Shareholder Welfare and Bid Negotiation in Freeze-Out Deals: Are Minority Shareholders Left Out in the Cold?

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ABSTRACT

This paper examines shareholder welfare during bids by controlling shareholders seeking to acquire the remaining minority equity stake in a firm – deals commonly referred to as minority freeze-out bids. Minority shareholders receive lower premiums and realize lower announcement period returns in freeze-out bids relative to comparable arms-length transactions. However, these results are driven by lower deal surplus in freeze-out transactions rather than by expropriation by controlling shareholders. In fact, minority claimants in freeze-out offers receive an allocation of deal surplus that exceeds their pro-rata claim on the firm. An analysis of bid outcomes and renegotiation suggests that minority claimants and their agents exercise significant bargaining power during freeze-out proposals. Overall, our results suggest that legal standards and economic incentives are sufficient to deter self-dealing by controllers during freeze-out bids.

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This paper examines shareholder welfare during bids by controlling shareholders seeking to acquire the remaining minority equity stake in a firm – deals commonly referred to as minority freeze-out bids. Minority shareholders receive lower premiums and realize lower announcement period returns in freeze-out bids relative to comparable arms-length transactions. However, these results are driven by lower deal surplus in freeze-out transactions rather than by expropriation by controlling shareholders. In fact, minority claimants in freeze-out offers receive an allocation of deal surplus that exceeds their pro-rata claim on the firm. An analysis of bid outcomes and renegotiation suggests that minority claimants and their agents exercise significant bargaining power during freeze-out proposals. Overall, our results suggest that legal standards and economic incentives are sufficient to deter self-dealing by controllers during freeze-out bids.

JEL Classification: G34, K22
Keywords: merger, tender offer, acquisition, minority shareholder, squeeze-out, freeze-out, toehold

1. Introduction

Few subjects in applied corporate finance generate as much practitioner debate as the valuation of minority equity claims in U.S. public corporations. This issue is particularly important when a corporation's controlling shareholder bids for the remaining minority equity stake in the firm – deals commonly referred to as minority freeze-outs. The ability to buy out minority shareholders on favorable terms is one way that controlling shareholders can derive private benefits of control.[1] Concerns associated with minority shareholder welfare in freeze-out bids have frequently garnered the attention of the business press and legal community because the pricing of minority shares does not necessarily emerge from an arms-length negotiation between independent parties, but rather may reflect a conflict inherent with disparate ownership interests.[2]

The courts have recognized potential limitations on the objectivity of controlling shareholders and a target firm's directors during freeze-out negotiations.[3] Correspondingly, legal doctrine concerning the fiduciary obligations of controlling shareholders and their directors during freeze-out bids has developed considerably over the last decade. Judicial review of freeze-out transactions has applied a fairness standard that discourages coercive bids while encouraging full information arms-length negotiation between claimants. Nevertheless, while legal and economic conditions may engender negotiation between controllers and minority shareholders in freeze-out bids, they may not circumvent conflicts in deal negotiation that arise when the controlling claimant effectively stands on both sides of the transaction.

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[1] Private benefits of control can also accrue on a number of alternative dimensions including the manipulation of the firm's investment and dividend policies. Decisions affecting controlling and minority shareholders equally are commonly regarded as business judgments. In contrast, actions affecting controlling and minority shareholders asymmetrically (such as freeze-out bids) can be subject to judicial review.

[2] The acquisition of minority shares is not uncommon. These transactions frequently occur as a second-step or "clean-up" merger following a tender offer but are rarely challenged given an established fair price. We exclude clean-up transactions from the analysis that follows, and focus instead on bids by majority shareholders that have held their stake for a minimum of six months prior to the freeze-out offer.

[3] "The controlling stockholder relationship has the potential to influence, however subtly, the vote of minority stockholders in a manner that is not likely to occur in a transaction with a non-controlling party." Kahn v. Lynch Communications Systems, Inc., 638 A.2d (Del. 1994).

To summarize the dynamics between the legal and economic environment in freeze-out bids, and the range of possible outcomes in these transactions, we propose two alternative theories concerning the welfare of minority shareholders around these deals. The first is a theory of bid capture. This theory suggests that controllers are able to capture a sizable share of the gains to freeze-out transactions by structuring bids that minimize vigorous negotiation with minority claimants who lack sufficient board representation and/or efficient legal recourse. Alternatively, we consider a minority bargaining power theory. Under this theory we posit that, despite potentially incomplete legal protections for minority shareholders, economic conditions associated with deal structure and participant incentives create a bargaining environment that insulates minority shareholders from self-dealing by controlling shareholders.

To address these hypotheses, we empirically examine bid characteristics and deal outcomes for a sample of freeze-out proposals involving U.S. public corporations between 1988 and 2003. We consider both the indirect evidence pertaining to changes in shareholder wealth during freeze-out bids, and the direct evidence on the prevalence and tenor of explicit bid negotiation during these transactions. Our analysis incorporates two sets of benchmark transactions: i.) deals proffered by bidders holding non-controlling equity toeholds in a target (henceforth referred to as toehold bids), and ii.) deals involving bidders with no pre-bid equity stake in the target. Transactions involving the transfer of control provide a revealing benchmark for negotiation; however, if they yield systematically different wealth changes or include significant control premiums relative to freeze-out bids, then our interpretation of differences in wealth effects across transaction forms will be limited. To deal with this issue, our analysis of shareholder welfare includes an assessment of the distribution of transaction surplus between majority (bidder) and minority (target) claimants benchmarked to their respective pro-rata shares of target ownership, a measure free of potential distortions imposed by systematic differences in value creation between our control and freeze-out transactions.

Results of our study indicate that final bid premiums offered to minority shareholders in freeze-out bids are, on average, 17.8% and 12.0% lower than the premiums observed in no-toehold and minority toehold bids, respectively. Controlling for bid and contract characteristics and characteristics of the target including pre-announcement stock price run-up, target announcement period cumulative abnormal returns (CARs) in freeze-outs, while positive, are as much as 10% to 14% lower than the CARs realized by target shareholders in control transactions. If the lower bid premiums and CARs to target shareholders in freeze-out bids that are due to bid capture, then bidders in freeze-out transactions should capture a larger share of the deal's surplus. This implies that freeze-out bidders should fare better than bidders in arms-length transactions, after adjusting for the appreciation in the value of the target shares already owned by the bidder. In contrast to this prediction, we find that adjusted announcement period CARs to controlling shareholders during freeze-out bids are comparable to those realized by bidders in no-toehold and minority-toehold deals.

An alternative explanation for the lower premiums offered in freeze-out bids is that freeze-outs do not create comparable synergy gains or do not warrant a significant control premium compared to transactions involving a transfer of control. Consistent with this interpretation, we find that the overall wealth gains around the announcement of freeze-out bids average $55.1 million, compared to $88.4 million in minority toehold bids and $118.9 million in no-toehold bids. To address the allocation of deal surplus directly, we examine the distribution of transaction gains between bidding and target shareholders. After controlling for target shares owned by the bidder, minority shareholders receive, on average, an allocation of deal value that is 11% ($6.1 million) greater than their pro-rata share of the firm. Overall, the evidence does not support the view that the inherent conflicts of interest present in freeze-out transactions result in favorable allocations of deal surplus to controlling shareholders.

To complement our findings on deal wealth effects, we also consider the prevalence and tenor of explicit bid negotiation in freeze-out deals by examining: i) the rate of deal completion, ii)

bid hostility, and iii) the incidence and magnitude of bid revisions. Despite lower average bid premiums, the rate of deal completion for freeze-out offers exceeds the rate observed in both the minority toehold and no-toehold subsamples. Given favorable wealth distributions to minority claimants, however, higher completion rates in freeze-out deals do not suggest that controllers are able to circumvent negotiation. Consistent with this view, freeze-out bids are no less likely to receive a hostile reception in comparison to no toehold bids, and are only 2.8% less likely to be hostile compared to toehold bids. Moreover, within the subsample of freeze-out bids, a hostile reception reduces the probability of deal completion by 42.2%. Finally, revisions to initial bid premiums are 13.7% and 9.4% more common in freeze-out bids relative to no-toehold and minority toehold bids, respectively, and the magnitude of bid revisions are statistically equivalent across transactions. Given the evidence here, it appears that active bargaining by board committees and the potential for legal recourse effectively insulate minority shareholders from self-serving bids from controllers in freeze-out deals.

Finally, controversy concerning freeze-out bids has recently intensified following a series of judicial decisions (beginning with *Siliconix* in 2001) according a different and lower standard of review and oversight to freeze-out bids structured as tender offers rather than mergers. These decisions have led legal scholars, including Iacono (2003) and Subramanian (2004), to decry the current standards as doing little to protect minority claimants in tender offer freeze-outs. Although not the primary focus of our analysis, our evidence does not indicate that minority shareholders fare worse in bids initiated after the *Siliconix* decision regardless of transaction form, suggesting that the impact of recent judicial decisions on the economic outcomes of minority shareholders in freeze-outs has been negligible.

The remainder of this paper is structured as follows. In Section 2, we provide a review of judicial standards as they apply to freeze-out bids. In Section 3, we outline our hypotheses and summarize the related literature. Section 4 describes our sample selection process and data. In

Section 5, we examine shareholder welfare around freeze-out bids, and in Section 6, we empirically model deal completion rates, bid resistance, and the likelihood and magnitude of bid premium revisions for freeze-out and control bids. We provide concluding remarks in Section 7.

2. Legal treatment of freeze-out transactions

Judicial interpretation of freeze-out law in the U.S. has developed substantially over the last decade.[4] In this section we review the relevant case work, with an emphasis on the standards applied in a judicial review of freeze-out bids, and the legal recourse available to dissatisfied minority shareholders through judicial appraisal.[5]

2.1. Freeze-out merger and tender offer bids

Given the potential for self-dealing, Delaware courts have traditionally maintained that freeze-out transactions are subject to judicial review. The current legal framework distinguishes between the obligations of majority shareholders in freeze-out merger bids and tender offers. Under Delaware law, merger negotiations involving controlling shareholders owning less than 89.5% of a target corporation require judicial review under the entire fairness standard.[6] Entire fairness in a freeze-out merger revolves around two elements. The first element, fair dealing, entails the majority shareholder's obligation of candor in what approximates an arm's length transaction. The second element, fair price, grants an appraisal right to dissenting shareholders. In 1994, fair dealing was explicitly defined as requiring that a merger bid be approved by a "fully empowered independent negotiating committee" and be conditioned upon the approval of a majority of the minority

[4] The legal rules and interpretations associated with freeze-out bids are complex. We refer interested readers to Gilson and Gordon (2003) and Coffee (1997) for a more complete discussion of this subject.

[5] Although we emphasize Delaware law, many deal requirements, particularly those associated with disclosure and coercion, have corollary federal legal standards. For example, full disclosure and coercion are addressed in SEC rules 10b-5 and 13e-3. While each state jurisdiction has its own laws and courts, Subramanian (2004) finds that many state courts adopt Delaware standards as they pertain to control transactions. However, it is possible that Delaware standards are not applied uniformly to freeze-outs, a conjecture we incorporate into our empirical analyses.

shareholders.[7] While this standard highlights the importance of an arms-length process in freeze-out bids, absent "plain overreaching" or a "serious breach of fiduciary duty by the controlling stock[holder]", directors have only a limited duty to protect the interests of minority shareholders.[8]

A tender offer freeze-out provides an alternative to a negotiated merger. In many cases, tender offer bids by controlling shareholders are two-stage transactions involving a tender offer for a minimum of 90% of the target's shares, followed closely by a short-form merger.[9] Given the voluntary nature of the decision to tender shares, Delaware courts apply a less exacting standard of review to tender offer bids made by controlling shareholders. Specifically, provided a tender offer is not structurally coercive, that it includes full disclosure of a bidder's private information and includes a non-waivable majority of the minority tender condition, then the transaction is not subject to judicial review under the entire fairness standard. Nevertheless, even in the case of a tender offer, the target board typically appoints a special committee of independent directors to evaluate the transaction and issue a recommendation to target shareholders through a 14D-9 filing. Gilson and Gordon (2003) suggest that by 1995 practitioners generally assumed that freeze-out tender offers would be subject to this alternative standard.[10] This perspective was challenged and substantively upheld in a series of recent Delaware court decisions.[11]

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[6] See Weinberger v. UOP, Inc. 457 A. 2d 701 (Del. 1983). Shareholders controlling at least 90% of a target's stock can utilize a short-form merger under Del. Corp Code 253, which obviates the fairness requirements applied to freeze-out bids, but grants appraisal rights to minority shareholders regardless of the consideration granted.

[7] See Kahn v. Lynch Communications Systems, Inc., 638 A. 2d 1110 (Del. 1994).

[8] Mendel v. Carroll, 651 A.2s 297 (Del. Ch. 1994)

[9] Shareholders controlling at least 90 percent of a target's stock can utilize a short-form merger under Del. Corp Code 253, which obviates the fairness requirements applied to freeze-out bids. Glassman v. Unocal Exploration Corporation (No. 390, 2000 Del. Sup. Ct.) indicates that a minority shareholder's only remedy in a short-form merger is appraisal.

[10] Gilson and Gordon note that this view is largely predicated on an interpretation of the finding in Solomon v. Pathe Communications 672 A2d 35 (Del 1995).

[11] See In re Siliconix Incorporated Shareholders Litigation (Del. Ch. 2001) and In re Aquila Inc. Shareholders Litigation 805 A. 2d 184 (Del Ch. 2002).

2.2. The expected value of an appraisal right

Dissatisfied shareholders electing not to participate in successful acquisition bids, including freeze-out offers, are generally entitled to a court directed appraisal of their claim's fair value. Thus, the expected appraisal value establishes the lower bound on the value of an acquisition bid. An appraisal right is granted to shareholders following cash bids, but only to those claimants who do not vote for a merger proposal and do not tender their shares.[12] Appraisal can also be sought following successful tender offer bids provided a shareholder did not tender shares or submit shares in a second stage clean-up merger bid. Notably, while class appraisal rights are available for all shareholders seeking relief following a merger, only individual appraisal rights are available following a tender offer, increasing the expected cost of appraisal around tender offer bids relative to merger bids.

3. Shareholder welfare in freeze-out bids

The efficacy of legal protections and economic incentives in engendering truly competitive bid behavior is the focus of our analysis. In particular, this paper examines whether majority shareholders receive economic rents from freeze-out bids that are not shared with, or possibly come at the expense of, the corporation's minority equity claimants. In this section we outline our hypotheses concerning the quality of bid negotiation and the allocation of deal value between claimants in freeze-out bids, discuss the testable implications, and summarize the relevant prior research.

3.1 The bid capture hypothesis

Majority shareholders are endowed with a number of advantages in proposing and negotiating freeze-out bids with minority shareholders. Although target firms in freeze-out bids

[12] Bids involving bidder equity do not receive an appraisal right. Conditioning the appraisal right on the form of payment reflects a perception that target shareholders receiving bidder stock are able to proportionally share in the gains that may come from substandard bids. This ignores the fact that bidding shareholders can manipulate the rate of exchange between target and bidder claims. Silverstein and McBride (2002) provide a summary of conditions under which stockholders may seek relief in Delaware freeze-out transactions.

generally appoint a special committee of "independent" directors to evaluate the bid, the prospect of judicial review may not adequately resolve conflicts of interest that may exist when directors represent both controlling and minority shareholders during freeze-out negotiations.[13] Consistent with this perspective, Delaware courts have indicated that, absent a serious breach of fiduciary duty, "Revlon duties" do not apply in freeze-out bids given that adherence to this standard would impose a requirement of self-sacrifice on the part of the controlling shareholder.[14]

It is also possible that controlling shareholders enjoy a negotiation advantage through their private information about the value of the consolidated claims. Bebchuk and Kahan (2000) show that freeze-out bids can be motivated by a discrepancy between the minority shares' market price and the present value of investment opportunities known exclusively to the controlling shareholder. Information asymmetry, combined with the potentially limited role of target directors as information agents for the minority, suggests that controlling shareholders may be able to capture a portion of deal surplus that would otherwise accrue to the minority shareholders in a comparable full-information negotiation. Finally, a controlling shareholder's ownership in the target virtually eliminates third-party bid competition, reducing the incentive to offer a premium that might otherwise be necessary to deter a competing bidder (e.g. Fishman, 1989).

3.2 The minority bargaining hypothesis

Despite a seemingly poor environment for bid negotiation in freeze-out deals, legal recourse may effectively insulate minority shareholders from self-dealing by controlling shareholders. Legal requirements impose a standard of entire fairness on freeze-out merger bids, and require that freeze-out tender offers be full information non-coercive bids. Dissenting shareholders are also legally

[13] See Pure Resources 808 A.2d 421, 435: "In colloquial terms, the supreme court saw the controlling stockholder as the 800-pound gorilla whose urgent hunger for the rest of the bananas is likely to frighten less powerful primates like putatively independent directors who might well have been hand picked by the gorilla (and at the very least owed their seats on the board to his support)."

[14] See Mendel v. Carroll, 6651 A.2d 297 (Del Ch. 1994). Revlon duties are defined in Revlon v. MacAndrews & Forbes Holdings Inc. 508 A.2d 173 (Del. 1986), which holds that directors have a duty to maximize the value of their corporation's stock by obtaining the best price for its sale.

afforded an opportunity to seek the appraisal value for their shares following successful freeze-out cash offers, a condition that imposes a minimum value on freeze-out bids.

Proactive representation by independent directors of special committees can also limit the ability of controllers to negotiate deals that disproportionately allocate deal value to themselves. Of course, director committees may only give freeze-out bids a cursory review, or in the extreme, fail to provide minority shareholders with an opinion regarding the value of a proffered tender offer. Alternatively, external incentives may be sufficient to systematically encourage unaffiliated directors to actively represent the interests of minority claimants during freeze-out proposals. For example, Harford (2003) and Yermack (2004) find a positive relation between the performance of independent directors and their subsequent employment opportunities and compensation. Anecdotal evidence also supports this claim. For instance, a July 2002 press release by the special committee of McAfee.com's board characterized a revised tender offer by Network Associates for the 25% of McAfee it did not already own as "inadequate and not in the best interests of McAfee.com's shareholders, other than Network Associates and its affiliates.". Following months of negotiation, McAfee's special committee recommended a $17.86 per share offer for MacAfee's shares – an 81% increase over Network Associates' initial bid of $9.88 per share. Several other recent deals, including Sabre's bid for Travelocity.com, Toronto-Dominions Bank's acquisition of TD Waterhouse Group, and SBC Communications Inc.'s acquisition of Prodigy Communications also involved publicly negotiated bid revisions.[15]

3.3. Testable implications

The bid capture and minority bargaining hypotheses yield different predictions regarding the wealth effects for deal participants and the quality of negotiation associated with freeze-out bids. If controlling shareholders are able to propose freeze-out bids that forestall arms-length negotiation

[15] See "Takeover Targets Force Up Offers in 'Minority Squeeze-Out' Deals" *Wall Street Journal*, May 10, 2002, page C3.

and/or undervalue a minority shareholder's claim, then we expect to observe systematic evidence that freeze-out targets receive lower premiums and exhibit lower announcement period CARs relative to those in benchmark transactions involving a transfer of control. However, evidence of lower premiums and target CARs is insufficient to conclude that bidders capture a disproportionate share of any transaction gains because it is possible that the total surplus created in freeze-out acquisitions is systematically different than in our benchmark transactions. To address this possibility, we examine adjusted bidder CARs (which exclude any appreciation in target shares already owned) and the distribution of deal surplus between bidders and targets. Bid capture predicts that adjusted bidder CARs will be higher for freeze-outs than for comparable control transactions, and that bidders will capture a disproportionate allocation of deal surplus in freeze-out transactions relative to their pre-bid pro-rata share of the target. In contrast, the minority bargaining power hypothesis predicts that adjusted bidder CARs will be comparable to those in transactions involving a change in control, and that minority shareholders will capture a share of deal surplus that equals or exceeds their pro-rata claim in the target.

The bid capture hypothesis also implies that controlling shareholders will suppress negotiation with minority claimants and their representatives, suggesting that, relative to comparable control transactions, freeze-out deals will have a greater likelihood of deal completion, a lower incidence of bid hostility and bid revision, and when observed, relatively small bid revisions. Alternatively, the minority bargaining hypothesis predicts that freeze-out bid completion rates will be similar to those observed in control transactions. Moreover, this hypothesis predicts that we will observe direct evidence of negotiation, such as a hostile response from the target board, and bid revisions that are similar in incidence and magnitude to those in other deals.

We note that the bid capture and minority bargaining hypotheses are not mutually exclusive in describing outcomes within the population of freeze-out bids. Many of our empirical analyses are designed to identify the conditions associated with the average sample outcome. In order to provide

insight into the distribution of outcomes that might obtain, we also examine the relation between specific offer and contract characteristics and deal outcomes within the subsample of freeze-out bids.

3.4. Prior research

Several papers have examined changes in target shareholder wealth around takeover bids proposed by controlling shareholders. Dodd and Ruback (1977) report an average abnormal announcement return of 17.4% to the target shareholders in a sample of 19 controlling shareholder bids. Holderness and Sheehan (1998) study 38 minority share reorganizations between 1978 and 1984 involving either a merger, going private transaction, or liquidation and find target abnormal stock returns average 12% at the reorganization announcement, and 23% from days -20 to +10 relative to the announcement day. DeAngelo, DeAngelo, and Rice (1984) examine management initiated going-private transactions involving the acquisition of either a minority equity stake, or a subset of the firm's assets. For the 45 pure going private transactions in their sample, they find announcement period abnormal returns between 25% and 54% measured from 40 days prior to the bid proposal. Based on their findings, both Holderness and Sheehan and DeAngelo et al. infer that legal or organizational features associated with freeze-out bids limit the ability of controlling shareholders to propose opportunistic bids at the expense of minority shareholders.

In a contemporary paper, Subramanian (2004) examines freeze-out activity following the *Siliconix* decision of 2001. Given a different standard of judicial review, Subramanian asserts that tender offers should be the dominant freeze-out mechanism for controlling shareholders. Subramanian finds that controlling shareholders pay lower premiums to minority shareholders in freeze-out tender offers than in freeze-out merger bids.[16] However, he also notes that more than two thirds of freeze-out bids following *Siliconix* are structured as mergers. He attributes these seemingly

[16] Subramanian's conclusions regarding shareholder welfare in freeze-out transactions are difficult to interpret. As we show in this paper, systematic variation in transaction surplus makes it difficult to reliably draw inferences regarding the allocation of value across transactions using only premium data.

counterintuitive choices to an inefficient dissemination of best practice doctrine among legal practitioners.

Our research also complements the broader literature on the relation between bidder toeholds and the quality and competitiveness of acquisition bids. Evidence in Walkling (1985) and Betton and Eckbo (2000) suggests that toehold bids are significantly less likely to be challenged by target managers or receive competition by third party bidders. In theoretical work, Singh (1998) also finds a positive relation between toeholds and deal completion, while Fishman (1989) concludes that toeholds discourage third-party bids. The research relating acquisition announcement wealth effects to bidder toeholds is mixed. Eckbo and Langohr (1989) and Jarrell and Poulsen (1989) find that target announcement abnormal returns are decreasing in toeholds, while Franks and Harris (1989) document a positive relation. Stulz, Walkling, and Song (1990) do not find a statistically significant relation between toeholds and returns. More recently, Betton and Eckbo (2000) find that toeholds increase (decrease) a bidder's (target's) expected return to a tender offer bid. In contrast, Singh (1998) shows that toeholds spur aggressive bids, leading toehold bidders to overpay in equilibrium.

4. Data collection and summary statistics

4.1 Sampling

Our sample of freeze-out bids is drawn from a pool of 8,871 merger and acquisition bids announced between 1988 and 2003 compiled using the Securities Data Corporation (SDC) domestic mergers and acquisitions database. Observations in the pool include only acquisition attempts for public targets incorporated in the U.S.; transactions for which deal value was publicly disclosed; deals defined by SDC as either a "merger", "acquisition", or "acquisition of remaining interest"; and deals whose status is designated as either "completed" or "withdrawn". We restrict our analysis to transactions where the bidder is seeking to acquire all of the remaining shares of the target and where both the bidder and target have returns data available on CRSP at the bid announcement, leaving

4,581 bids. Finally, we eliminate ADRs, companies incorporated outside the U.S., closed-end funds, primes and scores, and REITs, yielding a final sample of 4,079 merger and acquisition bids from 1988 through 2003.[17] To minimize the possibility that our freeze-out bids are clean-up mergers, we measure and classify toeholds six months prior to the bid announcement date. In our sample, 148 observations are freeze-out bids by controlling shareholders holding less than an 89.5% stake in the target corporation, and 13 observations are short-form bids with bidders holding in excess of 89.5% of target equity. Given differences in the legal treatment of freeze-out and short-form bids, we distinguish between them in our analyses.

In this study, we compare the characteristics of freeze-out bids to those of subsamples of benchmark deals including: i.) deals proffered by bidders holding non-controlling equity toeholds in a target (e.g. toehold bids), and ii.) deals involving bidders with no pre-bid equity stake in the target. From the 4,079 takeover bids described above, we identify 3,732 deals with no bidder toehold, and 186 with a minority bidder toehold.

Figure 1 summarizes the frequency of minority freeze-out bid conclusions (withdrawn or completed) relative to all merger and acquisition activity between 1988 and 2002. For this comparison, we do not restrict transactions to those that meet the criteria discussed above. Given that deals announced near the end of our sample period are less likely to be resolved, we confine our illustration to one year prior to the end of our sample. Over this time period, freeze-out bids constitute approximately 4.7% of the observed takeover activity. Freeze-out bid activity peaked in 2000 with over 40 deals concluding that year. As a proportion of all M&A deals, freeze-out activity has risen in each sample year since 1999. Despite the data restrictions we impose, 4.0% of the transactions in our sample are freeze-out bids, which is roughly the same proportion of freeze-out bids in the unrestricted sample of SDC transactions.

[17] We eliminate those transactions where the first digit of the bidder or target share code (from CRSP) is 3 or where the second digit is 2 through 8.

4.2. Bidder toeholds and other deal characteristics

Table 1 reports summary statistics for bidder toehold, deal outcomes, bid characteristics, and deal premiums across the toehold categories. Asterisks highlight the statistically significant sample mean (median) differences between the no-toehold subsample and the toehold, freeze-out and short-form transaction subsamples, respectively. The mean (median) preannouncement toehold for bidders with minority toeholds is 15.7% (9.9%), and is 71.5% (73.8%) for freeze-out bidders. In short-form deals, mean (median) toeholds are 92.4% (91.1%) of the target's equity six months before announcement. Toeholds increase slightly from six months prior to the announcement date for the minority toehold subsample, but remain unchanged for the freeze-out and short-form bid subsamples.

Deal value incorporates all consideration offered including cash, common stock and equivalents, preferred stock, debt, options, and warrants. Transaction value declines across our toehold categories. The relative value of the target is the market value of the target's equity not owned by the bidder, divided by the market value of the bidder's equity plus the market value of the target's equity not owned by the bidder (e.g., for freeze-out bids, this is the ratio of the market value of the minority shares to that of the combined firm) measured two days prior to the announcement. Toehold and freeze-out transactions are more likely to be structured as tender offers than are no-toehold offers, but are less likely to include bidder equity. Toehold and freeze-out deals are also less likely to include provisions for bidder termination fees or target equity lockups.

We measure bid premium as the share price offered to target shareholders reported by SDC deflated by the target's share price 42 trading days prior to the bid announcement, less one. The bid premium is set to missing if the share price offered or the pre-bid market price is unavailable from SDC and CRSP, respectively. We compute premiums using the price offered on a per-share basis to avoid issues that arise in comparing bid premiums across different toehold categories. Compared to no toehold bids, average premiums are similar in minority toehold transactions and lower in freeze-out transactions.

Table 1 includes several proxies for bid negotiation. Just under 85% of freeze-out bids are completed, which is significantly higher than the 65.6% completion rate for bids involving toeholds (statistic not reported in table), but not statistically different from the 81.5% completion rate in no-toehold deals. Short-form bids are completed in every observed instance. Freeze-out bids receive a hostile reception in 14.9% of the cases, roughly half the hostility rate observed for toehold bids, but more than double the 6.5% rate observed in the no toehold sample. Approximately 25.0% of freeze-out bids are revised, with a mean (median) revision that is 16.5% (12.8%) above the initial bid.[18] Revision rates are 22.6% and 8.2% in toehold and no-toehold bids, respectively, with a mean (median) bid revision for toehold and no-toehold bids of 13.2% (13.4%) and 6.5% (4.8%) of initial bid value, respectively. The observed frequency and magnitude of hostility and bid revisions in the freeze-out subsample is inconsistent with the notion that minority investors or their boards remain passive during freeze-out negotiations. The results also suggest that controlling shareholders have a propensity to propose substandard initial bids. We consider these fundamental issues more completely in multivariate analyses that follow.

In order to discriminate between the economic effects of initial and follow-on bids, we define an auction sequence following Bates and Lemmon (2003) and summarize auction characteristics for deal subsamples in Table 1. A bid is considered an initial bid if no prior bid for the target is identified for 365 calendar days before the bid announcement. Bids are considered part of an auction if announced within 365 calendar days of the last observed bid (but not necessarily the first bid) for a target. Roughly 9% of toehold bids are not initial bids in an auction sequence, similar to the rate for the no-toehold sample. Less than 5% of bids in the freeze-out sample are not initial bids.

[18] Bid revisions are recorded as part of an individual observation on SDC, and are independent of our auction sequence measure that is defined using the time-series of individual bid observations for a particular target.

5. Shareholder wealth effects in minority freeze-out bids

In this section, we examine changes in shareholder wealth and the allocation of deal surplus between controlling and minority shareholders around freeze-out bids. The bid capture and minority bargaining power hypotheses provide disparate predictions about target shareholder welfare and the distribution of gains in freeze-out bids. If the directors of target corporations fail to represent the interests of minority shareholders in freeze-out bids, and legal recourse is insufficient, then controlling shareholders may be able to structure freeze-out bids that allocate a relatively favorable distribution of transaction gains to themselves. Alternatively, incentives for active board representation, appraisal rights, and legal recourse may limit self-dealing in freeze-out offers. In this case, the distribution of surplus in a freeze-out deal is expected to approach the distribution of a comparable bid proposed by a bidder with a non-controlling stake in the target. To consider evidence on wealth effects associated with freeze-out bids, we examine: i) bid premiums, ii) announcement period abnormal returns to target and bidding shareholders, and iii) the distribution of announcement period wealth gains between bidders and targets.

5.1. Bid premiums in freeze-out deals

Table 2 presents the results of OLS regressions of the log of one plus the bid premium on our bidder toehold categories. Premium data is available for 3,692 bids, including 138 freeze-out bids. Models (1) and (2) of Table 2 incorporate toehold category indicator variables equal to one if a bidder's equity stake in a target six months prior to the bid announcement falls within either the toehold ($0.0\% < \text{toehold} < 50.0\%$); freeze-out ($50.0\% \leq \text{toehold} < 89.5\%$); or short-form ($\text{toehold} \geq 89.5\%$) definition, and zero otherwise. Model (2) allows each toehold category its own intercept and slope coefficient. Model (3) examines the determinants of bid premiums for the freeze-out bid subsample alone. Regressions in this table include various deal characteristics that have been found to be associated with deal premiums in prior research, and year fixed effects for 1989 to 2003 to capture any unmodeled macroeconomic effects (1988 is the excluded year). For brevity, we exclude

target specific characteristics including market-to-book, total debt-to-assets, and free cash flow; the inclusion of which does not alter the tenor or significance of our inferences.

Each of the toehold indicator variables in Model (1) are negative and statistically significant, indicating that premiums are lower in each toehold category compared to no-toehold deals. This result is consistent with the negative relation between premiums and toeholds found in Betton and Eckbo (2000). The average bid premium in freeze-out proposals is 17.8% lower than the premium offered in no-toehold bids (p-value < 0.001), and 12.0% below the premium offered in minority toehold bids (p-value for difference < 0.001). In Model (2), the interaction term Toe1 * Toehold is negative and significant, indicating that deal premiums decline in the bidder's toehold for bids involving minority toeholds. In freeze-out and short-form bids, the slope coefficient is not significantly different from zero. The results of Models (1) and (2) suggest that premiums in freeze out bids are systematically lower in freeze-out deals relative to our control sample, but are invariant in the size of the toehold.

Model (3) summarizes the determinants of premiums offered in the subsample of 138 freeze-out bids with premium data. Model (3) includes a "post-*Siliconix*" indicator variable equal to one for bids initiated after the *Siliconix* decision (June 19, 2001). The regression also includes an interaction of the post-*Siliconix* and tender offer indicators to test whether the lower standard of review for tender offer freeze-outs established in *Siliconix* has had an effect on bid premiums. We know of no research establishing a Delaware precedent in the treatment of freeze-out offers for firms incorporated outside of Delaware; thus, Model (3) also includes an indicator variable equal to one if the freeze-out target firm is incorporated in Delaware. The F-statistic for the overall regression is not significantly different from zero indicating that there is no systematic variation in bid premiums within the subsample of freeze-out transactions. More specifically, there is no evidence that the premiums offered to minority shareholders are different for Delaware targets or following the

Siliconix decision, nor is there evidence that premiums are statistically different between freeze-out tender offers and mergers in the post-*Siliconix* period.

5.2 Announcement period abnormal returns

Data in Table 3 summarize OLS regressions of announcement period CARs to target and bidding shareholders over a three day {-1, +1} period centered on the bid announcement date. Announcement period abnormal returns are computed as a firm's equity return minus the contemporaneous return to the CRSP value-weighted NYSE/AMEX/Nasdaq index and summed over the three-day announcement period. We analyze target shareholder announcement CARs for the full sample of acquisition bids in Models (1) and (2), and to freeze-out bids alone in Model (3). Models (4) and (5) explain announcement period CARs to bidding shareholders for the full and freeze-out bid samples respectively. Regressions in Table 3 incorporate indicator variables for our three bidder toehold categories, as well as indicator variables associated with bidder equity compensation and the form of the bid. As a proxy for investors' expectation regarding deal success, each model includes an indicator variable equal to one if the proposed bid is ultimately completed. Model control variables include indicators equal to one if a bid receives a hostile response or is a follow on offer, the relative market value of the target, and year fixed effects.

5.2.1 Abnormal returns to targets

The results of Model (1) suggest that, on average, target announcement CARs in freeze-out bids are approximately 10.4% below those realized by target shareholders in no-toehold deals (p-value < 0.001), and 9.2% below the target returns in minority toehold bid announcements (p-value for difference < 0.001). While freeze-out bids yield relatively lower announcement period gains for target shareholders relative to comparable control transactions, this difference may be attributable to a higher ex-ante expectation about the likelihood of an offer in freeze-out bids. To control for this possibility, Model (2) includes the pre-bid stock price run-up for the target calculated from days -42 to -2 relative to bid announcement, as well as measures of the target's Tobin's q, total debt, and free

cash flow ratios estimated in the fiscal year prior to the bid. As might be expected, the run-up coefficient is negative and significant in our target CAR regressions. The coefficient associated with the freeze-out bid indicator in Model (2) remains negative, significant, and statistically different from the coefficient on the toehold bid indicator, suggesting that lower announcement CARs to target shareholders in freeze-out transactions are not attributable to bid anticipation.

Model (3) of Table 3 estimates the determinants of target announcement CARs for freeze-out bids. Freeze-out target CARs are lower when deals involve bidder equity, but are higher when the bid is met with a hostile reception from target management. Target CARs are invariant to final deal status and prior bidding. Model (3) includes a continuous measure of the size of the bidder toehold, an indicator variable equal to one if the target is incorporated in Delaware, and an indicator variable equal to one for transactions initiated following the *Siliconix* decision. Target CARs do not vary with toeholds or Delaware incorporation. Target shareholders do not receive lower CARs in freeze-out transactions initiated following the *Siliconix* decision regardless of bid form, a finding at odds with the contention that *Siliconix* had an adverse affect on deal outcomes for minority shareholders.

5.2.2 Abnormal returns to bidders

Overall, the analysis of bid premiums and target CARs suggests that minority shareholders in freeze-out bids realize substantially lower overall wealth gains relative to target shareholders in comparable deals involving a transfer of control. Given these results, one might infer that freeze-out bids are structured in a way that allocates deal value disproportionately to controlling shareholders. If this is the case, then the bid capture hypothesis predicts positive abnormal returns to bidders in freeze-out transactions.

To test for bid capture, it is necessary to isolate the component of the bidder's return attributable solely to the change in value of its underlying assets – e.g., excluding the value change attributable to the shares it holds in the target. Specifically, we measure "adjusted" bidder CARs as the bidder announcement CAR minus the return component directly attributable to any change in the

value of the target claim. Following Maletesta (1983), we estimate the abnormal change in market value by multiplying the pre-bid market value (MV) of the bidder and target firms (as of day -2 relative to the announcement day) by the announcement CAR. Target and bidder abnormal market value (AMV) changes are measured as follows:

$$\text{Bidder AMV change} = \text{Bidder pre-bid MV} * \text{Bidder CAR}, \quad (1)$$

$$\text{Target AMV change} = \text{Target pre-bid MV} * \text{Target CAR}. \quad (2)$$

When the bidder owns a toehold of α in the target's equity, then a portion of the bidder's abnormal market value change is due to changes in the value of the target shares owned by the bidder (e.g., Bradley, Desai, and Kim (1988)). We estimate an adjusted bidder CAR as:

$$\text{Adjusted Bidder CAR} = \frac{Bidder\ AMV\ Change - \alpha * Target\ AMV\ Change}{Bidder\ pre\text{–}bid\ MV - \alpha * Target\ pre\text{–}bid\ MV} \quad (3)$$

Model (4) of Table 3 summarizes a regression of adjusted bidder announcement CARs on our toehold indicators and other control variables. The coefficient associated with the freeze-out indicator variable is negative, but not significant, indicating that bidder returns not associated with target shares owned, are statistically equivalent to comparable returns for no-toehold bidders. In addition, there is no statistically significant difference between adjusted bidder CARs for freeze-out and minority toehold bidders (p-value for difference = 0.265). Similar results obtain in unreported regressions that include target q, leverage, and free cash flow as explanatory variables. Model (5) evaluates the determinants of adjusted bidder announcement CARs for freeze-out bids only. None of the explanatory variables, including indicator variables associated with Delaware target incorporation and the post-*Siliconix* period, are significantly related to bidder CARs in the freeze-out bid subsample.

Overall, an analysis of adjusted bidder CARs, a measure that excludes appreciation in the value of the bidder's toehold, suggests that controlling bidders receive similar allocations of the deal surplus as they do in deals where the bidder holds minority or no-toehold positions in the target.

These results are interesting on two dimensions. First, combined with the evidence on target CARs, they suggest that the overall wealth gains to freeze-out bids may be lower than in toehold and no-toehold bids. More importantly, our findings suggest that, on average, controllers do not extract deal surplus in freeze-out bids, a result that is inconsistent with systematic bid capture.

5.3. Wealth distribution across freeze-out participants

In this section, we directly analyze the overall wealth gains in freeze-out transactions and how these gains are split among bidding and target shareholders. We focus on the wealth gains to deal participants benchmarked against their pro-rata share of the target firm's equity held immediately preceding the bid announcement. Following our estimate of the change in market value for bidding and target (minority) shareholders in equations (1) and (2), we calculate total abnormal market value (AMV) change as follows:

$$\text{Total AMV Change} = \text{Bidder AMV Change} + (1 - \alpha) * \text{Target AMV Change}, \quad (4)$$

where α is the toehold of the bidding firm. We calculate gains or losses to target (minority) shareholders relative to their proportional share of the firm owned prior to the bid. We evaluate this distribution in two ways:

$$\text{Fractional Surplus to Target} = [(1 - \alpha) * \text{Target AMV Change}] / \text{Total AMV Change}, \quad (5)$$

$$\text{Relative Surplus to Target} = \text{Fractional Surplus to Target} / (1 - \alpha). \quad (6)$$

Equation (5) measures the fraction of the dollar value of total deal surplus allocated to minority claimants in the target firm, while equation (6) measures the proportional share of gains to the target minority shareholders relative to their pre-bid share of the firm. For example, if target shareholders owned 25% of the firm pre-bid and received 25% of the transaction gains, then the target shareholders received 100% of the their pro-rata share of the gains.

Table 4 summarizes the allocation of bid surplus between target and bidding shareholders in our sample.[19] We analyze wealth effects for completed bids only from the subsamples of no-toehold, minority toehold, and freeze-out bids over a three-day announcement period widow. Wealth distributions for bidders and targets are calculated as the aggregate wealth increase across all transactions, divided by the total wealth generated in all transactions. This approach reduces the impact of extreme values for individual transactions while providing a portfolio perspective on outcomes. Over the announcement interval, the average total wealth gain to freeze-out bids is $55.1 million, compared to average gains of $88.4 million for minority toehold bids, and $118.9 million for no-toehold bids. In freeze-out bids, 38.2% of announcement period surplus accrues to minority shareholders, while bidding shareholders receive 61.8% of the total wealth gains. Comparable target/bidder splits for no toehold and non-majority toehold deals are 84.7%/15.3% and 100.9%/-0.9%, respectively. Controlling for the bidder's toehold in target shares, the average minority shareholder in the freeze-outs bid subsample receives an allocation of bid surplus that exceeds their pro-rata share by 11.0% (38.2% - 27.2%) or $6.1 million. This is smaller than the comparable mean excess distribution of surplus of 21.5% ($19.0 million) observed in toehold bids, but exceeds the -15.3% ($-18.2 million) relative allocation in no-toehold bids.

Overall, the results in Table 4 suggest that although freeze-out bids are associated with lower value creation compared to no-toehold and toehold deals, they do generate substantial gains, on average, for deal participants. More importantly, the average minority shareholder in a freeze-out bid receives well in excess of 100% of their pro-rata claim to surplus created at the bid announcement. This finding is inconsistent with bid capture and suggests there exists a substantial degree of exercised or implied bargaining power for minority shareholders in freeze-out transactions.

[19] In Table 4 we exclude transactions where the total wealth loss exceeds $2 billion (e.g., see Moeller, Schlingemann and Stulz (2004)). This eliminates two minority-toehold bids, but does not eliminate any freeze-out bids. We deal with the issue of outliers more scientifically in the multivariate analyses in Table 5.

To provide additional evidence on how deal surplus is allocated between bidding and target shareholders, Table 5 reports the results from regressions of target gains as a proportion of their pro-rata claim of the firm on our bidder toehold indicators and control variables. Individual transactions can yield either positive or negative changes in total wealth. To obtain a consistent measure of the proportional gain to targets, we condition the estimation of this value on the sign of these wealth changes. If the total wealth change is positive, the distribution is estimated following equation (6). Alternatively, if the total wealth change is negative, a target shareholder's gain as a proportion of their pro-rata stake is estimated as:

Relative surplus to target = $1 - [((1- \alpha)*\text{Target AMV Change} / \text{Total AMV Change}) / (1- \alpha)]$ (7)

Transactions yielding small wealth gains can lead to extreme values in our measure of the surplus allocation. To address this issue, we estimate percentile rank regressions reported in the Table. In unreported specifications identical to Model (1), we also estimate median regressions of target proportional gains, the results of which are qualitatively identical to those of the rank regressions reported here.

Model (1) of Table 5 performs a percentile rank regression for the full sample of completed transactions with wealth effects estimated over the daily interval {-1, +1} relative to the bid announcement. The coefficient for the freeze-out indicator variable is positive and statistically significant (*p*-value = 0.025), indicating that the target's share of the gains to acquisition bids (relative to their pro-rata share in the firm) are higher for freeze-out bids relative to no-toehold bids. Freeze-out bids also lead to larger gains to target shareholders than minority toehold bids (*p*-value for difference = 0.047). Coefficients on our control variables suggest that the proportional share of total wealth gains allocated to target shareholders around acquisition announcements are statistically higher in stock offers, tender offers, and when bids are met with a hostile response.

Model (2) incorporates an identical specification to Model (1) for the subsample of completed deals where wealth effects are estimated over the auction interval {-1, Auction End}.

Auction CARs are measured as a firm's cumulative abnormal return of the firm relative to the CRSP value-weighted NYSE/AMEX/Nasdaq index calculated from day -1 relative to a first bid announcement and ending at the close of the completed bid. Examining wealth effects over the entire auction period accounts for unanticipated bid revisions that occur after the announcement, but are also likely to be noisy because they include the effects of other events unrelated to the merger. The coefficient on the freeze-out dummy remains positive, but is no longer significant in this specification. In addition, no statistical difference in the target's proportional allocation of bid surplus is observed between the freeze-out and toehold subsamples (*p*-value for difference = 0.298).

Model (3) of Table 5 examines the target's proportional share of bid surplus for the freeze-out subsample only. The target's share of the gains to freeze-outs is larger for tender offers (*p*-value = 0.071). None of the other variables in the freeze-out sample regression are significant, including the post-*Siliconix* indicator variable and its interaction term. These results are inconsistent with the contention that post-*Siliconix*, freeze-out tender offers enabled bidders to extract excess rents from minority shareholders. Model (4), which examines the allocation of surplus using wealth effects computed over the entire auction interval for the freeze-out subsample, yields similar inferences.

Overall, the results in Table 5 reinforce conclusions drawn from Table 4. After controlling for bid characteristics, the proportional allocation to minority shareholders in the full sample of freeze-out transactions is at least as large as comparable allocations to the target shareholders in toehold and no-toehold acquisition bids.

6. Bid negotiation in minority freeze-out deals

The evidence on wealth effects and the allocation of deal surplus in freeze-out bids is inconsistent with outright expropriation, and suggests instead that minority shareholders or their agents realize substantial bargaining power in their negotiations with controlling shareholders. In

this section, we provide evidence on the mechanisms through which bid outcomes are affected in freeze-out transactions.

6.1. Likelihood of bid completion

In Table 6 we model the probability of deal completion and bid hostility as a function of our toehold categories. Of the 4,079 bids in our sample, 3,302 deals are ultimately completed and 777 are withdrawn. The bid capture hypothesis predicts that conflicted directors, ineffective legal recourse, and limited third-party bidding will result in a higher completion rate for freeze-out proposals relative to minority toehold or no-toehold offers. Alternatively, full information bid requirements and the prospect of proactive negotiation by special committees members can result in a freeze-out bidding process that is as contentious as that associated with bids proffered by non-controlling shareholders. To examine the validity of either conjecture, Model (1) of Table 6 estimates the probability of deal completion for the full sample of takeover bids as a function of our categorical toehold indicator variables. The regression incorporates control variables for target payable termination fee provisions, target share lockups, bid form, method of payment, prior bidding, deal hostility, and litigation. Standardized coefficients in brackets represent the change in the probability of deal completion for a change in the explanatory variable from zero to one, or a one standard deviation change in a continuous variable, holding other variables constant at their means. Observations associated with short-form bids are excluded from the sample given that all of these transactions are completed.

Holding contract, bid, and negotiation characteristics constant, coefficients in Model (1) of Table 6 indicate that completion rates are approximately 5.7% higher in freeze-out bids when compared to no-toehold bids and 4.6% higher than the rate for minority toehold bids (p-value = 0.096). The positive coefficient on the freeze-out bid indicator indicates that, despite lower average bid premiums, freeze-outs are more likely to be completed relative to comparable toehold and no-toehold transactions. Consistent with Bates and Lemmon (2003) and Burch (2001), we find that

target termination fees and equity lockups significantly increase the likelihood of deal completion. Deal completion rates are also higher for tender offers and deals including bidder equity, but lower for follow-on bids. Bids that receive a hostile reception are 55.1% less likely to be completed, while deal associated litigation reduces the likelihood of completion by only 1.9%.

Model (2) of Table 6 summarizes the determinants of bid completion for the freeze-out bid subsample. Completion rates for freeze-out bids are 22.4% higher for tender offers. One view of this result is that these bids avoid contentious negotiations with a special committee and effectively co-opt target shareholders. Alternatively, it may be the case that the premiums offered in tender offer bids are sufficiently large to incent shareholders to tender into the offer. The premium results in Table 2 are generally consistent with this alternative view. Deal hostility reduces the likelihood of completion by 42.2%, slightly less than the incremental effect observed in the full sample. This finding indicates that bid resistance, when observed, effectively deters acquisition bids by majority shareholders. Given this result, we infer that agents charged with representing the interests of minority shareholders can and do exert leverage in negotiating on behalf of minority claimants.

6.2. Bid Hostility

Model (3) of Table 6 estimates the likelihood of a hostile bid reception for the full sample of takeover bids as a function of our three categorical toehold indicator variables, and various contract, target, and deal characteristics. Model (4) examines bid hostility for freeze-out bids alone. Since the deal premium likely plays a role in determining bid response, we include the log of one plus the final deal premium in our hostility models.

The results of Model (3) indicate relatively small differences in hostility between the deals in our sample. The likelihood of observing a hostile bid reception is equal in freeze-out and no toehold bids. Minority toehold bids are 3.5% more likely to elicit a hostile response compared to no-toehold bids. Hostility is 2.8% more likely in minority toehold deals than in freeze-outs (*p-value* = 0.037). These results are consistent with Walkling and Long (1984) and Jennings and Mazzeo (1993), who

find that resistance is higher for toehold bids, but declining in toehold size. While statistically significant, the economic magnitude of the effect of toeholds on hostility is quite small. Hostility is less likely to be observed in deals involving target payable termination fee and lockup provisions. Tender offers and follow on bids are more likely to receive a hostile reception, while stock offers are 1.8% less likely to be hostile. A positive and significant coefficient on the log of bid premium suggests that higher premiums forestall a hostile response. The economic magnitude of this result is also slight (0.5%). Furthermore, we note that the relation between bid response and observed premium is likely determined endogenously. In prior work, Schwert (2000) documents only a marginal relation between measures of hostility and bid premiums, while Walkling and Long (1984) find no statistically reliable relation between bid premiums and managerial bid resistance.

Model (4) examines deal hostility for the freeze-out bid subsample. As in the full sample, the likelihood of hostility is higher when freeze-out bids are structured as tender offers rather than mergers. The incremental effect of proposing a tender offer is an 18.5% increase in hostility for freeze-out bids, about five times the magnitude of the same coefficient in Model (3). The relationship between tender offers and hostility in freeze-out bids is inconsistent with the premise that controllers avoid conflict with shareholders or their representatives by proposing freeze-out tender offers. With the exception of the tender offer indicator, no other deal factors are significantly related to bid hostility for freeze-out transactions.[20]

6.3. Bid premium revisions

In Table 7 we analyze bid revisions for our full sample, and for the subsample of freeze-out bids. We define a premium revision as the percent difference between the initial and final bid

[20] For brevity we exclude the post-*Siliconix* indicator variable from the analyses in Table 6. The coefficient on this variable in specifications identical to Models (2) and (4) is insignificantly different from zero as is the coefficient on an interaction term between the post-*Siliconix* indicator variable and the tender offer indicator variable.

premium for a single bid as recorded by SDC.[21] We observe bid premium revisions for 388 of our 4,079 sample deals, 37 of which occur during freeze-out negotiations. The evidence presented in Section 5 of this paper indicates that final bid premiums in freeze-out bids are substantially below those in comparable toehold and no-toehold deals. Under the minority bargaining power hypothesis, low bid premiums may incent target managers to wrangle for bid revisions during merger negotiation, or reduce the likelihood that minority shareholders will tender their shares. Alternatively, faced with negligible third party bid competition, and potentially stifled minority representation, the bid capture hypothesis predicts that bidders have little incentive to propose large initial bid premiums or revise initial freeze-out bids. To evaluate these alternatives, Model (1) of Table 7 estimates a logistic regression of the incidence of bid revision as a function of our three toehold indicator variables, as well as controls for deal contract characteristics, bid form, relative size, bid hostility, and litigation.

Relative to no-toehold bids, the coefficients from Model (1) suggest that the likelihood of a bid revision increases across our toehold categories: minority toehold deals are 4.3% more likely to be revised, and freeze-out bids are 13.7% more likely to be revised. The difference between revision rates across the minority toehold and freeze-out subsamples is statistically different from zero (*p*-value = 0.026). Thus, despite lower final bid premiums, our results are consistent with the presence of a degree of bid tension in freeze-out offers that exceeds what is observed during an arms-length negotiation. Several other control measures affect the likelihood of premium revisions, the most economically significant being a hostile initial reception, which increases the probability of a bid revision by 34.4%. As might be expected, bid revisions are also more likely in tender offers, equity based transactions, and deals involving litigation, although the economic significance of these independent effects are small relative to the impact of deal hostility.

[21] SDC include only publicly announced bid revisions thus any bid revisions that are negotiated before the deal is made public are not observed in our data.

Model (2) of Table 7 summarizes the determinants of observing bid revisions for the freeze-out bid subsample. In freeze-out deals, hostility is associated with a 28.6% increase in the likelihood of a bid revision, while tender offers increase revision probability by 22.2%. A positive and significant coefficient on bid hostility is consistent with the notion that explicit bargaining improves the allocation of deal value for minority shareholders in freeze-out bids. Similarly, the positive relation between bid revision and tender offers suggests a significant degree of post-bid renegotiation between controllers and minority shareholders and/or their agents during freeze-out tender offers.

Model (3) of Table 7 examines the magnitude of bid revisions for the 388 revised acquisition bids in our full sample of merger and acquisition bids. Although not statistically significant, the coefficient on the freeze-out bid indicator suggests that, when observed, revisions are 9.3% larger in freeze-out bids as compared to deals involving no bidder toehold. Revisions associated with toehold bids are insignificantly different from the revisions observed in the no-toehold bid subsample, and the difference in bid revisions between the freeze-out and toehold sample is also not different from zero (p-value = 0.419). In conjunction with our data on the likelihood of bid revisions generally, this evidence does not suggest that renegotiation is any less vigorous in freeze-out transactions relative to bids involving a change in control. Bid revisions are increasing in deal litigation, but are declining in the relative size of the target. Model (4) examines bid revisions for freeze-out bids only. Bid revisions do not appear to vary systematically with deal or contract characteristics, but the sample size is small.

7. Conclusion

This paper examines shareholder welfare in acquisition bids proposed by controlling shareholders – deals commonly referred to as minority freeze-out bids. Practitioners and legal scholars have been engaged in an ongoing debate regarding the inherent conflicts of interest that arise in these transactions, and the impact of these conflicts on deal outcomes for minority shareholders.

Our analysis discriminates between two competing theories regarding these bids. The first is a theory of bid capture under which minority shareholders lack sufficient board representation and/or efficient legal recourse allowing controllers to capture a disproportionate share of the gains in freeze-out acquisitions. Alternatively, we consider a minority bargaining power theory, which posits that active board representation and implicit legal recourse effectively insulate minority shareholders from self-dealing by controllers.

All else equal, we find that CARs to controlling shareholders, excluding any gains associated with appreciation in toehold shares, are similar to comparable returns to bidding shareholders in minority toehold and no-toehold bids. Moreover, we find that, on average, minority claimants in freeze-out bids actually receive approximately 11% more than their pro-rata share of deal surplus, an excess distribution of approximately $6.1 million.

In keeping with our findings concerning deal wealth effects, we also find evidence consistent with a degree of active negotiation on behalf of minority shareholders during freeze-out bids. The incidence of bid hostility in freeze-out transactions is similar to the rate observed in arms-length transactions, and a hostile deal reception reduces the probability of deal completion by over 40% in freeze-out bids. In addition, freeze-out bids are more likely to be associated with price revisions and, when observed, these revisions are roughly equivalent in magnitude to those in control transactions.

Several broad conclusions can be derived from our results concerning shareholder welfare during minority freeze-out bids. First, our findings are consistent with the notion that economic incentives and legal protections are sufficient to adequately protect minority shareholders from expropriation during freeze-out bidding. The disproportionate allocation of deal surplus to minority claimants in these deals seems inconsistent with the provision of a minimum premium intended to forestall shareholder dissension and appraisal, and suggests that substantial premiums, on average, are necessary to compensate targets, even in bids that do not involve a change in control. In addition, our evidence suggests that bid negotiation by minority shareholders and their agents is common and

is used to improve the allocation of deal surplus to minority claimants. The fact that minority shareholders receive more than their pro-rata share of the deal surplus is consistent with bidders seeking to avoid any transactions costs associated with the expected direct and indirect expense of a legal challenge.

Finally, our analysis does not suggest minority shareholders have fared worse following the *Siliconix* decision in 2001, regardless of bid form. In fact, our evidence suggests that wealth effects and negotiation associated with freeze-out bids are statistically equivalent in pre- and post-*Siliconix* subsamples. This evidence contrasts with the conventional wisdom that tender offers present an optimal transaction for controlling shareholders seeking to consummate a freeze-out following the *Siliconix* decision. We infer instead that freeze-out tender offers (like tender offers generally) provide a relatively poor method for extracting deal value from atomistic target shareholders, as they require the distribution of premium to all minority shareholders sufficient to meet the reservation price of the marginal informed shareholder. Given these results, we question the economic basis underlying recent calls for a strengthening of the current review standards applied to freeze-out transactions by the Delaware judiciary.

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Fig. 1. Freeze-out transactions as a proportion of all public M&A activity, 1988-2002.
The observations are compiled from Securities Data Corporation and include 8,502 transactions involving U.S. targets. Observations include deals defined as "merger", "acquisition", or "acquisition of remaining interest". Freeze-out bids are identified using the bidder's toehold position six months prior to the transaction bid announcement.

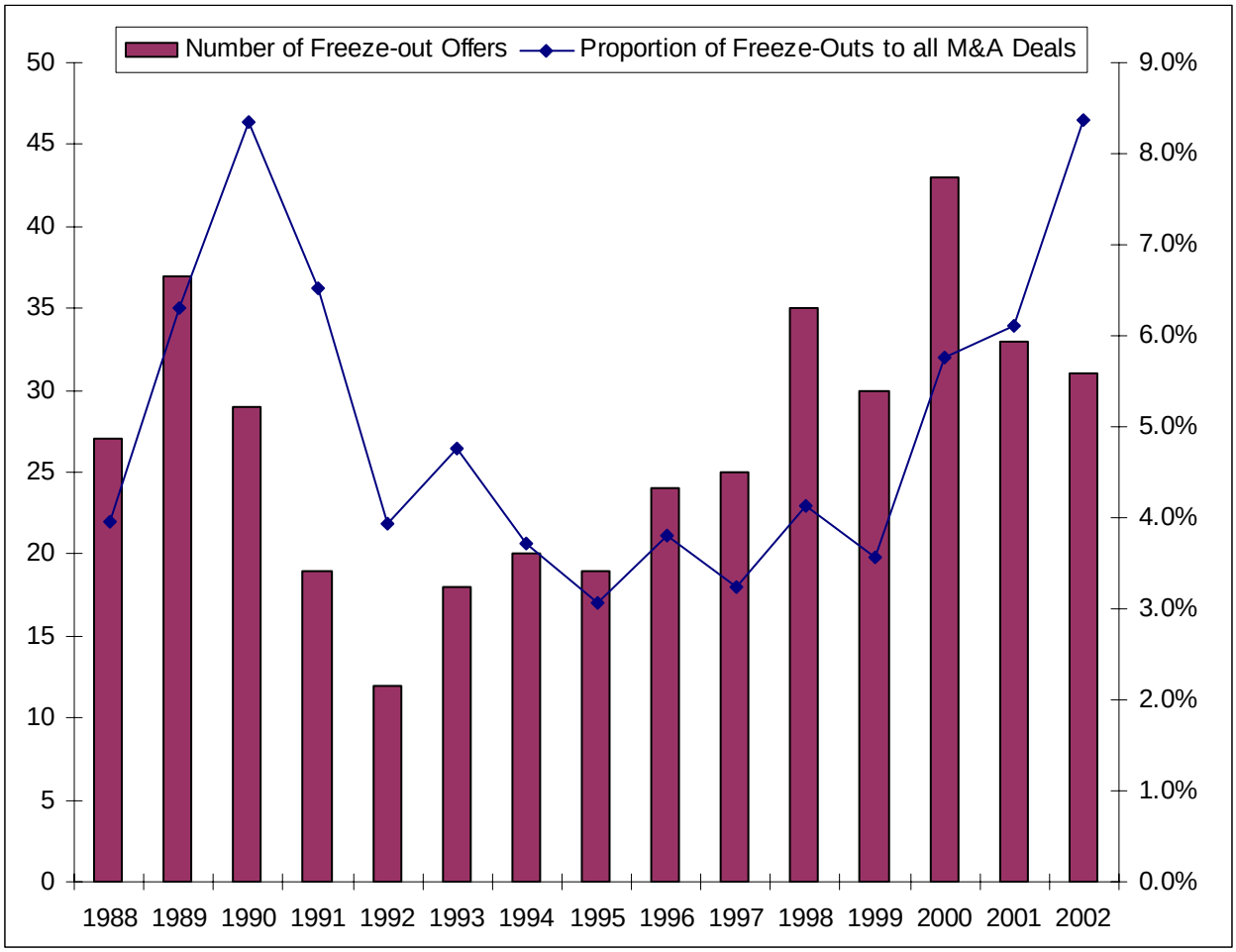

Table 1
Summary of deal characteristics in merger and tender offer bids 1988-2003

The sample consists of 4,079 merger and acquisition attempts announced and either completed or withdrawn between 1988 and 2003 where both the bidder and target were publicly traded. Toehold is the fraction of target shares held by the bidder. Bidder termination fee is an indicator variable equal to one if proposed deal includes a target payable termination fee. Relative value of target is the market value of the target's equity, less the bidder toehold, divided by the market value of the bidder's equity plus the market value of the target's equity, less the bidder toehold. Acquirer Lockup is an indicator variable equal to one if the bidder is granted an option to purchase shares in the target. Bids receive a hostile classification from SDC if target managers rebuff the bidder's offer. The bid revision indicator is equal to one if a bidder's final bid is different from the first bid. Bid revision (%) is the difference between a bidder's first and last bid premium. An auction is comprised of all bids for a target, including the first observed bid and any successive bids made within 365 calendar days of the most recent bid announcement. Deal numbers in auction sequences are defined relative to the first observed bid. The symbols *,**, *** indicate that subsample means (medians) are significantly different from that of the no-toehold subsample at the 10%, 5%, and 1% levels, respectively.

	No toehold (N=3,732)	Toehold deals: 0 < toehold < 50% (N=186)	Freeze-out deals: 50% ≤ toehold < 89.5% (N=148)	Short-form deals: 89.5% ≤ toehold < 100% (N=13)
Toehold 6 months before bid		15.7%	71.5%	92.4%
(Median)		(9.9%)	(73.8%)	(91.1%)
Toehold at bid announcement	0.0%	17.2%	71.5%	92.4%
(Median)	(0.0%)	(11.5%)	(73.8%)	(91.1%)
Deal value ($ millions)	1,236.9	931.0	336.3*	68.1
(Median)	(153.9)	(140.5)	(92.8)***	(43.4)***
Relative value of target	19.0%	22.2%**	8.0%***	3.2%***
(Median)	(13.3%)	(14.0%)	(4.3%)***	(2.1%)***
Tender offer	14.6%	34.4%***	35.8%***	0.0%
Offer includes bidder equity	67.0%	40.3%***	45.9%***	38.5%**
Target termination fees	46.6%	22.6%***	2.0%***	0.0%***
Acquirer Lockup	21.7%	8.6%***	0.7%***	0.0%*
Premium	38.4%	39.1%	26.2%***	14.2%
(Median)	(38.1%)	(34.9%)	(28.5%)***	(12.1%)*
Deal Status (1=Completed)	81.5%	65.6%***	84.5%	100.0%*
Deal Attitude (1=hostile)	6.5%	29.6%***	14.9%***	0.0%
Bid revision indicator	8.2%	22.6%***	25.0%***	15.4%
Bid revision	6.5%	13.2%	16.5%	22.0%
(Median)	(4.8%)	(13.4%)***	(12.8%)***	(22.0%)*
Deal number in auction sequence				
1	3,412	166	141	12
2	272	17	7	1
3	36	2	0	0
4+	12	1	0	0

Table 2
OLS regressions on merger bid premium

The table summarizes OLS regressions of the log of the premium paid to target stockholders on bidder toeholds and other deal characteristics. The bid premium is the percentage difference in the share price paid to target shareholders as reported by SDC relative to the target's share price 42 trading days prior to the bid announcement for the first bid in the auction. Bidder equity and tender offer indicator variables equal one if the acquisition proposal includes bidder equity and is structured as a tender offer, respectively. Bids receive a hostile classification from SDC if target managers rebuff the initial offer. Prior bidding is an indicator variable equal to one if the deal follows a prior bid within 365 days, and zero if it is an initial bid. Relative value of target is the market value of the target's equity, less the bidder toehold, divided by the market value of the bidder's equity plus the market value of the target's equity, less the bidder toehold. Bidder toehold is defined as the bidder's fractional equity ownership in the target six months prior to the bid. Toehold indicator variables are equal to one if the bidder's toehold falls within the specified interval, and zero otherwise. The Delaware incorporation indicator variable is equal to one if the target firm is incorporated in the state of Delaware and zero if it is not. Year dummies equal one for each announcement year 1989 through 2003 (1988 is the excluded year), while the *Siliconix* indicator variable is equal to one for transactions initiated after June 19, 2001. The top number provided for each explanatory variable is the parameter estimate with *p*-values based on robust standard errors provided in parentheses.

Table 2 (continued)

Model #	**Model 1**	**Model 2**	**Model 3**
Bid subsample	All Bids	All Bids	Freeze-outs
Dependent variable	Bid Premium	Bid Premium	Bid Premium
Number of observations	3,692	3,692	138
Intercept	0.521	0.520	0.215
	(<0.001)	(<0.001)	(0.229)
Offer includes bidder equity	-0.043	-0.043	-0.113
	(0.002)	(0.002)	(0.073)
Tender offer	0.033	0.031	0.037
	(0.041)	(0.053)	(0.529)
Deal Attitude (1=hostile)	0.071	0.064	-0.021
	(<0.001)	(<0.001)	(0.762)
Prior Bidding Indicator	0.058	0.059	0.030
	(0.012)	(0.011)	(0.801)
Relative value of target	-0.353	-0.355	0.014
	(<0.001)	(<0.001)	(0.974)
Toehold 6 months before bid			0.001
			(0.730)
Delaware incorporation indicator			0.010
			(0.876)
Post-*Siliconix* dummy			0.042
			(0.756)
Post-*Siliconix* * Tender offer dummy			-0.164
			(0.361)
Toehold Indicator Variables:			
Toe1: 0 < toehold < 50%	-0.058	0.015	
	(0.017)	(0.640)	
Toe2: 50% ≤ toehold < 89.5%	-0.178	-0.258	
	(<0.001)	(0.117)	
Toe3: 89.5% ≤ toehold < 100%	-0.329	-3.010	
	(0.001)	(0.200)	
Toe1 * Toehold		-0.005	
		(0.008)	
Toe2 * Toehold		0.001	
		(0.669)	
Toe3 * Toehold		0.029	
		(0.406)	
Year Dummies	YES	YES	NO
Difference:Toe1 – Toe2 (*p-value)*	(<0.001)	(0.104)	
Difference:Toe1*Toehold – Toe2*Toehold (*p-value)*		(0.031)	
Model F-statistic	11.32	10.33	0.80
(*p*-value)	(<0.001)	(<0.001)	(0.618)
Adjusted R^2	0.060	0.062	-0.013

Table 3
OLS regressions on target and bidder announcement period abnormal returns

The table summarizes OLS regressions of target and bidder abnormal returns on bidder toeholds and other deal characteristics. Announcement period cumulative abnormal returns (CARs) are computed as the stock return of the sample firm minus the return on the CRSP value-weighted NYSE/AMEX/Nasdaq index summed over the three-day period {-1, +1} relative to the bid announcement. In models (1-3), the dependent variable is the target CAR, and in models 4 and 5, the dependent variable is the bidder's CAR adjusted for the bidder toehold. The stock offer and tender offer indicator variables equal one if the acquisition proposal includes bidder equity and is structured as a tender offer, respectively. Prior bidding is an indicator variable equal to one if the deal follows a prior bid within 365 days, and zero if it is an initial bid. Bids receive a hostile classification from SDC if target managers rebuff the bidder's offer. Relative value of target is the market value of the target's equity less the bidder toehold, divided by the market value of the bidder's equity plus the market value of the target's equity less the bidder toehold. Bidder toehold is defined as the bidder's fractional equity ownership in the target six months prior to the bid. Toehold indicator variables are equal to one if the bidder's toehold falls within the specified interval, and zero otherwise. The Delaware incorporation indicator variable is equal to one if the target firm is incorporated in the state of Delaware and zero if it is not. Tobin's *q* is the measured as total assets minus book equity plus market equity divided by total assets. Total debt includes short and long-term debt issues. Free cash flow is computed as operating income before depreciation minus total taxes minus change in deferred taxes minus gross interest expense minus any preferred and common dividends paid. Pre-bid run-up CARs are estimated as daily abnormal returns summed over a daily interval from 42 days to two days before a bid announcement. Year dummies equal one for each announcement year 1989 through 2003 (1988 is the excluded year) while the *Siliconix* indicator variable is equal to one for transactions initiated after June 19, 2002. The top number provided for each explanatory variable is the parameter estimate with *p*-values based on robust standard errors provided in parenthesis.

Table 3 (continued)

Model	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Dependent Variable	Target CAR	Target CAR	Target CAR	Adj Bidder CAR	Adj Bidder CAR
Sample	All Bids	All Bids	Freeze-outs	All Bids	Freeze-outs
Number of observations	4,079	2,809	148	4,079	148
Intercept	0.229	0.256	0.194	0.004	0.216
	(<0.001)	(<0.001)	(0.084)	(0.825)	(0.450)
Offer includes bidder equity	-0.035	-0.047	-0.127	-0.033	-0.006
	(0.001)	(<0.001)	(0.001)	(<0.001)	(0.896)
Tender offer	0.108	0.075	-0.001	0.000	0.026
	(<0.001)	(<0.001)	(0.969)	(0.933)	(0.678)
Deal Status (1=Completed)	0.033	0.056	0.059	0.012	0.011
	(0.003)	(<0.001)	(0.137)	(0.054)	(0.872)
Deal Attitude (1=hostile)	0.009	0.063	0.061	-0.020	-0.041
	(0.667)	(<0.001)	(0.061)	(0.044)	(0.206)
Prior Bidding Indicator	-0.062	-0.035	0.023	-0.006	0.018
	(<0.001)	(0.006)	(0.668)	(0.336)	(0.770)
Relative value of target	-0.270	-0.323	-0.274	0.064	-0.286
	(<0.001)	(<0.001)	(0.166)	(0.004)	(0.658)
Toehold			-0.001		-0.003
			(0.519)		(0.367)
Delaware incorporation indicator			0.031		-0.048
			(0.308)		(0.395)
Post-Siliconix dummy			0.082		-0.036
			(0.399)		(0.431)
Post-Siliconix * Tender offer dummy			0.044		-0.016
			(0.687)		(0.769)
Toehold Indicator Variables:					
Toe1: 0 < toehold < 50%	-0.012	-0.022		0.018	
	(0.438)	(0.185)		(0.367)	
Toe2: 50% ≤ toehold < 89.5%	-0.104	-0.144		-0.020	
	(<0.001)	(<0.001)		(0.511)	
Toe3: 89.5% ≤ toehold < 100%	-0.137	-0.172		-0.145	
	(<0.001)	(<0.001)		(0.193)	
Target Tobin's Q		-0.002			
		(0.288)			
Total debt / Total assets		-0.045			
		(0.019)			
Free cash flow / Total assets		0.056			
		(0.026)			
Target run-up CAR		-0.061	-0.125		
		(<0.001)	(0.003)		
Year Dummies	YES	YES	NO	YES	NO
Difference: Toe1 – Toe2 (*p-value)*	(<0.001)	(<0.001)		(0.265)	
Model F-statistic	19.99	17.64	3.83	5.34	0.19
(*p*-value)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(0.997)
Adjusted R^2	0.101	0.142	0.175	0.025	-0.058

Table 4
Wealth effects and the distribution of transaction gains between bidding and target shareholders

The table summarizes the wealth gains to mergers and tender offer bids, and the distribution of these gains between target and bidder shareholders. The table reflects the change in value for only the first bids in an auction sequence and for completed deals only. Market values (and changes) are in millions of dollars. The bidder's abnormal change in market value is the bidder's beginning market value increased/decreased by the net-of-market stock return realized over the three-day period {-1, +1} relative to the bid announcement. The target's abnormal market value change is the target's beginning market value multiplied by one minus the bidder's toehold and increased/decreased by the net-of-market stock return realized over the three-day period {-1, +1} relative to the bid announcement. The reported surplus (loss) as % of pre-bid market value is the aggregate gain/loss (for all target or bidding shareholders or all transactions) divided by the aggregate pre-bid market value of equity. Percent of gains to targets (bidders) is the aggregate gain to all targets (bidders) divided by the aggregate total market value change for all bidders and targets.

Variable	No toehold (N=2,783)	Toehold deals: 0 < toehold < 50% (N=107)	Freeze-out deals: 50% ≤ toehold < 89.5% (N=120)
Bid Subsample	No toehold	Toehold	Freeze-outs
Return Period	{-1,+1}	{-1,+1}	{-1,+1}
Number of Observations	2,783	107	120
Target			
Mean abnormal market value change	100.7	89.2	21.0
Mean pre-bid market value	626.9	397.2	181.1
Mean Gain(loss) as % of pre-bid market value	16.1%	22.5%	11.6%
Bidder			
Mean abnormal market value change	18.2	-0.8	34.1
Mean pre-bid market value	7,194.8	6,975.3	6,364.4
Mean Gain(loss) as % of pre-bid market value	0.3%	0.0%	0.5%
Total			
Mean abnormal market value change	118.9	88.4	55.1
Distribution of gains to targets and bidders - bidder's includes its stake in target			
Percent of gains to targets (aggregate)	84.7%	100.9%	38.2%
Percent of gains to bidders (aggregate)	15.3%	-0.9%	61.8%
Target gains relative to their pro-rata share of the firm pre-bid			
Target's pro-rata share of firm	100.0%	79.4%	27.2%
Target's share of gains minus pro-rata share	-15.3%	21.5%	11.0%
Mean excess gains (losses) to targets ($millions)	(18.2)	19.0	6.1
Surplus to targets (aggregate) as a proportion of their pro-rata claim on the firm	84.7%	127.1%	140.5%

Table 5
Target's proportionate share of transaction gains – multivariate analysis

The table summarizes percentile rank regressions of the target shareholders allocation of transaction's gains on our bidder toehold categories and other deal characteristics. The table includes observations for first bids and for completed deals only. The target's share of the transaction's gains represents the change in market value for all the target's shareholders, excluding the bidder, divided by the transaction's total gains. We report the value change using a three-day announcement CAR {-1 to +1} or the auction interval {-1 to Auction End}. The stock offer and tender offer indicator variables equal one if the acquisition proposal includes bidder equity and is structured as a tender offer, respectively. Bids receive a hostile classification from SDC if target managers rebuff the bidder's offer. Relative value of target is the market value of the target's equity, less the bidder toehold, divided by the market value of the bidder's equity plus the market value of the target's equity, less the bidder toehold. Bidder toehold is defined as the bidder's fractional equity ownership in the target six months prior to the bid. Toehold indicator variables are equal to one if the bidder's toehold falls within the specified interval, and zero otherwise. The Delaware incorporation indicator variable is equal to one if the target firm is incorporated in the state of Delaware and zero if it is not. Year dummies equal one for each announcement year 1989 through 2003 (1988 is the excluded year). The top number provided for each explanatory variable is the parameter estimate with *p*-values based on robust standard errors provided in parenthesis.

Model #	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Bid subsample	Completed Bids	Completed Bids	Freeze-outs	Freeze-outs
Return Period	{-1, +1}	{-1, Auction End}	{-1, +1}	{-1, Auction End}
Regression Type	Percentile Rank	Percentile Rank	Percentile Rank	Percentile Rank
Number of Observations	3,085	3,085	120	120
Intercept	0.610	0.542	0.354	0.618
	(<0.001)	(<0.001)	(0.122)	(0.018)
Offer includes bidder equity	0.120	0.047	-0.085	0.010
	(<0.001)	(0.010)	(0.200)	(0.897)
Tender offer	0.040	0.006	0.152	-0.076
	(0.065)	(0.792)	(0.071)	(0.355)
Deal Attitude (1=hostile)	0.101	0.011	0.035	-0.075
	(0.035)	(0.850)	(0.750)	(0.511)
Relative value of target	-0.023	0.150	0.520	-0.193
	(0.579)	(<0.001)	(0.194)	(0.717)
Toehold at bid announcement			0.003	0.000
			(0.358)	(0.960)
Delaware incorporation indicator			-0.023	0.096
			(0.775)	(0.252)
Post-Siliconix dummy			0.085	-0.192
			(0.372)	(0.138)
Post-Siliconix * Tender offer dummy			0.060	0.384
			(0.643)	(0.017)
Toehold Indicator Variables:				
Toe1: 0 < toehold < 50%	-0.017	-0.002		
	(0.659)	(0.960)		
Toe2: 50% ≤ toehold < 89.5%	0.090	0.057		
	(0.025)	(0.173)		
Toe3: 89.5% ≤ toehold < 100%	0.087	0.087		
	(0.484)	(0.454)		
Year dummies	YES	YES	NO	NO
Difference: Toe1 – Toe2 (*p-value)*	(0.047)	(0.298)		
Model F-statistic	3.35	1.79	2.73	1.09
(*p*-value)	(0.022)	(0.013)	(0.009)	(0.3786)
Adjusted R^2	0.022	0.012	0.112	0.051

Table 6
Logistic regressions modeling bid completion and hostility in mergers and tender offer bids

Models 1 and 2 estimate the probability that a proposed deal in the sample will be completed. The dependent variable equals one if the proposed merger is ultimately consummated and zero if it is not. Models 3 and 4 estimate the probability of hostility. The dependent variable equals one if the proposed merger receives a hostile reception from target management, and zero otherwise. The toehold, freeze-out, and short-form bid variables are indicator variables equal to one if the bidder's equity toehold is any of the following: 0% < toehold < 50%; 50% ≤toehold < 89.5%; and toehold ≥ 89.5% respectively; otherwise the respective toehold indicator variable is zero. The models also include an indicator variable equal to one if the deal includes a target fee provision and zero if it does not; an indicator variable equal to one if the deal includes a lockup agreement involving target equity, zero if it does not, and indicator variables equal to one if the deal includes equity-based compensation; if the form of the bid is a tender offer; and if the deal follows a prior bid offered within the preceding 365 calendar days. Relative value of target is the market value of the target's equity, less the bidder toehold, divided by the market value of the bidder's equity plus the market value of the target's equity, less the bidder toehold. Model (2) also incorporates indicator variables equal to one if the deal has associated litigation as defined by SDC or if the deal is defined as "hostile". The bid premium is the percentage difference in the share price paid to target shareholders as reported by SDC relative to the target's share price 42 trading days prior to the bid announcement for the first bid in the auction. The columns summarize the coefficients from logistic regressions with *p*-values, based on robust standard errors, in parentheses. Standardized coefficients, reported in brackets, relate the change in the probability given a shift in an indicator variable from zero to one, or a one standard deviation change in a continuous variable, holding all other variables constant at their means.

Table 6 (continued)

Model #	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Dependent variable	Completion	Completion	Hostility	Hostility
Sample	All Bids	Freeze-outs	All Bids	Freeze-outs
Number of observations	4,079	148	3,692	138
Intercept	1.239	1.931	-2.717	-2.602
	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Toe1: 0 < toehold < 50%	0.101		0.953	
	(0.652)		(<0.001)	
	[0.011]		[0.035]	
Toe2: 50% ≤ toehold < 89.5%	0.654		0.268	
	(0.015)		(0.337)	
	[0.057]		[0.007]	
Target termination fees	1.383		-2.267	
	(<0.001)		(<0.001)	
	[0.146]		[-0.056]	
Acquirer Lockup	0.943		-3.090	
	(<0.001)		(<0.001)	
	[0.085]		[-0.042]	
Tender offer	1.754	3.961	0.996	1.448
	(<0.001)	(0.002)	(<0.001)	(0.009)
	[0.128]	[0.224]	[0.034]	[0.185]
Offer includes bidder equity	0.606	0.025	-0.686	0.124
	(<0.001)	(0.965)	(<0.001)	(0.829)
	[0.071]	[0.002]	[-0.018]	[0.013]
Prior Bidding Indicator	-0.580	-0.815	0.900	0.408
	(<0.001)	(0.258)	(<0.001)	(0.632)
	[-0.076]	[-0.068]	[0.031]	[0.050]
Relative value of target	-2.759	-2.833	3.210	1.448
	(<0.001)	(0.333)	(<0.001)	(0.647)
	[-0.066]	[-0.017]	[0.019]	[0.014]
Deal Attitude (1=hostile)	-2.800	-2.930		
	(<0.001)	(<0.001)		
	[-0.551]	[-0.422]		
Litigation Indicator	-0.165	0.055		
	(0.383)	(0.941)		
	[-0.019]	[0.003]		
Log(Premium)			0.571	-0.384
			(0.010)	(0.643)
			[0.005]	[-0.012]
Difference: Toe1 – Toe2 (*p-value)*	(0.096)		(0.037)	
Model Chi-square	138.41	15.22	206.16	17.83
(*p*-value)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Pseudo R^2	0.242	0.203	0.150	0.056

Table 7
Estimates of the likelihood and magnitude of bid revisions in merger and tender offer bids

Models (1) and (2) summarize the likelihood of a bid revision where the dependent variable is an indicator equal to one if a bid revision occurs for a proposed bid, and zero if no revision is observed. Models (3) and (4) provide summaries of OLS regressions of bid revision size. The toehold, freeze-out, and short-form bids variables are indicator variables equal to one if the bidder's equity toehold is any of the following: 0% < toehold < 50%; 50% ≤ toehold < 89.5%; and toehold ≥ 89.5% respectively; otherwise the respective toehold indicator variable is zero. The models also include an indicator variable equal to one if the deal includes a target fee provision and zero if it does not; an indicator variable equal to one if the deal includes a lockup agreement involving target equity, zero if it does not, and indicator variables equal to one if the deal includes equity-based compensation; if the form of the bid is a tender offer; and if the deal follows a prior bid offered within the preceding 365 calendar days. Model (2) also incorporates measures of target resistance as indicator variables equal to one if the deal has associated litigation as defined by SDC or if the deal is defined as "hostile". Relative value of target is the market value of the target's equity, less the bidder toehold, divided by the market value of the bidder's equity plus the market value of the target's equity, less the bidder toehold. The bid premium is the percentage difference in the share price paid to target shareholders as reported by SDC relative to the target's share price 42 trading days prior to the bid announcement for the first bid in the auction. Otherwise the bid premium is regarded as missing. Models (1) and (2) summarize the coefficients from logistic regressions, while Models (3) and (4) coefficients are estimated using OLS. Coefficient *p*-values, based on robust standard errors, are in parentheses. Standardized coefficients, reported in brackets for the logistic regressions, relate the change in the probability of a revision given a shift in an indicator variable from zero to one or a one standard deviation change in a continuous variable, holding all other variables constant at their means.

Table 7 (continued)

Model #	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Dependent variable	Bid Revision	Bid Revision	Revision Size	Revision Size
Sample	All Bids	Freeze-outs	All Bids	Freeze-outs
Number of observations	4,079	148	388	37
Intercept	-3.509	-1.910	5.538	30.765
	(<0.001)	(<0.001)	(0.148)	(0.029)
Toe1: 0 < toehold < 50%	0.512		3.518	
	(0.025)		(0.210)	
	[0.043]			
Toe2: 50% ≤ toehold < 89.5%	1.238		9.317	
	(<0.001)		(0.192)	
	[0.137]			
Toe3: 89.5% ≤ toehold < 100%	1.404		13.361	
	(0.077)		(0.079)	
	[0.170]			
Target termination fees	0.432			
	(0.001)			
	[0.030]			
Acquirer Lockup	-0.090			
	(0.586)			
	[-0.006]			
Tender offer	0.734	1.188	-4.630	-13.365
	(<0.001)	(0.007)	(0.217)	(0.339)
	[0.062]	[0.222]		
Post-Siliconix dummy				-17.229
				(0.415)
Post-Siliconix * Tender offer dummy				2.680
				(0.912)
Offer includes bidder equity	0.688	0.325	0.737	2.486
	(<0.001)	(0.497)	(0.835)	(0.816)
	[0.043]	[0.056]		
Deal Attitude (1=hostile)	2.337	1.358	14.027	5.173
	(<0.001)	(0.004)	(<0.001)	(0.616)
	[0.344]	[0.286]		
Litigation Indicator	0.697	-0.291	6.644	46.258
	(<0.001)	(0.640)	(0.213)	(0.278)
	[0.061]	[-0.047]		
Relative value of target	-0.361	-2.019	-17.508	-145.043
	(0.244)	(0.582)	(0.112)	(0.110)
	[-0.004]	[-0.028]		
Target CAR		0.555		
		(0.575)		
		[0.106]		
Difference: Toe1 – Toe2 (*p-value)*	(0.026)		(0.4187)	
Pseudo R^2 / Adjusted R^2	0.083	0.128	0.010	0.144