07. This is not a surprising result since hostile bids are usually related with publicity, as Schwert (2000) points out. Traditionally, hostile bids are used to replace entrenched target managers (e.g. Manne (1965)). If a hostile attitude represents some degree of target entrenchment, the significant relation between hostile bids and early announcements is consistent with the model prediction that signaling involves an entrenchment aspect.

However, it is important to stress the discussion in Section 2.3: while entrenchment is a necessary condition for signaling, it is not a sufficient condition. That is, while early announced transactions share some common features with takeovers of entrenched targets, they must additionally provide for greater bidder-specific synergies. We will test this vital point in the next section, and discuss the distinction between early announced bids and hostile takeovers.

[INSERT TABLE 4]

5.2 Do Early Announcements Signal High Synergy?

Hypothesis 2 states the core of the signaling equilibrium: early announced transactions are expected to have higher bidder-specific synergy, and thus greater abnormal deal returns. We formally test this hypothesis in a univariate test and in regressions in Section 5.2.1 and 5.2.2. In section 5.2.3, we provide additional evidence through simultaneous equation analysis.

5.2.1 Univariate Comparison

In Table 5 we present CARs calculated for the bidder, target and at the deal level. In the first row of Panel A, we show the three-day CARs around the deal announcement date (that is, early negotiation

disclosure date for early announced deals and merger agreement date for late announced deals). The average bidder announcement CARs is -1.30%. This is consistent with various earlier studies that show M&As involving listed targets are on average value-destroying for acquirers (Travlos (1987); Andrade, Mitchell, and Stafford (2001); Fuller, Netter, and Stegemoller (2002)). However, when we look at the subsample of early announced deals, the abnormal returns (0.04%) are insignificantly different from zero. The value-destroying deals are thus driven by the late subsample. On average, early announced deals have 1.44% higher bidder CARs than late announced deals (t-statistic=2.76).

When we investigate target announcement CARs, however, we do not observe a significant difference between the two subgroups: the average target CAR is 21.63% for the full sample, with early and late announcement CARs of 21.27% and 21.65%, respectively.

Finally, we show that at the deal level, early announcements are associated with higher CARs: the difference is in the order of 1.87% and is significant at 1%. From the synergy perspective, deal CARs constitutes a better measure of combination synergies, as it is not affected by premia paid. This is consistent with the signaling model which predicts that early announcements are associated with higher deal level returns.

Comparing CARs on the first announcement date, however, has two problems. For one, early announcements do not guarantee the signature of a definitive agreement between parties; late announcements, on the contrary, are essentially announcements of definitive agreements. In other words, early announced deals are associated with higher uncertainty about deal completion. The second problem is that arbitrage activities surrounding these announcement dates can be potentially different. Merger arbitrageurs typically start to buy shares of the target firm on the day of *definitive agreement*[20], which implies that early announcements are associated with less price pressure from merger arbitrage activities. Weaker buying pressure on the target shares results in smaller target price updrift. To account for these differences between early and late announcements, we need to further

[20] See Mitchell, Pulvino, and Stafford (2004) for a detailed description.

consider abnormal returns around the agreement date (the second announcement date) for the early announced subsample.

We report the "agreement date CARs" for the early subsample in Panel B of Table 5. We calculate agreement CARs for transactions whose agreement signature date is at least 11 days after the first announcement date. We do so to avoid confounding information contained in abnormal returns when the two events are too close, but relaxing this requirement does not change our major conclusion. First, we find that abnormal returns are essentially zero for bidders on the agreement day. Second, we document significantly positive abnormal returns for targets: the average target agreement CARs is 5.06%. This reflects an update on the agreement probability as well as greater trading pressure that pushes target share prices upward. Finally, the deal level CARs on the agreement day is 0.92% (t-statistic=3.17).

We finally combine the first announcement date CARs with the second agreement date CARs for the early subsample, and call it "adjusted CARs". Note that for late announced deals, "adjusted CARs" equals the first announcement date CARs. We report these calculations in Panel C: we see that for bidders, targets, and at the deal level, adjusted CARs in early announced deals is always significantly higher. The difference is 1.47% for bidders, 4.68% for targets, and 2.78% at the deal level, all significant at 1%.

[INSERT TABLE 5]

5.2.2 OLS Regression Results of Abnormal Returns

We further test Hypothesis 2 using OLS regressions in this subsection. We measure synergies using adjusted deal CARs. We also use adjusted bidder and target CARs as dependent variables to complement previous analysis. We create a "joint announcement" dummy to identify an early announcement jointly announced by the bidder and the target, because one may worry that these announcements

are different from other early announcements. Other deal and firm characteristics, as well as year and industry dummies are also included. Standard errors are two-way clustered by year and by industry.

We report the results in Table 6. Columns 1 and 2 report on deal level CARs, columns 3 and 4 on bidder CARs, and columns 5 to 6 on target level CARs.

Estimates in column 1 of Table 6 indicate that early announced deals are associated with higher returns. Specifically, early announcements have 2.80% higher CARs than late announcements, with t-statistic of 4.44. The economic effect is largely in line with the univariate comparison. To the extent that the bargaining process which we show to drive an early announcement may also affect abnormal returns, in column 2, we add these bargaining proxies (negotiation length, target initiated, auction and unsolicited) as additional controls. The economic effect of early announcements is largely unaffected, and remains highly significant.

Hostile bids and tender offers do not seem to suggest higher deal CARs. This finding is in line with Schwert (2000)'s conclusion that hostile takeovers are not economically distinguishable from friendly deals. In addition, cash offers and relative size are associated with higher abnormal returns.

For bidders, early announcements are associated with 1.53% higher returns (column 3), with t-statistic of 2.01. However, the aggregate effect of an early announcement on bidder CARs is absorbed by the bargaining proxies, as shown in column 4: the coefficient estimate of "early" becomes insignificant once we include these additional variables. However, the positive sign of "early" coefficient suggests that early announced transactions on average do not destroy acquirers' value.

Columns 5 and 6 show that early announcements are positively related to target CARs: the aggregate effect of early announcements on the target CARs is in the order of 6.43% (t-statistic=4.45). When we include the bargaining proxies, we find this positive relationship remains.

[INSERT TABLE 6]

Overall, these results suggest that early announcements are not merely takeover bids for entrenched

targets. Prior research finds that entrenched targets (i.e. those with a classified board) are related with significant lower acquirer returns (e.g. Bates, Becher, and Lemmon (2008)). These authors also provide evidence that target governance as proxied by G-index is an insignificant predictor for neither bidders' return nor targets' return. Hartzell, Ofek, and Yermack (2004) find that entrenched target managers bargain for lower deal premium in exchange for private benefit, so that the target abnormal return is significantly lower in these transactions. We show the opposite: early announced deals achieve higher deal and target returns, and in Section 5.3, we will show that early announcements are associated with higher premium as well. Hence, our finding is in line with the signaling model that posits that these synergies must be bidder-specific.

5.2.3 Two-Stage Simultaneous Equations Analysis

So far, we have used early announcements as an independent variable explaining deal abnormal returns. This is somehow naive as it treats the decision to announce early as exogenous. The signaling model however, asserts that an early announcement is an equilibrium outcome that is partially determined by deal synergy itself. Therefore, deal returns, as a proxy for synergy, are both the outcome and the determinant of early announcements. We resort to the simultaneous equations analysis (Pindyck and Rubinfield, 1981, Chapter 7) in this section to address the endogenous relation between early announcements and the deal returns.

In the simultaneous equations analysis, two endogenous variables (in our case, deal returns and "Early") are first regressed on a set of exogenous variables. This first stage regression estimates the fitted value for both dependent variables. In the second stage regressions, the fitted values of deal returns and "Early" (denoted by "*Adjusted deal CARs**" and "*Early**", respectively) are used to explain the other endogenous variable (i.e. "*Adjusted deal CARs**" as an explanatory variable for "Early", and "*Early**" as an explanatory variable for "Adjusted deal CARs"). Since the choice of early announcement should be estimated with a probit model, we use Keshk (2003)'s method in

STATA to correct for the standard errors (Maddala (1983)).

As exogenous variables, we use deal, bidder and target characteristics as in Table 6, since theories from prior research have suggested that these characteristics predict deal returns. We also include proxies for frictions (i.e. negotiation length, auction, target initiation and unsolicited) because the signaling model suggests the frictions affect the announcement timing decision. The drawback to including these frictions proxies is that our sample size is reduced to the observations where these hand-collected variables are available. In untabulated regressions, we exclude the frictions proxies and find similar results.

In the simultaneous equations system, we must exclude one exogenous variable from each of the equations in the system. For the deal abnormal returns, we identify the bidder size as the variable that explains the deal returns but not the decision of early announcement, as shown in Table 7. Therefore, bidder size is excluded from the second stage regression for the choice of early announcement. For early announcement, we identify the variable "tender offer" as the variable that predicts the announcement timing choice but not the deal returns. This is plausible as we show that "tender offer" is insignificantly related with deal level returns (see the first column of Table 7). Therefore, tender offer is excluded from the second stage regression for the deal returns.

The results of the two-stage analysis are reported in Table 7. As is clear, the second stage results of deal returns show that early announcements predict higher adjusted deal CARs: the coefficient estimate is close to that reported in Table 6 and is statistically significant. The second stage results of early announcements suggest that higher deal CARs predict an early announcement, consistent with our theoretical model. Collectively, these results illustrate the signaling equilibrium: higher transaction synergy prompts the bidder to announce early, and investors correctly interpret this signal, so they perceive early announced deals as of greater synergy.

[INSERT TABLE 7]

5.3 Do Early Announcing Bidders Pay Higher Premium?

We turn now to evaluate Hypothesis 3, which states that offer premium in early announced transactions is higher. We measure offer price premium in two ways: the first is "four-week premium", defined as the bidder's final offer price over the target's share price four weeks prior to the deal announcement; the second one is "actual offer premium" proposed by Officer (2003), which accounts for the actual percentage of shares acquired. The actual offer premium is defined as the ratio of the total consideration offered relative to the target market value 42 days prior to the announcement, adjusted for the percentage of target shares acquired:

$$Actual\ offer\ premium = \frac{Total\ consideration\ offered_i / \%\ acquired_i}{Target\ market\ value_{i,t-42}} - 1.$$

Due to the observation of troubling outliers, we follow Officer (2003) to focus on premium values between zero and two. If a premium measure provides a number below zero or above two, we set its value as missing.[21] The results are reported in Table 8.

Estimates in the first four columns of Table 8 show that early announced deals are associated with significantly higher premia. Four-week premium is about 12% higher in the early announced subsample (t-statistic=2.23, column 2). Given the unconditional average target market capitalization of $1,083 million four weeks prior to the deal announcement, this translates into $130 million higher value paid by early announcing bidders. Similarly, when we use actual offer premium, we find that early announcements are associated with about 12% higher actual premium (t-statistic=1.70, column 4). This confirms Hypothesis 3.

Interestingly, we find that a lengthier negotiation is associated with lower premium. Target initiat-

[21] About 1.3% of 4-week premium and 5.8% of actual offer premium have values above two. About 7.4% of 4-week premium and 4.8% of actual offer premium have negative values. While we set these outliers as missing value throughout the paper as in Officer (2003), our results are qualitatively unchanged if we winsorize at 2.5% level at each tail of the premium distribution.

ed deals receive a lower premium, as in Aktas, de Bodt, and Roll (2010) and Masulis and Aziz Simsir (2016). Hostile bids are indistinguishable from other bids in terms of premium, as Schwert (2000) suggests. Unsolicited bids and tender offers are positively associated with offer premium (Offenberg and Pirinsky (2015)).

To complement the analysis, we also construct an indicator variable "Positive Offer Price Revision". This variable takes the value of one if the final offer price is upward revised from the initial offer price, as reported by the SDC. We estimate whether an early announcement leads to a positive price revision by estimating a probit regression. In columns 5 and 6, we show that early announcements raise the likelihood of a positive offer price revision by about 16%. This again is indicative of the high costs of early announcements.

Taking these results together with the CARs analysis, we conclude that high premium in the early announced takeovers reflects the great bidder-specific synergy rather than overpayment.

[INSERT TABLE 8]

5.4 Are Early Announcements Related to Consummation and Public Phase Competition?

To evaluate whether early announcements raise the probability of deal consummation rates, we use a probit regression. The dependent variable is a dummy variable that equals one if a deal is completed, and zero otherwise. We control for deal, bidder and target characteristics as in Table 6, as well as industry and year fixed effects. However, we leave the hostility, "joint announcement" and toehold variables out of the specification because in our sample all hostile bids, jointly early announced and non-zero toehold deals are completed.

We find that early announcements are positively related to the deal consummation: early deals have about 4% higher probability of being completed than late deals (z-statistics=2.68), as shown in

column 1 of Table 9. The positive relationship is not affected by the friction proxies that we further include in column 2. Note that the friction proxy "unsolicited" is negative and significant, consistent with the model assumption that higher resistance negatively affects the deal completion rate.

[INSERT TABLE 9]

Finally, we test Hypothesis 5, which states early announcements increase competing bids in the public phase, in Table 10. We use a probit model with the dependent variable of "public competition", a dummy variable that equals one if a competing bid is reported by SDC, and 0 otherwise. We control for deal, bidder and target characteristics, as well as industry and year fixed effects. We leave out "unsolicited" variable in these regressions because none of unsolicited bids in our sample receive a competing bid in the public phase.

Table 10 shows that early announcements are related with an average higher likelihood of public competing bids by about 3%, significant at 1%. Our previous analysis shows that early announcements are more likely to happen in industries with low liquidity (i.e. negative coefficient of "M&A liquidity" in Table 4), where the bidder faces relatively fewer potential takeover competitors. However, even in these relatively less competitive M&A industries, more competing bids are observed following early announcements. This evidence confirms our view that early announcements are prohibitively expensive.

[INSERT TABLE 10]

6 Alternative Explanations and Robustness

While the empirical results are consistent with the signaling model, in this section, we discuss several alternative explanations such as "announce-to-learn", preemptive bids, and CEO overconfidence. We also conduct a battery of robustness tests.

6.1 Alternative Explanations

One alternative rationale to make early announcements is to gather market feedback. Luo (2001, 2005) presents empirical evidence that market reactions upon an M&A announcement predict deal completion, suggesting that managers may announce to learn. Luo's "announce-to-learn" explanation differs from our signaling explanation along the following lines: First, "announce-to-learn" assumes that the market has superior information in the transaction than the managers, while "announce-to-signal" assumes the opposite. Second, "announce-to-learn" is more likely in friendly one-on-one negotiations while signaling is more present in negotiation frictions. In our analysis, early announcements are mostly made from the bidder-side only (see Table 2), contradicting Luo's case where announcements can be made by either the bidder or the target. We also show that these early announcements are somehow *not* well received by the target, which is consistent with signaling but inconsistent with learning. Finally, the learning hypothesis itself cannot explain higher announcement returns upon early deal disclosure, while signaling hypothesis predicts higher early announcement returns. Our empirical finding is consistent with the later.

Another explanation of early announcement is preemptive bids (or jump bids). Fishman (1988) presents a model where an initial bidder offers a high premium to signal high valuation so as to deter competition and "preempt" the target. Preemptive intention and our signaling model both predict higher offer premium and higher success rates. However, unlike preemptive bids, signaling does not predict low public competition. In contrast, we hypothesize and empirically confirm that the public competition following early announcements is significantly higher. This rules out preemptive intention as an explanation to early announcements. In addition, we find significant greater likelihood of offer price upward revision in Table 8, inconsistent with jumping bids but consistent with negotiation frictions. Our results are thus more in line with Dimopoulos and Sacchetto (2014) who show that high takeover premia are mainly driven by target resistance rather than preemptive intentions.

Finally, CEO overconfidence or narcissism may also explain why some deals are disclosed early. These alternative explanations however can be easily precluded in light of higher bidder and deal announcement returns of early announced transactions (Table 6). Earlier research (Malmendier and Tate (2008)) shows that overconfident CEOs make transactions with worse market reactions. Narcissistic CEOs are also known to negotiate faster (Aktas, de Bodt, Bollaert, and Roll (2016)), contrasting early announcements that are likely resulted from an abnormally long negotiation. Thus, CEO's behavioral trait (such as overconfidence or narcissism) is less likely to drive early announcements in our sample.

One possible explanation that we cannot empirically preclude is that bidders announce a deal early just to get ahead of the rumors or the press. The long and competitive takeover process of early announced deals is more likely associated with likelihood of leakage. Testing this hypothesis is, however, empirically challenging. Though we cannot directly exclude this possibility, we find it difficult to rationalize the motive of "getting ahead of the press" since it does not seem to provide any obvious advantage to the bidder.

6.2 Robustness Tests

We report results of robustness tests in Table 11. First, as a robustness check of the results in Table 4, we exclude all hostile takeovers in column 1, so transactions in this subsample are friendly as defined by SDC. The results carry over. This supports our earlier argument that early announcements, though sharing some similar characteristics as hostile bids, are distinct strategic moves themselves.

Potential omitted variables can affect our results. For example, corporate governance and target entrenchment, as discussed earlier, should affect target resistance and thus announcement timing. To address this concern, we obtain from the ISS governance database proxies for takeover defense (whether a target firm has a classified board) and CEO's private benefit in a change of corporate control (whether a target grants golden parachutes). This addition of these variables significantly reduces our sample size because the ISS database covers only S&P 500 firms. In column 2 of Table

11, we find that including the dummy indicator of target classified board does not change the main conclusion of Table 4. Very similar results are obtained by including the control of target CEO golden parachute (column 3 of Table 11). Interestingly, target golden parachute positively predicts an early announcement: this result is consistent with the entrenchment argument that we discussed in Section 2.3.

To systematically check whether omitted variables bias our results on deal synergies (Table 6) and premium paid (Table 8), we apply an approach developed by Hosman, Hansen, and Holland (2010), which assesses the sensitivity of estimates to remaining omitted variables in a multiple linear regression.[22] The considered approach quantifies a lower bound of a coefficient estimate assuming a covariate W is omitted from the regression. Let β and b be the coefficients of interest (in our example, the coefficient of *Early*) from a multiple linear regression with and without W. Hosman, Hansen, and Holland (2010) show that the bias from omitting W equals to:

$$|b - \beta| = |S.E(b) \times t_W \times \rho(y, W)_{Early,W}| \tag{1}$$

where $\rho(y, W)_{Early,X}$ is the partial correlation between the outcome variable Y and W, conditional on covariates X and *Early*; S.E(b) is the standard error of b, and t_W is the t-statistic of W out of the regression of *Early* on W and the remaining regressors from the outcome regression.

Because we are concerned here about upward bias, we compute the lower bounds of our coefficient estimate of *Early* in Tables 6 and 8. We assume that the omitted variable, W, predicts the outcome variable (*deal CARs* and premium measures) as the strongest included covariate in columns with full set of controls. We report these lower bounds of *Early* coefficient estimates in Panel B of Table 11. We find that our estimates are robust to omitted variables.

[INSERT TABLE 11]

[22] Hosman, Hansen, and Holland (2010) use this approach in a cross-sectional OLS study, but their results carry through to fixed-effect (FE) models (see Black, De Carvalho, Khanna, Kim, and Yurtoglu (2014)).

7 Conclusion

We provide a rationale for the choice of merger announcement timing in this paper. For a high synergy bidder with potential negotiation frictions that may hinder his probability of winning, he chooses to reveal the private confidential information to public early in exchange for the target shareholders' support. Early announcements raise transaction premium, and induce public phase competition.

We empirically show that, first, a bidder's weak bargaining power predicts an early announcement. In particular, a bidder undergoing lengthy negotiations, in a competitive bidding process, or soliciting a negotiation is more likely to announce the deal early. In contrast, a bidder in a transaction initiated by the target itself is less likely to make an early announcement. Second, early announced deals are associated with higher deal level abnormal returns as well as higher premia. As expected, these deals have higher success rates, despite the fact that they induce more competing bids in the public phase.

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Appendix A

1. Proof of Separating Equilibrium

From Condition (1), H type bidder can set X^H so that

$$X^H \leq V_s^H - \frac{C}{\Delta p}, \text{ (where } \Delta p = p^S - p^{NS}) \tag{A1}$$

and his incentive compatibility constraint (ICC) is satisfied.

Condition (2) can be rewritten as $\Delta p \cdot (V_s^L - X^H) < p^{NS} \cdot D + C$, where $D = X^H - X^L > 0$. Therefore, H type bidder can set X^H so that

$$X^H > V_s^L - \frac{p^{NS}}{\Delta p} \cdot D - \frac{C}{\Delta p} \tag{A2}$$

and Condition (2) is satisfied.

Since $D > 0$, the tightest lower bound condition for (A2) is $X^H > V_s^L - \frac{C}{\Delta p}$. Therefore, we have to show $V_s^L - \frac{C}{\Delta p} < V_s^H - \frac{C}{\Delta p}$, which by definition is true, so that the separating equilibrium follows. □

2. Target Entrenchment

We can write the H-type bidder manager's compensation as

$$M_H = \begin{cases} p^S(V^E + V_s^H - X^H - X^E) - C \ \textit{if } S = 1 \\ p^{NS}(V^E + V_s^H - X^H - X^E) \ \textit{if } S = 0 \end{cases} \tag{A3}$$

and E-type bidder manager's compensation as

$$M_E = \begin{cases} p^S(V^E - X^H - X^E) - C \ \textit{if } S = 1 \\ p^{NS}(V^E - X^E) \ \textit{if } S = 0 \end{cases} \tag{A4}$$

Assume that the equilibrium is separating. This requires:

$$\Delta p \cdot (V^E - X^E) > C - \Delta p \cdot (V_s^H - X^H) \text{ , and} \tag{A5}$$

$$\Delta p \cdot (V^E - X^E) < C + p^S \cdot X^H \tag{A6}$$

where (A5) and (A6) are ICCs for H- and E-type bidders, respectively.

We can show that there always exists a premium package, $\{X^H, X^E\} = \{X^H = V_s^H, V^E - C/\Delta p - p^s \cdot V_s^H/\Delta p < X^E < V^E - C/\Delta p\}$, such that both ICCs are satisfied. In fact, a pooling equilibrium where both types signal cannot exist because E type bidder's compensation is strictly lower under this pooling ($p^{pooling}(V^E - X^E) < p^{pooling}(V^E - X^E - X^H) - C$). More intuitively, entrenchment synergy *alone* does not lead to signaling since signaling does not improve deal completion probabilities: All bidders can jump into the bidding process so a low synergy bidder will always lose.

Appendix B. Variable Definition

Panel A: return variables	
Deal announcement CAR [-1,+1]	Weighted three-day acquirer and target cumulative abnormal returns around the announcement. Weights are acquirer and target's market value of equity over combined market value of equity four days prior to the announcement. Acquirer and target CARs are defined as below. (Source: CRSP)
Bidder/target announcement CAR [-1,+1]	Acquirer (target)'s three-day cumulative abnormal return around announcement date calculated using the one-factor market model. The market model parameters are estimated over the (-230, -31) trading days prior to the announcement date with value-weighted CRSP market index. (Source: CRSP)
Deal agreement day CAR [-1,+1]	Weighted three-day acquirer and target cumulative abnormal returns around the definitive agreement date. Weights are acquirer and target's market value of equity over combined market value of equity four days prior to the definitive agreement date. (Source: CRSP)
Bidder/target agreement day CAR [-1,+1]	Acquirer (target)'s three-day cumulative abnormal return around the definitive agreement date calculated using the one-factor market model. The market model parameters are estimated over the (-230, -31) trading days prior to the agreement date with value-weighted CRSP market index. To calculate this return, I require the gap between the announcement date and agreement date to be greater than 10. (Source: CRSP)
Bidder/target runup	Acquirer (target)'s cumulative abnormal returns before the announcement date calculated using the one-factor market model. The market model parameters are estimated over the (-230, -31) trading days prior to the announcement date with value-weighted CRSP market index. The abnormal returns are cumulated from day -30 to -2 before the announcement date. (Source: CRSP)
Panel B: deal-level variables	
Early	Dummy variable equals 1 if the deal is an early announced deal described in Section 3, and 0 otherwise. (Source: SDC, EDGAR)
All cash deal	Dummy variable equals 1 for purely cash-financed transactions, 0 otherwise. (Source: SDC)
Diversifying deal	Dummy variable equals 1 if the acquirer and the target are not in the same 2-digit SIC industry, 0 otherwise. (Source: SDC)
Auction	Dummy variable equals 1 if other potential bidders appear in the negotiation process other than the bidder who announces the deal, 0 otherwise. (Source: EDGAR)

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Target initiated	Dummy variable equals 1 if the deal is initiated by the target, 0 otherwise. (Source: EDGAR)
Negotiation length	Time, measured in months, between the initiation of the bidding process and the deal announcement. (Source: EDGAR)
Hostile	Dummy variable equals 1 if the transaction is classified as hostile in the SDC, 0 otherwise. (Source: SDC)
Unsolicited	Dummy variable equals 1 if the transaction is classified as unsolicited in the SDC, 0 otherwise. (Source: SDC)
Tender offer	Dummy variable equals 1 if the transaction is classified as a tender offer in the SDC, 0 otherwise. (Source: SDC)
Toehold	Bidder's ownership in the target prior to the merger announcement. (Source: SDC)
Relative size	Deal value reported by SDC scaled by acquirer's market value of equity four days prior to the announcement. (Source: SDC, CRSP)
M&A liquidity	The liquidity index is the value of corporate control transactions during a year relative to the aggregate book value of assets of firms in each 2-digit SIC industry. (Source: SDC, Compustat)
Four-week premium	The offered price over the target share price 4 weeks prior to the deal announcement. (Source: SDC, CRSP)
Actual offer premium	The ratio of the total consideration offered, adjusted for the percentage of shares acquired, relative to the target market value 42 days before the deal announcement: $$\frac{Total\ consideration\ offered_i / \%\ acquired_i}{Target\ market\ value_{i,t-42}} - 1$$ (Source: SDC, CRSP)
Consummated	Dummy variable equals 1 if the transaction is completed, 0 otherwise. (Source: SDC)
Days to complete	Number of calendar days from the announcement date to the effective date. (Source: SDC)
Panel C: firm-level variables	
Size	The logarithm of book value of total assets. (Source: Compustat)
Tobin's Q	Market value of assets (book value of assets minus book value of equity plus market value of equity) over book value of assets. (Source: CRSP, Compustat)

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Leverage	Book value of debts over market value of total assets. (Source: CRSP, Compustat)
Price volatility	Stock price volatility calculated over (-300, -30) trading days before the announcement. (Source: CRSP)
Profitability	EBIDTA margin (EBITDA / Sales) (Source: Compustat)
Institutional ownership in Target	Percent of target shares owned by institutional investors. (Source: Thomson-Reuters Institutional Holdings Database)
Classified board	Dummy variable equals 1 if the target has a classified board, 0 otherwise. (Source: ISS Governance)
Golden parachute	Dummy variable equals 1 if the target CEO receives golden parachute compensation, 0 otherwise. (Source: ISS Governance)

Table 1: Criteria of Defining "Early Announcement"

This table lists the criteria we use to define "early announcement". We start from all transactions from 1990 to 2013 after applying filters described in section 3.1, and drop cases by step as listed below. The final "early announcement" subsample consists of 269 transactions.

Total transactions from SDC:	4,035	
of which...		
Announcement date is prior to definitive agreement date according to SDC	476	(12%)
Exclude:		
Gap between announcement and definitive agreement < 4 days	107	(3%)
Rumor is reported by SCD, SEC filings or news search	24	(0.6%)
Announcement is target seeking strategic alternatives	19	(0.5%)
Announcement is from target firm only	22	(0.6%)
Announcement is a definitive agreement	35	(0.9%)
Early announcements	269	(7%)

Table 2: Early Announcements

This table presents the information of early announcements and the number and percentage of early announcements split by industry. The sample includes both completed and uncompleted deals announced between 1990 and 2013. The industry is reported according to the 1-digit SIC industry classification.

Early announcements in sample	269	
of which		
The announcement coming from the bidder only	175	(65%)
The announcement coming from both sides	77	(29%)
Not identifiable[1]	17	(6%)
Content in early announcements:		
Proposal terms (including offer price and methods of payment) are disclosed	236	(88%)
Rationales (or bidder's discussion of transaction synergies) are disclosed	178	(66%)
Negotiation frictions are explicitly mentioned	27	(10%)
Average days between early deal announcement and definitive agreement:		80 days
Median days between early deal announcement and definitive agreement:		55 days

Industry:	Total deal number	Early announcement	% early announcement
Agriculture, Forestry, Fishing	5	0	(0%)
Mining	148	10	(7%)
Construction	26	2	(8%)
Manufacturing	1,059	76	(7%)
Transportation and Utilities	330	19	(6%)
Wholesale	78	6	(8%)
Retail	136	16	(12%)
Finance	1,401	95	(7%)
Services	852	45	(5%)

[1] "Not identifiable" are cases where we cannot identify the source of announcement after searching the EDGAR database, Factiva, company websites, and other popular web searching tools.

Table 3: Summary Statistics

The table reports mean and median value of deal characteristics, acquirer and target characteristics for early- and late-announced deals separately. The sample includes completed and uncompleted deals announced between 1990 and 2013. p-value of t-test (for mean) and of 2-sample chi-squared test (for median) is calculated for the equality of early and late announcements. Definitions of the variables are in the Appendix. Note: Tobin's Q and profitability are winsorized at 0.5/99.5% level to reduce the influence of extreme outliers.

	Total #	Early		Late		*p-value*	*p-value*
	of obs.	Mean	Median	Mean	Median	(mean)	(median)
A. Deal characteristics							
Unsolicited	4,035	0.022	0	0.001	0	0.00	0.00
Target initiated	3,307	0.307	0	0.452	0	0.00	0.00
Auction	3,309	0.527	1	0.585	1	0.16	*n.a.*
Negotiation length (m)	3,240	6.042	5	3.804	3	0.00	0.01
Tender offer	4,035	0.141	0	0.110	0	0.12	0.12
Hostile	4,035	0.059	0	0.001	0	0.00	0.00
Toehold (%)	4,023	3.003	0	0.380	0	0.00	0.00
Relative size	3,971	0.571	0.236	0.420	0.196	0.01	0.25
All cash deal	4,035	0.197	0	0.235	0	0.16	0.16
Diversifying deal	4,035	0.309	0	0.306	0	0.93	0.94
Four-week premium (%)	3,658	54.533	46.600	42.887	35.045	0.00	0.00
Actual offer premium (%)	3,588	68.850	59.684	58.318	48.622	0.00	0.00
Inst. ownership in Target	3,256	0.330	0.244	0.390	0.330	0.01	0.01
M&A liquidity	4,035	0.055	0.016	0.065	0.028	0.48	0.00
Days to complete	3,792	134	126	139	123	0.48	0.59
B. Bidder characteristics							
Size (assets in billion)	3,973	10.209	1.275	18.805	2.294	0.09	0.00
Tobin's Q	3,901	1.840	1.267	2.159	1.373	0.03	0.07
Leverage	3,901	0.153	0.113	0.149	0.116	0.70	0.20
Profitability	3,212	0.142	0.161	0.102	0.192	0.41	0.01
Price volatility	3,905	0.029	0.024	0.027	0.022	0.03	0.12
Runup	3,808	0.016	0.004	0.023	0.012	0.43	0.04
C. Target characteristics							
Size (assets in billion)	3,779	1.248	0.134	3.085	0. 291	0.30	0.00
Tobin's Q	3,723	1.566	1.190	1.855	1.246	0.02	0.17
Leverage	3,723	0.184	0.126	0.158	0.101	0.03	0.40
Profitability	3,210	-0.061	0.107	-0.098	0.128	0.74	0.37
Price volatility	3,844	0.041	0.035	0.036	0.031	0.00	0.00
Runup	3,737	0.080	0.055	0.070	0.049	0.43	0.50

Table 4: Determinants of Early Announcement

Probit models predicting whether a deal is announced in advance of the merger agreement, using the sample of deals announced between 1990 and 2013. Coefficients of marginal effect are reported. The dependent variable is early announcement, a dummy variable identifying early announced deals. Columns (1) to (3) include different proxies for bargaining power and frictions during private negotiations. Column (4) examines the role of institutional ownership in the target firm in predicting an early announcement. Column (5) reports on a specification which combines all proxies. In all specifications, deal, acquirer and target characteristics, and year and industry fixed effects are included. Definitions of these variables are in the Appendix. Standard errors are two-way-clustered on announcement year and on industry. Z-statistics from the probit regressions are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Choice of Early Announcement				
	1	2	3	4	5
Negotiation length	0.0030***				0.0021***
	(3.96)				(2.76)
Auction		0.0102**			0.0116***
		(2.38)			(2.70)
Target initiated		-0.0130**			-0.0064*
		(-2.54)			(-1.88)
Unsolicited			0.0562*		0.0392**
			(1.91)		(1.98)
Institutional ownership in Target				-0.0043**	-0.0050***
				(-2.28)	(-3.46)
M&A liquidity	-0.0035	-0.0022	-0.0137	-0.0164**	-0.0057
	(-0.34)	(-0.21)	(-1.40)	(-2.31)	(-0.77)
Relative size	0.0016	0.0013	-0.0004	0.0029	0.0017
	(0.38)	(0.30)	(-0.11)	(1.14)	(0.58)
All cash deal	-0.0066	-0.0084	-0.0091	-0.0026	-0.0046
	(-1.05)	(-1.35)	(-1.29)	(-0.38)	(-0.78)
Tender offer	0.0141**	0.0154**	0.0190**	0.0170*	0.0141**
	(2.14)	(2.42)	(2.36)	(1.92)	(2.23)
Hostile	0.1360***	0.1447***	0.2060***	0.1835***	0.1086***
	(6.33)	(6.28)	(7.29)	(5.83)	(6.07)
Toehold	0.0014***	0.0015***	0.0022***	0.0018***	0.0013***
	(3.48)	(3.67)	(5.77)	(4.28)	(3.01)
Diversifying deal	0.0056	0.0050	-0.0017	-0.0017	0.0013
	(1.19)	(1.08)	(-0.33)	(-0.34)	(0.29)
Acquirer size	-0.0031	-0.0029	-0.0043**	-0.0012	-0.0027
	(-1.30)	(-1.36)	(-2.21)	(-0.54)	(-1.22)
Acquirer Tobin's Q	0.0000	-0.0003	-0.0000	0.0008	-0.0001
	(0.03)	(-0.24)	(-0.02)	(0.54)	(-0.05)
Acquirer leverage	-0.0230	-0.0128	-0.0039	-0.0025	-0.0257
	(-0.96)	(-0.54)	(-0.18)	(-0.10)	(-1.07)
Acquirer profitability	0.0103**	0.0109***	0.0141***	0.0140***	0.0112***

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	(2.50)	(2.60)	(3.05)	(3.00)	(3.22)
Acquirer price volatility	0.2772	0.3367	0.2690	0.7764***	0.3719
	(1.19)	(1.49)	(1.24)	(3.11)	(1.61)
Target size	-0.0058*	-0.0066**	-0.0098***	-0.0059	-0.0012
	(-1.80)	(-2.05)	(-2.79)	(-1.53)	(-0.43)
Target Tobin's Q	-0.0008	-0.0006	-0.0031	-0.0022	0.0005
	(-0.43)	(-0.31)	(-1.20)	(-0.96)	(0.37)
Target leverage	0.0213	0.0230	0.0419**	0.0392**	0.0106
	(1.39)	(1.60)	(2.45)	(2.24)	(0.69)
Target profitability	-0.0009	-0.0013	-0.0006	-0.0002	-0.0009
	(-0.76)	(-1.01)	(-0.24)	(-0.13)	(-1.12)
Target price volatility	-0.2129*	-0.1976*	-0.1747	-0.1403	-0.2143*
	(-1.66)	(-1.56)	(-1.28)	(-0.85)	(-1.65)
Observations	1,966	2,022	2,482	2,023	1,711
Pseudo R^2	0.338	0.323	0.299	0.314	0.384
Year FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES

Table 5: Univariate Comparison of Cumulative Abnormal Returns between Early and Late Announcements

This table reports cumulative abnormal returns (CARs) around the early announcement date and takeover agreement date, using the sample of deals announced between 1990 and 2013. CARs are measured using a one-factor market model where the market returns are proxied by the value-weighted CRSP index. Market model parameters are estimated over a 200-day non-missing-value window ending 31 days before the event date. Event day 0 is the first day that deal effect can be incorporated into security prices. Panel A reports CARs on the deal announcement date. Panel B reports CARs on the definitive agreement date for the subsample of early announced deals. To calculate agreement date CARs, the agreement date should be at least 11 days after the early announcement date. Panel C reports "Combined event CARs", which equal the sum of "Announcement CARs" and "Agreement CARs" for the subsample of early announced deals, and equal "Announcement CARs" for the late announced deals. The deal CARs are weighted using the bidder and target market capitalizations 4 days before the corresponding event. Test statistics are calculated using the standard error of the mean. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Bidder returns (in %)				Target returns (in %)				Deal level returns (in %)			
	All	Early	Late	Diff.	All	Early	Late	Diff.	All	Early	Late	Diff.
	1	2	3	(2-3)	4	5	6	(5-6)	7	8	9	(8-9)
A. Announcement Date [-1, +1]												
CAR	-1.304	0.041	-1.395	1.437	21.629	21.269	21.652	-0.383	1.482	3.234	1.368	1.867
t-stat.	-10.25***	0.10	-10.50***	2.76***	50.82***	15.68***	48.72***	-0.21	11.97***	6.39***	10.74***	3.62***
N	3,788	241	3,547		3,710	221	3,489		3,474	212	3,262	
B. Agreement Date [-1, +1]												
CAR	n.a.	0.031	n.a.	n.a.	n.a.	5.058	n.a.	n.a.	n.a.	0.917	n.a.	n.a.
t-stat.		0.112				7.47***				3.17***		
N		241				221				212		
C. Combined Event Dates – Adjusted CARs												
CAR	-1.302	0.073	-1.395	1.468	21.931	26.327	21.652	4.675	1.538	4.151	1.368	2.784
t-stat.	-10.15***	0.15	-10.50***	2.80***	51.20***	17.03***	48.72***	2.59***	12.26***	7.06***	10.74***	5.34***
N	3,788	241	3,547		3,710	221	3,489		3,474	212	3,262	

Table 6: Does Early Announcement Signal Deal Value?

OLS regressions of cumulative abnormal returns, using the sample of deals announced between 1990 and 2013. The dependent variable is adjusted CARs. Adjusted CARs is defined as the sum of 3-day early announcement CAR and 3-day agreement CAR for early announcements, and 3-day announcement CAR for late announcements. All CARs are calculated with a one-factor market model where the market returns are proxied by the value-weighted CRSP index. Market model parameters are estimated over a 200-day non-missing-value window ending 31 days before the event date. Deal CARs are weighted using the bidder and target market capitalizations 4 days before the event. Definitions of variables are in the Appendix. Announcement year and industry dummies are included in all regressions. Standard errors are double-clustered by deal announcement year and by industry. Constant is estimated but not reported. T-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Adjusted Deal CARs		**Adjusted Bidder CARs**		**Adjusted Target CARs**	
	1	2	3	4	5	6
Early	2.8027***	2.8179***	1.5255**	0.8456	6.4278***	7.4320**
	(4.44)	(3.67)	(2.01)	(0.93)	(4.45)	(2.49)
Negotiation length		-0.0462		-0.0291		-0.4053***
		(-1.35)		(-0.65)		(-3.79)
Target initiated		-0.3147		-0.0594		-4.4122***
		(-1.06)		(-0.21)		(-3.80)
Auction		-0.0585		0.5457		-1.2237*
		(-0.17)		(1.34)		(-1.96)
Unsolicited		2.1113		0.2849		-11.9655
		(1.34)		(0.22)		(-0.73)
Joint announcement	-2.6005	-2.1273	-1.9347	0.0900	-2.9143	-4.5260
	(-1.63)	(-0.91)	(-1.21)	(0.04)	(-0.74)	(-0.68)
Hostile	3.0401	3.2545	-0.1960	0.4189	7.0971	4.7170
	(0.97)	(0.95)	(-0.08)	(0.15)	(1.15)	(0.64)
Tender offer	1.1990**	1.0720	0.2769	0.4588	8.2918***	8.4036***
	(1.98)	(1.55)	(0.55)	(0.80)	(3.48)	(3.28)
Toehold	-0.0023	-0.0157	0.0624**	0.0439**	-0.3155***	-0.3178***
	(-0.08)	(-0.80)	(2.37)	(1.97)	(-3.20)	(-3.38)
Bidder runup	-2.7415**	-1.3169	-3.6724**	-2.8239	12.2176***	14.2665***
	(-2.20)	(-1.07)	(-2.00)	(-1.57)	(3.71)	(4.53)

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Target runup	-0.2749	-0.3360	1.4622	1.6591	-21.4514***	-22.5146***
	(-0.27)	(-0.32)	(1.50)	(1.64)	(-4.48)	(-4.51)
All cash deal	1.7307***	1.8619***	2.1192***	2.1741***	2.1216	2.2306
	(4.60)	(4.22)	(6.78)	(6.81)	(1.56)	(1.57)
Diversifying deal	0.0749	0.2484	-0.2350	-0.0934	-0.1843	-0.1081
	(0.27)	(0.80)	(-0.84)	(-0.28)	(-0.22)	(-0.12)
Relative size	1.0752**	1.5338***	0.0267	0.0550	-0.5606	-1.1116
	(2.50)	(3.20)	(0.06)	(0.08)	(-0.82)	(-1.15)
Bidder size	-0.5726***	-0.5727***	0.2861**	0.2845	2.3015***	1.6253***
	(-3.74)	(-2.98)	(2.13)	(1.62)	(5.51)	(3.17)
Bidder Tobin's Q	-0.1708***	-0.1281**	-0.0300	0.0433	0.4328*	0.2597
	(-2.81)	(-2.13)	(-0.58)	(0.84)	(1.83)	(0.80)
Bidder leverage	3.3161***	3.0225**	1.5950	1.6107	-7.9374**	-5.7255*
	(2.80)	(2.01)	(0.91)	(0.75)	(-2.37)	(-1.84)
Bidder prc volatility	7.0959	-8.1826	12.0838	-0.4586	-81.3447*	-124.0307***
	(0.33)	(-0.41)	(0.53)	(-0.02)	(-1.68)	(-3.06)
Target size	0.2400	0.0919	-0.4689***	-0.5315***	-3.4974***	-3.4197***
	(1.58)	(0.60)	(-3.28)	(-3.43)	(-6.13)	(-6.18)
Target Tobin's Q	-0.1589	-0.1574	-0.2351**	-0.2707*	-2.1741***	-1.9252***
	(-1.25)	(-1.03)	(-2.20)	(-1.96)	(-3.82)	(-3.20)
Target leverage	-1.0866	-0.1685	0.2750	1.1538	6.3875**	7.7832**
	(-1.46)	(-0.17)	(0.24)	(0.84)	(2.28)	(2.20)
Target prc volatility	-20.2280*	-17.7133	3.6561	2.4334	56.0143	79.2962
	(-1.90)	(-1.35)	(0.34)	(0.18)	(1.06)	(1.37)
Observations	3,245	2,725	3,249	2,727	3,247	2,727
Adjusted R^2	0.093	0.113	0.061	0.071	0.155	0.160
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

Table 7: Two-Stage Simultaneous Equations Analysis

This table reports simultaneous equations analysis for adjusted deal CARs and for the choice of early announcement, using the sample of deals announced between 1990 and 2013. The dependent variables are "adjusted deal CARs" and the dummy indicator for an early announcement. "Adjusted deal CARs" are similarly defined as in Table 6. In the 1st stage, the dependent variable is regressed on exogenous variables. In the 2nd stage, the predicted value of the dependent variable from the first regression is used as an explanatory variable for the other dependent variable, using "tender offer" and "bidder size" as instruments for "early" and "adjusted deal CARs", respectively. Definitions of variables are in the Appendix. Announcement year and industry dummies are included in all regressions. Standard errors are double-clustered by year and by industry in the first stage regression, and are corrected using Keshk (2003)'s method in the second stage regression. T(Z)-statistics are reported in parentheses. Constant is estimated but not reported. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Adjusted deal CARs		Early	
	1st Stage	2nd Stage	1st Stage	2nd Stage
*Early**		2.2457*		
		(1.78)		
*Adjusted deal CARs**				0.1265*
				(1.74)
Negotiation length	-0.0403	-0.1390	0.0439*	0.0490**
	(-0.51)	(-1.41)	(1.95)	(2.14)
Target initiated	-0.2803	0.2519	-0.2370**	-0.2015
	(-0.84)	(0.39)	(-2.04)	(-1.18)
Auction	-0.3142	-0.9315	0.2748**	0.3146*
	(-0.58)	(-1.51)	(2.41)	(1.91)
Unsolicited	3.7206*	0.7500	1.3228*	0.8521
	(1.75)	(0.17)	(1.73)	(1.04)
M&A liquidity	1.1901***	2.0321	-0.3749	-0.5255
	(3.16)	(1.50)	(-1.12)	(-1.35)
Hostile	7.2546**	-0.0551	3.2550***	2.3371***
	(2.16)	(-0.01)	(5.91)	(2.84)
Toehold	0.0148	-0.0832	0.0436***	0.0418***
	(0.61)	(-1.11)	(3.14)	(3.74)

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Tender offer	1.2311		0.5482***	0.3924*
	(1.59)		(2.66)	(1.78)
Bidder runup	-0.8757	0.5255	-0.6240	-0.5132
	(-0.57)	(0.28)	(-1.21)	(-0.94)
Target runup	-0.2821	0.2640	-0.2432	-0.2075
	(-0.22)	(0.23)	(-0.58)	(-0.62)
All cash deal	1.6665***	2.2589***	-0.2638	-0.4747**
	(2.77)	(3.63)	(-1.24)	(-2.17)
Diversifying deal	-0.1633	-0.2882	0.0556	0.0763
	(-0.49)	(-0.55)	(0.37)	(0.49)
Relative size	0.9737***	0.9118**	0.0276	-0.0956
	(3.49)	(2.34)	(0.33)	(-0.65)
Bidder size	-0.8200***	-0.5870**	-0.1037	
	(-3.44)	(-2.50)	(-1.61)	
Bidder Tobin's Q	-0.1396**	-0.0488	-0.0404	-0.0228
	(-2.12)	(-0.32)	(-0.69)	(-0.46)
Bidder leverage	4.9819**	5.5736**	-0.2635	-0.8938
	(2.15)	(2.32)	(-0.36)	(-1.18)
Bidder prc volatility	-43.5070**	-46.4617*	1.3157	6.8202
	(-2.24)	(-1.90)	(0.21)	(1.02)
Target size	0.0010	0.2526	-0.1120	-0.1122
	(0.01)	(0.95)	(-1.29)	(-1.55)
Target Tobin's Q	-0.1089	-0.1730	0.0286	0.0423
	(-0.64)	(-1.18)	(0.71)	(0.91)
Target leverage	0.6507	-0.8775	0.6805	0.5981
	(0.61)	(-0.45)	(1.30)	(1.14)
Target prc volatility	-21.0123	-13.6514	-3.2778	-0.6193
	(-1.51)	(-0.81)	(-0.72)	(-0.12)
Observations	1,592	1,592	1,592	1,592
Adjusted R^2	0.100	0.100	0.321	0.321
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES

Table 8: Early Announcement, Deal Premium, and Offer Price Revision

This table reports OLS regressions of offer price premium in columns (1) through (4), and probit regressions of positive offer price revision in columns (5) and (6), using the sample of deals announced between 1990 and 2013. The dependent variable in columns (1) and (2) is "4-week Premium", defined as the acquirer's offered price over the target's share price four weeks prior to the announcement. The dependent variable in columns (3) and (4) is "Actual offer premium", defined as the ratio of the offered price relative to the target share price 42 days before the announcement, adjusted for the percentage of target shares acquired:

$$\frac{Total\ consideration\ offered_i / \%\ acquired_i}{Target\ market\ value_{i,t-42}} - 1$$

The dependent variable in columns (5) and (6) is a dummy variable indicating whether the offer price has been upward revised. Coefficients of marginal effect are reported in columns (5) and (6). Definitions of variables are in the Appendix. Announcement year and industry dummies are included in all regressions. Standard errors are double-clustered by deal announcement year and by industry. T-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	4-week Premium		**Actual Offer Premium**		**Positive Offer Price Revision**	
	1	2	3	4	5	6
Early	12.8907**	12.2171**	8.7339**	12.1839*	0.1264***	0.1558***
	(2.45)	(2.23)	(2.21)	(1.70)	(6.82)	(6.70)
Negotiation length		-0.7877***		-0.6653**		-0.0003
		(-3.90)		(-2.07)		(-0.16)
Target initiated		-5.5759***		-9.2958***		0.0145**
		(-3.79)		(-5.21)		(2.24)
Auction		0.5229		3.3908		-0.0025
		(0.33)		(1.57)		(-0.27)
Unsolicited		14.6251***		15.7427*		0.1329*
		(5.90)		(1.89)		(1.92)
Joint announcement	-11.5414*	-8.4416	-4.8091	-5.4259	-0.1208***	-0.1364***
	(-1.72)	(-1.02)	(-0.98)	(-0.65)	(-3.88)	(-3.27)
Tender offer	3.4683	2.1514	8.3288***	8.0027***	0.0123	0.0127
	(1.24)	(0.76)	(3.67)	(3.53)	(1.43)	(1.31)
Hostile	9.2718	6.7653	19.0830	9.0328	0.2026***	0.2166***
	(1.09)	(0.92)	(1.63)	(0.66)	(2.91)	(2.61)
Toehold	-0.3058***	-0.2343	-0.1002	0.0086	0.0004	-0.0001
	(-2.66)	(-1.49)	(-0.66)	(0.04)	(0.52)	(-0.07)

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All cash deal	-2.4510	-1.8646	-10.8653***	-11.0787***	-0.0296***	-0.0371***
	(-1.14)	(-0.83)	(-4.55)	(-3.80)	(-2.85)	(-2.67)
Diversifying deal	0.3824	-1.6317	-4.1754**	-5.3446**	-0.0183**	-0.0212**
	(0.25)	(-1.05)	(-2.15)	(-2.35)	(-2.32)	(-2.16)
Relative size	1.6964**	1.2809*	6.5240***	6.5549**	-0.0074	-0.0131
	(2.03)	(1.81)	(2.70)	(2.55)	(-0.82)	(-1.29)
Bidder runup	12.9132**	14.4362**	17.7119***	17.5360***	-0.0119	-0.0163
	(2.22)	(2.11)	(2.77)	(2.67)	(-0.47)	(-0.47)
Target runup	37.4250***	37.3029***	58.1404***	57.2892***	0.0047	0.0121
	(9.46)	(8.32)	(8.99)	(8.28)	(0.26)	(0.53)
Bidder size	1.8640***	1.6245**	3.4991***	3.2822***	0.0037	0.0042*
	(3.05)	(2.49)	(4.05)	(3.27)	(1.19)	(1.36)
Bidder Tobin's Q	0.7162***	0.5179	1.0515***	0.7177*	-0.0036***	-0.0038***
	(2.90)	(1.21)	(3.29)	(1.65)	(-3.46)	(-2.60)
Bidder leverage	-15.2666***	-15.2846***	-3.6669	-6.8099	-0.0097	-0.0007
	(-2.70)	(-2.75)	(-0.35)	(-0.59)	(-0.29)	(-0.02)
Bidder prc volatility	62.0395	23.9569	-132.1662	-79.7229	0.1074	0.1812
	(1.03)	(0.36)	(-1.15)	(-0.55)	(0.32)	(0.46)
Target size	-3.1152***	-3.7606***	-4.2603***	-4.9700***	0.0024	0.0033
	(-4.76)	(-5.15)	(-4.83)	(-5.56)	(1.03)	(1.06)
Target Tobin's Q	-2.1663***	-1.7608***	-2.1387***	-1.4975***	0.0001	0.0012
	(-4.25)	(-3.85)	(-3.81)	(-4.46)	(0.03)	(0.41)
Target leverage	5.9496	8.7454	52.2793***	59.0031***	-0.0462**	-0.0416*
	(1.20)	(1.61)	(5.96)	(6.68)	(-2.04)	(-1.85)
Target prc volatility	268.5836***	300.9974***	264.0835***	241.4463***	0.3534**	0.4092**
	(4.04)	(4.36)	(4.05)	(3.62)	(2.00)	(2.18)
Observations	2,780	2,382	2,718	2,324	2,930	2,485
Adjusted (Pseudo) R^2	0.197	0.215	0.215	0.227	0.218	0.215
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

Table 9: Is Early Announcement Related to Deal Consummation?

Probit models predicting whether an early announced deal is associated with the consummation rate, using the sample of deals announced between 1990 and 2013. Coefficients of marginal effect are reported. The dependent variable is "Consummation" (1 if the deal is completed; 0 otherwise). In all regressions, announcement year dummies and industry dummies are included. Definitions of variables are in the Appendix. Standard errors are double-clustered by announcement year and by industry. Z-statistics of probit regressions are reported in parenthesis. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Deal is consummated	
	1	2
Early	0.0350***	0.0310**
	(2.68)	(2.15)
Negotiation length		0.0007
		(0.69)
Target initiated		0.0059
		(1.09)
Auction		0.0033
		(0.59)
Unsolicited		-0.0981**
		(-2.17)
Tender offer	0.0525***	0.0248**
	(2.82)	(2.20)
All cash deal	-0.0081	-0.0003
	(-1.11)	(-0.03)
Diversifying deal	-0.0190***	-0.0122**
	(-2.63)	(-2.28)
Relative size	-0.0011	-0.0057
	(-0.34)	(-1.39)
Bidder runup	0.0431***	0.0548***
	(2.61)	(3.73)
Target runup	0.0377*	-0.0136
	(1.91)	(-1.09)
Bidder size	0.0184***	0.0106***
	(6.23)	(3.55)
Bidder Tobin's Q	0.0016	0.0002
	(0.80)	(0.10)
Bidder leverage	-0.0397	-0.0357
	(-1.55)	(-1.44)
Bidder price volatility	-0.1061	0.0155
	(-0.37)	(0.07)
Target size	-0.0096***	-0.0063**
	(-3.34)	(-2.29)
Target Tobin's Q	-0.0024	-0.0006
	(-0.95)	(-0.33)
Target leverage	-0.0161	0.0314*
	(-0.83)	(1.66)
Target price volatility	-0.3412*	-0.2462
	(-1.61)	(-1.28)
Observations	3,082	2,387
Pseudo R^2	0.150	0.145
Year and Industry FE	YES	YES

Table 10: Does Early Announcement Affect Public Competition?

Probit models predicting whether an early announced deal is associated with higher public-phase competition, using the sample of deals announced between 1990 and 2013. Coefficients of marginal effect are reported. The dependent variable is "Public competition" (1 if a competing bid is received after the deal announcement; 0 otherwise). In all regressions, announcement year dummies and industry dummies are included. Definitions of variables are in the Appendix. Standard errors are double-clustered by announcement year and by industry. Z-statistics of probit regressions are reported in parenthesis. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Competing bid is received after deal announcement	
	1	2
Early	0.0250***	0.0271***
	(3.96)	(4.38)
Negotiation length		-0.0004
		(-0.90)
Target initiated		-0.0028
		(-1.05)
Auction		0.0097***
		(3.66)
Joint announcement	0.0031	0.0013
	(0.34)	(0.13)
Tender offer	0.0160***	0.0146***
	(3.21)	(3.19)
Hostile	0.0070	0.0028
	(0.77)	(0.35)
Toehold	-0.0006*	-0.0003
	(-1.87)	(-1.14)
All cash deal	0.0028	0.0042
	(0.71)	(1.44)
Diversifying deal	-0.0109**	-0.0076*
	(-2.36)	(-1.96)
Relative size	0.0022	0.0019
	(1.44)	(1.15)
Bidder runup	-0.0166	-0.0210*
	(-1.30)	(-1.65)
Target runup	0.0039	0.0019
	(0.65)	(0.31)
Bidder size	-0.0003	-0.0010
	(-0.27)	(-0.80)
Bidder Tobin's Q	0.0007	0.0005
	(1.09)	(1.04)
Bidder leverage	0.0210*	0.0259**
	(1.76)	(2.21)
Bidder price volatility	-0.0135	-0.0817
	(-0.08)	(-0.61)
Target size	0.0032**	0.0032*
	(2.04)	(1.94)
Target Tobin's Q	-0.0031	-0.0021
	(-1.43)	(-1.00)
Target leverage	-0.0275***	-0.0296***
	(-2.83)	(-2.92)
Target price volatility	0.1038	0.1040
	(0.86)	(1.01)
Observations	2,810	2,329
Pseudo R^2	0.228	0.270
Year and Industry FE	YES	YES

Table 11: Robustness Tests

Results of robustness tests for Table 4 (in Panel A) and for Table 6 and 8 (in Panel B). Panel A displays marginal effects of coefficient estimates of bargaining power proxies with different subsamples and additional control variables. Panel B tests the sensitivity to omitted variables by calculating the lower bound of "early" coefficient estimate using a procedure proposed by Hosman, Hansen, and Holland (2010). (In this test, t-statistics are calculated using standard errors from regressions in corresponding main specifications in Table 6 and 8.) Same control variables as in the main tables are included in all regressions. Standard errors are double-clustered by announcement year and by industry. Z (or T)-statistics are reported in parenthesis. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: Robustness tests for determinants of early announcements (Table 4)			
	Exclude hostile takeovers	Takeover defense	Golden parachute
	1	2	3
Negotiation length	0.0020***	0.0074***	0.0104***
	(2.85)	(4.02)	(3.40)
Auction	0.0109***	0.0785***	0.1118**
	(2.78)	(3.18)	(2.15)
Target initiated	-0.0047*	-0.1673**	-0.2543*
	(-1.66)	(-2.40)	(-1.92)
Unsolicited[1]	0.0380**		
	(2.00)		
Classified board		0.0414	
		(0.94)	
Golden parachute			0.1476**
			(2.40)
Controls, Year and Industry dummies	YES	YES	YES
Observations	1,691	237	237
Panel B: Robustness tests for deal synergy and premium paid (Table 6 and 8)			
	Adjusted deal CARs	4-week premium	Actual premium paid
	4	5	6
HHH procedure to test sensitivity to omitted variables: *lower bound* estimate of "Early"	2.8100***	11.8694***	11.804*
	(3.66)	(2.64)	(1.96)
Controls, Year and Industry dummies	YES	YES	YES
Observations	2,725	2,382	2,324

[1]Note: "Unsolicited" is omitted in regressions 2 and 3 because unsolicitation perfectly predicts early announcements in this subsample.