Fyrqvist, Tomi; Rantapuska, Elias; Torstila, Sami

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# Irrevocable Commitments and Tender Offer Outcomes

Tomi Fyrqvist
Phaver

Elias Rantapuska
Aalto University

Sami Torstila
Aalto University

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* Corresponding author: Sami Torstila, sami.torstila@aalto.fi. We thank an anonymous reviewer, Utpal Bhattacharya, Matti Keloharju, Omesh Kini, and Vesa Puttonen for comments. Torstila thanks UC Berkeley, Haas School of Business and Rantapuska HKUST, Stockholm School of Economics, HANKEN, and Erasmus University Rotterdam where part of this work was completed. Kartik Agarwal, Nga Nguyen, and Eeva-Leena Perttula provided excellent research assistance. We thank the Academy of Finland, OP-Pohjola Research Foundation, and Wihuri Foundation for funding.

Data availability statement: The data that support the findings of this study are available from FE InvestEgate (https://www.investegate.co.uk/) and SDC Platinum (https://www.refinitiv.com/en/products/sdc-platinum-financial-securities). Restrictions apply to the availability of these data, which were used under license for this study.

# Irrevocable Commitments and Tender Offer Outcomes


## Abstract

Irrevocable commitments (ICs) are undertakings by target-firm blockholders to accept an upcoming takeover bid before its announcement. Using a novel manually-collected dataset, we develop three new hypotheses and explore one existing hypothesis to explain the use of ICs: (1) trade-off between speed and price; (2) trade-off between completion probability and price; (3) differences in bargaining power, and (4) blockholder certification. Transactions with more than 20% of shares irrevocably committed have a 7–16% higher probability of tender offer completion and 8–10 days shorter bid duration. A transaction with an average-sized irrevocable commitment is associated with a 2.9 percentage points lower four-week bid premium than a transaction with no irrevocable commitment. Overall, the results appear most consistent with the hypothesis on completion probability versus price. The results also offer partial evidence in favor of the certification hypothesis.



**Keywords:** irrevocable commitments, deal-protection devices, acquisitions, tender offers

**JEL Classification**: G34

## 1. Introduction

An irrevocable commitment (IC) is an agreement by target-firm blockholders to commit to an upcoming bid prior to its public announcement. Contractual arrangements of this type, related to U.S. Shareholder Tender Agreements (STAs) but less binding, have been increasing in popularity globally. We observe use of ICs in at least 19 European markets, of which the United Kingdom takeover market is the largest, the most likely to use ICs, and with the best data availability due to access to original offer documents. In our U.K. data from 1985 to 2016, we have tender offers with total market value of targets in excess of 1.1 trillion USD. In these deals, 24% of all shares, worth more than 250 billion USD, were irrevocably committed. In addition, the importance of ICs has grown over time. In 2016, 94% of tender offers have at least some shares tendered under an IC, while this figure was only 15% in 1986.

ICs are a deal structure element aimed at increasing the likelihood of a successful offer. Related empirical research is plentiful on deal-structure elements such as break-up fees, lock-up options, toeholds, and their effects on bid outcomes and the premium paid.[1] Despite the high and growing proportion of deals with an IC, and the publicity an IC generates by mentioning committed shareholders in the very first press release, the evidence on ICs or STAs is still scarce.

ICs make it less likely that a single blockholder (or multiple shareholders acting in collaboration) can frustrate the deal. In other words, with an IC an acquirer is able to mitigate the risk that a key shareholder will exercise significant bargaining power. Securing the agreement of key blockholders in the target is pivotal to the success of the bid. For example, if the bidder is looking for 100% control of the target, with a squeeze-out threshold of 90%, any blockholder with more than 10% ownership possesses effective veto power. Moreover, atomistic target-shareholders may assume that key blockholders are more informed on the merits of the bid, creating an information cascade similar to Welch's (1992) description of sequential sales in the context of initial public offerings.

Signing an IC may even be a precondition for an offer that otherwise would not have been initiated. For example, for an undiversified blockholder who has been looking for an exit for some time, losing

some of the upside by committing into an IC may be a small price to pay to increase the likelihood of completion of a deal. Alternatively, if an offer is indeed made, an IC may help break through a collective action problem, such as the free-rider problem in Grossman and Hart (1980).

From the bidder's point of view, the key empirical questions are whether the inclusion of an IC increases the likelihood of bid success, shortens the time to completion, or improves shareholder reactions to the bid.[2] If not, the inclusion of the IC is not worth negotiation concessions in terms of premium or otherwise, and may be a matter of fad or custom. From the target's point of view, the question is whether the restrictions resulting from the IC are counterbalanced by either the transaction becoming more likely, or by the premium becoming larger. If not, accepting an IC may be unwise, as the loss in bargaining power outweighs the benefits obtained.

At first sight, it appears clear that all other things equal, a bidder would prefer to have ICs in place, and a target shareholder would prefer to maintain their freedom of action to the end. Why, then, do some transactions use an IC while others do not? We develop three new hypotheses, which we summarize as trade-off of speed versus price; trade-off of likelihood of completion versus price; and differences in bargaining power. In addition, we examine a fourth hypothesis, which has received empirical support in the very scarce STA literature: the certification hypothesis.

The first hypothesis, speed versus price, predicts that target shareholders get compensation for the IC through a higher price.[3] In return, bidders get a faster transaction. Therefore, we would expect deals with ICs to be completed faster, to have a higher target cumulative-average abnormal return (CAAR), and a lower bidder CAAR. The second hypothesis—completion probability versus price—predicts that in the right circumstances, signing an IC is beneficial to target blockholders because it increases the likelihood of a successful, premium-generating transaction. In this case, the target is trading a higher probability of completion against lower negotiating power on price.[4] If this hypothesis gains support in the data, we would expect deals with ICs to have a higher likelihood of completion, to have a lower target CAAR, and a higher bidder CAAR. A third hypothesis is that ICs are only signed in cases where target shareholders have little or no relative negotiation power compared to the bidder. This

hypothesis leads us to expect a positive empirical link between proxies of bargaining power and use of ICs.

The results are most consistent with the second hypothesis: targets appear to get a higher likelihood of completion in return for having to accept concessions on price. A more detailed review follows below.

To examine the hypotheses, we use takeover bids from the United Kingdom in the period 1/1/1985–10/18/2016. The original offer documents are available for the U.K. from the FE InvestEgate service. The setting is ideal for studying our hypotheses for three reasons: access to the original documents exists; ICs are well-defined in the takeover code and widely used; and, finally, the U.K. market is one of the largest public takeover markets in the world. Access to documents allows us to manually collect the IC data from 2001 to 2016. For older data from 1985 to 2000, we use data from the SDC Platinum International Mergers and Acquisitions (IMA) with manual random checks. The fact that we collect data from 2001 to 2016 from primary sources means our results are not affected by any potential inaccuracies of the IC flag in the widely-used SDC Platinum IMA data. IC data is available for a total of 2,025 takeovers over the sample period. When we link the premium and target market value data to the transaction data, we are able to match 1,574 takeovers.

Descriptive statistics show ICs have become very common and complement toeholds, an alternative deal protection device. Between 2000 and 2016, 87% of deals used ICs, with only 19% using toeholds. In September 2011, the Takeover Panel introduced a ban on break-up fees, which left ICs as one of the few deal-protection devices still available.

In relation to the first hypothesis, we find that bids which include an IC are completed faster. For deals involving any ICs, the difference conditioning on other deal characteristics is –2 to –4 days, and for deals with ICs larger than 20% of shares outstanding, –8 to –10 days (the mean time to completion in the sample is 56 days). The CAARs of acquirers are not significantly different for IC deals and non-IC deals. The CAARs of targets, however, are lower in the IC deals than in the non-IC deals. The [–1,+1] target CAAR is approximately 6.5 percentage points lower in a deal with an average-sized IC (the

average deal in our sample has 24% of shares irrevocably committed), while four-week bid premiums are 2.9 percentage points lower.[5] Hence our first hypothesis, that bidders are trading a higher price for a faster transaction, is not supported by the data.

The second hypothesis suggests that ICs arise as a trade-off between a higher probability of completion for the target, and a lower price for the bidder. Bids that include an IC are in fact more likely to be completed. The marginal effect at the means is a 5–11% higher likelihood of deal completion for deals with ICs, and 7–16% for deals with ICs larger than 20% of shares outstanding. At the means, a one-percentage-point increase in shares committed to an IC is associated with an increase in completion likelihood of 0.3%. The results are consistent with the second hypothesis: deals with an IC have lower premiums on average, but they offer a higher likelihood of success. It should be noted that the absolute target CAARs are still as high as 16.8% in IC transactions, even if CAARs and four-week bid premiums for non-IC transactions are higher. The possibility of locking in such a profit in relation to the reference point provided by the current market price may well make the lower CAAR seem acceptable to target shareholders.

The third hypothesis is that ICs are more likely in transactions where the target's bargaining power is relatively weak. The role of target bargaining power has been investigated in the contexts of acquisition premiums and venture capital exit mechanisms. Ahern (2012) proposes that targets with high scarcity (high power in product market and customer-supplier relationship) achieve higher value of gains in mergers. Larger targets generally achieve more of the acquisition gains (e.g., Peterson & Peterson, 1991; Moeller, Schlingemann, & Stulz, 2004; Alexandridis, Fuller, Terhaar, & Travlos, 2013). Bayar and Chemmanur (2011) propose that in a venture capital portfolio, firms with a higher degree of product market competition are less likely to go public and more likely to be acquired by competitors. Signing an IC foregoes the opportunity for the target to shop for a potential higher bid, holding everything else equal. Hence, drawing a parallel from the bargaining power literature, it could be the case that firms with relatively low bargaining power are those who agree to sign an IC.

However, our results fail to support this hypothesis. Measures of bargaining power do not appear consistently linked to the use of ICs.

In addition to our three new hypotheses, we investigate the certification hypothesis from the STA literature. According to the certification hypothesis, IC contracts could be used by informed target blockholders to credibly signal the fairness of the offer towards uninformed target shareholders. Because of this, low-synergy bidders self-select to use ICs. Empirically, the certification hypothesis predicts at least that ICs are more likely to occur in lower-synergy-value deals, and that ICs are associated with lower offer premiums. The former prediction does not find support in our data, but in line with Bargeron (2012), we find a negative association between ICs and premiums, giving partial support to the certification hypothesis.

We discuss a number of alternative interpretations of the results. We examine whether the presence of an IC is simply a proxy for a friendly transaction. However, the effects of ICs are robust in a subsample of unfriendly transactions, and the magnitude of the results increases. In addition, we examine ICs as a substitute for toeholds: however, the evidence shows that ICs are rather complements to toeholds.

Our interpretation of the results is that ICs act as a bridge between a formal public-market tender offer and a privately-negotiated process. The initially privately-negotiated agreement on an IC becomes, in the second stage, technically structured as a public tender offer. Empirically, the outcomes are higher likelihood of completion and faster completion times, without the need for a higher premium.

The main contribution of this paper relative to prior literature is to propose and find empirical support for a new hypothesis: ICs allow targets to trade higher completion probability against lower price. We do not claim an unambiguous causal interpretation where the IC directly causes the outcome variables. It could well be that for deals likely to be completed, the acquirer is more likely to suggest and the target more likely to accept an IC. Still, it appears fairly plausible that at the time of signing the IC, target shareholders believe their action will have a positive causal effect on deal completion.

In addition, the paper contributes to the literature by documenting a large increase in the use of ICs; by confirming that the certification hypothesis from the STA literature also receives partial support in the IC context; and by providing manually collected IC data for 2001–2016 (available at corresponding author's web-page) to help future research on the topic.

This paper is related to previous work by Wright, Weir, and Burrows (2007) and Bargeron (2012). The former study examines the determinants of U.K. ICs in 155 public-to-private transactions. The latter studies hypotheses on premiums, ownership structure, and information asymmetry in 802 U.S. STA and non-STA tender offers. In particular, Bargeron (2012) finds evidence for the certification hypothesis that we also study in this paper. However, the link between ICs and outcomes such as completion probability, completion time, and abnormal returns remains largely unexplored.

In addition to the literature on ICs and STAs, this article is linked to three strands of literature on acquisition tactics: break-up fees, lock-up options, and toeholds. Break-up (or termination) fees, which are more often applicable to the seller than to the buyer, are a deal-protection device in some ways analogous to ICs. The major difference is that the seller can withdraw from the transaction through payment of the fee. The literature on break-up fees includes Coates and Subramanian (2000) and Officer (2003).[6] Lock-up options (Burch, 2001) are a deal-protection device where target management offers a selected buyer the right to purchase a portion of the target at a discount. Since management is the active party, this opens up questions of agency conflicts, as management may be favoring a particular buyer on non-shareholder-value grounds. Finally, toeholds (Bulow, Huang, & Klemperer, 1999, Betton & Eckbo, 2000; Betton, Eckbo, & Thorburn, 2009), that is, shares in the target company bought on the market prior to the bid may have a similar deterring effect on competing buyers as ICs. However, unlike ICs, toeholds are not a contractual device agreed on between buyer and seller, although they may function as complements to ICs in some transactions.

This paper adds to the wider literature on deal-protection devices by documenting that different types of deal-protection devices lead to heterogeneous outcomes. ICs are associated with lower target-shareholder gains. This is in line with toeholds (Betton & Eckbo, 2000), but in contrast with break-up

fees and lock-ups, which exhibit higher target-shareholder gains (Burch, 2001; Officer, 2003). This casts some doubt on the current U.K. regulatory policy of allowing ICs but disallowing break-up fees.

The remainder of the paper is structured as follows. Section 2 discusses the institutional background to ICs. Section 3 describes the data, methods, and descriptive statistics. Section 4 presents the main results. Section 5 discusses the interpretation of the results, and section 6 concludes.

## 2. Institutional background on irrevocable commitments

We use data from the U.K. as it is the largest takeover market in Europe with the highest prevalence of ICs. In this section we discuss the definition and properties of ICs under U.K. law. We include a discussion of how ICs compare to their U.S. equivalents, STAs.

U.K. takeover processes, including ICs, are regulated by The City Code on Takeovers and Mergers (the "City Code") instead of statutory law. The 12th edition of the City Code (12 September 2016), section C, defines ICs as follows:

> *Irrevocable commitments…include…commitments…:*
>
> *(a) to accept or not to accept (or to procure that any other person accept or not accept) an offer; or*
>
> *(b) to vote (or to procure that any other person vote) in favour of or against a resolution of an offeror or the offeree company (or of its shareholders) in the context of an offer, including a resolution to approve or to give effect to a scheme of arrangement.*

According to Rule 4.3 of The City Code:

> *Any person proposing to contact a private individual or small corporate shareholder with a view to seeking an irrevocable commitment must consult the Panel in advance.*

Rule 4.3 notes further explain that:

> *Where irrevocable commitments are to be sought, the Panel will wish to be satisfied that the proposed arrangements will provide adequate information as to the nature of the commitment sought; and a realistic opportunity to consider whether or not that commitment should be given and to obtain independent advice if required.*

Figure 1 illustrates the positioning of ICs in the tender offer process. Typically ICs are gathered by the bidder from the target shareholders in a private tender offer process. However, the bidder can also continue collecting the ICs after the announcement of the offer.

[INSERT FIGURE 1 ABOUT HERE]

ICs proper can be categorized into "soft" and "hard" ICs. This categorization relates to the strength of the commitment. In soft ICs the target shareholders retain the right to accept a higher offer by a competing bidder.

Hard ICs are defined as contracts where the committing shareholders forgo their rights to accept any subsequent bid(s). Therefore, the hard commitments are truly binding as long as the initial bid proceeds as planned. However, it is worth asking what happens to hard ICs if a higher offer emerges. As long as the initial offer has not become unconditional, the initial offer will likely lapse if a higher bid emerges. This is because the target shareholders who have not signed an IC have a right to withdraw their previous acceptance.[7] If the initial offer lapses, the ICs attached to it become void as well.

The ICs in this data are conditional in that they are voided by a higher counter-offer (soft ICs). This makes it possible that hoping to trigger a bidding war could be a seller motivation to commit to an IC. As such, the target shareholders maintain freedom to shop for a better bid—they are committing to a sale, but not to the final identity of the purchaser. Further, the U.K. ICs in our sample are typically conditional on a given threshold of acceptances. If the offer fails to generate this threshold of acceptances, the ICs will also lapse.

These features of U.K. ICs are in contrast with U.S. STAs, which typically are not conditional on a threshold of acceptances. Therefore, unlike STAs, ICs are only truly binding in case a) the first offer progresses without competition, and b) the non-IC shareholder base provides sufficient acceptance for the bid. Thus, writing the call option implicit in an IC imposes significantly fewer constraints than committing to an STA. STAs contain an option for the initial bidder to purchase the shares even if the initial offer would fail.

U.K. offers are often set conditional to 90% of the outstanding shares accepting the offer. In other words, the offer and the associated ICs will lapse if it does not reach 90% or more acceptances. Above 90%, the buyer can trigger a mandatory squeeze-out of the remaining minority interest.

An IC may trigger mandatory disclosure. In the U.K., the threshold for mandatory disclosure is a 3% interest in shares and includes a statement why the shares have been acquired.[8] An IC is included in the definition of an interest in shares. Moreover, in the U.K., the Takeover Panel must be consulted prior gathering any irrevocable commitments. The ICs can also be gathered via a telephone campaign as instructed in the U.K. takeover code.[9]

## 3. Data and methods

### *3.1. Data*

#### 3.1.1. Tender offer and returns data

We acquire tender offer data from the SDC Platinum International Mergers and Acquisitions (IMA) database by Refinitiv (previously Thomson Reuters). Our initial sample of 3,269 includes all tender offers in the data with listed U.K. targets between 1/1/1985 and 10/18/2016. We place no restrictions on acquirer geography. After exclusions described in Table 1, the tender-offer sample narrows down to 2,025 observations. The availability of control variables (offer premium and target market value) restricts us to 1,574 observations (used in Tables 3 and 5), and when we further require completion

date to compute time to completion, we are left with 1,420 observations (used in Table 5). In Table 1, the sample on each row is a subset of the sample on rows above.

[INSERT TABLE 1 ABOUT HERE]

We use original SDC Platinum IMA variable definitions for unfriendly (no initial management approval or initiated without management access, also consistent with Officer, 2003), shares offered (1/0), SIC code (to measure if bidder and target share first digit US industry codes)[10] target market value four weeks before announcement, short-term toehold (bidder ownership before offer announcement), long-term toehold (bidder ownership six months before the offer announcement), public to private (1/0), rumored (1/0), and buyout (1/0 with value of 1 if a buyout firm is involved). In addition, we flexibly control for time trends and different industry base rates by including year and industry fixed effects (FE) or industry × year FEs. Variable definitions are consolidated in Appendix Table A1.

For the deal completion (1/0) variable, a tender offer is defined as successful in the year when the offer becomes effective or unconditional. Time to completion is measured in calendar days and measures the interval between offer announcement and completion date. Finally, we use Worldscope identifiers in SDC data to obtain market value of the target at the end of fiscal year prior to tender offer announcement.

In our analysis of completion probability and time to completion, we use SDC four-week premiums over target share price instead of one-day premiums for data availability reasons. First, share price data required to compute the one-day bid premium is available only for a subset of 564 targets from Datastream, versus 858 targets available with the four-week premium data. Second, the four-week premium captures potential run-ups in target price before the tender offer announcement. The four-week premium is highly correlated with both one-week and one-day premiums from SDC Platinum IMA ($\rho_{4w,1w}$=0.78 and $\rho_{4w,1d}$=0.92).

For our analysis using CAARs, we use stock return data from Datastream. There are 471 cases where both the acquirer and the target are public, stock returns are available for both companies around announcement day using window [-20,+60], and deal size exceeds USD 1 million and 1% of acquirer market value (as in Moeller, Schlingemann, & Stulz, 2004). For these companies, we compute cumulative abnormal returns around the tender offer announcement day from SDC by using Datastream U.K. return index (TOTMKUK (RI)). Table 6 and Figures 3 and 4 use this sample.

We also collect data on acquirer characteristics from SDC Platinum IMA, Datastream, Orbis, and Capital IQ. Acquirer characteristics data are available for a subset of public bidders (as they may be located outside the U.K.), and we use acquirer characteristics in Tables 3, 4, 5, 8, and A2. For analyses using acquirer characteristics, sample sizes vary somewhat between tables as some of the control variables perfectly confound with dependent variables after inclusion of FEs. For example, in Table 4, we lose 67 observations as the binary dependent variable IC has no within-year variation in the subsample as we include both acquirer characteristics available and year fixed effects.

For the most part, the smaller sample size in parts of the analysis is not caused by a particular acquirer financial characteristic variable: Rather, the change mostly relates to availability of target share price data from Datastream and size data from Thomson SDC Platinium IMA. In terms of sample selection, this is likely to exclude smaller targets, and to be representative of a sample of large acquisitions rather than small acquisitions.

For acquirer characteristics, we use the same variables as in Moeller, Schlingemann, & Stulz (2004, 2005), as they have same primary data source (SDC Platinum IMA). We replicate some of their analysis in Table 6, and they share the outcome variable in the analysis of Table 8. The acquirer characteristics used are *debt / market value of assets*, *Tobin's q*, *relative size*, and *operating cash flow / market value of assets*. Variable definitions are in Appendix Table A1.

3.1.2. Data on irrevocable commitments

For irrevocable commitments, we collect data in two batches. For data from 1/1/2001 to 10/18/2016, we independently hand-collect the data from FE InvestEgate (http://www.investegate.co.uk/).[11] FE InvestEgate data originates from the Regulatory News Service of London Stock Exchange. For data from 1/1/1985 to 12/31/2000, we collect the data with the help of Thomson Reuters. A team from Thomson Reuters hand-collected the data from prospectuses and other sources through an iterative process with one of the authors highlighting potential errors at each round. The final data was verified by performing random cross-checks with FE InvestEgate.

As we hand-collect data from FE InvestEgate, and combine it with quality-checked older data from SDC Platinum IMA, we are the first to offer a comprehensive dataset on irrevocable commitments using a reliable measure. We make this IC data publicly available to allow for further research on irrevocable commitments. At the time of writing, the SDC Platinum IMA database has not been updated for irrevocable commitments to provide as accurate data as in our analysis.

*3.2. Descriptive statistics*

Table 2 Panel A displays aggregate summary statistics in the broad sample of 2,025 observations by year regarding irrevocable commitments, completion rates, premiums and completion times. The average deal has 24% of shares irrevocably committed. The average completion rate is 88% in the sample and increases slightly towards the end of the sample period. The average time to completion is 56 days and target market value is 391 USD million (inflation-adjusted, 2016 as base year).

[INSERT TABLE 2 ABOUT HERE]

As shown in Table 2 Panel A for number of observations, the sample clusters in waves as shown by earlier research (e.g., Andrade, Mitchell, & Stafford, 2001). Clusters of takeovers occur in 1997–2000 and 2005–2007, when global M&A activity was generally high. This is addressed in the empirical tests by including year FEs.

Panel B of Table 2 reveals that judging by the outcome variables of interest, the subsample of public bidders is similar to the broad sample depicted in Panel A of Table 2, although deal sizes are unsurprisingly larger than in the broad sample which includes public and private acquirers. Finally, acquirer characteristics are not distinctively different from those reported in Moeller, Schlingemann, & Stulz (2004, 2005).

Figure 2 highlights the proportion of offers with ICs, percentage of shares irrevocably committed conditional on having any, and toeholds over time. The turn of the millennium marks a step change in the data. The increase happens between 1998 and 2000. In 1998, only 34% of transactions included an IC component. In 1999, this figure was already 59%; by 2000, it had reached 84%. The increase in ICs, however, does not coincide with the two data batches used in our study, where the cut-off date is 2/1/2001. This suggests that, for the most part, the increase is not driven by differences in data collection. Meanwhile, the proportion of offers containing a toehold (defined as number of offers containing a toehold divided by total number of offers) decreases slowly but steadily throughout the period. Short-term toeholds have disappeared in the U.K., similarly as they did in the U.S. market as documented by Eckbo (2009). Percentage of shares committed (conditional on having any) is more stable than the proportion of offers with an IC, indicating that most of the variation in the fourth column of Table 2 (IC %) is driven by the prevalence of a tender offer having an IC rather than the percentage of shares committed.

[INSERT FIGURE 2 ABOUT HERE]

*3.3. Methods*

To evaluate whether ICs are associated with a higher probability of success, we first estimate the following logit model:

$$P(completion_i = 1|X_i) = \frac{e^{\beta \mathbf{X}_i}}{1+e^{\beta \mathbf{X}_i}} \quad (1)$$

where $P(completion_i = 1|\mathbf{X}_i)$ is the probability of success of tender offer *i* conditional on the effects of the independent variables, which are denoted as the $\mathbf{X}_i$ matrix. Vector $\beta$ denotes the coefficient of the independent variables. The independent variables consist of deal, target, and acquirer characteristics and vary across specification .

For ease of interpretation, the model we use to estimate time from announcement until resolution is ordinary least squares (OLS) as in Golubov, Petmezas, and Travlos (2012). An OLS approach as opposed to a proportional hazards model is viable as there are few outliers in the time distribution:

$$Time\ to\ resolution_i = \beta_0 + \beta_1 \times Irrevocable\ commitments_i + \sum_{j=2}^{n}(\beta_j \times X_{ij}) + u_i \quad (2)$$

where *Time to resolution* is measured in calendar days and measures the interval between tender offer announcement and resolution (completion). *Irrevocable commitments* denotes the measure for irrevocable commitments: depending on specification it can be either *% of shares irrevocably committed, irrevocable commitments >0%* dummy, or *irrevocable commitments >20%* dummy. Subscript *i* denotes a unique tender offer and runs from 1 till *N*, where *N* is the sample size. $X_{ij}$ denotes the other independent variables indexed as *j [2,n]*, where n depends on the specification. $u_i$ is the error term.

## 4. Results

### *4.1. Baseline results*

We first examine the determinants of irrevocable commitments. The OLS results are reported in Panel A of Table 3. The regressions investigate the prediction that ICs may be substitutes for toeholds, that is, that there is a negative relationship between ICs and toeholds. We include premium, rumors of the offer, target market value, and hostility among explanatory variables. Moreover, we differentiate between public-to-private and public-to-public cases. Findings in the existing literature are solely based on public-to-public transactions and irrevocable commitments may have different dynamics

based on the type of the deal. Further, we seek to examine whether private equity (*buyout*) acquirers are more frequent users of irrevocable commitments than other bidders.

[INSERT TABLE 3 ABOUT HERE.]

Conditioning on observables in the full sample, premiums are lower in transactions with ICs. The coefficients for the premium variable are approximately –0.05 and statistically significant in columns 1 and 2, which report results for the sample with 1,574 observations. This implies at the means that going from a zero premium to a 100% premium would translate into 5% fewer shares irrevocably committed in a tender offer. This suggests that ICs and premiums do not appear to be linked in the sense of target shareholders getting explicit compensation in return for the IC, but the contrary. Thus, ICs do not seem to follow the same logic as proposed by Offenberg and Pirinsky (2015) for the choice of a public tender offer versus a privately negotiated merger. In their model, the acquirer trades speed (opts for a tender offer) for price (opts for a merger). Accordingly, under the speed and price trade-off hypothesis, we would expect ICs (which are associated with speed) to have a higher premium, but empirically, this is not the case. Instead, conditioning on observables, a deal with ICs would seem to require a smaller premium. Either target shareholders with relatively low bargaining power against the acquirer are comfortable with signing an IC with a lower offer premium, or alternatively target shareholders trade off some of the premium for a lower risk of deal failure by signing an IC.

In addition, given that we control for target size, it seems that the IC-effect we observe is not merely a manifestation of the size effect. Instead, the finding that larger targets are less likely to have shares irrevocably committed would be consistent with the bargaining power hypothesis because larger targets on average have more bargaining power than smaller targets (Moeller, Schlingemann, & Stulz, 2004).

The results reveal a significant negative relation between ICs and long-term toeholds. A 10 percent long-term toehold would be equivalent to having 4.2–7.7% of shares irrevocably committed. Short-term toeholds, however, are not significantly associated with ICs. ICs might be used as less risky

alternatives to long-term toeholds, ensuring that important blockholders are going to tender their shares.

Our results for the premium are somewhat weaker in columns 3 and 4. These columns report results using the narrow sample of 362 observations as the sample is restricted to public bidders with financial statement data available. The coefficient for the premium variable is –0.04, but no longer statistically significant. Hence, if anything, the bargaining power hypothesis gains marginally more support in the subset of private acquirers.

As a robustness check, as Panel B of Table 3, we report results of a logit model with the dependent variable defined as one if the IC% is higher than the median IC%. The empirical results are consistent with Panel A of Table 3, which uses the continuous IC% variable.

Table 4 displays the results of the logit regressions associating irrevocable commitments on completion probability using the 1985–2016 U.K. sample. In specifications (7) to (9), we analyze a smaller subsample of observations in which the acquirer is publicly listed and data on acquirer characteristics is available. In addition to model coefficients, we report marginal effects at means for all IC variables. All specifications use *year* × *industry* clustering of standard errors, while the modeling of *industry*, *year* and *industry* x *year* fixed effects varies by specification.

[INSERT TABLE 4 ABOUT HERE]

A higher likelihood of bid success is associated with a higher proportion of shares irrevocably committed. In specifications (1), (2), and (7), where irrevocable commitments are measured as the continuous variable *% of target shares irrevocably committed,* the coefficients are all statistically significant with *t*-values ranging from 2.0 in the small sample to 5.5 in the larger sample. The prediction that irrevocable commitments are associated with increased probability of tender offer completion receives strong support. We do not claim an unambiguous causal interpretation that ICs directly cause completion. It may be that publicly announced ICs enable other shareholders to tender

their shares quickly, or alternatively counterparties sign an IC because they already expect a smooth tender offer process.

These coefficients translate at the means into marginal effects of 0.19 to 0.37. Thus, the marginal effect of each one-percentage-point increase in *% of shares irrevocably committed* is associated with an approximately 0.3% higher completion probability. If the marginal effect is measured at 0% of shares irrevocably committed (rather than at mean), when all other variables equal their means, the marginal effect is slightly higher: a one percent increase in ICs translates to 0.4% higher completion probability.

The dummy variable for offers where ICs account for more than 20% of outstanding shares has a coefficient of 1.33 in specification (3), while the dummy variable for any number of shares irrevocably committed (*irrevocable commitments > 0%)* has a coefficient of 1.02 in specification (5). The marginal effects of *irrevocable commitments > 20% dummy* and *irrevocable commitments > 0% dummy* are 7-16% and 5-11%, respectively. The sign of these dummy variables remains, but their significance drops below conventional levels in specifications (8) and (9), which analyze a smaller sample with additional acquirer-level variables. Unexpectedly, but in line with Schwert (2000), Mitchell and Pulvino (2001), and Baker and Savasoglu (2002), we find that acquirer attitude is one of the best predictors of takeover success: the *unfriendly dummy* has a significant negative coefficient across the specifications.

The significant positive association of ICs and probability of deal success is consistent with the idea that ICs indeed do mitigate the risk of a tender offer failing. The effects of control variables are consistent with the predictions, or insignificant. The indicator for same-industry acquirer and target remains insignificant in all of the specifications as expected based on the results of Baker and Savasoglu (2002). The interpretation for this coefficient can go both ways, since a positive sign is expected if the variable captures the effect of non-diversifying acquisitions, whereas a negative sign is expected if the variable is a proxy for increased probability of a regulatory hurdle (an antitrust regulator blocking the acquisition as a result of increased market power within a specific industry or geographical area). Premium over target market price is not a significant predictor of deal completion probability in this sample.

Additionally, we would expect that there should be a negative relationship between ICs and time to resolution, that is, the use of ICs predicts a shorter public phase of the tender offer process, or that deals expected to be completed with ease are those for which counterparties are comfortable with signing an IC. The results are shown in Table 5.

[INSERT TABLE 5 ABOUT HERE]

The coefficient of *% shares irrevocably committed* ranges from –18.7 to –21.5 in columns 1 to 2. The result indicates that offers with irrevocable commitments are associated with shorter public phase durations. As shown in specifications (3) and (4) (first controlling for one common time trend in the data with year FEs and then letting time trend to vary within industries), having 20% or more of the target outstanding shares irrevocably committed results in a decrease in bid duration of 8–10 days. Specifications 5 to 6 show that having at least some IC shares results in a decrease of 2–4 days, although these results are not statistically significant. Once the sample is restricted to public bidders with data on more detailed acquirer characteristics (specifications 7 to 9), all the IC variables retain their sign, although the significance levels drop below conventional levels in specifications (7) and (9), as sample size drops from 1,420 to 321.

The effects of *natural logarithm of target market value* and *hostility* are as expected. *Target market value* increases the time to completion, perhaps since larger companies are more likely to face regulatory hurdles more frequently and usually have a larger number of small shareholders. Their market share in any region is more likely to breach antitrust thresholds due to an acquisition. The result is also consistent with Golubov, Petmezas, & Travlos (2012). Hostility increases the time to completion, potentially due to defensive measures and non-cooperativeness on behalf of the target.

*4.2. Determinants of premium: Cumulative Average Abnormal Returns*

We turn next to analysis of shareholder value effects of ICs. For this purpose, we estimate CAARs and shareholder value changes for both acquirers and targets over a [–1,+1] event window. Table 6 shows

these results for univariate comparisons. Figures 3 and 4 show CAARs for acquirers and targets respectively in IC and non-IC transactions. We use a subsample of 471 tender offers with a public bidder and a public target with share price data available around the tender offer. From 1,420 observations in Table 5, the sample size first drops to 858 when we require acquirer to be public and have share price data available, and eventually to 471 when we further require the same data for target and set deal size thresholds described in Section 3.1.1. Because public acquirers tend to acquire larger targets, this sample has a greater average deal size (757 vs. 391 million USD) than our analysis of completion likelihood and time. The analysis closely follows Moeller, Schlingemann, & Stulz (2004) in Panel A, while Panel B adds descriptive statistics about target and acquirer market values in the different subsamples.

[INSERT TABLE 6 ABOUT HERE]

[INSERT FIGURE 3 ABOUT HERE]

[INSERT FIGURE 4 ABOUT HERE]

Table 6 indicates that for acquirers with and without an IC, the announcement returns are not different in the [−1,+1] window. For targets, the picture is starkly different. Transactions with ICs are associated with significantly lower target CAARs of 4.7 percentage points. A focus on equally-weighted returns may be misleading as the sample of market values has a long right tail. Therefore, we also check for median cumulative abnormal returns, and find results congruent with average returns: transactions with ICs have statistically significant lower mean abnormal target returns of 4.5 percentage points over the [-1,+1] window. We reach similar conclusions when we evaluate target median NPVs.[12] For example, the median target NPV is 2.8 million USD for deals with an IC and 6.0 million for deals without an IC. We also replicate Table 6 using event windows [−10,+10] and [−20,+20] in Appendix Table A3, and reach similar conclusions as when using [−1,+1] event windows.

*4.3. Determinants of premium: multivariate analysis for target returns*

In Table 7, we analyze the possibility that decisions on offer premiums are affected by self-selection in the choice of signing an IC. The subsample with data on all outcome variables consists of 447 observations—compared with Table 6, we lose 24 observations due to availability of completion time as control variable. In columns 1 to 3, we use a specification similar to Bargeron (2012) where we first estimate a probit model of the factors associated with the likelihood of using an IC. These results are reported in column 1. Columns 2 and 3 report second-stage estimates for premium, measured with both 4-week premium and CAAR using window [-1,+1]. In columns 4 and 5, for comparison purposes, we report OLS estimates for the full sample and in columns 6 and 7 for the subsample with IC above zero.

[INSERT TABLE 7 ABOUT HERE]

In the first stage, we include deal synergy variables motivated by the certification hypothesis that low-synergy deals are more likely to have an IC (or an STA in the US context): this is because informed target blockholders can use the IC to credibly signal to uninformed target shareholders that the offer represents fair value. We allow different elasticities for positive and negative synergies and measure them as the natural logarithm of target synergies (measures derived from target NPVs used in Table 6) in 2016 dollars. To be able to estimate the model in column 1 with a maximum number of observations, we exclude industry and year fixed effects, but include a post-1999 dummy to account for the time-series step change in IC usage.

For second-stage excluded instruments, we choose the deal completion dummy, deal completion time (in days), and two variables for deal synergies, as well as the post-1999 dummy. The excluded instruments are chosen so as to capture factors related to IC self-selection, but not to directly influence premium such as friendliness variables.

Consistent with results in Table 3, the results in column 1 indicate that deals which have an IC are likely to have smaller market value targets and more likely to have friendly characteristics. The variables for target synergies capture hardly any variation in the first stage, lending little support to the idea that low-synergy transactions self-select to use ICs. In unreported results, we replace target synergies with total deal synergies and reach similar conclusions. The Inverse Mills Ratio ("self-selectivity" in Table 7) is borderline significant both in column 2 for the four-week premium and in column 3 for CAAR, lending partial support to the idea that premium is determined conditional on IC. The association between [−1,+1] CAAR and *% of shares irrevocably committed* remains negative and significant, regardless of whether the estimation is two-step or OLS, and regardless of whether no-IC deals are included or not. The association between four-week premiums and *% of shares irrevocably committed* remains also negative, but is significant at conventional levels only in Specification 6. The results are in part consistent with Bargeron (2012), and provide some inconclusive evidence in favor of the certification hypothesis.[13]

We interpret the magnitude of the coefficients on *% of shares irrevocably committed* in Table 7 as follows: taking the average IC% in the sample, 24% and multiplying by the coefficient of −0.08 from specification (2) gives a −1.9 percentage point change in the four-week-premium. This is likely to be an underestimate, however, as the average IC% is based on all observations, including zeros. We condition the estimate by dividing it with the likelihood of an IC in this sample (0.664), and obtain 24% × −0.08 × (1/0.664) = −2.9%. In other words, an average-sized IC implies a 2.9 percentage point lower four-week bid premium. We perform the same calculation for specification (3) to obtain the result that [−1,+1] target CAARs are 6.5 percentage points lower in a deal with an average-sized IC.

*4.4. Determinants of acquirer returns: multivariate analysis*

Univariate results reported in Table 6 and Appendix Table A3 indicate that acquirer stock prices seem not to be consistently related to the choice of using IC. However, this finding may potentially be affected by IC choice being influenced by acquirer characteristics. Therefore, the multivariate analysis in Table 8 conditions on target, deal, and acquirer characteristics. In the multivariate setting, however,

data availability causes the sample to shrink further from 471 observations in Table 6 to 278 in Table 8.

In Table 8, we perform an analysis on acquirer returns similar to Moeller, Schlingemann, & Stulz (2004, 2005); Masulis, Wang, & Xie (2007); Johnson, Moorman, & Sorescu (2009); and Harford, Humphery-Jenner, & Powell (2012). We include target, deal, and acquirer characteristics in all regressions in Table 8 and report results for three different windows for computing CAARs: [−1,+1], [−10,+10], and [−20,+20] days. The variable of primary interest, Irrevocable Commitment (%) is significant at 10% only in window [−20,+20]. However, similar to the univariate setting, acquirer returns are not consistently related with ICs.[14]

As is not uncommon in the academic literature on the shareholder value effects of mergers and acquisitions (see e.g. Andrade, Mitchell, & Stafford, 2001), our results on target returns are statistically significant at the same time as our results on acquirer results fail to reject the null. This is possibly due to the signal from the acquisition being lost in the noise of all other variation in the acquirer's market value, given that the acquirer is typically a larger company.

Tender offers with more levered acquirers tend to generate higher returns consistent with Maloney, McCormick, and Mitchell (1993) and Bae, Kang, and Kim (2002) among others, albeit this finding is not strongly significant in all specifications. In addition, when the target is relatively large compared to the acquirer, acquirer returns tend to be consistently smaller. Perhaps surprisingly, higher premiums are associated in our sample with higher acquirer returns when including year and industry FEs in columns (1), (3), and (5).

[INSERT TABLE 8 ABOUT HERE]

## 5. Interpretations

### *5.1 ICs as trade-offs between speed, completion likelihood, and price*

Our first hypothesis suggests that target shareholders get compensation for the IC through a higher price, while bidders get a faster transaction. The empirical prediction is that deals with ICs are completed faster, have a higher target CAAR, and a lower bidder CAAR.

The results show that bids which include an IC are indeed completed faster. For deals involving any ICs, the difference conditioning on other deal characteristics is −2 to −4 days, and for deals with ICs larger than 20% of shares outstanding, −8 to −10 days (the mean time to completion in the sample is 56 days). The [−1,+1] target CAAR is 6.5 percentage points lower in the average deal with an IC, while four-week bid premiums are 2.9 percentage points lower. The results do not support the first hypothesis of fast completion versus higher price: while the deals with ICs are completed faster, targets do not receive a premium compared to deals without an IC.

Our second hypothesis suggests that target shareholders want to increase the likelihood of a successful, premium-generating transaction, and are willing to trade a higher probability of completion against lower leverage on price. The empirical prediction is that deals with ICs have a higher likelihood of completion, a lower target CAAR, and a higher bidder CAAR.

The results show that bids which include an IC are in fact more likely to be completed. The marginal effect at the means is a 5–11% higher likelihood of deal completion for deals with ICs, and 7–16% for deals with ICs larger than 20% of shares outstanding. At the means, a one-percentage-point increase in shares committed to an IC is associated with an increase in completion likelihood of 0.3%. As predicted by the second hypothesis, ICs also result in smaller target CAARs and bid premiums. The results on bidder CAARs, however, are not statistically significant.

The results appear therefore most consistent with the second hypothesis: deals with an IC have lower premiums on average, but from the point of view of both the target and the acquirer, they offer the

advantage of a higher likelihood of success. The higher likelihood of completion may be attractive to target blockholders even if they have to compromise on the premium.

*5.2. ICs as a Proxy for Weak Target Bargaining Power*

At first sight, it would appear that an IC would be counterproductive to target shareholders, as it eliminates incentives for the acquirer to raise the price. For this reason, signing an IC can be a signal for low bargaining power. We construct empirical proxies for bargaining power for public acquirers and targets following Ahern (2012), who proposes that targets with high scarcity achieve higher value of gains in mergers.

First, we classify the sample into horizontal and vertical mergers. A horizontal merger is a merger in which the acquirer and target operate in the same industry (defined here as sharing the same two-digit SIC code) and typically are competitors operating independently from each other. In vertical mergers, the acquirer and target are usually interdependent, forming a supplier/customer-relationship.

Due to the interdependency involved in vertical mergers, we expect ICs to be more common in vertical mergers than in horizontal mergers. We conjecture that when the interdependency is strong it is easier to agree on an IC: the target has less bargaining power to look for another bidder if the relationship and interdependency is strong with the potential acquirer. In contrast, in horizontal mergers between competitors there is no such interdependency and thus no incentive to sign an IC right away instead of shopping for a better offer.

Of the 533 transactions in the sample with stock returns data, 248 are vertical and 285 are horizontal mergers. The data (unreported here) first show that ICs are used in 64.5% of vertical mergers compared to 69.1% of horizontal mergers, a difference of −4.6 percentage points ($t$-stat = −1.12, N = 248 and 285, respectively). The results do not reject the null hypothesis of no difference between the groups, and the sign is unexpected.

Second, within the group of vertical mergers, the acquirer can have relatively high or low bargaining power. When does the acquirer have high bargaining power? Imagine the acquirer, company A, buying company B in a situation where B supplies materials to A, which is B's only customer. As the only customer, A can effectively threaten to take its business elsewhere. The product-market power relationship may be transferred to the market for corporate control: B's shareholders will have little choice but to accept an IC.

We follow the logic of Ahern (2012) to define backward and forward mergers. As a measure of bargaining power, we use Input/Output tables of U.K. industries (U.K. IO Analytical Tables 2005 from Office of National Statistics) to construct Ahern's (2012) measures of the relative importance of Supplier to Customer V(s) = Supplier Input / Total Customer Output; and the relative importance of Customer to Supplier V(c) = Customer Purchases / Total Supplier Sales.[15]

The sample of 248 vertical mergers can be grouped into 91 cases when the acquirer is the customer and the target is the supplier (backward merger) and 96 cases where the acquirer is the supplier and the target is the customer (forward mergers), and 61 indefinite cases in which V(s) and V(c) give mixed signals on the direction of the supplier/customer relationship. For backward mergers, we use V(c) as a measure of acquirer bargaining power: if V(c) is high, the acquirer (as a customer) is relatively important to the target (as a supplier). For forward mergers, we use V(s) as a measure of acquirer bargaining power: if V(s) is high, the acquirer (as a supplier) is relatively important to the target (as a customer).

[INSERT TABLE 9 ABOUT HERE]

The results in Panel A of Table 9 show that, as predicted, backward mergers with ICs have on average 0.7 percentage point (3.1% vs. 3.8%) lower acquirer power (V(c) "market share") than backward mergers without ICs. For forward mergers, transactions with ICs have 7.8 percentage points (13.5% vs. 5.7%) higher bargaining power (V(s) "market share") than forward mergers without ICs. These

results are as expected but not robustly significant. This could be due to small sample size, 91 and 96 for the two groups respectively.

Finally, we group backward and forward mergers together in Panel B of Table 9 for increased statistical power. For this analysis, we define as a high-bargaining-power backward merger a case in which the acquirer has above-median V(c) (the customer is important to the supplier). Correspondingly, a high-bargaining-power forward merger is a case that has an above-median V(s) (the supplier is important to the customer). In this combined sample, the high-acquirer-bargaining-power sample uses ICs in 65.6% of cases, while the low-acquirer-bargaining-power sample uses ICs in 63.8% of cases. The direction is as expected but the difference is not statistically significant (*t*-stat 0.29). Consequently, our third hypothesis for bargaining power is not convincingly supported by the data.

*5.3. ICs as a Proxy for Break-Up Fees*

There is a clear empirical trend in the likelihood of use of deal control devices. Solomon and Sautter (2013) discuss what they name "lock-up creep": mergers and acquisitions agreements include an increasing number of clauses designed to make withdrawing from a proposed acquisition negotiation unprofitable. They speculate that courts will eventually step in to draw lines where such deal-protection devices go too far and become against the shareholders' interests.

A major regulatory change relevant to our results happened in September 2011, when the U.K. Takeover Panel introduced a ban on break-up fees. After this, ICs were left as one of the few deal-protection devices still available.

However, the idea that ICs became more common due to this regulatory change is hard to reconcile with our results. As seen in Figure 1, ICs become a de facto standard much earlier than 2011. The increase happens between 1998 and 2000. In 1998, only 34% of transactions included an IC component. In 1999, this figure was already 59%; by 2000, it had reached 84%. Regulatory changes do not appear to account for the sudden and lasting popularity of ICs.[16]

*5.4. ICs as a Proxy for Friendly Transactions*

One can argue that ICs are a proxy variable for the friendliness of the deal. We attempt to rule out this possibility by examining the effect of ICs to completion probability in a subsample of unfriendly deals. Based on the results reported in Table 10, specifications 1 and 2, the baseline results on completion probability remain robust, while the results on time to completion exhibit an unexpected sign but are not statistically significant. The magnitude of the completion probability result is higher for the unfriendly transactions. This appears to imply that the signaling function of obtaining ICs is particularly important in unfriendly transactions. This is logical in the sense that it provides an indication of major shareholder siding with the unfriendly bidder as opposed to management.

[INSERT TABLE 10 ABOUT HERE]

*5.5. ICs as a Substitute for Toeholds*

The decrease of toeholds and growth of ICs can potentially be linked if they have substitutable characteristics. Toeholds refer to acquisitions of target shares on the open market prior to the launch of a full takeover bid. The bidder hopes to acquire part of the company at the market price without paying a control premium, but is limited by ownership disclosure limits. Toeholds are particularly attractive in hostile bids (Betton, Eckbo, & Thorburn, 2009). Both of these mechanisms are meant to achieve the same goals: to increase the probability of a successful bid at minimum total value of the offer.

However, ICs are at best partial substitutes for toeholds. A bidder with a toehold is also bidding for its own shares and therefore receives a premium for its own shares. In toehold situations the bidder either pays a premium for smaller amount of shares (if it is able to acquire the target) or gains the bid premium paid by the rival bidder for its toehold (Bulow, Huang, & Klemperer, 1999). Specifically, when there are competing bidders, the bidder with a toehold has an incentive to bid high and drop out only at a price just below the competing bidder's valuation, since this strategy will increase the premium received from the other bidder (Hirshleifer & Titman, 1990).

We examine separately subsamples of transactions with long-term toeholds and those without. The results are reported in Table 10. The positive effects of ICs for bid success likelihood remain robust in both subsamples. However, in the long-term toehold subsample, the marginal effect of the IC is about twice as large. As to completion time, the effect of ICs is only robust in the no-long-term-toehold subsample. When a toehold is present, completion time is not affected by ICs at conventional significance levels. Overall, this evidence is consistent with ICs as a complement rather than a substitute for toeholds in deal completion.

## 6. Conclusions

We study the role of ICs in takeovers. We find that in comparison with non-IC transactions, transactions with ICs are associated with a higher probability of tender offer success, a shorter time from announcement to completion, lower target [-1,+1] CAARs, and lower four-week bid premiums.

The empirical results are most consistent with our hypothesis two, suggesting that target shareholders trade off a higher likelihood of deal success against lower target-shareholder returns. Such a mechanism would be in line with the sizable literature (see, e.g., Andrade, Mitchell, & Stafford, 2001) showing that target shareholders benefit from acquisitions, while acquirer shareholders obtain close to zero returns. Target shareholders committing to ICs are, after all, still obtaining high absolute CAARs, even if the four-week bid premiums for IC transactions are lower. In such a situation, with an offer on the table that far exceeds the reference point provided by the current market price, target blockholders looking for an immediate exit opportunity may well value a high likelihood of deal success more than the opportunity cost of negotiating a potentially higher premium.

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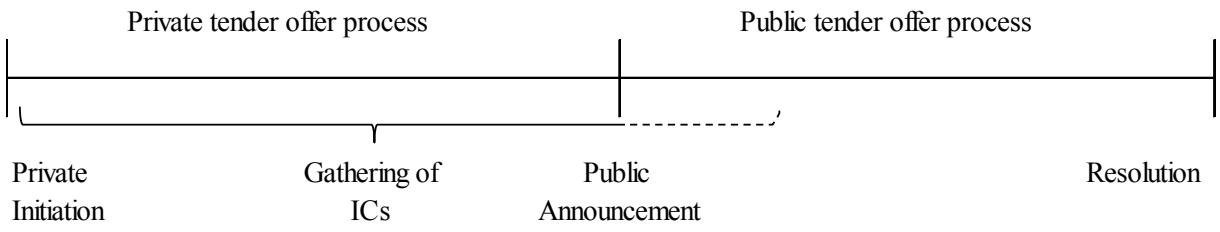
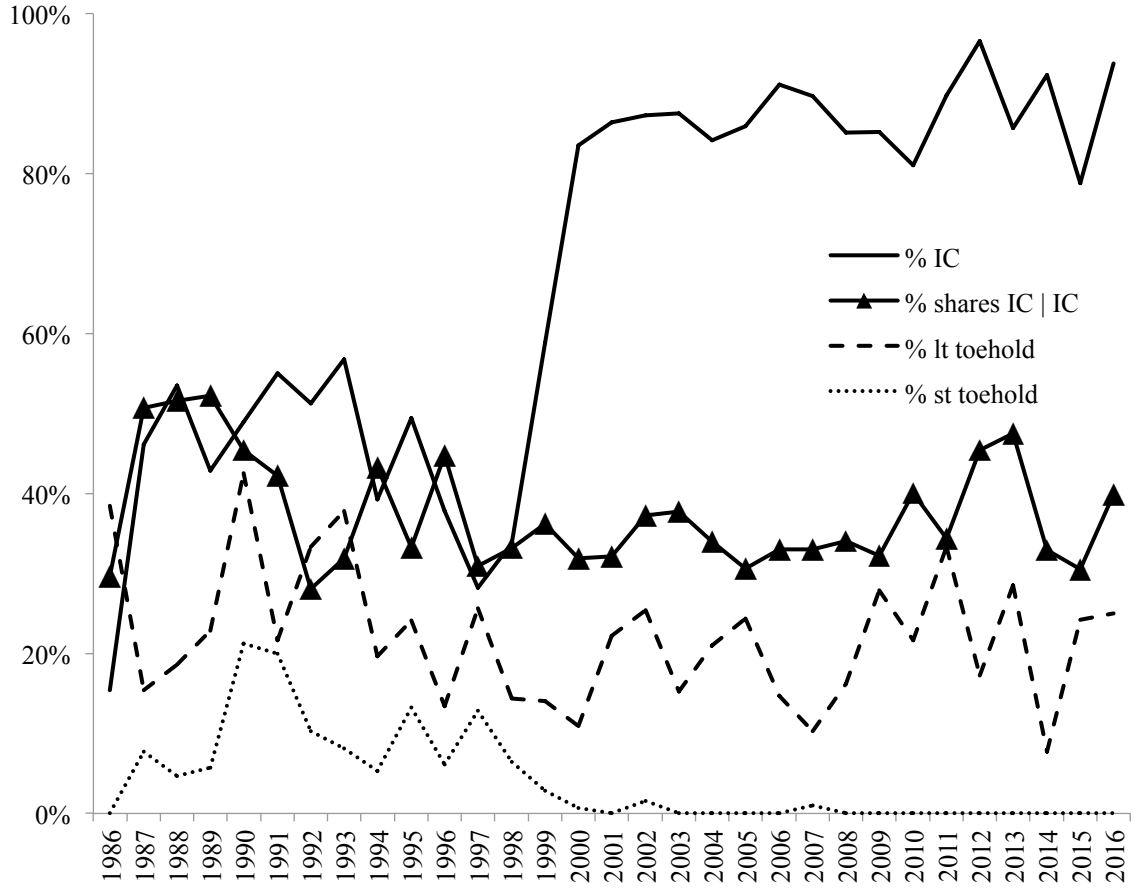
**FIGURE 1 ICs in the tender offer process**




*Notes:* This figure illustrates the positioning of irrevocable commitments (ICs) in the timeline of a tender offer process. The private part of the process starts from initiation and ends at the public announcement of the offer. The public tender offer process runs from announcement to resolution. Gathering of ICs is positioned in the private tender offer process, but can sometimes extend to the public tender offer process as indicated by the dotted line.

**FIGURE 2 Toeholds and ICs in 1986–2016**




*Notes.* The figure d**e**picts the proportion of bids with a target in the U.K., which have irrevocable commitments (ICs) and toeholds (long-term, lt; or short-term, st) as percentage of total number of bids on annual basis. The sample contains all tender offers from SDC Platinum IMA with a U.K. target in the period 01/01/1986–10/18/2016 (N = 2025) post exclusions described in Table 1. Long-term toehold is defined as any fraction of target shares below 50% held six months before the announcement. A short-term toehold is otherwise like a long-term toehold, but with shares that have been acquired less than six months before the announcement. Year 1985 is excluded from the graph due to small number of observations (N=2).

**TABLE 1 Sample Construction**

| Criteria | N |
|---|---|
| All IMA tender offers with U.K. target in SDC between 1/1/1985 and 10/18/2016 | 3269 |
| Exclude all | |
| Stake purchases | 3043 |
| Block purchases | 2999 |
| Asset swaps | 2999 |
| Splitoffs | 2998 |
| Spinoffs | 2997 |
| Privatizations | 2992 |
| Recapitalizations | 2992 |
| Divestitures | 2939 |
| Joint ventures | 2939 |
| Bankrupt targets | 2939 |
| % sought < 50% | 2105 |
| | |
| IC data available, "broad sample" (Table 2 Panel A) | 2025 |
| Offer premium and target market value available (Tables 3 and 5) | 1574 |
| Offer premium, target market value, and time to completion available (Table 5) | 1420 |
| Acquirer is public and market value available | 858 |
| Target is public and share price data available | 533 |
| Target market value >1 mUSD 2016 and >1% of acquirer market value (Table 6 and Figures 3 and 4) | 471 |
| Both Table 5 (premium and time to completion) and Table 6 (market value) data available (used in Table 7) | 447 |
| Acquirer characteristics available, "narrow sample" (Table 2 Panel B) | 362 |
| Acquirer characteristics, market value, and share prices available (Table 8) | 278 |
| Vertical merger with share price data available | 248 |
| Vertical merger with consistent signals on supplier/customer relationship | 187 |

*Notes:* This table reports sample construction from SDC International Mergers (IMA) and Datastream leading to subsamples with different sample sizes. The number of observations in each row is a subset of the sample on rows above.

**TABLE 2 Summary statistics of the sample by year**

| Panel A: broad sample | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Outcome variables of interest | | | | Deal characteristics | | | | | | | | | |
| | | | | | | | % | | | | | | | | |
| Year | N | Completion, % | IC, % | Premium, % | Time to completion, d | Mkt value, USD mn | Unfriendly | Shares offered | Same SIC (1d) | ST toehold | LT toehold | Public to private | Rumored | Buyout |
| 1985 | 2 | 50 | 0 | | 5 | | 50 | 50 | 0 | 0 | 8 | 0 | 0 | 0 |
| 1986 | 13 | 54 | 5 | 56 | 110 | 105 | 31 | 15 | 46 | 0 | 2 | 15 | 0 | 8 |
| 1987 | 26 | 73 | 23 | 36 | 64 | 59 | 23 | 31 | 38 | 1 | 2 | 8 | 0 | 4 |
| 1988 | 43 | 81 | 28 | 37 | 61 | 131 | 21 | 12 | 21 | 1 | 4 | 14 | 0 | 5 |
| 1989 | 35 | 94 | 22 | 38 | 61 | 193 | 11 | 20 | 37 | 1 | 3 | 14 | 6 | 11 |
| 1990 | 47 | 87 | 22 | 32 | 62 | 77 | 28 | 17 | 26 | 5 | 10 | 15 | 6 | 2 |
| 1991 | 60 | 85 | 23 | 51 | 43 | 35 | 23 | 23 | 42 | 2 | 4 | 15 | 5 | 7 |
| 1992 | 39 | 79 | 14 | 64 | 55 | 47 | 13 | 26 | 46 | 1 | 7 | 26 | 3 | 3 |
| 1993 | 37 | 84 | 18 | 51 | 43 | 50 | 8 | 22 | 46 | 1 | 10 | 14 | 5 | 3 |
| 1994 | 56 | 84 | 17 | 45 | 47 | 81 | 7 | 11 | 48 | 0 | 5 | 13 | 5 | 4 |
| 1995 | 83 | 90 | 16 | 49 | 40 | 363 | 14 | 19 | 45 | 3 | 4 | 12 | 2 | 6 |
| 1996 | 82 | 84 | 17 | 32 | 48 | 224 | 16 | 20 | 50 | 1 | 2 | 13 | 2 | 1 |
| 1997 | 117 | 89 | 9 | 44 | 44 | 123 | 8 | 21 | 45 | 3 | 4 | 21 | 0 | 7 |
| 1998 | 139 | 88 | 11 | 44 | 42 | 240 | 11 | 16 | 51 | 1 | 3 | 31 | 0 | 22 |
| 1999 | 214 | 88 | 21 | 50 | 42 | 396 | 12 | 22 | 37 | 0 | 2 | 32 | 32 | 24 |
| 2000 | 146 | 89 | 27 | 52 | 43 | 288 | 9 | 15 | 41 | 0 | 2 | 32 | 64 | 24 |
| 2001 | 81 | 93 | 28 | 40 | 47 | 178 | 9 | 17 | 46 | 0 | 5 | 41 | 67 | 32 |
| 2002 | 63 | 92 | 33 | 45 | 44 | 146 | 19 | 17 | 51 | 0 | 7 | 44 | 52 | 24 |
| 2003 | 72 | 86 | 33 | 33 | 52 | 109 | 6 | 22 | 40 | 0 | 4 | 49 | 15 | 22 |
| 2004 | 57 | 91 | 29 | 27 | 60 | 1331 | 2 | 16 | 28 | 0 | 5 | 32 | 2 | 11 |
| 2005 | 78 | 88 | 26 | 26 | 63 | 444 | 6 | 14 | 40 | 0 | 5 | 37 | 4 | 21 |
| 2006 | 102 | 91 | 30 | 29 | 65 | 527 | 13 | 13 | 35 | 0 | 4 | 39 | 8 | 26 |
| 2007 | 97 | 92 | 30 | 36 | 78 | 1065 | 9 | 8 | 32 | 0 | 3 | 44 | 12 | 27 |
| 2008 | 74 | 89 | 29 | 48 | 72 | 258 | 16 | 12 | 39 | 0 | 4 | 38 | 7 | 19 |
| 2009 | 61 | 89 | 27 | 42 | 76 | 278 | 8 | 30 | 48 | 0 | 7 | 36 | 2 | 16 |
| 2010 | 37 | 81 | 32 | 49 | 68 | 177 | 8 | 8 | 35 | 0 | 6 | 35 | 8 | 5 |
| 2011 | 39 | 90 | 31 | 31 | 83 | 383 | 8 | 13 | 38 | 0 | 8 | 31 | 8 | 21 |
| 2012 | 29 | 93 | 44 | 37 | 68 | 241 | 10 | 14 | 38 | 0 | 4 | 52 | 3 | 31 |
| 2013 | 21 | 86 | 41 | 53 | 90 | 242 | 5 | 19 | 38 | 0 | 8 | 24 | 10 | 10 |
| 2014 | 26 | 100 | 30 | 39 | 107 | 481 | 12 | 12 | 35 | 0 | 3 | 54 | 0 | 15 |
| 2015 | 33 | 91 | 24 | 47 | 96 | 2795 | 27 | 21 | 30 | 0 | 6 | 24 | 6 | 15 |
| 2016 | 16 | 63 | 37 | 67 | 54 | 939 | 13 | 19 | 38 | 0 | 4 | 56 | 0 | 19 |
| All | 2025 | 88 | 24 | 42 | 56 | 391 | 12 | 17 | 40 | 1 | 4 | 30 | 16 | 17 |
| N | 2025 | 2025 | 2025 | 1574 | 1805 | 1707 | 2025 | 2025 | 2025 | 2025 | 2025 | 2025 | 2025 | 2025 | 2025 |

| Panel B: Sample with acquirer data available | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Outcomes | | | | | Acquirer characteristics | | | |
| Year | N | Com-pletion % | IC, % | Pre-mi-um, % | Time to com-ple-tion, d | Mkt va-lue, USD mn | Debt / Assets$_{(market)}$ | Tobin's q | Target mkt value / Acq. Mkt value | OCF / Assets$_{(book)}$ |
| 1990 | 1 | 0 | 0 | 32 | | 18 | 0.25 | 2.86 | 0.02 | 0.19 |
| 1991 | 2 | 50 | 0 | 107 | 62 | 18 | 0.36 | 2.59 | 0.06 | 0.27 |
| 1994 | 2 | 100 | 0 | 62 | 31 | 69 | 0.35 | 4.07 | 0.02 | 0.29 |
| 1995 | 13 | 100 | 22 | 47 | 43 | 205 | 0.44 | 1.79 | 0.18 | 0.18 |
| 1996 | 10 | 80 | 10 | 32 | 38 | 225 | 0.28 | 3.29 | 0.10 | 0.21 |
| 1997 | 23 | 87 | 9 | 49 | 41 | 220 | 0.49 | 2.25 | 0.49 | 0.14 |
| 1998 | 40 | 90 | 12 | 44 | 46 | 306 | 0.38 | 2.04 | 0.26 | 0.18 |
| 1999 | 62 | 89 | 23 | 48 | 42 | 430 | 0.48 | 2.46 | 0.81 | 0.13 |
| 2000 | 41 | 85 | 25 | 58 | 50 | 441 | 0.53 | 1.61 | 0.79 | 0.18 |
| 2001 | 19 | 89 | 27 | 41 | 38 | 102 | 0.58 | 1.24 | 0.32 | 0.12 |
| 2002 | 11 | 100 | 32 | 34 | 52 | 72 | 0.27 | 2.53 | 0.06 | 0.14 |
| 2003 | 9 | 89 | 27 | 19 | 41 | 209 | 0.43 | 1.32 | 0.23 | 0.14 |
| 2004 | 16 | 94 | 18 | 30 | 83 | 4138 | 0.36 | 1.75 | 0.16 | 0.15 |
| 2005 | 18 | 89 | 22 | 37 | 72 | 506 | 0.38 | 3.52 | 1.19 | 0.15 |
| 2006 | 14 | 86 | 21 | 31 | 84 | 777 | 0.36 | 1.80 | 0.20 | 0.16 |
| 2007 | 18 | 83 | 28 | 49 | 81 | 2717 | 0.33 | 1.75 | 0.17 | 0.17 |
| 2008 | 15 | 80 | 24 | 39 | 69 | 612 | 0.46 | 2.03 | 3.47 | 0.14 |
| 2009 | 14 | 100 | 31 | 42 | 69 | 690 | 0.30 | 1.73 | 0.29 | 0.18 |
| 2010 | 8 | 88 | 37 | 53 | 49 | 290 | 0.72 | 1.75 | 0.12 | 0.25 |
| 2011 | 5 | 100 | 25 | 66 | 73 | 135 | 0.36 | 2.14 | 0.07 | 0.24 |
| 2012 | 1 | 100 | 2 | -42 | 80 | 274 | 0.39 | 1.44 | 0.28 | 0.26 |
| 2013 | 7 | 100 | 35 | 48 | 88 | 506 | 0.32 | 1.99 | 0.20 | 0.17 |
| 2014 | 4 | 100 | 27 | 44 | 146 | 258 | 0.38 | 1.50 | 0.20 | 0.12 |
| 2015 | 7 | 86 | 30 | 32 | 137 | 10424 | 0.39 | 2.13 | 0.15 | 0.15 |
| 2016 | 2 | 50 | 6 | 23 | 53 | 6080 | 0.68 | 1.29 | 0.42 | 0.05 |
| All | | 89 | 22 | 44 | 57 | 880 | 0.43 | 2.08 | 0.58 | 0.16 |
| N | 362 | 362 | 362 | 362 | 321 | 362 | 362 | 362 | 362 | 362 |

*Notes.* This table displays mean statistics for tender offers in the period 01/01/1985-10/18/2016 for U.K. targets. *Completion* measures the % of all U.K. deals completed out of all tender offers. *IC %* indicates % of shares irrevocably committed. *Premium* indicates offer price over target share price 30 days before the announcement. *Time to completion* is the duration from announcement until the offer becomes effective or unconditional, measured in calendar days. *Market value* is for target in USD million (inflation-adjusted, year 2016 as base). *Unfriendly* (0/1) indicates offer not endorsed by target management or offer initiated by the buyer without target management access, *Shares offered* (0/1) is an offer financed partly or wholly with acquirer shares, *Same SIC* (0/1) is an indicator for one-digit shared SIC code, *ST toehold* is percentage of shares owned by bidder acquired within six months of the announcement, *LT toehold* is percentage of shares owned by bidder six months prior to announcement, *Public to private* (0/1) is an indicator for a private bidder, *Rumored* (0/1) indicates if the deal became as rumored, and *Buyout* (0/1) indicates acquisition by a buyout firm. Panel A reports statistics for broad sample and Panel B for narrow sample with available acquirer characteristics data.

**TABLE 3 OLS regressions of determinants of ICs**

| Panel A: Determinants of IC (continuous dependent variable) | | | | |
|---|---|---|---|---|
| Dependent variable | % irrevocably committed in the offer | | | |
| Specification | | | | |
| | 1 | 2 | 3 | 4 |
| Ln (target mkt value) | −0.05*** | −0.05*** | −0.05*** | −0.05*** |
| | (−12.99) | (−11.24) | (−7.72) | (−4.95) |
| Unfriendly (1/0) | −0.12*** | −0.11*** | −0.12*** | −0.18*** |
| | (−8.73) | (−7.12) | (−5.02) | (−5.26) |
| Shares offered (1/0) | −0.03** | −0.04** | −0.04 | −0.03 |
| | (−2.04) | (−2.21) | (−1.33) | (−0.76) |
| Same 1d SIC-code (1/0) | 0.00 | 0.00 | 0.00 | 0.02 |
| | (−0.40) | (−0.28) | (0.04) | (0.69) |
| Short-term toehold, % | 11.82 | 8.28 | 59.75* | 30.30 |
| | (1.00) | (0.61) | (1.70) | (0.55) |
| Long-term toehold, % | −42.31*** | −42.27*** | −77.27*** | −67.81** |
| | (−7.26) | (−5.84) | (−4.32) | (−2.43) |
| Public-to-private (1/0) | −0.01 | −0.02 | −0.01 | −0.02 |
| | (−0.66) | (−1.11) | (−0.21) | (−0.32) |
| Rumored (1/0) | 0.04** | 0.04** | 0.07** | 0.04 |
| | (2.40) | (2.02) | (2.48) | (1.11) |
| Buyout (1/0) | −0.01 | −0.02 | 0.01 | 0.04 |
| | (−0.27) | (−0.71) | (0.14) | (0.26) |
| Premium, % | −0.05*** | −0.06*** | −0.04 | −0.04 |
| | (−2.80) | (−2.93) | (−1.08) | (−0.84) |
| Acq. Debt / $Assets_{(market)}$ | | | 0.04 | 0.00 |
| | | | (0.71) | (−0.03) |
| Acq. Tobin's q | | | 0.00 | 0.00 |
| | | | (0.18) | (−0.67) |
| Target market value / Acquirer market value | | | 0.00 | 0.00 |
| | | | (−0.28) | (0.00) |
| Acq. OCF / $Assets_{(market)}$ | | | 0.01 | −0.11 |
| | | | (0.09) | (−0.63) |
| Fixed effects | | | | |
| Industry | Yes | No | Yes | No |
| Year | Yes | No | Yes | No |
| Industry × year | No | Yes | No | Yes |
| Mean dependent variable | 0.23 | 0.23 | 0.22 | 0.22 |
| Adjusted $R^2$ | 0.26 | 0.26 | 0.26 | 0.28 |
| Number of observations | 1574 | 1574 | 362 | 362 |

| Panel B: Determinants of IC (binary dependent variable) | | | | |
|---|---|---|---|---|
| Dependent variable | % IC committed in the offer (>median, 0/1) | | | |
| Specification | | | | |
| | 1 | 2 | 3 | 4 |
| Ln (target mkt value) | −0.47*** | −0.52*** | −0.54*** | −0.82*** |
| | (−10.10) | (−9.50) | (−5.23) | (−4.02) |
| Unfriendly (1/0) | −1.39*** | −1.52*** | −2.52*** | −4.85*** |
| | (−6.87) | (−6.01) | (−4.06) | (−2.87) |
| Shares offered (1/0) | −0.37** | −0.42** | −0.70* | −0.45 |
| | (−2.19) | (−2.13) | (−1.77) | (−0.74) |
| Same 1d SIC-code (1/0) | −0.18 | −0.22 | −0.43 | −0.22 |
| | (−1.36) | (−1.39) | (−1.44) | (−0.46) |
| Short-term toehold, % | −0.35 | −0.97 | 4.05 | 1.24 |
| | (−0.20) | (−0.43) | (0.62) | (0.12) |
| Long-term toehold, % | −3.32*** | −3.68*** | −6.57** | −6.08 |
| | (−4.48) | (−3.96) | (−2.06) | (−1.21) |
| Public-to-private (1/0) | −0.11 | −0.23 | −0.70 | −2.10** |
| | (−0.79) | (−1.32) | (−0.96) | (−2.10) |
| Rumored (1/0) | 0.46** | 0.49** | 0.81* | 0.59 |
| | (2.56) | (2.39) | (1.65) | (0.76) |
| Buyout (1/0) | −0.21 | −0.32 | 0.05 | 1.21 |
| | (−1.14) | (−1.49) | (0.08) | (0.92) |
| Premium, % | −0.24 | −0.38* | −0.61 | −1.02 |
| | (−1.43) | (−1.90) | (−1.48) | (−1.53) |
| Acq. Debt / $Assets_{(market)}$ | | | 0.19 | −1.54 |
| | | | (0.36) | (−1.53) |
| Acq. Tobin's q | | | −0.02 | −0.19 |
| | | | (−0.46) | (−1.26) |
| Target market value / Acquirer market value | | | −0.05 | 0.01 |
| | | | (−0.99) | (0.11) |
| Acq. OCF / $Assets_{(market)}$ | | | 0.35 | −1.73 |
| | | | (0.38) | (−0.95) |
| Fixed effects | | | | |
| Industry | Yes | No | Yes | No |
| Year | Yes | No | Yes | No |
| Industry × year | No | Yes | No | Yes |
| Mean dependent variable | 0.50 | 0.50 | 0.50 | 0.49 |
| Pseudo $R^2$ | 0.21 | 0.25 | 0.30 | 0.37 |
| Number of observations | 1566 | 1473 | 352 | 248 |

*Notes:* Panel A reports OLS results estimating determinants of irrevocable commitments (ICs); Panel B uses binary definition of dependent variable (>IC% median). The dependent variable is *% of target shares irrevocably committed* in the offer. ICs are measured at the time of announcement. Definitions of other variables are included in Appendix Table A1. *t*-statistics are reported in parentheses. *Short-term toehold* and *Long-term toehold* coefficients are multiplied by 100. Sample sizes in Panel B are smaller as some industry and/or years have no variation in binary dependent variable. ***, ** and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed *t*-test), respectively.

**TABLE 4 Logistic regressions for tender offer completion probability**

| Completion probability | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Dependent variable | (1/0) announced offer completed (1) or withdrawn (0) | | | | | | | | |
| Specification | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| % of shares irrevocably committed (IC) | 2.88*** | 3.48*** | | | | | 2.11** | | |
| | (5.2) | (5.5) | | | | | (2.0) | | |
| marginal effect at means | 0.24*** | 0.37*** | | | | | 0.19* | | |
| | (5.3) | (6.0) | | | | | (1.9) | | |
| >20% of shares IC (1/0) | | | 1.33*** | 1.53*** | | | | 0.76 | |
| | | | (6.0) | (6.2) | | | | (1.5) | |
| marginal effect at means | | | 0.11*** | 0.16*** | | | | 0.07 | |
| | | | (6.1) | (6.6) | | | | (1.5) | |
| >0% of shares IC (1/0) | | | | | 1.02*** | 1.00*** | | | 0.52 |
| | | | | | (5.1) | (5.2) | | | (1.0) |
| marginal effect at means | | | | | 0.09*** | 0.11*** | | | 0.05 |
| | | | | | (5.2) | (4.2) | | | (1.0) |
| Ln (target mkt value) | 9.0* | 8.9 | 8.1 | 7.1 | 2.4 | −0.7 | −10.4 | −14.0 | −18.2 |
| | (1.7) | (1.2) | (1.5) | (0.9) | (0.5) | (−0.1) | (−0.6) | (−0.8) | (−1.2) |
| Unfriendly (1/0) | −157*** | −183*** | −160*** | −187*** | −154*** | −185*** | −251*** | −252*** | −251*** |
| | (−7.6) | (−6.3) | (−7.6) | (−6.3) | (−7.5) | (−6.4) | (−4.1) | (−4.2) | (−3.7) |
| Shares offered (1/0) | 6.6 | −11.6 | 6.0 | −13.0 | 0.3 | −16.6 | −50.3 | −50.7 | −55.1 |
| | (0.3) | (−0.4) | (0.2) | (−0.4) | (0.0) | (−0.6) | (−1.3) | (−1.3) | (−1.4) |
| Same 1d SIC-code (1/0) | −10.7 | −15.8 | −9.2 | −12.9 | −8.8 | −11.0 | −83.4 | −79.1 | −79.9 |
| | (−0.6) | (−0.7) | (−0.5) | (−0.5) | (−0.5) | (−0.5) | (−1.6) | (−1.5) | (−1.6) |
| Short-term toehold, % | 64.7 | 263.7 | 73.8 | 302.4 | 75.2 | 266.2 | -1329.1* | -1309.1* | -1272.0* |
| | (0.3) | (0.8) | (0.3) | (0.9) | (0.3) | (0.8) | (−1.9) | (−1.8) | (−1.8) |
| Long-term toehold, % | 7.3 | −19.5 | −4.1 | −46.0 | −24.1 | −51.4 | 295.2 | 242.2 | 222.5 |
| | (0.1) | (−0.2) | (−0.1) | (−0.5) | (−0.3) | (−0.5) | (0.8) | (0.7) | (0.6) |
| Public-to-private (1/0) | 4.8 | 25.5 | 4.8 | 27.1 | 8.3 | 29.1 | 22.4 | 31.7 | 24.9 |
| | (0.2) | (0.9) | (0.2) | (1.0) | (0.4) | (1.1) | (0.2) | (0.3) | (0.2) |
| Rumored (1/0) | 73.6** | 74.2* | 76.9** | 75.0** | 65.6** | 71.6* | 125.5* | 136.4** | 129.2** |
| | (2.4) | (1.9) | (2.5) | (2.0) | (2.0) | (1.8) | (1.9) | (2.0) | (2.0) |
| Buyout (1/0) | −17.4 | −54.1 | −13.5 | −47.7 | −22.2 | −49.9 | | | |
| | (−0.6) | (−1.6) | (−0.5) | (−1.4) | (−0.8) | (−1.5) | | | |
| Premium, % | 27.6 | −1.4 | 27.5 | −7.5 | 14.3 | −12.2 | −32.6 | −26.5 | −28.3 |
| | (1.3) | (−0.1) | (1.2) | (−0.3) | (0.6) | (−0.5) | (−0.5) | (−0.4) | (−0.4) |
| Acq. Debt / Assets(market) | | | | | | | 0.51 | 0.49 | 0.54 |
| | | | | | | | (0.6) | (0.6) | (0.7) |
| Acq. Tobin's q | | | | | | | −0.01 | 0.00 | 0.00 |
| | | | | | | | (−0.1) | (0.0) | (0.0) |

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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Target market value / Acquirer market value | | | | | | | 0.36 | 0.34 | 0.35 |
| | | | | | | | (1.0) | (1.0) | (1.0) |
| Acq. OCF / Assets$_{(market)}$ | | | | | | | −0.55 | −0.55 | −0.57 |
| | | | | | | | (−0.2) | (−0.3) | (−0.3) |
| Fixed effects | | | | | | | | | |
| Industry | Yes | No | Yes | No | Yes | No | Yes | Yes | Yes |
| Year | Yes | No | Yes | No | Yes | No | Yes | Yes | Yes |
| Industry x year | No | Yes | No | Yes | No | Yes | No | No | No |
| Mean dependent variable | 0.888 | 0.836 | 0.888 | 0.836 | 0.888 | 0.836 | 0.864 | 0.864 | 0.864 |
| Pseudo $R^2$ | 0.168 | 0.223 | 0.170 | 0.223 | 0.158 | 0.199 | 0.274 | 0.270 | 0.266 |
| Number of observations | 1574 | 1038 | 1574 | 1038 | 1574 | 1038 | 295 | 295 | 295 |

*Notes:* The sample consists of tender offers announced for U.K. targets in the period 01/01/1985–10/18/2016. The dependent variable is binary (announced offer completed = 1 or withdrawn = 0). Definitions of all variables are included in Appendix Table A1. *t*-statistics using industry × year clustered standard errors are reported in parentheses. Columns 7 to 9 have no variation in variable *Buyout,* and they lose 67 observations from an initial sample of 362 as 8 years and 1 industry have no variation in the dependent variable. *Short-term* toehold and *Long-term toehold* coefficients are multiplied by 100. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed *t*-test), respectively.

**TABLE 5 OLS regressions for completion time**

| Completion time | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Dependent variable | Days between announcement and completion date | | | | | | | | |
| Specification | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| % of shares irrevocably committed (IC) | –18.7*** | –21.5*** | | | | | –9.7 | | |
| | (–3.5) | (–3.6) | | | | | (–1.1) | | |
| >20% of shares IC (1/0) | | | –8.0*** | –9.6*** | | | | –7.7* | |
| | | | (–3.2) | (–3.6) | | | | (–1.9) | |
| >0% of shares IC (1/0) | | | | | –2.6 | –3.7 | | | –2.5 |
| | | | | | (–0.9) | (–1.2) | | | (–0.5) |
| Ln (target mkt value) | 5.4*** | 5.5*** | 5.7*** | 5.8*** | 6.3*** | 6.5*** | 8.1*** | 7.8*** | 8.5*** |
| | (5.8) | (5.1) | (6.2) | (5.4) | (7.2) | (6.3) | (4.8) | (4.6) | (5.6) |
| Unfriendly (1/0) | 27.7*** | 30.1*** | 28.0*** | 30.4*** | 29.0*** | 31.3*** | 47.5*** | 47.0*** | 47.7*** |
| | (4.7) | (4.6) | (4.8) | (4.7) | (5.0) | (4.8) | (4.7) | (4.6) | (4.6) |
| Shares offered (1/0) | 8.1** | 4.2 | 8.3** | 4.3 | 8.7*** | 4.9 | 11.1** | 10.7** | 11.3** |
| | (2.5) | (1.3) | (2.5) | (1.3) | (2.7) | (1.5) | (2.3) | (2.2) | (2.3) |
| Same 1d SIC-code (1/0) | –0.6 | 1.9 | –0.8 | 1.7 | –0.6 | 2.0 | –4.5 | –5.4 | –4.6 |
| | (–0.3) | (0.7) | (–0.3) | (0.6) | (–0.2) | (0.7) | (–1.1) | (–1.4) | (–1.2) |
| Short-term toehold % | 35.6 | 47.9 | 35.3 | 47.4 | 34.2 | 47.1 | –54.3 | –54.0 | –59.0 |
| | (1.1) | (1.3) | (1.0) | (1.2) | (1.0) | (1.3) | (–0.9) | (–0.9) | (–1.0) |
| Long-term toehold % | –27.3* | –28.4 | –25.0 | –26.5 | –20.4 | –20.7 | 32.3 | 32.3 | 38.7 |
| | (–1.7) | (–1.4) | (–1.6) | (–1.4) | (–1.3) | (–1.1) | (1.1) | (1.1) | (1.4) |
| Public-to-private (1/0) | 0.8 | –0.6 | 1.1 | –0.2 | 1.0 | –0.2 | –5.9 | –6.8 | –5.9 |
| | (0.3) | (–0.2) | (0.4) | (–0.1) | (0.4) | (–0.1) | (–0.7) | (–0.9) | (–0.7) |
| Rumored (1/0) | 3.3 | 3.4 | 3.1 | 3.2 | 2.9 | 3.2 | 11.2** | 11.6** | 10.9** |
| | (0.8) | (0.8) | (0.7) | (0.8) | (0.7) | (0.8) | (2.1) | (2.2) | (2.0) |
| Buyout (1/0) | 4.4 | 6.1 | 4.0 | 5.7 | 4.3 | 6.3 | 21.2 | 21.1 | 21.0 |
| | (1.3) | (1.4) | (1.1) | (1.3) | (1.2) | (1.5) | (1.6) | (1.6) | (1.6) |
| Premium. % | 8.1*** | 5.1 | 8.6*** | 5.8 | 9.1*** | 6.4* | 9.0* | 8.3* | 9.3* |
| | (2.7) | (1.4) | (2.8) | (1.5) | (3.0) | (1.7) | (1.8) | (1.7) | (1.9) |
| Acq. Debt / $Assets_{(market)}$ | | | | | | | 1.1 | 1.4 | 0.7 |
| | | | | | | | (0.2) | (0.2) | (0.1) |
| Acq. Tobin's q | | | | | | | –0.9 | –0.9 | –0.9 |
| | | | | | | | (–1.6) | (–1.6) | (–1.6) |
| Target market value / Acquirer market value | | | | | | | –0.2 | –0.3 | –0.2 |
| | | | | | | | (–0.4) | (–0.5) | (–0.3) |

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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Acq. OCF / Assets$_{(market)}$ | | | | | | | 17.4 | 18.1 | 17.0 |
| | | | | | | | (1.2) | (1.2) | (1.1) |
| Fixed effects | | | | | | | | | |
| Industry | Yes | No | Yes | No | Yes | No | Yes | Yes | Yes |
| Year | Yes | No | Yes | No | Yes | No | Yes | Yes | Yes |
| Industry × year | No | Yes | No | Yes | No | Yes | No | No | No |
| Mean dependent variable | 57.37 | 57.37 | 57.37 | 57.37 | 57.37 | 57.37 | 57.07 | 57.07 | 57.07 |
| Adjusted $R^2$ | 0.24 | 0.32 | 0.24 | 0.32 | 0.24 | 0.31 | 0.52 | 0.53 | 0.52 |
| Number of observations | 1420 | 1420 | 1420 | 1420 | 1420 | 1420 | 321 | 321 | 321 |

*Notes:* The dependent variable is time to resolution, measured as the interval between announcement and resolution (completion) in calendar days. Definitions of other variables are included in Table A1 in the Appendix. The sample consists of tender offers in 1/1/1985–10/18/2016. *t*-statistics using industry × year clustered standard errors are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed *t*-test), respectively.

**TABLE 6 Event study on relative and absolute gains around tender offers with and without IC**

| Panel A: [−1,+1] window | | | | |
|---|---|---|---|---|
| | All | With IC | Without IC | Difference |
| | (1) | (2) | (3) | (2)–(3) |
| Acquirer $CAAR_{(-1,1)}$ | −0.010 | −0.012 | −0.007 | −0.005 |
| | (−0.007) | (−0.005) | (−0.014) | 0.009 |
| Acquirer $NPV_{mUSD2016}$ | −86.42 | −53.54 | −149.74 | 96.20 |
| | (−0.33) | (−0.19) | (−0.87) | 0.68 |
| Target $CAAR_{(-1,1)}$ | 0.184 | 0.168 | 0.215 | −0.047** |
| | (0.133) | (0.114) | (0.159) | −0.045** |
| Target $NPV_{mUSD2016}$ | 129.42 | 48.65 | 284.92 | −236.27** |
| | (3.21) | (2.77) | (5.97) | −3.20*** |
| Value-weighted $CAAR_{(-1,1)}$ | 0.032 | 0.022 | 0.051 | −0.029*** |
| | (0.013) | (0.013) | (0.019) | −0.006 |
| Total $NPV_{mUSD2016}$ | 42.99 | −4.89 | 135.18 | −140.07 |
| | (1.80) | (1.50) | (2.54) | −1.04 |
| N | 471 | 310 | 161 | |

| Panel B: Market values | | | | |
|---|---|---|---|---|
| | All | With IC | Without IC | Difference |
| | (1) | (2) | (3) | (2)–(3) |
| Acquirer Mkt $value_{mUSD2016}$ | 2,653.32 | 1,992.06 | 3,926.57 | −1,934.51* |
| | (188.47) | (183.79) | (215.93) | (−32.14) |
| Target Mkt $value_{mUSD2016}$ | 757.10 | 313.96 | 1,610.35 | −1,296.4** |
| | (32.29) | (29.32) | (38.71) | (−9.40)** |
| N | 471 | 310 | 161 | |

*Notes:* This table reports the results from an event study splitting the sample into deals with an irrevocable commitment (IC) (310 tender offers) and without an IC (161 tender offers). The sample is a subsample where both acquirer and target are public companies and have stock return and market value data available. Panel A reports tender offer announcement results for a [−1,+1] window around announcement date. Panel B reports market values for the different subsamples. All dollar figures are calculated using inflation-adjusted (2016 as base year) market values yielding total deal NPVs to all acquirer and/or target shareholders. Cumulative average abnormal returns (CAARs) are computed by deducting U.K. market index log-return (TOTMUK) from firm-level log-returns. Mean values are reported in the first row for each statistic, and medians are reported in parentheses in the second row for each statistic. *** denotes statistical significance at 1% level (*t*-test or Mann-Whitney *z*-value). ** at 5% level, and * at 10% level in a two-sided test with $H_0$ for equal mean or median between samples with and without IC.

**TABLE 7 Likelihood of an IC and second-step premium regressions**

| Two-step selection model | | | | OLS | | OLS | |
|---|---|---|---|---|---|---|---|
| Dependent variable | Probit: shares irrevocably committed in the offer (1/0) | 2nd stage OLS: 4-week premium | 2nd stage OLS: Target CAR [−1,+1] | 4-week premium | Target CAR [−1+,1] | 4-week premium | Target CAR [−1,+1] |
| Specification | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Irrevocable commitment, % | | −0.08 | −0.18** | −0.08 | −0.19** | 0.27*** | −0.14** |
| | | (−1.51) | (−2.34) | (−1.64) | (−2.45) | (−2.73) | (−2.19) |
| Ln (target mkt value) | −0.18*** | 0.01 | −0.00 | −0.01 | −0.03*** | 0.04*** | −0.02** |
| | (−3.23) | (0.55) | (−0.27) | (−1.51) | (−2.67) | (−2.97) | (−2.52) |
| Unfriendly (1/0) | −0.79*** | 0.08 | 0.13 | −0.02 | −0.01 | 0.01 | −0.04 |
| | (−3.41) | (1.20) | (1.27) | (−0.61) | (−0.24) | (0.10) | (−0.70) |
| Shares offered (1/0) | −0.21 | −0.10*** | −0.11*** | −0.12*** | −0.14*** | −0.16*** | −0.14*** |
| | (−1.28) | (−3.93) | (−2.88) | (−5.12) | (−3.91) | (−3.62) | (−5.07) |
| Same 1d SIC-code (1/0) | −0.07 | 0.02 | 0.04 | 0.01 | 0.03 | −0.01 | −0.01 |
| | (−0.51) | (0.72) | (1.18) | (0.30) | (0.81) | (−0.28) | (−0.25) |
| Short-term toehold, % | 0.12 | 0.09 | 0.93** | 0.00 | 0.81** | 1.07* | 0.39 |
| | (0.07) | (0.35) | (2.42) | (0.00) | (2.13) | (1.66) | (0.95) |
| Long-term toehold, % | −2.01** | −0.11 | −0.42 | −0.31** | −0.69*** | −1.05*** | −0.47*** |
| | (−2.28) | (−0.65) | (−1.63) | (−2.23) | (−3.34) | (−3.68) | (−2.62) |
| Rumored (1/0) | 0.75*** | −0.13*** | 0.03 | −0.09*** | 0.10** | 0.12** | −0.08*** |
| | (3.02) | (−3.45) | (0.59) | (−2.97) | (2.32) | (2.49) | (−2.68) |
| Buyout (1/0) | −0.07 | −0.01 | −0.19 | −0.01 | −0.18 | −0.03 | 0.01 |
| | (−0.08) | (−0.12) | (−1.10) | (−0.07) | (−1.06) | (−0.17) | (0.05) |
| Completion (1/0) | 0.67 | | | | | | |
| | (1.20) | | | | | | |
| Completion time | 0.00 | | | | | | |
| | (−0.62) | | | | | | |
| Ln (Total NPVmUSD2016 \| | 0.02 | | | | | | |
| | (0.47) | | | | | | |
| Ln (Total NPVmUSD2016 \| | −0.03 | | | | | | |
| | (−0.72) | | | | | | |
| Self selectivity (Lambda) | | −0.20* | −0.27* | | | | |
| | | (−1.85) | (−1.70) | | | | |
| Fixed effects | | | | | | | |
| Post-1999 dummy | Yes | No | No | No | No | No | No |
| Mean dependent variable | 0.72 | 0.43 | 0.19 | 0.43 | 0.19 | 0.42 | 0.19 |
| Adjusted $R^2$ / Pseudo $R^2$ | 0.22 | 0.07 | 0.07 | 0.06 | 0.07 | 0.09 | 0.08 |
| LR Chi-squared | 118.14 | | | | | | |
| F | | 3.93 | 3.86 | 3.96 | 4.60 | 4.27 | 3.61 |
| Number of observations | 447 | 447 | 447 | 447 | 447 | 320 | 320 |

*Notes:* The sample of 447 observations is a subsample of Table 6, as 24 observations are missing data on completion time. Column 1 shows the first-stage probit estimates of the likelihood of the deal including an irrevocable commitment (IC). Columns 1–3 estimate a two-stage selection model similar to Bargeron (2012). Columns 4–5 estimate OLS on the entire subsample, and columns 6–7 in the subsample when *Irrevocable commitment* > 0. Definitions of variables are included in Appendix Table A1. The instrumental variables *completion (1/0), completion time, Ln(Total NPVmUSD2016 | >0),* and *Ln(Total NPVmUSD2016 | <0)* are excluded from the second-step regression. Variable *Public-to-private* used in Table 4 is excluded as it has no variation in this subsample. *Z*- (1st stage results in column 1) and *t*-statistics (OLS) are reported in brackets*. Self-selectivity* is the inverse Mills ratio (lambda) computed using probit estimates in column 1. ***, ** and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed t-test), respectively.

**TABLE 8 Acquirer returns**

| Dependent variable | Acq. CAAR [−1,+1] | | Acq. CAAR [−10,+10] | | Acq. CAAR [−20,+20] | |
|---|---|---|---|---|---|---|
| Specification | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Irrevocable commitment (%) | 0.01 | 0.01 | −0.04 | −0.05 | −0.10** | −0.15* |
| | (0.66) | (0.47) | (−1.07) | (−0.96) | (−1.97) | (−1.86) |
| Ln (target mkt value) | 0.00 | 0.00 | −0.01* | −0.01 | −0.01 | −0.01 |
| | (0.08) | (0.50) | (−1.72) | (−0.76) | (−1.59) | (−1.31) |
| Unfriendly (1/0) | −0.02* | −0.02 | −0.05** | −0.06 | −0.09** | −0.10 |
| | (−1.75) | (−1.19) | (−2.49) | (−1.51) | (−2.36) | (−1.54) |
| Shares offered (1/0) | −0.01 | 0.00 | 0.03 | 0.04 | 0.05** | 0.07* |
| | (−0.54) | (−0.10) | (1.38) | (1.22) | (2.20) | (1.87) |
| Same 1d SIC-code (1/0) | 0.00 | −0.01 | −0.03* | −0.05** | −0.03 | −0.06* |
| | (0.47) | (−0.51) | (−1.66) | (−1.96) | (−1.06) | (−1.80) |
| Short-term toehold % | −0.25** | −0.41*** | −0.18 | −0.30 | −0.12 | −0.32 |
| | (−2.52) | (−2.65) | (−1.15) | (−1.07) | (−0.60) | (−0.95) |
| Long-term toehold % | 0.18*** | 0.22*** | 0.23** | 0.24 | 0.18 | 0.10 |
| | (3.94) | (3.00) | (2.55) | (1.43) | (1.29) | (0.45) |
| Rumored (1/0) | −0.01 | −0.03* | 0.04* | 0.03 | 0.04 | 0.02 |
| | (−1.19) | (−1.65) | (1.84) | (0.79) | (1.38) | (0.50) |
| Premium, % | 0.04*** | 0.04* | 0.06** | 0.04 | 0.11** | 0.09 |
| | (2.61) | (1.73) | (2.24) | (1.12) | (2.54) | (1.49) |
| Acq. Debt / $\text{Assets}_{(\text{market})}$ | 0.05*** | 0.06*** | 0.09** | 0.07 | 0.09* | 0.10* |
| | (3.33) | (2.64) | (2.49) | (1.48) | (1.83) | (1.69) |
| Acq. Tobin's q | 0.00** | 0.00 | 0.00 | 0.00 | 0.00 | 0.01** |
| | (1.99) | (0.42) | (0.06) | (0.96) | (−0.07) | (2.22) |
| Target market value / Acquirer market value | −0.01*** | −0.01*** | −0.01*** | −0.01*** | −0.01*** | −0.01*** |
| | (−5.79) | (−4.60) | (−4.37) | (−3.44) | (−3.46) | (−3.59) |
| Acq. OCF / $\text{Assets}_{(\text{market})}$ | 0.04 | 0.01 | 0.12 | 0.01 | −0.05 | −0.22 |
| | (0.92) | (0.11) | (1.56) | (0.08) | (−0.38) | (−1.18) |
| Fixed effects | | | | | | |
| Industry | Yes | No | Yes | No | Yes | No |
| Year | Yes | No | Yes | No | Yes | No |
| Industry × year | No | Yes | No | Yes | No | Yes |
| Mean dependent variable | 0.00 | 0.00 | 0.00 | 0.00 | −0.01 | −0.01 |
| Adjusted $R^2$ | 0.08 | 0.10 | 0.09 | 0.15 | 0.05 | 0.12 |
| Number of observations | 278 | 278 | 278 | 278 | 278 | 278 |

Notes: The sample of 278 observations is a subsample of Table 7, as 169 observations are missing data on acquirer characteristics. Definitions of variables are included in Appendix Table A1. Variables Buyout and Public-to-private are excluded as they have no variation in this subsample after including fixed effects. t-statistics (OLS) using industry × year clustered standard errors are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed t-test), respectively.

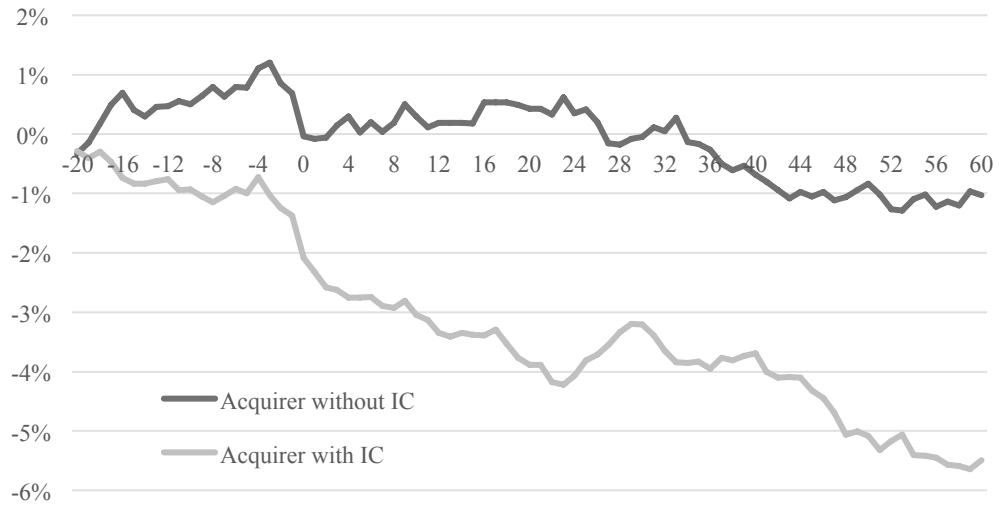
**TABLE 9 ICs and proxies for bargaining power**

| Panel A: Forward and backward mergers treated separately | | | | | | | |
|---|---|---|---|---|---|---|---|
| | $V(s) = \frac{\text{Supplier Inputs}}{\text{Total Customer Outputs}}$ | | | | $V(c) = \frac{\text{Customer Purchases}}{\text{Total Supplier Sales}}$ | | |
| Forward mergers | N | Mean | Median | Backward mergers | N | Mean | Median |
| IC Deals | 69 | 0.135 | 0.026 | IC Deals | 55 | 0.031 | 0.021 |
| Non-IC Deals | 27 | 0.057 | 0.023 | Non-IC Deals | 36 | 0.038 | 0.026 |
| Difference | | 0.078 | 0.003 | Difference | | -0.007 | -0.005 |
| *t*-stat(mean) | | 1.66* | | *t*-stat (mean) | | -0.79 | |
| *p*-value (median) | | | 0.18 | *p*-value (median) | | | 0.15 |

| Panel B: Forward and backward mergers aggregated | | | | |
|---|---|---|---|---|
| | Total deals | IC deals | Non- IC deals | %IC deals |
| Acquirer high bargaining power | 96 | 63 | 33 | 65.63 % |
| Acquirer low bargaining power | 152 | 97 | 55 | 63.82 % |
| Difference | | | | 1.81 % |
| *t*-stat (mean) | | | | 0.290 |
| *p*-value (median) | | | | 0.595 |

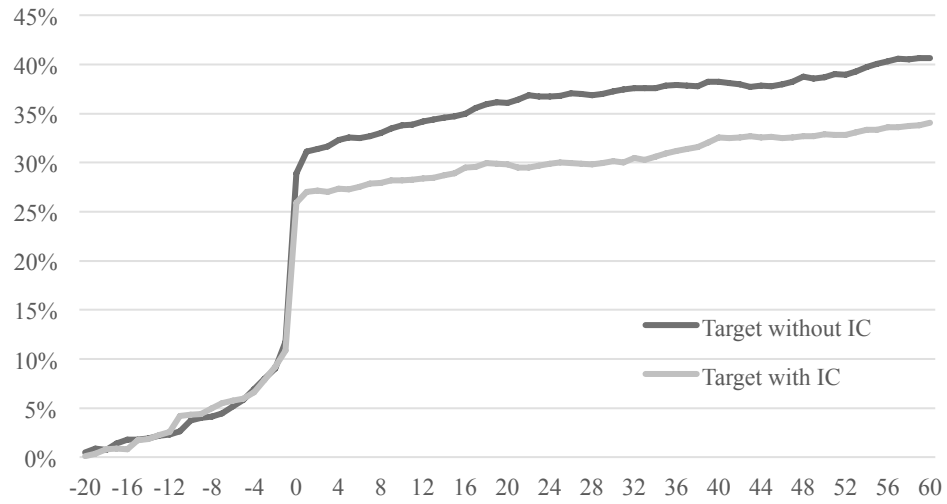
*Notes:* This table reports the use of irrevocable commitments (ICs) in subsamples of high and low acquirer bargaining power based on measures developed by Ahern (2012). We use Input/Output tables of U.K. industries (U.K. IO Analytical Tables 2005 from the Office of National Statistics) to construct Ahern's (2012) measures of the relative importance of Supplier to Customer V(s) = Supplier Input / Total Customer Output; and the relative importance of Customer to Supplier V(c) = Customer Purchases / Total Supplier Sales. The left-hand-side of Panel A presents the difference of V(s) between IC and non-IC deals in forward mergers. A merger is identified as a forward merger if the acquirer industry supplies more inputs to the target industry than the target industry supplies to the acquirer industry and the target industry buys more from the acquirer industry than the acquirer industry buys from the target, using the values of V(s) and V(c) as in Ahern (2012). The right-hand-side of Panel A reports the difference for V(c) between IC and non-IC deals in backward mergers. A merger is identified as a backward merger if the target industry supplies more inputs to the acquirer industry than the acquirer industry supplies to the target industry and the acquirer industry buys more from the target industry than the target industry buys from the acquirer, using the values of V(s) and V(c). Panel B groups backward and forward mergers together for increased statistical power. A high-bargaining-power backward merger is a case in which the acquirer has above-median V(c) (the customer is important to the supplier). Correspondingly, a high-bargaining-power forward merger is a case that has an above-median V(s) (the supplier is important to the customer). Both panels report *t*-statistics for difference in means and *p*-values for difference in medians. ***, ** and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed *t*-test), respectively.

**FIGURE 3 Cumulative Average Abnormal Returns (CAARs) for acquirers**




*Notes:* The figure shows cumulative average abnormal returns for acquirers with irrevocable commitments (ICs) in a tender offer (N=310) and acquirers without an IC in a tender offer (N=161). The sample includes all tender offers with a public acquirer and a public target with stock return data available in Datastream.

**FIGURE 4 Cumulative Average Abnormal Returns (CAARs) for targets**




*Notes:* The figure shows cumulative average abnormal returns for targets with irrevocable commitments (ICs) in a tender offer (N=330) and targets without ICs in a tender offer (N=161). The sample includes all tender offers with a public acquirer and a public target with stock return data available in Datastream.

**TABLE 10 Completion probability and completion time in subsamples**

| Panel A: Completion probability | | | | |
|---|---|---|---|---|
| Dependent variable | (1/0) announced offer completed (1) or withdrawn (0) | | | |
| Specification | Friendly | Unfriendly | Zero LT toehold | > 0 LT toehold |
| | 1 | 2 | 3 | 4 |
| % of shares irrevocably committed (IC) | 2.36*** | 9.47*** | 2.54*** | 4.19** |
| | (4.19) | (4.23) | (4.55) | (2.02) |
| marginal effect at means | 0.16*** | 1.49*** | 0.203*** | 0.45** |
| | (4.18) | (5.10) | (4.64) | (2.23) |
| Controls as in Table 4 column 1 | Yes | Yes | Yes | Yes |
| Fixed effects | | | | |
| Industry | Yes | Yes | Yes | Yes |
| Year | Yes | Yes | Yes | Yes |
| Industry × year | No | No | No | No |
| Mean dependent variable | 0.92 | 0.65 | 0.90 | 0.81 |
| Pseudo $R^2$ | 0.11 | 0.27 | 0.17 | 0.29 |
| Number of observations | 1327 | 184 | 1220 | 258 |

| Panel B: Completion time | | | | |
|---|---|---|---|---|
| Dependent variable | Days between announcement and completion date | | | |
| Specification | Friendly | Unfriendly | Zero LT toehold | > 0 LT toehold |
| | 1 | 2 | 3 | 4 |
| % of shares irrevocably committed (IC) | −22.50*** | 10.08 | −21.59*** | 4.70 |
| | (−4.47) | (0.28) | (−3.92) | (0.38) |
| Controls as in Table 5 column 1 | Yes | Yes | Yes | Yes |
| Fixed effects | | | | |
| Industry | Yes | Yes | Yes | Yes |
| Year | Yes | Yes | Yes | Yes |
| Industry x year | No | No | No | No |
| Mean dependent variable | 53.35 | 93.61 | 56.93 | 59.10 |
| Adjusted $R^2$ | 0.20 | 0.30 | 0.29 | 0.16 |
| Number of observations | 1278 | 142 | 1 131 | 289 |

*Notes:* The dependent variable in Panel A is completion probability and in Panel B time to resolution. Unfriendly is a tender offer that is unsolicited or hostile. Definitions of other variables are included in Appendix Table A1. The sample consists of tender offers in 1/1/1985–10/18/2016. *t*-statistics (OLS) using industry × year clustered standard errors are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed *t*-test), respectively.

## Appendix to Irrevocable Commitments and Tender Offer Outcomes

### Table A1. Variable definitions

**Panel A: Dependent variables and irrevocable commitments**

| | |
|---|---|
| *Completion* | Binary categorical dependent variable: one for completed transactions, zero for unsuccessful bids. Completion is defined as occurring in the year when the offer became effective or unconditional. |
| *Time to completion* | Time (number of calendar days) from announcement of the offer until the offer is unconditional, based on SDC Platinum IMA data. |
| *% of shares irrevocably committed* | Number of shares irrevocably committed divided by total number of shares outstanding. Data manually collected from FE InvestEgate for 2001–2016. Data for 1986–2000 is based on SDC Platinum IMA, corrected by a team from Thomson, with checks by one of the authors. ICs are measured at the time of the announcement of the offer. |
| >0% of shares IC | Dummy that identifies transactions where irrevocable commitments are used (any non-zero value). |
| >20% of shares IC | Dummy variable indicating when over 20 percentage of target shares are irrevocably committed. |

**Panel B: Deal, target, and acquirer characteristics**

| | |
|---|---|
| *Ln (target market value)* | Natural logarithm of inflation-adjusted (year 2016 as base) target market value in USD millions at the end of previous fiscal year. |
| *Unfriendly* | Dummy variable indicating hostility of the deal (initial reception) as indicated by target management approval (hostile) or a deal initiated by the bidder without management access (unsolicited). |
| *Shares offered* | Dummy variable indicating if the consideration offered is acquirer's own stock or a combination of stock and other consideration. |
| *Same 1d SIC-code* | Dummy variable equal to one if the acquirer and target are in the same industry based on the same one-digit SIC code |
| *Long-term toehold, %* | Percent of target shares (out of total outstanding |

| | |
|---|---|
| | number) owned by the acquirer *six months before* the announcement of the offer. |
| *Short-term toehold, %* | Percent of target shares (out of total outstanding number) purchased *within six months preceding* the announcement of the offer. |
| *Long-term toehold* | Dummy variable: if the variable l*ong-term toehold (% of shares)* is non-zero but less than 50%. |
| *Short-term toehold* | Dummy variable: if the variable *short-term toehold (% of shares)* is non-zero but less than 50%. |
| *Public-to-private* | Dummy for a private bidder. |
| *Rumored* | Dummy indicating if deal rumors were reported in the press. |
| *Buyout* | Dummy variable taking a value of one if the acquirer is a buyout firm |
| *Premium* | Based on SDC Platinum IMA premium (measured 4 weeks before the announcement date). If unavailable, initial offer price divided by share price from SDC Platinum IMA database 30 days prior to the offer (linked with SEDOL) or if the offer price is missing based on post-announcement share price / share price 30 days prior (again from SDC Platinum IMA linked with SEDOL). |
| *Acq. Debt / Assets$_{(market)}$* | Acquirer book value of assets LTM – book value of total equity LTM / (Acquirer book value of assets LTM – book value of total equity LTM + market value of equity 4 weeks prior to announcement)<br><br>LTM refers to "Last twelve months" or "most recent financial information available for a 12-month period prior to the original announcement date of the deal" |
| *Acq. Tobin's q* | (Acquirer book value of assets LTM – book value of total equity LTM + market value of equity 4 weeks prior to announcement) / Acquirer book value of assets LTM |
| *Target market value / Acquirer market value* | Target market value of equity 4 weeks prior to announcement / Acquirer market value of equity 4 weeks prior to announcement |
| *Acq. OCF / Assets$_{(market)}$* | Operating cash flow / (Acquirer book value of assets LTM – book value of total equity LTM + market value of equity 4 weeks prior to announcement)<br><br>Operating cash flow replaced with EBIT + Depreciation – Tax if operating cash flow not available |

**TABLE A2 Likelihood of an IC and Second-Step Premium Regressions with Acquirer Characteristics**

| | Two-step selection model | | | OLS | | OLS | |
|---|---|---|---|---|---|---|---|
| Dependent variable | Probit: shares irrevocably committed in the offer (1/0) | 2nd stage: 4-week premium | 2nd stage: Target CAR [−1,+1] | 4-week premium | Target CAR [−1,+1] | 4-week premium | Target CAR [−1,+1] |
| Specification | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Irrevocable commitment, % | | −0.04 | −0.14 | −0.04 | −0.14 | −0.13 | 0.00 |
| | | (−0.49) | (−1.50) | (−0.49) | (−1.49) | (−1.32) | (−0.71) |
| Ln (target mkt value) | −0.22** | −0.01 | −0.02 | −0.02* | −0.03** | −0.03*** | 0.00* |
| | (−2.53) | (−0.97) | (−1.37) | (−1.85) | (−2.39) | (−2.58) | (−1.71) |
| Unfriendly (1/0) | −1.49*** | 0.21** | 0.18 | 0.10* | 0.02 | 0.08 | 0.00 |
| | (−3.35) | (2.34) | (1.63) | (1.68) | (0.25) | (0.81) | (−0.18) |
| Shares offered (1/0) | −0.41* | −0.09** | −0.13*** | −0.12*** | 0.17*** | −0.14*** | 0.00*** |
| | (−1.65) | (−2.38) | (−2.69) | (−3.25) | (−3.67) | (−3.19) | (−3.09) |
| Same 1d SIC-code (1/0) | −0.03 | 0.02 | 0.06 | 0.01 | 0.05 | 0.02 | 0.00 |
| | (−0.16) | (0.58) | (1.54) | (0.44) | (1.38) | (0.57) | (1.09) |
| Short-term toehold, % | 4.55 | −0.26 | 0.19 | −0.15 | 0.34 | 0.43 | 0.00 |
| | (1.19) | (−0.56) | (0.33) | (−0.33) | (0.60) | (0.60) | (0.15) |
| Long-term toehold, % | −5.23*** | −0.07 | −0.13 | −0.37 | −0.56* | −0.54 | −0.00 |
| | (−3.01) | (−0.22) | (−0.33) | (−1.44) | (−1.74) | (−1.48) | (−1.41) |
| Rumored (1/0) | 1.07*** | −0.15*** | 0.01 | −0.11*** | 0.07 | −0.11*** | 0.00 |
| | (2.75) | (−3.24) | (0.19) | (−2.78) | (1.38) | (−2.60) | (1.35) |
| Acq. Debt / $Assets_{(market)}$ | −0.17 | 0.06 | 0.08 | 0.06 | 0.07 | 0.06 | 0.00 |
| | (−0.32) | (0.81) | (0.84) | (0.78) | (0.80) | (0.71) | (1.01) |
| Acq. Tobin's q | −0.03 | 0.00 | 0.00 | −0.00 | −0.00 | 0.00 | −0.00 |
| | (−1.10) | (0.45) | (0.64) | (−0.20) | (−0.09) | (0.43) | (−0.05) |
| Target market value / Acquirer market value | 0.10 | −0.01 | 0.01 | −0.01 | 0.01 | −0.01 | 0.00 |
| | (0.82) | (−1.42) | (0.62) | (−1.27) | (0.80) | (−1.39) | (0.66) |
| Acq. OCF / $Assets_{(market)}$ | −0.30 | 0.12 | 0.56*** | 0.12 | 0.56*** | 0.12 | 0.00** |
| | (−0.30) | (0.82) | (2.99) | (0.82) | (2.99) | (0.63) | (2.12) |

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Completion (1/0) | 0.58 | | | | | | |
| | (0.47) | | | | | | |
| Completion time | 0.01 | | | | | | |
| | (1.36) | | | | | | |
| Ln (Total NPVmUSD2016 \| >0) | 0.08 | | | | | | |
| | (1.16) | | | | | | |
| Ln (Total NPVmUSD2016 \| <0) | −0.02 | | | | | | |
| | (−0.31) | | | | | | |
| Self selectivity (Lambda) | | 0.00* | 0.00* | | | | |
| | | (−1.88) | (−1.65) | | | | |
| Fixed effects | | | | | | | |
| Post 2000 dummy | Yes | No | No | No | No | No | No |
| Mean dependent variable | 0.74 | 0.43 | 0.20 | 0.43 | 0.20 | 0.41 | 0.9 |
| Adjusted $R^2$ / Pseudo $R^2$ | 0.31 | 0.08 | 0.07 | 0.07 | 0.07 | 0.05 | 0.08 |
| LR Chi-squared | 87.83 | | | | | | |
| F | 2.59 | 2.35 | 2.35 | 2.48 | 2.31 | 1.75 | 2.28 |
| Number of observations | 245 | 245 | 245 | 245 | 245 | 181 | 181 |

*Notes:* The sample of 245 observations is a subsample of Table 7, as 202 observations are missing data on acquirer characteristics. Column 1 shows the first-stage probit estimates of the likelihood of the deal including an irrevocable commitment (IC). Columns 1–3 estimate a two-stage selection model similar to Bargeron (2012). Columns 4–5 estimate OLS on the entire subsample, and columns 6–7 in the subsample when *Irrevocable commitment* > 0. Definitions of variables are included in Appendix Table A1. The instrumental variables *completion (1/0), completion time, Ln(Total NPVmUSD2016 | >0),* and *Ln(Total NPVmUSD2016 | <0)* are excluded from the second-step regression. Variable *Public-to-private* used in Table 4 is excluded as it has no variation in this subsample. *Z*- (1st stage results in column 1) and *t*-statistics (OLS) are reported in brackets. *Self-selectivity* is the inverse Mills ratio (lambda) computed using probit estimates in column 1. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed *t*-test), respectively.

**TABLE A3 Event study on relative and absolute gains around tender offers with and without IC using event windows [−10,+10] and [−20,+20]**

| Panel A: [−10,+10] window | | | | |
|---|---|---|---|---|
| | All | With IC | Without IC | Difference |
| | (1) | (2) | (3) | (2)−(3) |
| Acquirer $CAAR_{(-10,10)}$ | −0.017 | −0.023 | −0.005 | −0.018 |
| | (−0.021) | (−0.022) | (−0.018) | −0.004 |
| Acquirer $NPV_{mUSD2016}$ | −166.93 | −96.91 | −301.74 | 204.83 |
| | (−0.97) | (−0.75) | (−1.20) | 0.45 |
| Target $CAAR_{(-10,10)}$ | 0.256 | 0.231 | 0.306 | −0.075** |
| | (0.205) | (0.176) | (0.246) | −0.069*** |
| Target $NPV_{mUSD2016}$ | 129.75 | 50.75 | 281.85 | −231.10** |
| | (5.57) | (4.38) | (10.47) | −6.09*** |
| Value-weighted $CAAR_{(-10,10)}$ | 0.042 | 0.032 | 0.074 | −0.042*** |
| | (0.025) | (0.018) | (0.040) | −0.022 |
| Total $NPV_{mUSD2016}$ | −37.18 | −46.16 | −19.89 | −26.27 |
| | (2.63) | (1.27) | (5.16) | −3.89** |
| N | 471 | 310 | 161 | |

| Panel B: [−20,+20] window | | | | |
|---|---|---|---|---|
| | All | With IC | Without IC | Difference |
| | (1) | (2) | (3) | (2)−(3) |
| Acquirer $CAAR_{(-20,20)}$ | −0.024 | −0.039 | 0.004 | −0.043** |
| | (−0.033) | (−0.043) | (−0.024) | −0.020** |
| Acquirer $NPV_{mUSD2016}$ | −200.62 | −134.90 | −327.16 | 192.26 |
| | (−1.256) | (−1.678) | (−1.023) | −0.655 |
| Target $CAAR_{(-20,20)}$ | 0.320 | 0.298 | 0.361 | −0.063 |
| | (0.251) | (0.219) | (0.304) | −0.085*** |
| Target $NPV_{mUSD2016}$ | 125.86 | 51.80 | 268.45 | −216.65** |
| | (7.14) | (5.32) | (11.79) | −6.47*** |
| Value-weighted $CAAR_{(-20,20)}$ | 0.059 | 0.041 | 0.094 | −0.053** |
| | (0.020) | (0.010) | (0.058) | −0.048*** |
| Total $NPV_{mUSD2016}$ | −74.76 | −83.10 | −58.71 | −24.39 |
| | (2.14) | (0.66) | (5.18) | −4.52** |
| N | 471 | 310 | 161 | |

*Notes:* This table reports the results from an event study splitting the sample into deals with an irrevocable commitment (IC) (310 tender offers) and without an IC (161 tender offers). The sample is a subsample where both acquirer and target are public companies and have stock return and market value data available. Panel A reports tender offer announcement results for a [−10,+10] window around announcement date. Panel B reports results for window [−20,+20]. The sample is identical to Table 6. All dollar figures are calculated using inflation-adjusted (2016 as base year) market values yielding total deal NPVs to all acquirer and/or target shareholders. Cumulative average abnormal returns (CAARs) are computed by deducting U.K. market index log-return (TOTMUK) from firm-level log-returns. Mean values are reported in the first row for each statistic, and medians are reported in parentheses in the second row for each statistic. *** denotes statistical significance at 1% level (*t*-test or Mann-Whitney *z*-value), ** at 5% level, and * at 10% level in a two-sided test with $H_0$ for equal mean or median between samples with and without IC.

## Endnotes

[1] See, e.g., on break-up fees: Coates and Subramanian (2000); Officer (2003); on lock-ups: Burch (2001); on toeholds: Bulow, Huang, and Klemperer (1999); Betton and Eckbo (2000); Betton, Eckbo, and Thorburn (2009).

[2] In a similar manner, an acquirer may evaluate whether including a go-shop provision in an M&A contract will affect transaction likelihood or premium, as in Jeon and Lee (2014).

[3] This argument is in line with Offenberg and Pirinsky (2015), who suggest that buyers choose a public tender offer versus a privately-negotiated merger to trade an increased premium against higher transaction speed.

[4] This hypothesis may seem counter-intuitive at first. Why would the target be more interested in completion likelihood than the bidder? The hypothesis was formulated after discussions with practitioners. The suggestion was that many target blockholders find themselves underdiversified and in search of liquidity. This makes them eager to lock in a bidder into a transaction, even at a slightly lower price, before the buyer obtains a negative signal on the target and buyer's remorse sets in.

[5] The calculation used to estimate CAAR and premium effect magnitudes is explained in subsection 4.3.

[6] Some authors, such as Coates and Subramanian (2000), use the term "lock-up" for a broader range of deal-protection devices, including break-up fees, asset options, stock options, and expense reimbursement fees. Davidoff Solomon, and Stautter (2013) describe the phenomenon of inserting ever-broader deal protection devices in mergers and acquisitions contracts as "lock-up creep."

[7] City Code Rule 13.6 notes. The availability of the withdrawal rights is determined by the Takeover Panel.

[8] For the directors of the company the disclosure requirements are stricter.

[9] City Code Rule 19.5 notes.

[10] We use one-digit SIC codes in building shared industry dummies and industry FEs for two reasons, despite two or three digits being more common in literature. First, some of the subsamples in the paper are rather small and using two- or three-digit codes would cause a significant loss of observations, as there often is no within-year and within-industry variation in the outcome variable of interest. Second, many influential studies which do not have the benefit of a very large sample size also have to resort to one-digit SIC codes (e.g., Rossi and Volpin, 2004; Moeller, Schlingemann, and Stulz, 2005). In Table 9, we divert from one-digit SIC codes and use U.K. two-digit codes instead to compute more specific industry-level measures of bargaining power (see Section 5.2. for details).

[11] For a subset of 35 deals the data is collected using London Stock Exchange, news, and company websites.

[12] Compared to medians, average dollar-value target NPVs are much larger because of the long right tail in market values. IC deals, however, still have lower average target NPVs than non-IC deals, and the difference remains statistically significant. All NPVs are inflation adjusted using 2016 as base year.

[13] In Appendix Table A2, we re-estimate the results of Table 7 in a subsample of public bidders including acquirer characteristics, with 181 to 245 observations remaining after controls. Compared to Table 7, the signs and magnitudes of the coefficients remain largely consistent, but the significance of the IC% variable mostly drops below conventional levels. The smaller sample limits strong conclusions based on this analysis.

[14] In order to check for non-linear effects, we alternatively estimated Table 8 by (a) including a squared term of IC% together with IC%, (b) replacing IC% with a dummy for IC%>=p50, and (c) replacing IC% with a dummy for IC%>=p75. The results are for these new variables are not significant at conventional levels, suggesting that non-linear effects are not empirically present.

[15] We first convert Acquirer's and Target's US SIC Code (from SDC) to U.K. SIC Code using the conversion table provided by https://www.list-logic.co.uk/lists/sic-codes/uk-to-usa-sic-conversion.html. Then the U.K. SIC codes are matched with U.K. Input-Output Industry Code by using the "Classification Key" for 2015 from https://www.ons.gov.uk/economy/nationalaccounts/supplyandusetables/datasets/ukinputoutputanalyticaltablesdetailed. Due to some mismatches between subsections (for example 15.85, 15.87) in U.K. SIC and IO Code, we combine sub-sections to total industry figures (for example, combining 15.85 and 15.87 to two-digit SIC Code 15). There is a strict correspondence from 160 two- or three-digit US SIC codes into 59 U.K. (Nace Rev 1.1.) SIC Codes. For these converted 59 U.K. SIC Codes we apply Input/Output tables.

[16] In order to verify our understanding of changes in the City Takeover Code, we contacted the Takeover Panel: they confirmed that no regulatory changes related to ICs occurred in the time period that would coincide with the pattern in the data. Two amendments to IC regulations took place in the sample period found two amendments, one in 2011 and the other in 2014. The Takeover Panel introduced a ban on break-up fees and other deal protection measures in September 2011, but ICs were still considered acceptable. The other amendment in 2014 requires any irrevocable commitment or letter of intent procured prior to an offer period to be disclosed by no later than 12 noon on the following business day following the identification of the bidder; irrevocable commitments and letters of intent will thus not need to be disclosed in an Opening Position Disclosure.