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B. Espen Eckbo
Dartmouth College and ECGI

Tanakorn Makaew
Financial Industry Regulatory Authority

Karin S Thorburn
Norwegian School of Economics, CEPR and ECGI

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Keywords: Deal initiation, opportunism, efficiency loss, adverse selection, cash payment, stock payment

JEL Classification: G3, G34

B. Espen Eckbo

Dartmouth College and ECGI
Tuck Centennial Professor of Finance
Dartmouth College, Tuck School of Business at Dartmouth
e-mail: b.espen.eckbo@dartmouth.edu

Tanakorn Makaew

Financial Industry Regulatory Authority
Senior Economist
e-mail: tanakornm@hotmail.com

Karin S Thorburn

Norwegian School of Economics, CEPR and ECGI
Research Chair Professor of Finance
NHH Norwegian School of Economics
e-mail: Karin.Thorburn@nhh.no

Are bidder-initiated takeovers opportunistic?[*]

B. Espen Eckbo[†] Tanakorn Makaew[‡] Karin S. Thorburn[§]

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Abstract

US bidders initiate the deal process to acquire a public target only about half the time—the target is involved in initiating the rest. We control for this endogenous initiation choice to increase power to test whether bidders time deal initiations to opportunistically pay for the target with overpriced shares and possibly crowd out more efficient buyers. Under our main alternative hypothesis, bidders prefer to use their shares as acquisition currency to hedge against target adverse selection—unless the target substantially undervalues those shares. We approach this complex issue from three angles. First, and most important, regardless of who initiates, bidders are *more* likely to pay with stock the better informed the target is about bidder true value. Since it is more difficult to sell overpriced shares to highly informed targets, this positive association is inconsistent with bidder opportunism. Second, structural estimation shows that opportunistic bidders crowd out high-synergy rivals in 7% of target-initiated transactions and only 6% in bidder-initiated deals. Third, bidder-initiated takeovers on average trigger positive announcement returns to the bidder's industry peers, which fails to support that the bidder's industry is overpriced by the market. In sum, our evidence suggests that the deal process substantially limits bidders' ability to sell overpriced shares and distort resource allocation in the US market for corporate control.

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[†]Tuck School of Business, Dartmouth College, b.espen.eckbo@dartmouth.edu
[‡]Marshall School of Business, University of Southern California, tanakornm@hotmail.com.
[§]NHH Norwegian School of Economics, karin.thorburn@nhh.no

1 Introduction

In principle, a potential acquirer may use private information to initiate the deal process and pay for the target with temporarily overpriced shares. Analogous to insider trading in secondary equity markets, and irrespective of how the subsequent deal process plays out, self-selecting the timing of the deal increases the scope for this opportunistic bidding strategy. Successful bidder opportunism raises a social welfare concern since the most overvalued rather than the most efficient bidder may win in the competition for the target. If unsuccessful, opportunistic bidders may still cause a wealth transfer by driving up the winner's price. Undervalued and financially constrained firms, despite having high synergies, may altogether avoid entering a costly bidding contest for the target. All of these information-based effects have the potential to distort the disciplinary role of what Manne (1965) labels the market for corporate control.

In this paper, we test whether bidder opportunism is important in takeovers. Our unique contribution is to increase test power by conditioning the analysis on whether the bidder was, in fact, the party that initiated the takeover process. Recognition of the importance of endogenous trade-initiation decisions in markets with asymmetric information goes back to the seminal work of Akerlof (1970) on adverse selection in markets where used cars ("lemons") are exchanged for cash. Adverse selection as a basic economic primitive has since influenced analyses of endogenous trade initiation—anonymous insider trades (beginning with Jaffe, 1974), seasoned equity offerings (Myers and Majluf, 1984), and dealer markets (Glosten and Milgrom, 1985)—and of payment design in negotiated takeovers, where a bidder paying with its own shares is effectively swapping "lemons" (Hansen, 1987; Fishman, 1989; Eckbo et al., 1990a).

Shleifer and Vishny (2003) drew early attention to the potential for bidder opportunism by suggesting that agency frictions on the target side of the deal may enable it: target managers may find it in their personal interest to knowingly accept overpriced shares from the bidder. Empirical research fails to find support for one such agency channel—the accelerated vesting of target management's unvested compensation upon a change in control (Fidrmuc and Xia, 2019)—and evidence from acquirer CEO compensation points to adverse selection rather than agency frictions (Bargeron and Denis, 2025); we return to this evidence in Section 6.3. Rather than pursuing agency explanations further, we focus on a more primitive and pervasive friction: information asymmetries between the transacting parties that may remain unresolved throughout the deal completion process.

Central to our alternative hypothesis is the contingent-value (hedge) property of stock as a deal payment: the value to the target of a stock-financed offer depends on the ex post realized value of the merged firm, whereas the value of a cash payment does not. Bidders therefore prefer payment in shares to hedge against adverse selection by the target: when a low-value target accepts, the shares it receives are claims on a merged firm that includes its own low value, reducing the bidder's overpayment. It is only when the target substantially undervalues the bidder shares that the bidder will optimally substitute cash for stock in the deal payment.[1]

We begin by integrating existing theory on payment design under adverse selection with the bidder's incentive to exploit private information that its shares are temporarily overpriced by the target. In settings with two-sided adverse selection, which we describe in more detail in Section 2 below, bidder opportunism is best understood as a rational side-bet on otherwise valuable (synergistic) takeover opportunities.[2] Unlike equilibrium models where the payment method fully reveals the bidder's true value (Eckbo et al., 1990a; Liu and Bernhardt, 2021), the bet is that the target will remain sufficiently confused about this value throughout the deal process to accept overpriced bidder shares (Rhodes-Kropf and Viswanathan, 2004; Li et al., 2018a). This raises the main challenge that we address: how to empirically identify whether a bidder's stock financing reflects opportunism, a hedge against target adverse selection, or both.

In general, beyond the deal parameters observable to the target, the likelihood that a bidder will succeed in paying for the target with overpriced shares also depends on the target's ability to reverse-engineer any overvaluation. Eckbo et al. (2018) proxy this ability with the extent to which the two firms operate in related product markets and close geographical proximity, and find that the likelihood of observing bidder stock in the deal payment *increases* rather than decreases with their information proxies. Kim et al. (2025) reach a similar conclusion after introducing institutional ownership concentration in the target firm as an additional information channel. Since it is more difficult to sell overpriced bidder shares to well-informed targets, this evidence contradicts bidder opportunism as a major rationale for stock-financed bids. Neither study, however, conditions on the party initiating the deal.

Li et al. (2018a) take a different approach to the empirical challenge of identifying bidder opportunism. They develop and structurally estimate the likelihood of opportunistic outcomes in a takeover model

[1] This intuition began with the theoretical developments of Hansen (1985, 1987), Fishman (1989), Eckbo et al. (1990a), and Berkovitch and Narayanan (1990). It also plays an important role in more recent takeover models such as Rhodes-Kropf and Viswanathan (2004), DeMarzo et al. (2005), Gorbenko and Malenko (2014), Gorbenko and Malenko (2018), and Liu and Bernhardt (2021). See also Dasgupta and Hansen (2007) and Skrzypacz (2013) for reviews.

[2] Absent positive deal synergies, a stock swap between rational parties would be a pure zero-sum bet on relative valuations, which the classical no-trade theorem rules out (Milgrom and Stokey, 1982). Synergies create the gains from trade on which an opportunistic side bet can ride.

in which stock-financed bids, in equilibrium, leave the target with a positive probability of accepting overpriced shares. This risk exists because observable deal parameters are insufficient for the target to infer the true bidder value. As a result, an opportunistic low-synergy bidder may crowd out a more efficient (higher-synergy) rival. Their structural estimation produces inefficient outcomes in only 7% of their sample of takeovers, leading them to conclude that "synergies swamp misvaluation" (p. 267).

Our main contribution to the above debate is to explicitly condition tests of bidder opportunism on whether the bidder or the target initiates the deal. The key identification advantage is that only bidder-initiated transactions allow the bidder to self-select the timing of the deal. Target-initiated transactions, therefore, provide a natural benchmark in which the bidder may still be overvalued, but cannot strategically choose when the transaction is proposed. Under opportunism, endogenous self-selection implies that a bidder-initiated, stock-financed deal is more likely to contain overpriced bidder shares than a target-initiated deal. Conditioning on initiation also increases test power relative to the extant empirical literature, which has essentially treated the initiation decision as a random assignment. The theoretical literature has likewise only recently begun to endogenize initiation (Gorbenko and Malenko, 2024), albeit without considering opportunism.

We analyze 2,968 acquisitions of public US-domiciled targets from 2000 through 2020, all sorted by deal initiation; the tests requiring bidder characteristics use the 1,845 deals in which the bidder is also publicly listed. In this sample, 57% of deals are bidder-initiated, 34% are target-initiated, and roughly 8% are initiated jointly.[3] In the process, we obtain granular information on the private phase of the bidding process, from deal initiation to the first public bid announcement. While it is common to associate auctions with target initiations (Boone and Mulherin, 2007), we find that the number of (largely non-binding) bids during the private deal process is *higher* in bidder- than in target-initiated deals. On the other hand, we confirm earlier findings that target-initiated deals are associated with lower average offer premiums (Masulis and Simsir, 2018), and that deals involving strategic buyers tend to use stock in the deal payment more often than financial buyers (Gorbenko and Malenko, 2018).

We perform our main tests of bidder opportunism in three distinct but complementary steps. In the first step, we estimate the likelihood of observing bidder shares in the deal payment as a function of target

[3]As explained further in Section 3, public targets file extensive information on the background of the merger with the Securities and Exchange Commission (SEC), and manual reading of this information can identify the initiating party in most cases. Our sample is among the largest in the growing literature on takeover initiations and the first to use initiation data in tests of bidder opportunism. See, e.g., Aktas et al. (2010), Masulis and Simsir (2018), Liu and Mulherin (2018), Fidrmuc and Xia (2019), and Brown et al. (2022).

information proxies and the identity of the initiating party. We find that this likelihood is significantly *higher* the more precise the target's information about the bidder—not lower as predicted by bidder opportunism. Specifically, we find that bidders are more likely to use their shares as acquisition currency when the two firms operate in similar product and labor markets and are geographically close, and when the target has access to disclosure documents from the bidder's recent seasoned equity offering.

Central to our tests, we show that this impact of the target information proxies, which by itself fails to support bidder opportunism, is also indistinguishable across bidder- and target-initiated transactions. The finding, which is robust to the inclusion of a large number of firm and deal characteristics, suggests that bidder private information about market mispricing is largely irrelevant to a decision to initiate the takeover process and pay for the target in shares. The same evidence, however, is consistent with efficient payment design, where bidders have an incentive to pay with shares as a partial hedge against target adverse selection (when the target's shares are overvalued by the bidder). Under this alternative hypothesis, bidders who face relatively precisely informed targets are more likely to exploit their shares as an effective hedge instrument since those targets are also less likely to undervalue the bidder shares.

In the second step, we structurally estimate the takeover model of Li et al. (2018a) after conditioning on the initiating party. While their model shuts down the target adverse selection channel for the bidder's preference to pay with shares, targets are uncertain as to whether the bidder is cash constrained or offer overpriced shares. The model's pooling equilibrium permits rational opportunistic side bets on otherwise synergistic takeover attempts. Importantly, since all model events occur after the deal is initiated, the estimation can be run separately on the bidder- and target-initiated subsamples without assumptions about the initiation process itself. The logic of our test is therefore that, if bidder-initiated deals reflect market timing, the empirical moments associated with those deals will generate a higher incidence of inefficient transactions than those of target-initiated deals, where the bidder does not control the timing. Moreover, because the inefficiency estimate associated with each of the two subsamples is derived from its own conditional moment vector, the resulting inefficiency estimates already reflect the endogenous initiation decision rather than treating initiation as exogenous.

We find that conditioning on deal initiations does *not* increase the fraction of cases where opportunistic bidders crowd out higher-synergy bidders. Rather, this fraction is 6.3% when the bidder initiates and 7.4% when the target initiates—if anything, slightly lower for bidder-initiated deals—resulting in a synergy loss of only about 0.6% of target value when averaged across the total subsample. These quantities are very close to those reported in Li et al. (2018a), who study 2,503 bids for public targets between 1980 and 2013. This result fails to support the bidder opportunism hypothesis even after conditioning on the bidder's endogenous initiation decision.

In the third step, we provide new, valuation-based evidence relevant to the opportunism debate. Most importantly, after confirming the model assumption of positive deal synergies, we find that takeover announcements generate a *positive* revaluation of the bidder's close industry peers—not negative as suggested by the model of Rhodes-Kropf and Viswanathan (2004) and the valuation evidence in Rhodes-Kropf et al. (2005). The peer-firm abnormal return averages a statistically significant 0.7%, regardless of the party initiating the takeover. Rather than signaling overvaluation, the deal announcements thus appear to reveal increased demand for industry-specific resources (possibly driving expectations of future takeover activity). Moreover, the bidder announcement returns in bidder-initiated deals are less negative than those in target-initiated deals, contrary to what opportunistic timing predicts. Finally, the abnormal return (alpha) on a portfolio that is long acquirers in bidder-initiated deals and short acquirers in target-initiated deals is statistically indistinguishable from zero.

In sum, after incorporating the endogenous initiation decision into empirical tests of bidder opportunism, including reduced-form regression analyses, structural estimation, and market revaluations, we conclude that successful bidder opportunism is rare and economically negligible. It appears that this type of bidder market timing is effectively unraveled during the deal process itself—beginning with the initiation decision, which likely leads a rational target to revise downward its assessment of bidder value. In other words, bidder opportunism is unlikely to meaningfully distort the allocation of corporate resources in the US market for corporate control.

2 Efficient payment method under asymmetric information

Over the past four decades, in more than 60% of all takeovers by publicly traded, US-domiciled bidders, the target was paid with all-stock or a mix of stock and cash (Eckbo et al., 2018). In a world of symmetric information, cash and stock offers would be informationally equivalent. However, if information is asymmetric, they are not, because the valuation of a stock offer becomes non-trivial. Perhaps as a result, both takeover premia and merger-induced abnormal stock returns have been shown to be systematically related to the deal payment method. For example, offer premiums tend to be higher in cash bids than in stock offers, while bidder announcement returns are systematically lower in all-stock bids than in cash bids.[4]

In this section, we provide a theoretical motivation for our main test approach based on information asymmetries between the bidder and target firms, which in some equilibria permit successful bidder opportunism. We begin with the tradeoff between cash and stock offers in settings where each party to the deal knows its own private valuation but only the distribution over the counterpart's valuation. Importantly, this tradeoff shows when bidders prefer stock over cash as deal currency even in the *absence* of any attempts to pay with overpriced shares—here labeled efficient payment design. We then informally extend the analysis to a situation in which the bidder may self-select the timing of deal initiation to take advantage of private information that its stock is overpriced by the market and, potentially, by the target—here referred to as bidder opportunism.

While our focus is on the implications of information asymmetries, the payment method choice may also reflect more traditional capital structure considerations, such as its effect on the combined firm's leverage, taxes, and shareholder approval requirements.[5] We account for these tradeoffs by including the acquirer's pre-offer leverage ratio and cash holdings in all payment-choice regressions (Section 3.4).

2.1 Principles of efficient payment design

Under asymmetric information, the form of consideration matters because, unlike a cash payment, the value to the target of an offer paid in bidder shares depends on the merged firm's realized value, which is not fully known when the offer is made.[6] To illustrate how this maps into an optimal payment method, suppose that a bidder makes the following take-it-or-leave-it offer that is acceptable to a target with the

[4]This evidence, which began with Huang and Walkling (1987), Travlos (1987), Franks et al. (1988), and Eckbo and Langohr (1989), has since been systematically confirmed in large-sample studies (Alexandridis et al., 2017; Eckbo et al., 2018; Dessaint et al., 2025).

[5]Because buyers assume or refinance the target's outstanding debt, and unless the cash bid is financed with an equity issue, post-takeover leverage is always lower for a stock bid than for a cash bid. Under the US Internal Revenue Code, a cash acquisition is a taxable event for the target's shareholders, while capital gains taxation in a stock acquisition is deferred until the shares are sold. de Bodt et al. (2018) argue that the 2001 abolishment of the pooling and goodwill amortization rules may also have impacted stock usage. Finally, NYSE listing rules require acquirer shareholder approval of share issues of 20% or more of outstanding shares (Li et al., 2018b).

[6]Hansen (1987) first showed how the contingent-value property of a stock payment can make stock an efficient payment instrument when the target has private information about its value. Fishman (1989) and Eckbo et al. (1990a) extend this insight to settings with two-sided asymmetric information, in which both bidder and target possess private information relevant to the transaction.

value t^* or less:

$$\underbrace{z\big(t^* + \widehat{\Omega} - c\big) + c}_{\text{mixed cash-stock offer}} \;\geq\; t^*, \tag{1}$$

where $\widehat{\Omega}$ is the target's assessment, conditional on the offer, of the bidder's true value Ω, which is privately known to the bidder and includes the synergy gains from the acquisition.[7] This offer consists of a cash component $c \geq 0$ and a fraction $z \in [0, 1]$ of the combined firm offered to the target, which from the target's point of view is worth $t^* + \widehat{\Omega} - c$.

To highlight the basic trade-off, suppose the bidder makes an all-cash bid of t^*. Since the bidder only knows the distribution over a target's true value t, target acceptance (indexed a) results in the following expected cost:

$$\underbrace{t^* - E[t \,|\, a] > 0}_{\text{expected overpayment cost of cash}} \qquad . \tag{2}$$

Analogous to the adverse selection cost in Akerlof (1970), this cash offer is accepted by a target with a value of t^* or less (a "lemon").

Importantly, paying for the target with bidder shares instead of cash implies a lower expected overpayment cost than the cash bid in (2). This follows from the nature of a stock offer as a contingent claim on the merged firm: the value of the payment depends on the target's true value after the takeover (which the value of a cash payment does not). When a low-valued target accepts, the shares it receives are claims on a combined firm that includes its own low value, so the bidder's overpayment to a "lemon" is automatically reduced. Conversely, for the same expected cost to the bidder, a stock offer is worth more to a high-valued target than the equivalent cash bid, inducing some high-valued targets to accept offers they would have rejected in cash. In sum, a stock offer induces a more efficient accept/reject decision by the target. Following Eckbo et al. (2018), we therefore refer to a stock offer as an efficient payment method.

Notwithstanding the efficiency of stock as a payment method, bidders may substitute cash for stock in the offer if the target undervalues the bidder, i.e., if

$$\underbrace{\Omega - \widehat{\Omega} > 0}_{\text{undervaluation cost of stock}} \qquad . \tag{3}$$

[7] The target enters the deal process with a prior assessment—based on the observable characteristics Γ introduced in Section 2.2—which it updates using the information conveyed by the offer terms (c, z); the $\widehat{\Omega}$ in Eq. (1) is this updated assessment.

Hence, the bidder prefers to pay in cash when the undervaluation cost of stock in (3) exceeds the expected overpayment cost of cash in (2). To show the tradeoff between cash and stock more specifically, note that, for a fixed target belief $\widehat{\Omega}$, the minimum fraction z that the target will accept is:

$$z \;=\; \frac{t^* - c}{t^* + \widehat{\Omega} - c}. \tag{4}$$

The bidder's expected value of the merged firm is therefore:

$$E[v|a] \;=\; (1-z)\big(\Omega + E[t|a] - c\big) \;=\; \frac{\widehat{\Omega}}{t^* + \widehat{\Omega} - c}\big(\Omega + E[t|a] - c\big), \tag{5}$$

where the second equality uses the minimum value of z in (4).

Moreover, again holding target beliefs constant, the marginal change in $E[v|a]$ from changing the cash component of the offer is:

$$\frac{\partial E[v|a]}{\partial c} = \frac{\widehat{\Omega}}{(\widehat{\Omega} + t^* - c)^2}\big[(\Omega - \widehat{\Omega}) - (t^* - E[t|a])\big]. \tag{6}$$

In (6), $\partial E[v|a]/\partial c > 0$ when $\Omega - \widehat{\Omega} > t^* - E[t|a]$, i.e., when the target substantially undervalues the bidder. This property carries over to the fully revealing equilibria in the models of Eckbo et al. (1990a), Berkovitch and Narayanan (1990), and Liu and Bernhardt (2021), where c itself affects the target's equilibrium assessment $\widehat{\Omega}$.[8] In these equilibria, the tradeoff between $\Omega - \widehat{\Omega}$ and $t^* - E[t|a]$ induces the bidder to select a higher c the more the target undervalues the bidder prior to the deal. Conversely, the lower the target's prior undervaluation of the bidder, the greater the stock portion of the deal.[9]

The above discussion motivates the key prediction of efficient payment design: bidders prefer to pay for the target with some or all stock provided the target does not substantially undervalue those shares. Figure 1 illustrates this prediction for the case of either all-stock or all-cash financing. Bidders prefer to use stock as acquisition currency in regions A and B of the target's prior valuation error $\Omega - \widehat{\Omega}$. In region C, however, the undervaluation cost of stock exceeds the expected overpayment cost of cash, and

[8]In these models, bidders use c as a costly signal that the target undervalues the bidder shares ($\widehat{\Omega} < \Omega$). See DeMarzo et al. (2005) for a general treatment of auction security design.

[9]For simplicity, the above analysis assumes that the bidder presents an offer that the marginal target t^* will accept. Allowing for target rejection of the offer tilts the efficient cash-stock trade-off further toward stock, because stock payments lead some high-value targets to accept offers they would otherwise reject under cash, thereby raising the probability of deal completion. A binding bidder cash constraint similarly tilts the payment toward stock without altering the basic principle behind the optimal payment design (Gorbenko and Malenko, 2018; Li et al., 2018a).

the bidder switches to an all-cash offer.

Figure 1 also helps to see the prediction of bidder opportunism, the alternative hypothesis to efficient payment design. Bidder opportunism can occur only when the target overvalues the bidder, which is restricted to region A in Figure 1. In regions B and C, the target does not overvalue the bidder, ruling out bidder opportunism. Moreover, because bidder initiation itself leads a rational target to revise $\widehat{\Omega}$ downward (Section 2.2), fewer bidder-initiated deals remain in region A—so opportunism must survive not only the target's prior information but also the information conveyed by the initiation decision itself. Hence, evidence that stock is included in the payment method beyond region A does not support bidder opportunism. It is, however, consistent with efficient payment design, since including stock in the payment method is optimal in region B of Figure 1, where $0 \leq \Omega - \widehat{\Omega} \leq t^* - E[t|a]$. Building on these theoretical arguments, we discuss our empirical test strategy next.

2.2 Testable prediction

The main purpose of our tests is to discriminate between efficient payment design and bidder opportunism. At its core, this test requires identification of the target's prior valuation error $|\Omega - \widehat{\Omega}|$. Denote a target with a relatively small valuation error $|\Omega - \widehat{\Omega}|$ as being relatively precisely informed about the bidder. Moreover, let the vector Γ consist of observable bidder and target characteristics that are correlated with the valuation error, so that a higher Γ corresponds to a lower $|\Omega - \widehat{\Omega}|$.

Hypothesis 1: *Let $I_B = 1$ indicate that the bidder is initiating the takeover. Moreover, let $\Phi_B \equiv Prob(z > 0|I_B = 1) = f(\Gamma)$ denote the probability, conditional on bidder initiation, that the equilibrium deal payment includes bidder shares. The following competing empirical predictions hold:*

(i) *Under efficient payment design: $\partial\Phi_B/\partial\Gamma \geq 0$.*

(ii) *Under bidder opportunism: $\partial\Phi_B/\partial\Gamma \leq 0$.*

Note first that part (i) of H1 holds whether the equilibrium fully or only partially reveals the true bidder value. In both cases, the sole purpose of using bidder shares ($z > 0$) in the payment is to hedge against target adverse selection. Since the value of this hedge is higher for well-informed targets, who are less likely to undervalue the bidder, $\partial\Phi_B/\partial\Gamma \geq 0$. Under part (ii), however, which requires a pooling equilibrium, targets may (unknowingly) accept overpriced bidder shares as payment. Since this outcome is less likely the better informed is the target, $\partial\Phi_B/\partial\Gamma \leq 0$. Moreover, because an opportunistic bidder times the initiation, the negative slope in part (ii) should be concentrated in bidder-initiated deals—target-initiated deals, where the bidder does not control the timing, provide the natural benchmark.

In Section 3.4, we test H1 using reduced-form probit and Tobit regressions of the probability Φ_B of observing bidder stock in the deal, with the target information vector Γ among the explanatory variables. A particularly desirable property of this test is that it nests H1(i) and H1(ii) within the same regression specification. Again using Figure 1 as an illustration, the sign of $\partial\Phi_B/\partial\Gamma$ reflects which mechanism dominates in the sample: under opportunism, better-informed targets (higher Γ) shrink the set of region-A deals in which overpriced stock can be placed, pushing the slope negative; under efficient payment design, better-informed targets are less likely to undervalue the bidder, expanding the set of deals in region (A+B) in which stock is the optimal payment and pushing the slope positive. Hence, evidence that stock usage increases with target information precision, and that this relation is not weaker in bidder-initiated transactions, is difficult to reconcile with bidder opportunism.

While H1 focuses on bidder initiations, we also frequently observe target-initiated deals in the data. Equilibrium models with endogenous deal initiations abstract from target opportunism (Gorbenko and Malenko, 2024). Intuitively, and analogous to the case with endogenous bidder initiation, a target that initiates the deal process is more likely to have private information that it is overvalued by the bidder. By the same contingent-value logic that makes stock a hedge for the bidder, payment in bidder shares would leave the initiating target exposed to the ex post deflation of its own overvaluation—so a target that opportunistically initiates the deal process will demand payment in cash. While the degree to which such targets obtain cash payment in equilibrium is an unresolved theoretical issue, a plausible prediction is that opportunistic target initiations *lower* the probability of observing bidder shares as deal payment. Empirically, target-initiated deals in our sample contain more, not less, stock (Table 2)—consistent with the lemons-based efficient-design channel dominating any opportunistic cash demand by initiating targets.

Complementing the reduced-form test of H1, we develop and test two additional sets of empirical predictions of bidder opportunism, labeled H2 and H3 in Sections 4 and 5, respectively. H2 is based on the model of Li et al. (2018a), which permits a structural estimate of the fraction of the sample with successful bidder opportunism; our contribution is to condition the estimation on the party initiating the deal. In H3, we estimate abnormal deal announcement returns not only to the bidder and target but also to the bidder's close industry peers. If the bidder's shares are overpriced, the peer firms' shares may be overpriced as well—a prediction the sign of the peer announcement return can discriminate from industry-specific synergy gains.

3 Takeover initiations: Reduced-form tests of opportunism

This section tests H1. We first describe how we identify the party initiating each takeover from SEC merger filings (Section 3.1) and how firm, auction, and valuation characteristics vary with the initiation decision (Sections 3.2–3.3). Section 3.4 then estimates the likelihood of stock as deal payment as a function of the target information proxies Γ and the initiating party.

3.1 Identification of the deal-initiating party

We start our sampling by selecting completed takeovers of US public targets from the SDC Platinum database from 2000–2020 to identify the initiating party. Of these, we can locate an SEC takeover filing, such as DEFM14A, PREM14A, and S-4, for 3,353 targets. For each transaction, we read the "background of the merger" section and classify the initiating party and other aspects of the sales process. This allows us to identify the initiating party for 2,968 public targets; the remaining 385 filings do not clearly identify the initiating party. The bidder is a publicly listed firm in 1,845 of these deals. Much of the analysis requires bidder characteristics and will therefore be limited to our subset of public-to-public deals.

Our initiation classification is as follows: The takeover is classified as *target initiated* if the SEC documents reveal that the target board initiated the sales process by directly contacting a potential buyer or by hiring an investment bank to identify potential acquirers (sometimes under pressure from its shareholders). Even if an acquirer subsequently approaches the target, we classify the deal as target-initiated as long as the target board has previously started a sales process.[10] Conversely, if the target board organizes an auction in response to an unsolicited approach, the deal remains classified as bidder-initiated—a pattern that helps explain why bidder-initiated deals exhibit more, not less, bidding competition (Table 2).

Second, the takeover is classified as *bidder initiated* if initiated by a potential acquirer approaching the target. Note that the initiating bidder need not be successful: the initiation may be followed by a rival bidder that ends up acquiring the target. For our purposes, the important fact is that, regardless of who eventually wins the target, the deal is initiated by a bidder with the potential to be opportunistic.

[10] A board-initiated sales process puts the target "in play," triggering the directors' *Revlon* duty to sell to the highest bidder (see Section 6.4)—so the economically relevant initiation decision is the board's, regardless of which buyer subsequently approaches.

Throughout, bidder characteristics and payment terms refer to the winning bidder; announcement returns are estimated for the bidder making the first public offer (day 0 in Section 5.2), which is the winning bidder in the vast majority of deals.

Third, the takeover is classified as *jointly initiated* if the initiation occurs through joint discussions between a bidder and the target, and there is no indication that either party initiated or was a driving force behind the transaction. About 10% of the jointly initiated transactions are described as a "merger of equals," in which the acquirer and the target firm are of similar size and market value. A merger of equals is typically structured as a stock swap, and leadership roles (board seats and executive positions) are often divided between the two firms to maintain a balance of power.

Figure 2 illustrates the time-series distribution of the sample deals and their three main categories of initiation: bidder, target, and joint. Figure 3 shows the sample proportions of each initiation type, which also separates out the two bidder-initiation categories (winning or rival bidder). Panel A, which uses the full sample of deals by both public and private bidders, shows that 57% are bidder-initiated (45% by the winning bidder and 12% by a rival bidder), while 34% are target-initiated. The remaining 8% are jointly initiated. Panel B, which limits the sample to public bidders, shows that the sample initiation proportions are broadly similar to those in the full sample, with 58% bidder-initiated, 31% target-initiated, and 11% jointly initiated transactions. Beyond the initiating party, the background sections allow us to code the dates, prices, payment form, and binding status of all bids in the private phase preceding the first public announcement—auction data we summarize in Section 3.2.[11]

3.2 Firm and auction characteristics conditional on deal initiation

Table 1 shows bidder and target characteristics for the subsample of deals where both parties are publicly listed and compares them across initiation types. Acquirers in bidder-initiated deals tend to be larger, with total assets averaging \$15.3 billion vs. \$10.2 billion in target-initiated transactions, and a larger

[11] While this paper is the first to use initiation data to address bidder opportunism, our finding that about 43% of the deals are target-initiated (directly or jointly) is consistent with a growing literature documenting initiation frequencies, albeit typically in smaller samples. Aktas et al., 2010 (N=1,774; 1994–2007) use the identity of the initiating party to estimate bidding costs, while Masulis and Simsir, 2018 (N=1,268; 1997–2012) and Liu and Mulherin, 2018 (N=388; 1981–2014) condition on the initiating party to study potential effects on final offer premiums. Fidrmuc and Xia, 2019 (N=1,098; 2005–2011) link initiations to executive incentives and compensation, while Brown et al., 2022 (N=1,585; 1981–2020) show an increasing rate of target initiations (from 16% over 1981-1989, N=402, to 38% from 1990-2020, N=1,183). With the hitherto largest sample, Eckbo et al. (2026) (N=4,363. 1996–2016) report that 45% are target-initiated and another 10% initiated jointly with the bidder. They also show that target initiations trend downward after 2010. Since our sample period extends beyond theirs, this downward trend may explain why the target initiations in our sample is 34%.

fraction pays dividends. However, the average acquirer has economically similar cash holdings, R&D levels, and M/B ratios across initiation types (differences at most marginally significant), undermining the notion that bidder-initiated deals are systematically driven by overvalued equity. As shown in Panel B, the targets, on average, are substantially smaller than their public acquirers ($1.9bn vs. $13.2bn), have lower M/B (2.86 vs. 4.23), and are less levered. However, there is no statistically significant difference in these target characteristics across bidder- and target-initiated deals. Interestingly, this observation also appears to hold for the relative M/B ratios of bidder and target firms, central to the debate over whether misvaluation drives merger activity. We expand on the issue of relative M/B in Section 3.3 below.

The auction data presented in Table 2 confirms and extends earlier evidence on the "private" part of the sales process that typically takes place prior to the first public bid announcement. We record the dates and prices of all bids reported, whether as a bid price (cash value or exchange ratio in stock swaps) or an offer premium. Bid prices may be exact values (e.g., $80.00) or price ranges (e.g., $80.00-$82.00). We also record the payment method (all-cash, all-stock, or mixed cash-stock offers) and the bid's form (binding or non-binding; verbal or written; tender offer or not), and note the dates of deal initiation and of the signed merger agreement (if any), from which we compute the duration of the private deal phase. The table also summarizes key features of the auction process conditional on initiation type. Focusing on the subsample of public bidders in Panel B, the private phase of the auction extends over roughly six months (196 days, on average) and features 3.5 bids, with multiple bids in 74% of deals and multiple bidders in 31% of deals. This evidence is comparable to Boone and Mulherin (2007), who find that about half of all deals involve some form of private competition; our higher incidence may reflect our counting of all bid indications, including non-binding and verbal bids.[12]

Table 2 also reports, for public bidders, an average bid-jump (incremental increase in the bid, averaged across all successive bid pairs within a contest) of 4.7%. This is somewhat lower than Boone et al. (2024), who document an average increase of 9.6% between the first and second bids in the private phase of the auction. The difference is consistent with bidders making increasingly smaller bid jumps as the auction progresses. Interestingly, the 9.6% initial private-phase jump is similar to the 10% average jump from the first to the second *public* bid in Betton and Eckbo (2000).

Moreover, consistent with the evidence in Masulis and Simsir (2018), the average offer premium

[12]For details of the private period, see also Liu and Mulherin (2018), Badawi and de Fontenay (2019), and Boone et al. (2024).

(measured here as the offer price divided by the target stock price one month prior to the offer date, minus one) is significantly lower for target-initiated than for bidder-initiated deals, with a difference of 18.4 percentage points when bidders are listed. This difference likely reflects that targets who initiate also tend to have a relatively low pre-takeover return on assets (Masulis and Simsir, 2018).

Although auctions are commonly associated with target-initiated sales processes, bidder-initiated deals in fact involve somewhat more competitive bidding: the mean number of bids and fraction of auctions with multiple bids are 3.7 and 80%, respectively, for bidder-initiated transactions and 3.1 and 65% for target-initiated deals. The differences are statistically significant and consistent with our classification rule (Section 3.1): bidder-initiated deals often contain competitive processes that the target board runs defensively in response to the unsolicited approach.

Moreover, stock is used less frequently in bidder-initiated than in target-initiated deals: on average, 36% of the consideration is paid in stock versus 49%, and only 19% of bidder-initiated deals are all-stock compared with 30% of target-initiated deals. This pattern—less stock when the bidder initiates, the opposite of what opportunistic market timing predicts—is the univariate version of the regression results in Section 3.4. The payment distribution itself carries a first message for Figure 1. The use of stock is closely tied to who initiates: the median bidder-initiated deal contains no stock at all, whereas the median target-initiated deal is roughly half stock (median stock fractions of 0% and 48%, respectively; Table 2, Panel B). Pooled, the median public-bidder deal still carries a 26% stock fraction, and 24% of deals are all-stock, so most of the sample includes at least some stock. Through the lens of Section 2.1, the all-cash deals sit in region C, where the target substantially undervalues the bidder and opportunism is ruled out by construction. Opportunism can arise only in the stock-financed deals, which form a majority of the sample and therefore leave ample scope to detect it if present; the tests in Section 3.4 examine whether those deals reflect region A (opportunism) or region B (efficient payment design).

3.3 Deal initiation and relative M/B

Shleifer and Vishny (2003) note that periods with high merger activity are also characterized by relatively high M/B ratios (see, more generally, Holmstrom and Kaplan, 2001; Harford, 2005). Moreover, in their model, temporarily overpriced bidders are more likely to use shares as acquisition currency than undervalued bidders, so opportunism should be most prevalent in periods with M/B at peak levels. Rhodes-Kropf et al. (2005) address this issue further by decomposing M/B into firm- and sector-specific components.

They infer that high M/B firms tend to buy relatively low M/B firms, and that this difference is driven by firm- and sector-specific misvaluations rather than by fundamental or long-run differences. Subsequent work finds that the positive association between merger activity and bidder M/B weakens under closer identification and tends to dissipate during the deal process itself (Harford, 2005; Fu et al., 2013; Eckbo et al., 2018).

Since bidders may prefer to stock-finance the takeover also when shares are correctly priced, identifying the presence of bidder opportunism requires going beyond correlating the frequency of stock-financed mergers with bidder valuation measures. While this identification is the main objective of Sections 3.4 and 4 below, in Section 5 we also find that takeover announcements—including stock-financed ones—trigger positive revaluations of the bidder's close industry peers, the opposite of the sector-overvaluation effect suggested by Rhodes-Kropf et al. (2005).

Given the widespread interest in the relation between M/B, merger activity, and the potential role of pricing errors,[13] Figure 4 illustrates the average annual level of M/B over our sample period for four groups of Compustat firms: all firms, high-tech firms, bidders, and high-tech bidders. As shown, public bidders have a higher mean M/B than all Compustat firms: 3.9 and 2.4, respectively. High-tech bidders tend to have the highest M/B, averaging 5.1 over the sample period. Figure 5 shows the median ratio of bidder-to-target M/B for our sample of public acquirers, sorted by bidder- and target-initiated deals. Interestingly, bidders typically have higher M/B ratios than targets, whether the deal is bidder- or target-initiated. Importantly, the two series track each other closely throughout the sample period, and the averages of the annual medians over the full sample period are nearly identical (1.19 and 1.23)—suggesting that which party initiates the deal matters little for relative M/B, in any part of the merger-wave cycle. This time-series pattern is what one would expect if the bidder's private information about market misvaluation at best plays a minor role in these takeovers.

3.4 Testing opportunism v. efficient payment design

We start the empirical analysis of H1 with the univariate regressions, which relate a bidder-initiation dummy to the likelihood of an all-stock bid (probit) and the fraction of stock in the deal payment (Tobit) for the subsample of public bidders. As shown in Table 3, bidder initiation is associated with

[13] E.g., Shleifer and Vishny (2003), Harford (2005), Rhodes-Kropf et al. (2005), Dong et al. (2006), Khan et al. (2012), Ben-David et al. (2015).

a statistically and economically significant *reduction* in the likelihood and extent of stock usage: the probit coefficient is -0.367 ($t = 5.66$) and the Tobit coefficient is -0.478 ($t = 5.67$), and the result is robust to restricting the sample to bidder- and target-initiated deals (columns 2 and 5) or to bidder- and jointly-initiated deals (columns 3 and 6). The negative relationship contradicts opportunistic market timing, under which endogenous initiation by an opportunistic bidder raises the likelihood of stock in the deal payment. The same evidence is instead consistent with efficient payment design: as argued in Section 2.1, target initiation signals a likely "lemon," raising the expected overpayment cost of cash and tilting payments in target-initiated deals toward stock; symmetrically, bidder initiation leads the target to revise its estimate of the bidder's valuation downward (Section 2.2), raising the undervaluation cost of stock and tilting bidder-initiated deals toward cash.

Recall from H1 that a target with a relatively small $|\Omega - \widehat{\Omega}|$ is labeled as being relatively precisely informed about the bidder. We identify $|\Omega - \widehat{\Omega}|$ with two types of observable proxies: the relatedness of the two firms in product and labor markets (Hoberg and Phillips, 2016) and their geographic proximity, and the bidder's recent disclosure activity. The logic of the first type is that a closely related or nearby target observes many of the same demand and cost fundamentals as the bidder and is therefore better positioned to reverse-engineer the bidder's true stand-alone value and synergy potential from the deal terms; the second type captures the public information environment created by the bidder's recent securities issues and acquisition activity.

Table 5 adds the firm-level controls and information variables defined in Table 4 to the regressions in Table 3, presenting the full conditional estimation of the likelihood of stock payment. Columns 1 and 5 list the baseline model coefficients, including acquirer and target-industry characteristics. As shown, larger bidders are less likely to use stock, while a large relative deal size increases stock usage. These relationships are intuitive: larger firms tend to have more internal financing, while large deals may require equity financing. Moreover, in line with the literature discussed in Section 3.3, bidders with a relatively high M/B ratio tend to use stock as a payment method. Note also that increased competition from *private* bidders in the target's FF49 industry reduces the use of stock in the deal payment. This result is intuitive: private bidders, whose own shares are illiquid, compete almost exclusively with cash offers. Because the value of a cash bid is certain while a stock offer is discounted by any target undervaluation of the bidder (Section 2.1), a listed bidder facing cash-bidding rivals is pushed toward cash to remain competitive—as the data strongly bear out.

In columns 2 and 6 of Table 5, we add the target information proxies. Of the four information variables, three enter with a positive and significant sign: *Local Deal*, *H-P Industry Relatedness*, and *Recent SEO*.[14] These findings are inconsistent with the opportunism prediction in Part (ii) of H1—that bidders find it easier to sell overpriced shares to poorly informed targets—and instead support the efficient-design prediction in Part (i): facing a relatively well-informed target lowers the bidder's expected undervaluation cost of stock and therefore increases the incentive to pay with shares.

Next, and most importantly, in the remaining columns of Table 5, we add a dummy for bidder-initiated transactions (columns 3 and 7) and the interaction between this dummy and the target information proxies (columns 4 and 8). As argued following H1, if bidder mispricing drives the decision to pay with stock, the effect should be strongest when the bidder endogenously times the initiation to coincide with market misvaluation. Interacting the bidder-initiation dummy with the target information proxies therefore increases the power to detect opportunism through the timing channel central to the market-timing analogy.

First, the dummy for bidder initiation confirms the earlier univariate regression result in Table 3 that bidder initiation lowers—rather than increases—the likelihood that the deal payment includes stock (Table 5, columns 3 and 7). Second, the interaction coefficients are statistically insignificant, and their point estimates are positive or near zero rather than negative (columns 4 and 8).[15] While these insignificant interactions do not, by themselves, rule out economically meaningful effects, opportunism predicts negative interactions—target information should deter stock usage most when the bidder times the initiation. The interactions thus fail to support opportunism by sign, not merely by insignificance. The burden of the test is, in any case, carried by the level effects: the information proxies enter positively and the bidder-initiation dummy negatively, both opposite in sign to the opportunism predictions.

[14] Unlike *Local Deal* and *H-P Industry Relatedness*, which capture the precision of the target's information about the bidder without implying a direction of revaluation, a recent seasoned equity offering may itself convey adverse valuation information (Myers and Majluf, 1984)—a distinction we return to when interpreting the announcement-return evidence in Section 5.2.

[15] Because interaction coefficients in nonlinear models do not directly equal interaction effects, we also compute average marginal effects from the probit specification in column 4 (Ai and Norton, 2003). The marginal effects of the target-information proxies are statistically indistinguishable across bidder- and target-initiated deals. Moreover, the estimated differences do not display the negative sign predicted by bidder opportunism.

4 Are bidder-initiated deals less efficient? Structural estimation

In this section, we condition key implications of the takeover model of Li et al. (2018a) (henceforth LTW) on the party initiating the deal. While H1 imposes relatively few theoretical restrictions on the empirical tests, our next hypothesis works within LTW's specific equilibrium framework. The payoff from the additional restrictions is a structural estimate of the efficiency loss that arises when overvalued but low-synergy bidders crowd out high-synergy rivals, and of the associated redistribution of takeover gains toward overvalued bidders. The test logic is simple: if bidders time initiation to exploit overpriced shares, the moments of bidder-initiated deals should generate a higher simulated incidence of inefficient crowding out than those of target-initiated deals.

The model offers several further advantages here. First, all of its events take place after the initiation decision: LTW treat participation as given (p. 269), so the model can be estimated separately for the bidder- and target-initiated subsamples. Assumptions about initiation enter only into interpreting differences across the two estimations. Second, the target's stand-alone value is common knowledge, so the target-side adverse selection motivating efficient payment design in Section 2 is absent by construction. This simplification is most strained in target-initiated deals, where the decision to seek a buyer may itself signal target private information; we return to this in Section 4.2. For detecting opportunism, however, the assumption works in our favor. In the model, stock payment cannot be rationalized as a hedge and can reflect only cash constraints or misvaluation. A failure of opportunistic crowding out to appear therefore cannot be blamed on the model absorbing opportunism into an efficiency channel. Third, LTW's own routines are available to us, making the estimates directly comparable.

4.1 Structural estimation procedure

LTW model a sealed-bid, second-price auction in which two synergistic bidders with independent private valuations compete for a target whose stand-alone value is common knowledge (one-sided information asymmetry). Each bidder is characterized by three variables that the target cannot observe: the synergy gain as a fraction of target value (s), the market misvaluation of the bidder's stand-alone value (ϵ, positive when the bidder is overpriced), and the bidder's cash capacity (k). The target's own value is standardized to 1, and the target observes only the bidder's relative market value (M) and the bid's cash-stock mix. In equilibrium, bidders bid their true valuations of the target—truthful bidding being optimal under the second-price format—and the target scores bids using a Bayes-rational rule that discounts equity offers for expected overvaluation.[16]

Because two observables cannot reveal three unobservables, the model produces a pooling equilibrium in which the target may unknowingly accept overpriced shares. The target—and, symmetrically, the stock market—can adjust only for the average misvaluation among bidders making the same type of bid, so an offer from an acquirer with above-average overvaluation remains inflated after that adjustment. An overvalued but low-synergy bidder can therefore match the score of a higher-synergy rival's bid and win the auction on mispricing rather than efficiency. In particular, the target cannot distinguish an opportunistic stock-financed offer from a correctly priced one made by a bidder whose unobservable cash constraint binds—the confusion that opportunism exploits.

Misvaluation of bidder shares can then create two effects. *Crowding out* occurs when an overvalued bidder paying with shares defeats a more efficient (higher-synergy) but less overvalued rival. *Redistribution* occurs when misvaluation shifts takeover gains from undervalued to overvalued bidders—most directly when an overvalued bidder loses to a more efficient rival but forces the winner to pay a higher premium. The first effect destroys synergy value; the second only transfers it.

Hypothesis 2 (inefficient crowding out): *If the bidder times deal initiation to coincide with private information that its shares are overpriced by the market, then the empirical moments of bidder-initiated deals generate a higher incidence of inefficient transactions in simulations of the LTW model than the moments of target-initiated deals.*

H2 follows because, while all events in the LTW model occur after the initiation decision, the data moments in the two subsamples condition on the party that initiates the deal. Hence, bidder opportunism necessarily raises the bidder-initiated estimate of inefficiency over and above the corresponding estimate in target-initiated deals. Also, since the target value is common knowledge, there is no target-side private information to reveal, so target-initiations are uninformative (by construction). Hence, within the model, target-initiated deals serve as a proper benchmark for testing for bidder opportunism.

Again, while target deal initiations may occur when the shares of potential bidders are overpriced, the

[16]LTW (Internet Appendix A.1) show that this equilibrium is equivalent to the open ascending (English) auction more common in the takeover literature (e.g., Fishman, 1989; Gorbenko and Malenko, 2014, 2018; Dimopoulos and Sacchetto, 2014): bidders raise offers until one drops out, and the winner's equity fraction is then lowered, holding cash fixed, until its bid matches the runner-up's value as scored by the target. The exact scoring rule is in LTW.

likelihood of bidder overpricing is strictly greater in bidder-initiated deals. This is precisely why conditioning on the party that self-selects the timing of the deal increases power to reject bidder opportunism. Note also that, while a bidder approached by the target may respond by paying with overpriced shares, the likelihood of this is constrained by the need for the bidder to have sufficient synergies to win the auction for the target.

Table 6 summarizes the Simulated Method of Moments (SMM) estimation procedure. To make our results directly comparable to LTW, we use their estimation code, which they generously supplied to us. Eight data moments exactly identify the eight model parameters $\Theta = (\mu_s, \sigma_s, \mu_\epsilon, \sigma_\epsilon, \mu_k, \sigma_k, \rho_{sM}, \rho_{kM})$ with acquirer characteristics treated as independent draws from the joint distribution

$$(s, \epsilon, k, M) \sim F(N_s(\mu_s, \sigma_s), N_\epsilon(\mu_\epsilon, \sigma_\epsilon), N_k(\mu_k, \sigma_k), M(\cdot); \rho_{sM}, \rho_{kM}). \tag{7}$$

The synergy parameters $(\mu_s, \sigma_s, \rho_{sM})$ are identified from the mean and variance of the offer premium (OP) and from the slope a_1 of OP on the log of the bidder's relative market value (M) in the cross-sectional regression in part I.(1) of Table 6—consistent with evidence that offer premiums vary systematically with relative deal size (e.g., Alexandridis, Fuller, Terhaar, and Travlos, 2013). The cash-capacity parameters $(\mu_k, \sigma_k, \rho_{kM})$ are identified analogously from the fraction of the bid paid in cash $(Cash)$ and the slope c_1.

Finally, of the two *misvaluation* parameters $(\mu_\epsilon, \sigma_\epsilon)$, the first is identified from the average bidder announcement return $CAR(-1, 3)$, estimated using the Market Model as specified in Table 6, following LTW. In the model, the misvaluation itself is unobservable to the target. The second parameter, σ_ϵ—the dispersion of bidder misvaluation—is identified through the signaling content of the cash fraction, as the slope b_1 in the CAR regression in part I.(1) of Table 6. Because the target and the market share similar beliefs about the acquirer's equity value, the market revaluation is internally consistent with the target's own expected revaluation: the target need not observe the market reaction before rationally scoring bids as a function of the cash fraction.[17]

Table 7 reports the data moments and their model-implied counterparts for the total sample. Because

[17]The three cross-sectional regressions under I.(1) in Table 6 share the same vector *Controls* (year indicators, target Fama–French 48 industry indicators, and five target characteristics: log market capitalization, market leverage, market-to-book, return on assets, and cash-to-assets). *Controls* is excluded from the simulations because it lies outside the theoretical model; as in LTW, our conclusions are similar when the moments are measured without *Controls*. LTW note that this treatment of heterogeneity has the advantage of computational feasibility, since the model lacks a closed-form solution. As in LTW, b_1 is interpreted through the model's signaling channel; the *Controls* vector absorbs observable deal heterogeneity when the moment is measured in the data.

the eight moments exactly identify the eight parameters, the closeness of columns 1 and 2 is a feature of the estimation procedure rather than a test of fit. Panel A shows that the offer premium averages 46.3% in the data, against a model prediction of 49.9%, and increases significantly with the acquirer's relative size (slope a_1 0.033; model prediction 0.023).[18] In Panel B, the average cash fraction is 64.4% (model: 63.1%). Notably, bidder-initiated deals carry a *higher* cash fraction than target-initiated deals (69.9% versus 56.4%)—already pointing away from opportunistic timing, which predicts greater reliance on stock when the bidder initiates.

In Panel C, the acquirer announcement return $CAR(-1,3)$ averages -1.5% and is *less negative* for bidder-initiated (-1.1%) than for target-initiated deals (-2.1%); successful opportunism predicts the opposite. Panel C also reports, by initiation type, the slope b_1 of the announcement return on the cash fraction, which helps identify the signaling effect σ_ϵ. The estimated slope is positive in the full sample (0.051) as well as in the bidder- and target-initiated subsamples (0.039 and 0.066, respectively). Thus, bidders offering a larger cash component experience less negative announcement returns, a pattern consistent with the classical signaling models of payment choice (Eckbo et al., 1990a).

The largest discrepancy among the targeted moments is the cash-fraction slope c_1 (0.121 versus 0.043). The shortfall plausibly reflects the high estimated cash capacity of bidders, which causes many simulated offers to be financed entirely with cash and therefore weakens the responsiveness of the cash fraction to relative size.[19] Evidence on fit comes instead from untargeted features. Although only means and variances enter the estimation, Figure 6 shows that the model reproduces the broad shape of the distributions of offer premiums, cash fractions, and announcement returns. It also generates the mass points at all-cash and all-stock bids, although it understates both, particularly the all-cash spike.

We next turn to the structural parameter estimates underlying the fitted moments. For completeness, the full-sample point estimates (standard errors in parentheses) are: synergy mean μ_s=0.452 (0.036) and dispersion σ_s=0.601 (0.083); misvaluation mean μ_ϵ=0.046 (0.019) and dispersion σ_ϵ=0.070 (0.005); cash-capacity mean μ_k=2.082 (0.256) and dispersion σ_k=1.487 (0.081); synergy–size correlation ρ_{sM}=0.487 (0.043); and cash–size correlation ρ_{kM}=0.574 (0.048).[20] Synergies s and cash capacity k are drawn from

[18] Unlike Table 2, this table follows LTW in excluding observations with offer premiums outside the range [0%, 200%].

[19] Consistent with this interpretation, Li et al. (2018a) match the same moment almost exactly (0.050 versus 0.052) in their 1980–2013 sample, where estimated mean cash capacity is roughly one-quarter of ours.

[20] To conserve space, we report only the full-sample parameter estimates. For comparison, Li et al. (2018a, Table 4) report, for 2,503 bids over 1980–2013: μ_s=0.439, σ_s=0.603, μ_ϵ=0.058, $\sigma_\epsilon = 0.070$, μ_k=0.480, σ_k=1.518, ρ_{sM}=0.496, and ρ_{kM}=0.566.

normal distributions truncated at zero; misvaluation ϵ is untruncated and expressed as a fraction of the bidder's stand-alone market value. The implied moments of the truncated distributions are $E[s]$=0.686, Stdev[s]=0.450, $E[k]$=2.142, and Stdev[k]=1.374.

Three features stand out. First, the estimated synergy distribution implies economically large gains: $E[s]$=0.686, so the average deal generates expected synergies of roughly 69% of the target's stand-alone value, with substantial dispersion (Stdev[s]=0.450). Second, bidder misvaluation is present but modest: bidders are, on average, overvalued by a statistically significant 4.6% of their stand-alone value, with a cross-sectional dispersion of 7.0%.[21] Third, although our sample begins two decades after LTW's, our estimates are remarkably close to theirs: the misvaluation dispersion σ_ϵ, which drives the scope for opportunistic crowding out, is essentially identical (0.070 in both samples), while the average misvaluation is, if anything, somewhat lower in our sample (0.046 versus 0.058). The one economically meaningful difference is the cash-capacity mean ($\mu_k = 2.082$ versus 0.480, expressed in units of the target's stand-alone value). This estimate implies an average cash capacity of roughly twice the target value in our sample, compared with one-half in LTW's—consistent with the secular increase in corporate cash holdings (Bates et al., 2009) and, in part, with the larger relative size of acquirers in our sample. Because greater cash capacity allows undervalued bidders to separate from overvalued ones by offering cash, weaker cash constraints shrink the pooling region in which opportunism can succeed—a mechanism we return to when comparing our estimated fraction of inefficient deals to LTW's (see footnote 22, Section 4.2).

To test H2, we repeat the estimation procedure of Table 6 on the conditional moment vectors of the bidder- and target-initiated subsamples (columns 4 and 5 of Table 7), and use each subsample's own parameter vector in the simulations that follow. The economic content of the hypothesis lies in auction outcomes: opportunistic timing must show up as a higher simulated incidence of inefficient transactions—overvalued, low-synergy bidders crowding out more efficient rivals—in the bidder-initiated subsample.

4.2 The crowding-out effect

We are now in a position to quantify the crowding-out effect of bidder misvaluation. Table 8 reports the fraction of inefficient outcomes and the average synergy loss—the difference between the simulated synergy gains of the inefficient winner and the more efficient losing bidder—for the total sample. As

[21] Because ϵ is scaled by the bidder's stand-alone value and s by the target's, and acquirers are substantially larger than their targets (Table 1), the two dispersions are closer in common units than the raw estimates suggest. The relative-size distribution M accounts for this scaling in the simulations.

shown in Panel A, inefficient deal outcomes occur on average in only 6.10% of the simulations—hence, a relatively rare outcome. Panel B quantifies the average efficiency loss due to misvaluation, expressed either as a percent of the target's stand-alone market value or as a percent of the losing bidder's higher synergy. Conditional on the deal being inefficient, the simulated synergy loss averages 10.10% of the target value and 19.20% of the highest synergy. Conditional losses are nontrivial: the market's occasional failure to unravel misvaluation is not costless.

However, since such outcomes are relatively rare, the unconditional loss is economically negligible. Averaging the loss across all deals, it is only 0.62% of the target size and 1.17% of the highest synergy (Panel C). This small average is not an artifact of favorable simulation draws: even at the 90th percentile across simulation samples, the loss remains only 1.45% of target value and 2.88% of the highest synergy.[22]

Turning to H2, we compare bidder- and target-initiated deals. Under opportunism, inefficient crowding out should be more prevalent when the bidder initiates, because only then does it control deal timing. Table 9 reports the crowding-out statistics for bidder- and target-initiated deals in columns 3–4 and 5–6, respectively. Central to H2, the fraction of inefficient deals is 6.27% in bidder-initiated deals and 7.37% in target-initiated deals. The 1.1 percentage-point gap is economically meaningful—roughly 15% of the target-initiated benchmark—and runs in the reverse direction to opportunism: inefficient crowding out is *less* frequent when the bidder initiates. Similarly, the average simulated synergy loss in inefficient deals (Panel B) and across all deals (Panel C) is lower—not higher—for bidder-initiated transactions.[23]

Note that both subsample estimates exceed the full-sample estimate of 6.10%. This is not an inconsistency: the full-sample estimate is not an average of the subsample estimates, but a separate estimation that imposes a common Θ on pooled moments—and pooled moments embed between-group variation (for example, the gap in mean cash fractions across initiation types) that neither subsample contains. Because the inefficiency fraction is, in addition, a nonlinear function of Θ, the full-sample estimate need not lie between the two subsample estimates, each generated from its own conditional moment vector.

One caveat worth mentioning is that the model's common-knowledge assumption on target value

[22]The full-sample results in Table 8 are broadly in line with those reported by LTW: our 6.10% fraction of inefficient deals compares to their 7.01% (LTW, Table 5), and our 0.62% average synergy loss across all deals compares to their 0.63%. The close correspondence follows naturally from the parameter estimates in Section 4.1: the misvaluation dispersion σ_ϵ, which drives the scope for crowding out, is identical across the two samples, while our higher estimated cash capacity works to slightly reduce the pooling region and, hence, the fraction of inefficient outcomes.

[23]While composition could, in principle, mask a timing effect, this would require the compositional differences to depress the bidder-initiated estimate by more than the full 1.1 percentage-point gap—offsetting opportunistic timing almost exactly, and doing so consistently across every loss metric in Panels B and C.

is most strained in the target-initiated subsample, where stock is most prevalent (Table 2). If stock payment in these deals partly hedges target adverse selection, the estimation may attribute some of it to misvaluation, biasing the estimated fraction of inefficient deals upward. Reversing the ordering in Panel A of Table 9, however, would require this misattribution to exceed the full observed gap. While the mean announcement returns differ somewhat across the two subsamples (-1.1% versus -2.1%; Panel C of Table 7), crowding out is driven primarily by the dispersion of misvaluation rather than its level. Moreover, the moment identifying σ_ϵ is statistically indistinguishable across the two subsamples ($t \approx 1.4$).[24] Any correction for target-side adverse selection would therefore have to generate a substantially different estimate of misvaluation dispersion to reverse the ordering in Panel A—an outcome that appears unlikely.

Taken together, the estimates in Table 9 are inconsistent with the prediction of H2: conditioning on the bidder's endogenous initiation decision does not raise the structurally estimated incidence or cost of opportunistic crowding out. Within the model, stock payment then reflects cash constraints rather than misvaluation. Combined with the reduced-form evidence in Section 3 that stock usage *increases* in the target's information about the bidder, the evidence points to bidders using stock as acquisition currency for efficiency reasons rather than to sell overpriced shares to the target.

4.3 The redistribution effect

We next estimate the redistribution effect by comparing bidder takeover gains in the estimated economy ($\sigma_\epsilon > 0$) with those in a counterfactual economy without misvaluation ($\sigma_\epsilon = 0$). Figure 7 shows how this varies with the bidder's own misvaluation, measured in standard deviations from the sample mean. The sample is split by initiating party (Panels A and B) and, within each panel, by synergy level and cash capacity. Unlike the earlier simulations, which draw s from its truncated normal distribution, these simulations fix the synergy at $s = 0.4$ (low) or $s = 0.8$ (high), following LTW, to isolate the effect of misvaluation and cash capacity. If opportunistic timing is important, the redistribution toward overvalued bidders should be stronger in Panel A than in Panel B.

As expected, the redistribution effect increases in bidder misvaluation: misvaluation shifts merger gains from undervalued to overvalued acquirers. Cash capacity mitigates this transfer. In the high-synergy

[24] Computed as the difference in slopes divided by the square root of the sum of squared Monte Carlo standard errors from Table 7.

graphs, undervalued bidders with sufficient cash lose little relative to the benchmark economy, whereas otherwise identical bidders with zero cash lose substantially, because cash allows them to separate from overvalued rivals. The most important message of Figure 7, however, is that the simulated redistribution is virtually identical in bidder- and target-initiated deals. Under H2, opportunistic timing should generate a visibly larger redistribution in bidder-initiated deals; the simulations show no such asymmetry.[25]

4.4 Bidder initiation, stock financing and cash constraints

The two theoretical settings above differ in one respect that is central to opportunism: access to cash. In Section 2, cash capacity is unlimited, so an undervalued acquirer can always separate from overvalued rivals by offering cash; when it does, no scope for opportunism remains. In the LTW model, by contrast, cash capacity is finite and unobservable, so some undervalued bidders must pay partly in shares and cannot credibly separate—the source of the pooling equilibrium estimated above.[26]

Figure 8 asks whether the acquirer's cash capacity differs across bidder- and target-initiated takeovers. The annual median cash-to-total-asset ratios of the two groups are nearly identical, averaging 8.6% and 8.4%, respectively, over the sample period—providing no evidence that the initiation decision is related to observable cash holdings. Although bidder-initiated offers contain more cash (Table 7, Panel B), the bidders themselves have similar cash holdings—pointing to the deal-level choice, not the firm-level endowment, as the margin of interest. Because the LTW friction is the unobservable portion of the bidder's cash capacity, Table 10 probes further: it decomposes the bidder's observable cash holding into an estimated cash target and the deviation from that target, and replaces the bidder's total cash holding with these two components in the payment-method regressions of Table 5 (whose specification it otherwise retains).

The portion of a bidder's cash holdings that it is willing to dedicate to financing a takeover depends on its commitments to other investment opportunities and is likely unobservable. We therefore decompose cash holdings into two parts: a cash target, capturing the holdings required for working capital and

[25]LTW show that their simulation results are robust to numerous alternative assumptions, including managerial entrenchment, the number of bidders, blockholder ownership, CEO overconfidence, merger type, excluding high-intangibility targets, and excluding bids with surrounding M&A or SEO activity (see their Internet Appendix). Because the initiation decision is exogenous to their model, these tests need not be repeated here, though they do not speak directly to the subsample split.

[26]The estimation assumes misvaluation (ϵ) and cash capacity (k) are uncorrelated. A positive correlation—if overvalued firms can raise cash pre-deal without eliminating the mispricing—would tighten undervalued bidders' constraints and make mimicry by overvalued acquirers easier, increasing the inefficiency. LTW re-estimate their model with the correlation set to $\pm 20\%$ and find the fraction of inefficient deals changes by less than 0.1 percentage points in either direction, concluding that the inefficiency remains small even under high correlation (p. 287).

ongoing investment needs, and a deviation from this target, which we use as a proxy for the bidder's acquisition-specific cash capacity.

The cash target is estimated as the fitted value from the following OLS regression, estimated year-by-year (hence the t subscript on β) across the universe of industrial Compustat firms (excluding financials and utilities):

$$\left(\frac{Cash\ Holding}{TA}\right)_{it} = X'_{i,t-1}\beta_t + g_{it}, \tag{8}$$

where *Cash Holding* is the firm's cash balance, TA is total assets, and the vector $X_{i,t-1}$ of lagged firm characteristics contains *Size*, *Operating Efficiency*, *M/B*, *R&D*, a *Missing R&D dummy* (indicating a missing value), *Asset Tangibility*, *Leverage*, and FF49 industry dummies. The fitted value from Eq. (8) is the firm's cash target, while the residual *Deviation from Cash-target* measures cash holdings in excess of, or below, that target. To the extent bidders accumulate cash in anticipation of an acquisition, the acquisition-specific cash capacity—the empirical counterpart of the model's k—is captured by this deviation.

Recall from Table 5 that total *Cash Holding* is statistically insignificant in every payment-method specification. The decomposition in Table 10 reveals why: total cash mixes a component that matters with one that does not. A higher cash target significantly reduces the probability of paying with shares, while the deviation from the cash target—our proxy for the cash capacity dedicated to the deal—bears no significant relation to the payment method.[27] Most important for our purpose, the cash-target effect is not weaker under bidder initiation—if anything, the interaction is marginally *negative* in the probit specification ($t = 1.65$), implying that bidders with high cash targets avoid stock even more when they initiate, the opposite of what opportunistic stock-pushing implies. Thus, the decomposition provides no evidence that bidder-initiated deals are disproportionately associated with acquirers possessing greater acquisition-specific cash capacity or a stronger propensity to finance acquisitions with stock.

5 Firm- and sector-specific valuation effects by deal initiation

The reduced-form tests in Section 3.4 and the structural estimates in Section 4 both draw their evidence from the transaction terms themselves. We next turn to how the stock market responds to these

[27] The insignificance of the deviation does not contradict the significant cash-capacity parameters in the structural estimation, which are identified from the cash content of the bids themselves rather than from balance-sheet holdings.

transactions: successful market timing should leave observable traces in announcement returns, in post-announcement stock performance, and in the revaluation of the bidder's close industry peers.

5.1 Testable predictions

We formulate the market-based predictions as follows:

Hypothesis 3 (valuation effects):

(i) In stock-financed acquisitions, bidder adverse selection predicts lower announcement returns than in cash-financed deals. Under opportunistic timing, announcement returns should be lower in bidder-initiated than in target-initiated deals.

(ii) Under bidder opportunism, a portfolio long acquirers in stock-financed and bidder-initiated deals and short acquirers in otherwise similar target-initiated deals earns a negative alpha over time.

(iii) Under industry-specific synergies, takeover announcements generate positive abnormal returns for the bidder's close industry peers. Under industry-wide bidder overvaluation, peer-firm abnormal returns should be attenuated or negative.

Part (i) combines the adverse-selection discount on stock offers with the positive expected synergies that rational takeover models require: a bidder who believes its shares are undervalued prefers cash, so offering stock signals overvaluation, and the announcement return nets the resulting markdown of the bidder's stand-alone value against the capitalized synergy gains. Under opportunistic timing, this discount should be concentrated in deals where the bidder chose the timing. As first shown by Eckbo et al. (1990a), when cash is a costly medium of exchange, a larger cash component signals greater bidder undervaluation in equilibrium and therefore mitigates the discount—a classical prediction we verify as a side result using the cash-fraction moment of the structural estimation (Table 7). We test Part (i) by asking whether announcement returns in stock-financed deals are lower in bidder-initiated deals, controlling for observable deal and firm characteristics.

Part (ii) follows if the market does not fully impound the bidder's temporary overvaluation at announcement. In that case, the correction unfolds gradually, consistent with the long-run reversal in stock mergers documented by Savor and Lu (2009), whose 36-month horizon we adopt. All-cash deals lack the overpriced-equity channel and therefore serve as a placebo. Together, Parts (i) and (ii) span the two possibilities for when overvaluation is revealed: at announcement (i) or subsequently through return reversals. We test Part (ii) using calendar-time portfolios of acquirers sorted by deal initiation and payment method.

Part (iii) follows when takeover synergies are correlated across firms within an industry. An announcement then raises expected sector-wide merger gains or the value of a sector-specific resource, predicting a positive peer revaluation. In Rhodes-Kropf and Viswanathan (2004), however, the same correlation allows stock bids to signal sector-wide overvaluation, predicting a negative or attenuated one; the sign of the peer revaluation thus discriminates between the two channels. We test Part (iii) on announcement returns to portfolios of the bidder's closest industry peers, identified by Hoberg–Phillips relatedness scores.

5.2 Bidder and target announcement returns

Positive expected synergies are a necessary condition for takeovers between rational agents: a pure exchange of mispriced shares is a zero-sum game that no informed party would accept, and under target adverse selection, it is the synergy gains that fund the bidder's expected overpayment cost (Section 2.1). Large-sample studies document positive average synergies (Alexandridis et al., 2017; Dessaint et al., 2025). We confirm that combined bidder–target announcement returns are positive in our sample within each initiation type and, notably, higher in bidder-initiated deals.

We estimate daily abnormal stock returns around successful merger bids using the conditional event parameters γ_{ji} ($j = 1, 2, 3$) from the four-factor return-generating process

$$R_{it} - R_{ft} = \alpha_i + \sum_{k=1}^{4} \beta_{ki} F_{kt} + \sum_{j=1}^{3} \gamma_{ji} d_{jt} + \epsilon_{it}, \tag{9}$$

where R_{it} is the daily CRSP return on firm (or portfolio) i, R_{ft} is the three-month U.S. Treasury bill rate, and the factor vector F_{kt} contains the excess return on the CRSP value-weighted market portfolio, the Fama and French (1993) size (SMB) and book-to-market (HML) factors, and the Carhart (1997) momentum factor (UMD). The estimation period runs from day $t = -297$, where day 0 is the announcement of the first public bid for target i through the merger effective date, capped at $t = 180$. Because the event windows are spanned by the dummies d_{jt}, the factor loadings are identified from pre-runup trading days $(-297, -43)$ and the event periods do not contaminate them.

The three indicator variables d_{jt}, $j = 1, 2, 3$, equal one during their respective event windows and zero otherwise: d_{1t} during the runup period $(-42, -2)$, controlling for partial bid anticipation; d_{2t} during the primary announcement window $(-1, 1)$; and d_{3t} during the post-announcement period from day 2 until the earlier of the effective merger date and day 180, capturing abnormal price adjustments after the initial bid. The event parameter γ_{2i} is thus the average daily abnormal return at the first public bid announcement, and the corresponding cumulative abnormal return, $CAR_{2i} = 3\gamma_{2i}$, is the primary focus below. Average estimates of CAR_{1i} and CAR_{3i} are reported in the Internet Appendix.[28]

Table 11 reports average three-day announcement-period abnormal returns, $CAR_{2i} = 3\gamma_{2i}$, denoted $CAR(-1, 1)$ in the table. The sample is restricted to deals in which both bidder and target are publicly listed. Consistent with extant evidence (e.g., Dessaint et al., 2025), bidders earn a significantly negative announcement return of -1.4% (Panel A), while targets gain a highly significant 26.1% (Panel B).[29]

Panel C of Table 11 supports the assumption of positive expected synergies. The average combined announcement return—the return on a value-weighted portfolio of the bidder and target—is 5.0% and highly significant: target gains more than offset bidder losses in value-weighted terms. Moreover, combined gains are significantly *greater* in bidder-initiated than in target-initiated transactions (5.9% versus 3.7%; difference $t = 2.81$), a pattern that also holds in the stock-payment subsample (3.9% versus 1.1%; $t = 3.31$)—where bidder opportunism, if present, should be most visible. Bidder-initiated transactions are thus associated with greater, not smaller, expected value creation.

Panels A and B point in the same direction. Acquirer announcement returns are less negative in bidder-initiated than in target-initiated transactions (-1.0% versus -2.0%), and target returns are higher (28.4% versus 22.8%). Both differences persist in the stock-payment subsample—where opportunism should be most visible—although the acquirer difference there (1.2 percentage points) is significant only at the 10% level, while the target difference (7.2 percentage points) remains highly significant.[30] Thus,

[28]Eq. (9) delivers the standard error σ_{2i} of each event parameter. For a sample of N targets, the average announcement return is $CAR_2(-1, 1) = (1/N)\sum_{i=1}^{N} 3\gamma_{2i}$, with test statistic

$$Z(CAR_2) = \frac{1}{\sqrt{N}} \sum_{i=1}^{N} \left(\frac{\hat{\gamma}_{2i}}{\hat{\sigma}_{2i}} \right) \sim N(0, 1)$$

in large samples, under the null of no abnormal returns, assuming cross-sectional independence of the event observations.

[29]A negative bidder announcement return admits several interpretations beyond an adverse-selection discount on the bidder's stand-alone value, including merger-arbitrage short selling of bidder shares and revelation about the target's stand-alone value through the medium of exchange (Malmendier et al., 2016).

[30]Although the SEC filings describing the merger negotiations (Section 3.1) become public only after the announcement, market rumors and conference calls often reveal information about the negotiation process earlier (Dasgupta et al., 2024)—so announcement returns can impound initiation-related information; any component not impounded at announcement is

rather than the larger adverse-selection discount that Part (i) of H3 predicts under opportunistic timing, bidder initiation is associated with *less* negative acquirer returns. These univariate differences, however, do not control for deal and firm characteristics correlated with both initiation and announcement returns.

Table 12 therefore reports cross-sectional regressions of bidder announcement returns on the explanatory variables of Table 5. The dependent variable is the five-day $CAR(-1,3)$, estimated with the Market Model over the window $(-297,-43)$.[31] We also include an inverse Mills ratio from a Heckman (1979) two-step procedure to control for self-selection into initiating a takeover (see Eckbo et al., 1990b, on selection in cross-sectional event-study regressions). The first-stage probit, estimated on the Compustat universe, predicts whether a firm initiates a bid for a US public target in the subsequent year, using the same firm characteristics as the second stage. Acquirers in bidder-initiated deals receive the standard inverse Mills ratio, and acquirers in target- and jointly initiated deals receive its non-initiation counterpart. Identification of the selection term rests solely on the probit's nonlinearity, and we accordingly treat the selection-corrected estimates (columns 5–8) as a robustness check rather than the primary specification.

Following the specification sequence of Table 5, columns 1 and 5 of Table 12 report the baseline, columns 2 and 6 add the target information variables, columns 3 and 7 add a bidder-initiation indicator, and columns 4 and 8 add its interactions with M/B, *All-Stock*, *Local Deal*, *H-P Industry Relatedness*, and *Recent SEO*; columns 5–8 repeat the sequence with the inverse Mills ratio.

Consistent with prior evidence, all-stock payments are associated with approximately 3.2 percentage-point lower bidder CAR (columns 2–4 and 6–8). Bidder CARs are also lower for relatively large deals and for high-technology acquirers. Among the target-information variables, only *Recent SEO* is significant, entering with a negative coefficient. By contrast, the remaining precision proxies are insignificant, consistent with our framework, as are all four interaction variables. The primary role of the information proxies is to predict the payment choice (Table 5), not the market's revaluation of the bidder once the payment method is controlled for. Moreover, neither *Bidder Initiated* nor *All-Stock*$\times$*Bidder Initiated* is significant, indicating that the valuation effect of stock-payment is similar across bidder- and target-initiated transactions.

More broadly, the remaining coefficient estimates are largely unchanged once bidder initiation and its interactions are included. The univariate difference documented in Table 11 is therefore explained by

picked up by the long-run tests in Section 5.3.

[31] The cross-sectional regressions require a firm-level CAR rather than the average event parameters of Eq. (9); the same Market Model CAR serves as the misvaluation moment in the structural estimation (Section 4), following LTW.

observable deal and firm characteristics rather than by initiation itself. Finally, the *Inverse Mills Ratio* is insignificant and the estimates are virtually unchanged following the selection correction.

5.3 Long-short portfolio returns by deal initiation

Part (ii) of H3 predicts that if bidders initiate stock-financed acquisitions when their shares are temporarily overvalued, subsequent returns should reverse as the overvaluation is corrected. Following the long-run event-study literature, we construct calendar-time portfolios sorted by deal initiation and by payment method. We adopt a 36-month horizon over which Savor and Lu (2009) document return reversal in stock mergers. Because the prediction applies only to stock-financed acquisitions, all-cash transactions serve as a placebo benchmark. Acquirers enter the portfolios in the month after announcement and remain for 36 months or until delisting. Abnormal performance is measured by the monthly intercept α from Eq. (9), estimated over the 287 months in which the portfolios are populated.

Panel A of Table 13 reports equal-weighted portfolios and Panel B value-weighted portfolios; columns 1–3 cover stock-finance deals and columns 4–6 all-cash deals. Within each payment group, the first two columns report bidder- and target-initiated acquirers separately, and the third reports the corresponding long-short portfolio (long bidder-initiated, short target-initiated). The intercept of the long-short portfolio provides the cleanest test of Part (ii), as differencing nets out abnormal performance common to all acquirers and isolates the incremental effect of bidder initiation.

The long-short alphas are statistically insignificant in all four specifications. Moreover, in the stock-financed sample—where Part (ii) predicts a *negative* alpha—the point estimates are positive: 0.3% per month in the equal-weighted specification (t = 1.61) and 0.2% in the value-weighted specification (t = 0.65). The all-cash long-short portfolios likewise generate no abnormal performance, consistent with the absence of an overpriced-equity mechanism in cash-financed acquisitions.[32] Thus, Table 13 provides no evidence that bidder-initiated acquirers subsequently underperform and, hence, no support for the opportunistic use of temporarily overvalued equity. As in all long-horizon event studies, however, these alphas constitute joint evidence on misvaluation correction and the maintained factor model; we therefore view them as complementary to, rather than independent of, the announcement-period evidence in Section 5.2.

[32] The positive and significant *level* alphas of the all-cash portfolios in Panel A (columns 4 and 5) plausibly reflect factor exposures common to cash acquirers; because these exposures are shared across initiation types, they difference out in the long-short portfolio.

5.4 Sector-specific announcement returns

The third and final valuation test, part (iii) of H3, asks whether takeover announcements convey information to the bidder's close industry peers. The peer firms are the relevant side of the deal because the putative overvaluation signal concerns the acquirer's industry: industry-specific synergies predict a positive peer revaluation, whereas industry-wide overvaluation predicts a negative or attenuated one (cf. Rhodes-Kropf and Viswanathan, 2004; Rhodes-Kropf et al., 2005). The two channels also differ in the nature of the information revealed—sector fundamentals versus sector-wide mispricing—so the sign of the peer reaction indicates which channel dominates. We define the acquirer's peers as the five US-listed Compustat firms with the highest Hoberg and Phillips (2016) TNIC-3 relatedness scores, excluding the acquirer and target, and estimate peer announcement returns on a relatedness-weighted portfolio of the five (Panel D of Table 11); equal weighting yields similar results (Table 14).

The average peer-portfolio $CAR(-1,1)$ is a significant 0.7%—and remains so precisely where opportunism should be most visible, bidder-initiated stock-financed transactions (0.8%, $t = 8.37$). The sign is particularly informative because the sector-overvaluation and sector-synergy channels make opposite predictions. Moreover, the revaluation is statistically indistinguishable across initiation types (difference 0.0%, $t = 0.10$; column 4 of Panel D). Together, these findings are more consistent with the sector-synergy channel than with an industry-overvaluation signal. Indeed, the same announcements that reduce average bidder value by 1.4% (Panel A; a deal-level effect, cf. Section 5.2) *raise* peer value by 0.7%; a sector-overvaluation signal would depress both. The sector-relevant news thus appears to concern fundamentals rather than pricing: increased demand for a sector-specific resource, or a higher probability of future synergistic acquisitions involving the peers themselves—a sector-wide complement to the "in play" hypothesis of Song and Walkling (2000).

Table 14 examines robustness to longer event windows, $(-1,3)$ and $(-1,6)$, progressively narrower peer groups—the baseline five-peer TNIC portfolios, then peers restricted to the same three-digit SIC and four-digit SIC codes, retaining the TNIC relatedness ranking within each restriction—and equal versus relatedness weighting. When fewer than five eligible peers exist, the portfolio uses all available. Panel A confirms the positive revaluation across windows and peer definitions, weakening only in the most restrictive cell (the equal-weighted four-digit SIC $CAR(-1,6)$). Panels B and C then impose the conditions under which opportunism is most likely: stock consideration (Panel B) and bidder-initiated stock deals (Panel C). The estimates remain uniformly non-negative across both panels. Statistical significance weakens as the peer definition becomes more restrictive and the sample size falls, particularly in Panel C, where the three-digit SIC portfolios contain only about 30% as many observations as Panel A. Most importantly, in the subsamples where the industry-overvaluation channel predicts a negative peer reaction, not a single estimate is negative.

Overall, the valuation evidence provides little support for bidder opportunism: we find no larger announcement discount in bidder-initiated stock-financed acquisitions (part (i)), no post-announcement reversal in long-short alphas (part (ii)), and no negative peer revaluations (part (iii)). Where the estimates are statistically significant, their signs run *against* opportunistic timing. The evidence instead points to takeover announcements revealing positive expected synergies and increased demand for sector-specific resources.

6 Further on impediments to successful opportunism

The empirical evidence on H1–H3 provides little, if any, support for bidder opportunism as a concern in our sample of takeovers between publicly traded companies. The final section discusses complementary evidence on why successful opportunism is so rare: the degree to which synergy gains are common across bidders (Section 6.1), the information held by the target's institutional shareholders (Section 6.2), the incentives of acquirer executives (Section 6.3), and the legal and contractual constraints that shape the deal process (Section 6.4).

6.1 High degree of commonality of valuations

Whether a bidder even chooses to initiate—the selection our tests condition on—depends on the degree to which the synergy value is common across bidders. Gorbenko and Malenko (2024) model this initiation incentive (without considering opportunism) in a setting where each of two potential bidders $i \in \{1, 2\}$ receives a private signal s_i and, conditional on both signals, the value of the target to bidder i is $v_i(s) = \alpha s_i + (1 - \alpha)s_{-i}$, where s_{-i} denotes the rival's signal. The parameter α measures the degree of valuation commonality, with $\alpha = 1$ corresponding to purely private values (zero commonality). Gorbenko and Malenko (2024) show that, when bidder valuations have a sufficiently high common component, no bidder approaches the seller in equilibrium and it is instead the target that initiates (to relax its own liquidity constraint). At the other extreme, with pure private values, potential rivals learn little from a bidder's initiation decision, so a bidder can initiate without ceding substantial informational rents to its rivals (while still strategically timing the initiation to maximize those rents). For our purposes, the implication is that bidder initiation is most likely when valuations contain a substantial private-value component. In this sense, bidder-initiated transactions provide a particularly informative setting for testing opportunistic timing.

Since the degree of valuation commonality is unobservable to the econometrician, judging its impact on auction outcomes is difficult. One strategy is to differentiate between financial and strategic bidders (Martos-Vila et al., 2019; Gorbenko and Malenko, 2014). At the end of each panel in Table 2, we report the fraction of deals won by a financial bidder: 24% in the full sample of public and private bidders (Panel A) versus 4% among public bidders (Panel B). Within each panel, the fraction of deals won by a financial bidder is statistically indistinguishable across bidder- and target-initiated transactions, as is the number of financial bidders per contest. Under Gorbenko and Malenko (2024), a greater common-value component should tilt financial-bidder deals toward target initiation; the data show no such tilt. Moreover, in Table 15, we compare the payment method and offer premium of financial and nonfinancial public bidders. As expected, financial bidders are significantly less likely to use stock. Moreover, the offer premium point estimate is lower for financial bidders but statistically indistinguishable given the small financial-bidder sample.

A second approach is to focus on the speed with which rival bidders enter following the first bid. If the first bid strongly signals a valuable opportunity to other potential buyers, rivals need little time to prepare a competing offer—and indeed, Betton and Eckbo (2000) document that rival entry, when it occurs, follows on average within two weeks of the first public offer (their Figure 2). Such rapid entry may indicate a degree of commonality in rival bidders' valuations. However, the interpretation is complicated by the extensive private phase preceding the first public bid. As Table 2 shows, contests in our sample involve 3.5 bids over roughly six months, on average, giving potential rivals ample opportunity to form bidder-specific assessments of the target before the first public offer is announced.

A third empirical approach to the issue of judging the uniqueness of bidder synergies is found in Dessaint et al. (2025). They show that average acquirer returns over the past four decades, while largely constant, mask fundamental changes in its two basic components. The first component is bidder-specific, which they identify as bidder fixed effects, and the second is common across bidders. They show that controlling for bidder composition, the common component of acquirer returns has increased by five percentage points relative to the 1980s. Offsetting this increase, the average bidder-specific component has declined. They propose a simple theory of bidder-specific synergies to help interpret these opposing trends. Both in this theory and in the data, acquirer returns increase with the extent to which synergies are unique to that bidder (the composition effect reflects bidder uniqueness). Overall, their evidence is consistent with rising merger synergies that have become less bidder specific. It is possible that this evolution may reflect an increased involvement of investment banks, who routinely keep their clients updated about the potential for target investment opportunities. Such updates may also shorten the reaction time of potential rival bidders.

6.2 Informed institutional target shareholders

Our reduced-form tests in Section 3 proxy the target's information about the bidder's true value with the relatedness of the two firms' product and labor markets, their geographic proximity, and the bidder's recent disclosure activity. Kim et al. (2025) introduce a complementary channel: the fraction of the target owned by (better-informed) institutional investors. The idea is that, whatever information about the bidder is available to the target shareholders who vote on the deal, institutional investors are better positioned than retail investors to evaluate it—so a rational bidder factors the target's institutional ownership into the expected value of an opportunistic bid.

In a sample of 3,236 public-to-public transactions—and controlling for information proxies related to ours—they find that target institutional ownership is associated with a *higher* likelihood of stock-based offers and a higher fraction of stock in the merger payment, as predicted by efficient payment design and inconsistent with bidder opportunism. Their tests do not condition on the initiating party, so their evidence and ours are distinct and mutually reinforcing.

6.3 Deal-driven bidder CEO compensation changes

Recall from the introduction that the accelerated vesting of target management's unvested compensation—an agency channel through which target managers might knowingly accept overpriced bidder shares (Shleifer and Vishny, 2003)—has received little empirical support (Fidrmuc and Xia, 2019). Bargeron and Denis (2025) examine the acquirer side instead: CEO compensation increases following acquisitions only when acquirer stock is the method of payment. These increases are driven by equity-based compensation and are concentrated in riskier acquirers, riskier acquisitions, and acquirers whose CEOs have low exposure to the stock price. Finding little support for traditional agency explanations, they conclude that the compensation changes represent a contracting solution to a two-sided adverse selection problem that arises only in stock-for-stock acquisitions. Their evidence therefore suggests that deal participants contract around the same informational friction that motivates the efficient payment design of Section 2.1—with stock payment helping to manage the friction rather than exploit it.

Acquirer executives with private information that their shares are temporarily overpriced also have an incentive to (legally) sell those shares in the open market if the overpricing persists after deal completion. Akbulut (2013) finds that firms at the extensive margin with insiders classified as "high-sellers"—insiders with high abnormal sales activity over a six-month period—have an enhanced probability of undertaking mergers and asset acquisitions over the next quarter. On the other hand, Chen et al. (2025), who study insider trading following takeovers by publicly listed US acquirers (2005–2018), find that acquirer insiders at the intensive margin increase rather than decrease their net purchases—particularly in stock-payment deals. Moreover, acquirers with a larger increase in insider net purchases exhibit better, not worse, long-term stock and operating performance—ruling out the interpretation that insiders abstain from selling merely because the announcement itself corrected the mispricing. Overall, this compensation and insider trading evidence fails to support the notion that acquirers are likely to opportunistically use overpriced shares as acquisition currency.[33]

6.4 Legal and contractual constraints

Finally, legal constraints on the deal process reduce the information asymmetries that successful opportunism requires. Mandatory disclosure rules—the federal Williams Act of 1968 and its 1970 Amendment—give the target time and information to evaluate competing bids (Jarrell and Bradley, 1980), while the so-called Revlon duty from 1986[34] requires target boards, once the firm is for sale, to protect their shareholders by selling to the highest bidder (Gilson and Kraakman, 1990). Together, these rules promote the bidding competition that helps targets infer the value of bidder shares: as first shown by Betton and Eckbo (2000) and Boone and Mulherin (2007), and confirmed for the private phase in our Table 2, both

[33] The net purchase activity also suggests that acquirer insiders are not particularly concerned with the (average) negative market reaction to stock-financed acquisition announcements, perhaps because that reaction primarily reflects short-selling pressures. See also Golubov et al. (2016).

[34] *Revlon, Inc. v. MacAndrews & Forbes Holdings, Inc.*, 506 A.2d 173 (Del. 1986). The duty arises when the actions of the target board indicate that it has abandoned a strategy of operating as a stand-alone company.

the public and private phases of the typical sales process attract multiple bids.

Contractual practice points in the same direction. The risk that rival bidders free-ride on the initiation decision motivates deal protection devices in merger contracts—confidentiality agreements, stand-still and non-compete provisions, breakup fees, insiders' tender precommitments, material adverse conditions (MAC) clauses, drop-dead dates that restrict the negotiation period, and no-shop provisions that discourage the target from soliciting additional offers (for an auction-theoretic analysis of the alternative go-shop provisions, see Chen and Wang, 2023). A bidder may also purchase target shares (a toehold) in the open market prior to initiating a bid to protect its first-mover advantage (Betton et al., 2009). That bidders demand such costly protections suggests that deal initiation is motivated by synergy gains worth defending rather than by temporary mispricing, a bet too fleeting to justify comparable contractual investments. Moreover, the period between the signing of a merger agreement and the target shareholder vote functions as a "shadow auction" (Betton et al., 2009; Chen and Wang, 2023), giving the market yet more time to unravel any bidder mispricing before the deal closes.

7 Conclusion

A bidder who self-selects the timing of a takeover may opportunistically pay for the target with overpriced shares. We examine this possibility against the alternative that the bidder chooses shares rather than cash as acquisition currency to hedge against the expected overpayment cost arising from target adverse selection. Ours is the first empirical analysis to condition tests of bidder opportunism on whether the takeover is bidder- rather than target-initiated. Just as in studies of insider trading, conditioning on who initiates the trade—rather than treating initiation as random—increases the power to test whether bidders use private information about temporary market mispricing when offering to pay for the target in shares.

We apply the initiation data to three hypotheses, each with different empirical predictions in a setting where bidder and target are asymmetrically informed about the counterpart's true value. In the first and most general hypothesis (H1), we ask whether bidders are more likely to pay with stock when the target is relatively uninformed about their true value, particularly when the bidder initiates the transaction. The evidence shows the opposite: the likelihood of a bid being fully or partially stock-financed *increases* in proxies for the target's information about the bidder, and this effect is statistically indistinguishable across bidder- and target-initiated deals.

Second, in H2, we condition the structural estimation of the rational equilibrium model of Li et al. (2018a) on the party initiating the deal. While the deal initiation decision is exogenous to their model, we treat it as a rational side bet on an otherwise synergistic takeover opportunity—a bet that the target will unknowingly accept overpriced bidder shares. If bidders time initiation on private information about market overvaluation, the moments of bidder-initiated deals should generate a higher simulated incidence of opportunistic outcomes than those of target-initiated deals. Instead, we find that the percent of inefficient deal outcomes (cases where an overvalued but lower-synergy bidder crowds out a more efficient rival) is small regardless of the initiating party—6.3% in bidder-initiated and 7.4% in target-initiated deals—and, contrary to the opportunism prediction, is in fact lower when the bidder initiates.

Finally, in H3, we examine market reactions to takeover announcements conditional on the party initiating the deal. We first confirm that the takeover deals in our sample are, on average, synergistic (not zero-sum games)—a necessary condition for rational transactions to accommodate opportunistic side bets. Second, there is no evidence of non-zero long-run risk-adjusted excess stock returns for portfolios long acquirers in bidder-initiated deals and short acquirers in target-initiated deals, whether the deals are stock-financed or all-cash. In the stock-financed sample, where opportunism predicts a negative alpha, the point estimates are positive. Third—and contrary to the industry-overvaluation channel of Rhodes-Kropf and Viswanathan (2004)—takeover announcements revalue the bidder's close industry peers *upward* by a statistically significant 0.7%, in bidder- and target-initiated deals alike. Rather than signaling that the bidder's industry may be overpriced, the announcements appear to convey the opposite—increased demand for sector-specific resources and the prospect of future synergistic acquisitions.

In sum, our reduced-form, structural, and valuation-based evidence fails to support the notion that information asymmetries between the transacting parties make bidder opportunism a significant concern in takeovers involving publicly traded U.S. firms. Importantly, this evidence is not a collection of under-powered nulls: across the reduced-form, structural, and valuation-based tests, the estimates are either statistically significant with the sign opposite to that predicted by opportunism, or economically small with no systematic direction. Rather, the weight of the evidence suggests that the takeover process itself substantially limits bidders' ability to time deal initiation to swap overpriced shares for the target. This deterrent effect most likely reflects disclosure regulation, contractual deal protections, the relatedness of the merging firms' product and labor markets, and the sophistication of the target's shareholders—all of which help the target substantially reverse-engineer bidder mispricing (if any) during the extensive deal process.

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Figure 1
Efficient payment design v. bidder opportunism

The figure shows how the bidder's optimal payment method varies with the target's valuation error $\Omega - \widehat{\Omega}$, where Ω is the bidder's true value and $\widehat{\Omega}$ the target's prior assessment of it—i.e., before the offer terms (c, z) convey information. Moving from left to right, the target first overvalues the bidder ($\Omega - \widehat{\Omega} < 0$); the overvaluation then declines and turns into undervaluation at $\Omega - \widehat{\Omega} = 0$. As long as the undervaluation falls short of the bidder's expected overpayment cost of cash ($t^* - E[t|a]$), it is never optimal to include cash in the deal payment; beyond that threshold, cash dominates stock. The potential for successful bidder opportunism—paying for the target with overpriced shares—is confined to the region where the target overvalues the bidder.

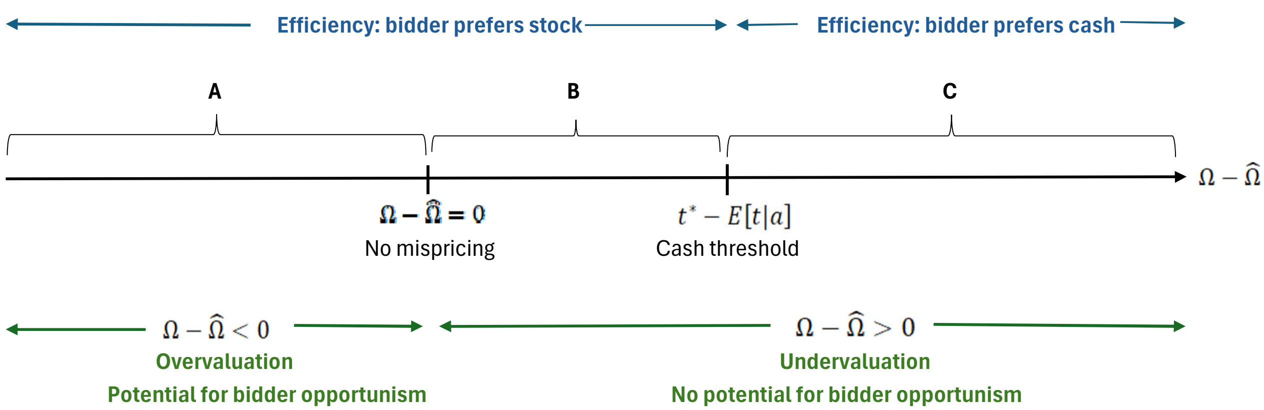


Figure 2
Annual sample distribution classified by the initiating party to the deal, 2000-2020

The sample comprises 2,968 completed takeovers of US public targets by US bidders, 2000–2020.

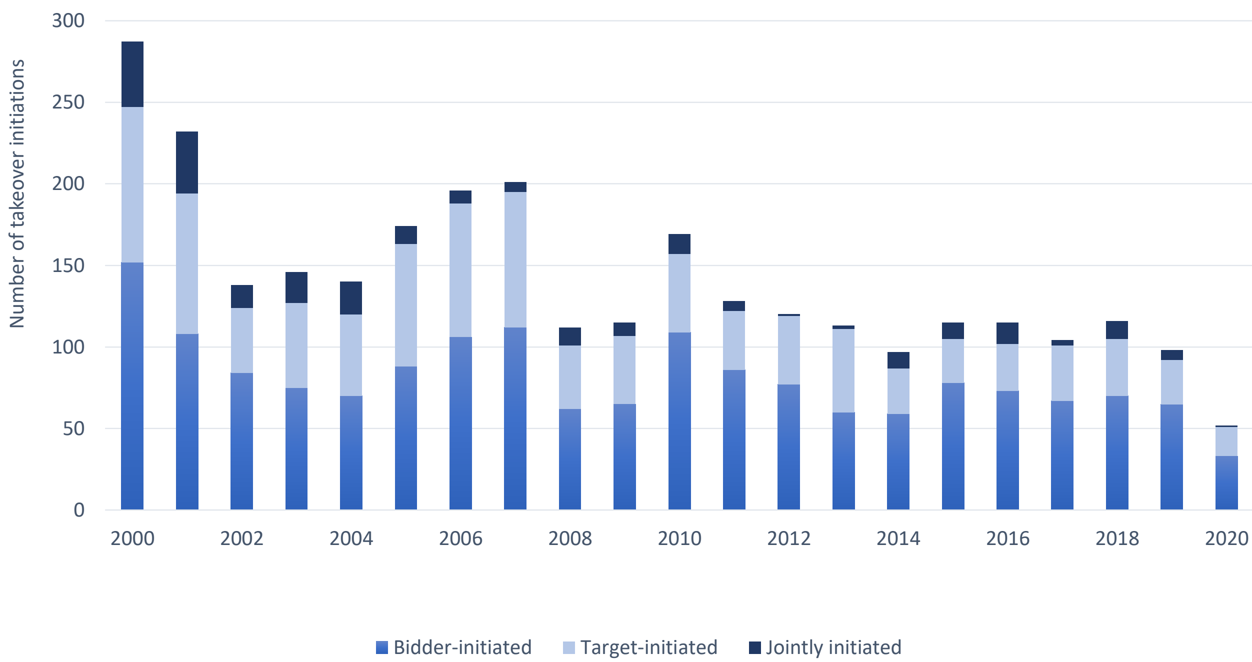
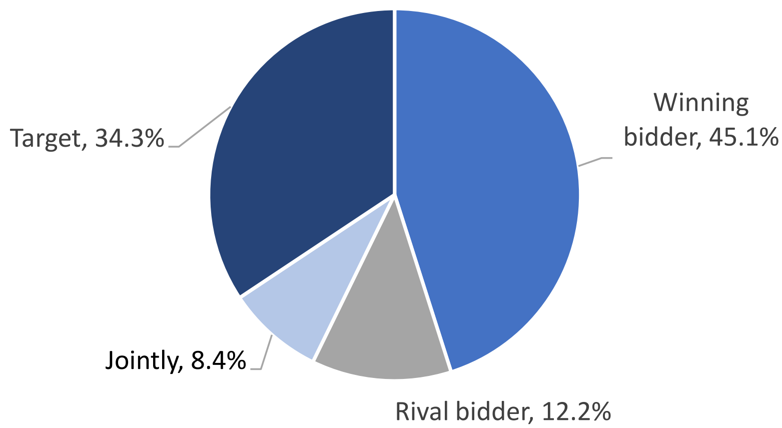


Figure 3
Sample proportions classified by the party that initiates the takeover process

The figure shows the sample proportions by deal initiation for the full sample of 2,968 public and private bidders (Panel A) and the subsample of 1,845 publicly traded bidders (Panel B). Deals can be initiated by the winning bidder, a rival bidder, the target firm, or the target and the bidder jointly. The sample consists of completed takeovers of US public targets by US bidders, 2000–2020.

Panel A: Full sample of public and private bidders (N=2,968)



Panel B: Subsample of public bidders (N=1,845)

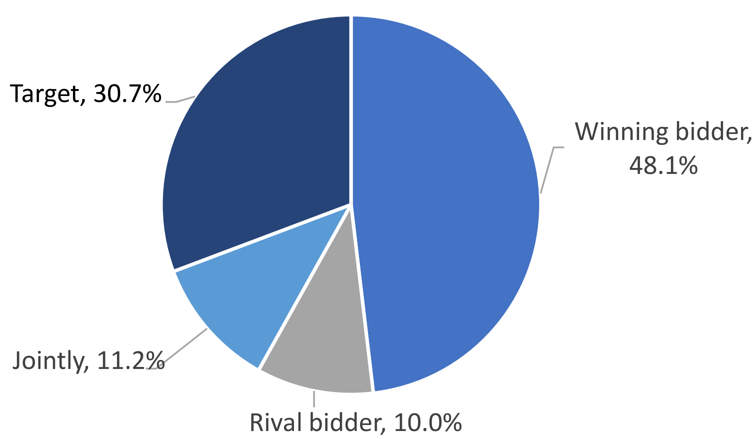


Figure 4
Average M/B, 2000-2020

The figure reports annual average market-to-book ratios (M/B) from 2000 to 2020 for four groups of Compustat firms: all firms, high-tech firms, bidders, and high-tech bidders. Across the full sample period, the mean M/B is 2.4 for all firms and 3.9 for all bidders. Among high-tech firms, the corresponding averages are 3.3 and 5.1, respectively.

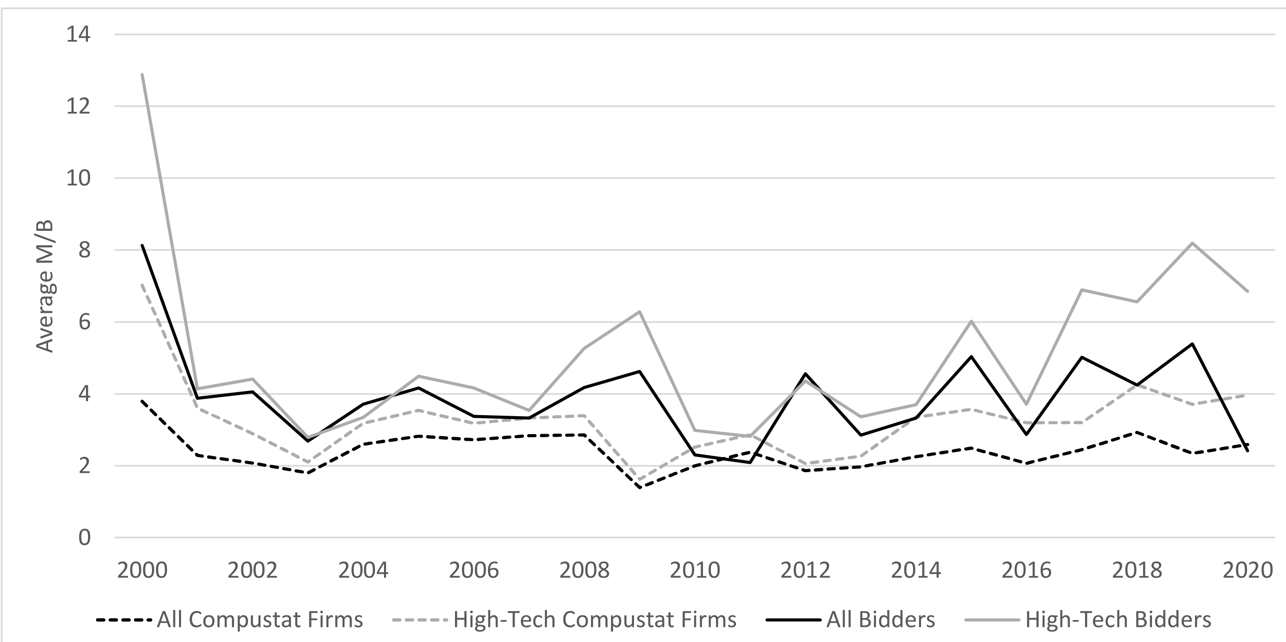


Figure 5
Median bidder M/B to target M/B, 2000-2020

The figure reports annual median ratios of bidder M/B to target M/B from 2000 to 2020, split by bidder-initiated and target-initiated deals. The sample includes 1,845 bids for U.S. public targets by U.S. public bidders. Over the full sample period, the annual median ratio averages 1.19 for bidder-initiated deals and 1.23 for target-initiated deals.

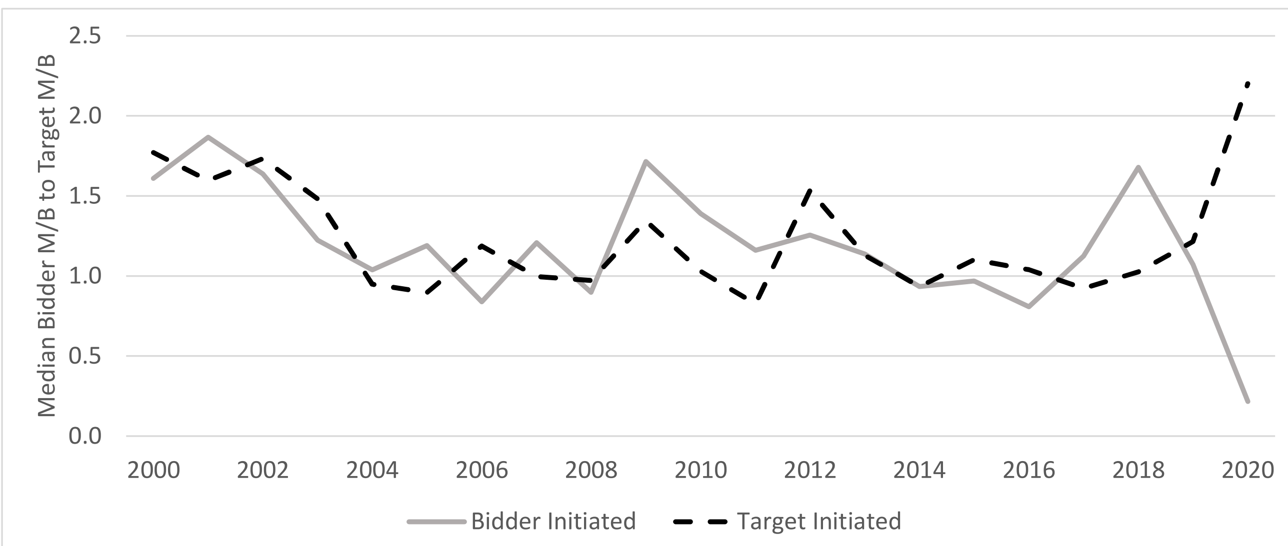
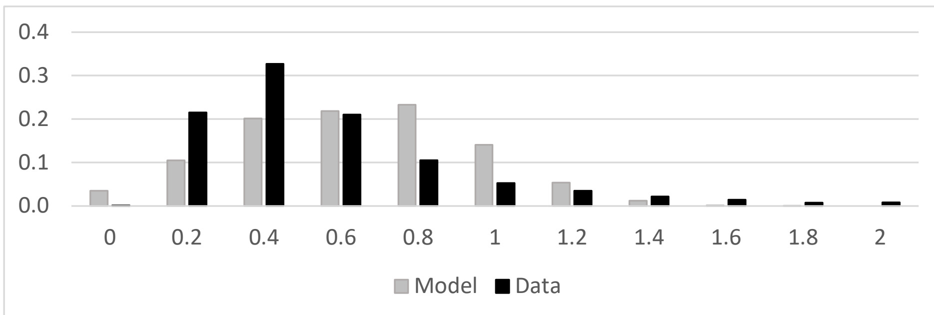


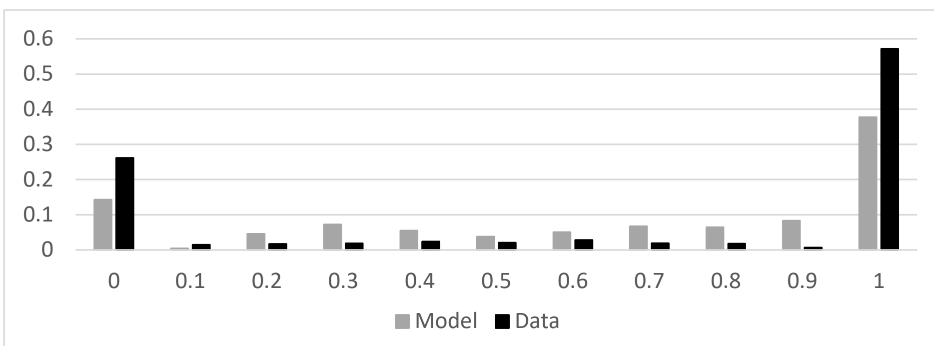
Figure 6
Simulated and empirical distributions

The figure plots the distributions of the offer premium, the fraction of cash in the bid, and the acquirer announcement return in the data and in the model.

Panel A: Offer premium



Panel B: Fraction of cash in the bid



Panel C: Acquirer announcement CAR

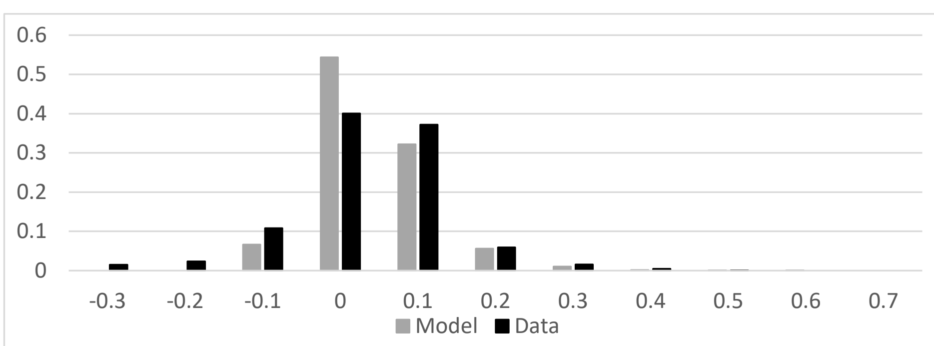
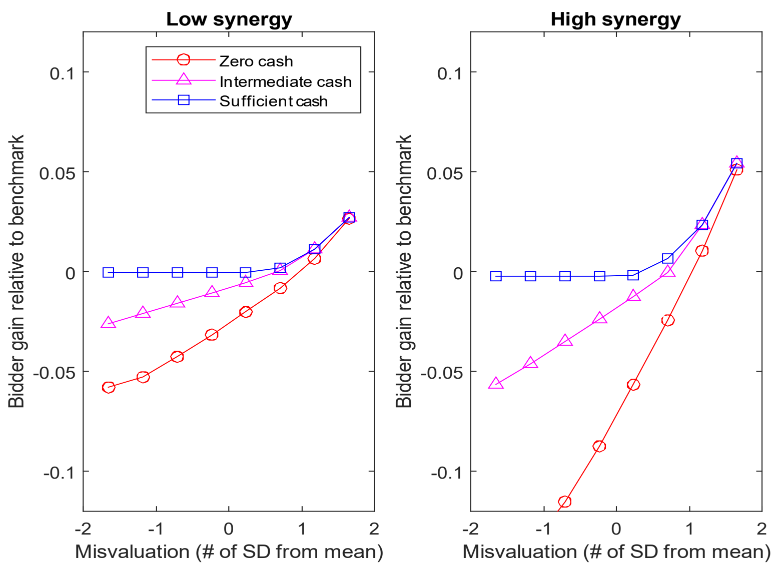


Figure 7
Simulated redistribution effects

The figure shows the redistribution effect (the effect of misvaluation on a bidder's takeover gains), defined as the difference in bidder gains between the estimated (with misvaluation) and counterfactual (without misvaluation) economy. The sample is split by deals initiated by the bidder (Panel A) and target (Panel B), and by low-synergy (left graph) and high-synergy (right graph) bidders. Each graph shows the effect for bidders with zero, intermediate, and sufficient cash holdings, who can pay, respectively, 0%, 50% and 100% of the offer price in cash. Each curve describes how the redistribution effect varies with bidder i's misvaluation, ceteris paribus. A bidder's misvaluation ϵ_1 (x-axis) is measured as the number of standard deviations from the sample mean.

Panel A: Bidder-initiated deals



Panel B: Target-initiated deals

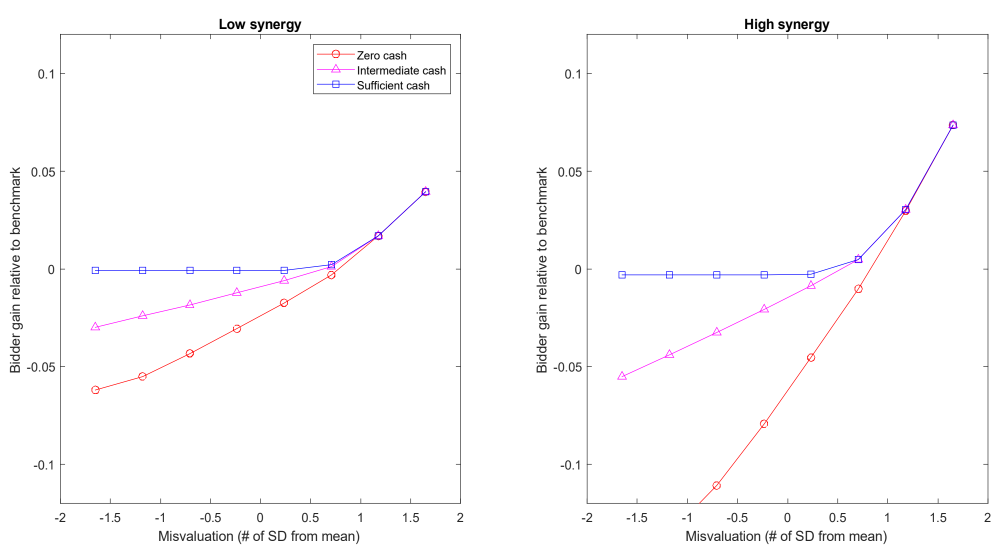


Figure 8
Median bidder cash ratios by initiation type, 2000-2020

The figure presents annual median cash-to-total-asset ratios for bidders over the period 2000–2020, separately for bidder-initiated and target-initiated transactions. The sample comprises 1,845 acquisitions of U.S. public targets by U.S. public bidders. Across the full sample period, the average annual median is 8.6% for bidder-initiated deals and 8.4% for target-initiated deals.

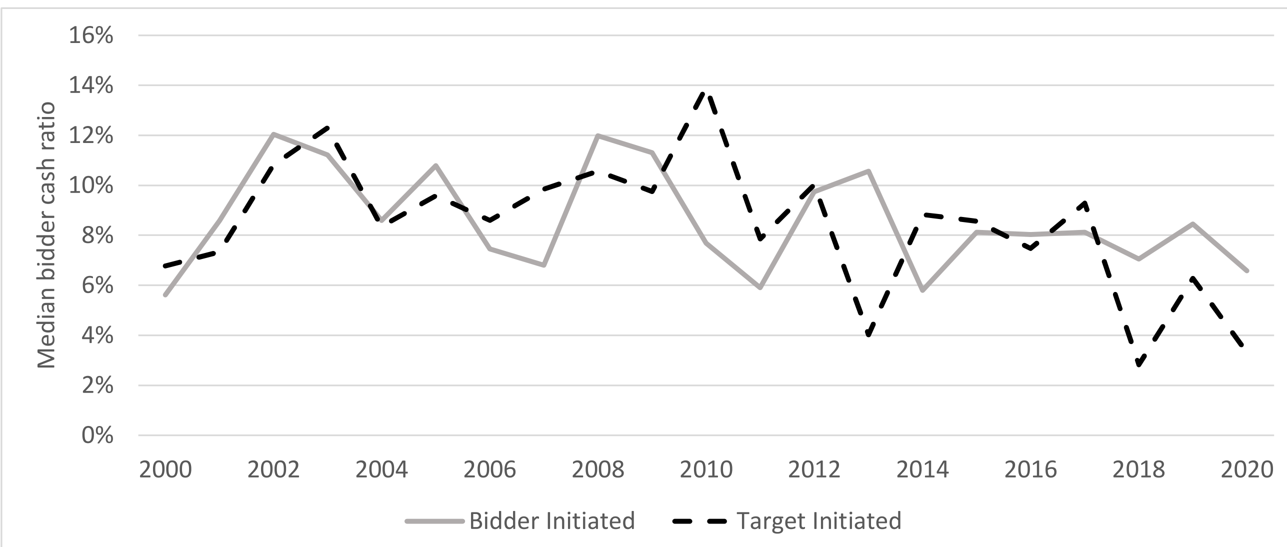


Table 1
Bidder and target characteristics by initiation

The table reports mean and median bidder and target characteristics in Panels A and B, respectively. Columns 1–3 use the full sample, while columns 4–6 limit the sample to bidder-initiated deals, and columns 7–9 to target-initiated deals. Columns 10–11 report the difference in mean (column 5 vs. 8) and its significance, respectively. The sample comprises completed takeovers of US public targets by US public bidders, 2000-2020. All variables are defined in Table 4. ***, **, and * denotes significance at the 1%, 5%, and 10% level, respectively.

	Full Sample			Bidder-Initiated			Target-Initiated			Bidder-Target Init.	
Variable	N	Mean	Median	N	Mean	Median	N	Mean	Median	Δ Mean	t-stat.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Panel A: Public bidder characteristics											
Total Assets	1,574	13,190	2,581	926	15,264	3,526	648	10,227	1,548	5,037	(4.17)***
Leverage	1,543	0.11	0.12	907	0.12	0.12	636	0.11	0.12	0.00	(0.26)
Cash Holding	1,551	0.13	0.08	913	0.13	0.08	638	0.14	0.08	-0.01	(1.66)*
M/B	1,545	4.23	2.71	911	4.19	2.79	634	4.28	2.64	-0.09	(0.25)
Dividend Dummy	1,575	0.48	0.00	926	0.51	1.00	649	0.44	0.00	0.07	(2.62)***
R&D	1,575	0.05	0.02	926	0.05	0.02	649	0.06	0.02	-0.01	(1.93)*
Asset Tangibility	1,564	0.44	0.30	920	0.43	0.30	644	0.45	0.30	-0.02	(1.17)
Operating Efficiency	1,370	1.94	1.39	802	1.94	1.38	568	1.93	1.42	0.01	(0.02)
Panel B: Target characteristics (of public bidders)											
Total Assets	1,430	1,924	258	835	2,139	337	595	1,622	170	517	(1.64)
Leverage	1,414	0.04	0.00	823	0.03	0.00	591	0.04	0.01	0.00	(0.21)
Cash Holding	1,422	0.18	0.12	827	0.18	0.12	595	0.18	0.11	0.00	(0.30)
Market to Book Equity	1,405	2.86	2.00	823	2.99	2.14	582	2.67	1.87	0.33	(1.05)
Dividend Dummy	1,432	0.29	0.00	835	0.29	0.00	597	0.29	0.00	0.00	(0.08)
R&D	1,432	0.09	0.02	835	0.09	0.02	597	0.09	0.02	0.00	(0.36)
Asset Tangibility	1,418	0.46	0.31	829	0.46	0.30	589	0.48	0.34	-0.02	(0.84)
Operating Efficiency	1,243	1.99	1.60	725	1.90	1.52	518	2.13	1.77	-0.23	(0.51)

Table 2
Auction characteristics

The table reports mean and median characteristics of the auction process, split by bidder-initiated and target-initiated deals. Panel A shows the full sample of 2,968 successful acquisitions of publicly listed targets by US-domiciled bidders from 2000 through 2020. Panel B shows the subsample of 1,845 takeovers by public bidders. "(d)" indicates a binary variable, while ***, **, and * denotes significance at the 1%, 5%, and 10% level, respectively.

	Full Sample			Bidder-Initiated			Target-Initiated			Bidder-Target Init.	
Variable	N	Mean	Median	N	Mean	Median	N	Mean	Median	Δ Mean	t-stat.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Panel A: Full sample of public and private bidders											
No. of Bids	2,968	4.16	3	1,699	4.26	4	1,269	4.03	3	0.23	(1.80)*
Multiple Bids (d)	2,968	0.80	1	1,699	0.84	1	1,269	0.75	1	0.10	(6.61)***
No. of Written Bids	2,968	2.23	1	1,699	2.22	1	1,269	2.25	1	-0.03	(0.32)
Multiple Written Bids (d)	2,968	0.48	0	1,699	0.49	0	1,269	0.47	0	0.02	(0.99)
No. of Unique Bidders	2,968	2.06	1	1,699	2.02	1	1,269	2.11	1	-0.09	(1.21)
Multiple Bidders (d)	2,968	0.40	0	1,699	0.40	0	1,269	0.40	0	0.00	(0.17)
No. of Financial Bidders	2,968	0.52	0	1,699	0.51	0	1,269	0.55	0	-0.04	(0.77)
Duration (days)	2,968	210.88	163	1,699	206.72	159	1,269	216.45	168	-9.74	(1.51)
Average Bid Jump (%)	2,057	4.07	2.28	1,268	4.37	2.62	789	3.57	1.86	0.80	(2.12)**
Fraction Stock Payment	2,798	0.27	0.00	1,612	0.24	0	1,186	0.31	0.00	-0.07	(4.53)***
All-Stock Payment (d)	2,968	0.15	0	1,699	0.12	0	1,269	0.19	0	-0.06	(4.82)***
Offer premium (one month)	2,805	52.56	33.63	1,624	61.69	36.07	1,181	40.01	29.46	21.69	(2.39)**
Financial Bidder Won Indicator	2,968	0.24	0	1,699	0.23	0	1,269	0.25	0	-0.02	(1.18)
Panel B: Subsample of public bidders											
No. of Bids	1,845	3.46	3	1,072	3.69	3	773	3.14	3	0.55	(3.85)***
Multiple Bids (d)	1,845	0.74	1	1,072	0.80	1	773	0.65	1	0.15	(7.33)***
No. of Written Bids	1,845	1.76	1	1,072	1.81	1	773	1.70	1	0.11	(1.00)
Multiple Written Bids (d)	1,845	0.40	0	1,072	0.42	0	773	0.38	0	0.04	(1.59)
No. of Unique Bidders	1,845	1.72	1	1,072	1.76	1	773	1.68	1	0.08	(1.06)
Multiple Bidders (d)	1,845	0.31	0	1,072	0.33	0	773	0.29	0	0.04	(1.70)*
No. of Financial Bidders	1,845	0.14	0	1,072	0.14	0	773	0.14	0	0.00	(0.06)
Duration (days)	1,845	196.08	146	1,072	191.77	140	773	202.06	153	-10.29	(1.28)
Average Bid Jump (%)	1,079	4.72	2.87	714	4.90	3.07	365	4.35	2.58	0.60	(1.06)
Fraction Stock Payment	1,753	0.41	0.26	1,023	0.36	0.00	730	0.49	0.48	-0.13	(6.02)***
All-Stock Payment (d)	1,845	0.24	0	1,072	0.19	0	773	0.30	0	-0.11	(5.74)***
Offer premium (one month)	1,737	50.52	34.22	1,025	58.07	36.92	712	39.65	28.37	18.42	(2.22)**
Financial Bidder Won Indicator	1,845	0.04	0	1,072	0.03	0	773	0.04	0	-0.01	(0.77)

Table 3
Univariate stock payment and initiation

The table reports the coefficient estimates from probit regression for the likelihood of an all-stock bid (columns 1–3) and Tobit regressions for the fraction of stock in the deal payment (columns 4–6). The explanatory variables are a dummy indicating that the deal is bidder-initiated and an intercept (not tabulated). Columns 1 and 4 use the full sample. Columns 2 and 5 restrict the sample to bidder- and target-initiated deals, and columns 3 and 6 to bidder- and jointly-initiated deals. The sample comprises completed takeovers of US public targets by US public bidders between 2000 and 2020. t-values are in parentheses. ***, **, and * denotes significance at the 1%, 5%, and 10% level, respectively.

	Probit (y = All-stock)			Tobit (y = Fraction of stock)		
	All deals	Bidder and target init.	Bidder and jointly init.	All Deals	Bidder and target init.	Bidder and jointly init.
	(1)	(2)	(3)	(4)	(5)	(6)
Bidder Initiated	-0.367	-0.152	-0.875	-0.478	-0.178	-1.179
	(5.66)***	(2.08)**	(8.93)***	(5.67)***	(1.95)*	(9.13)***
Pseudo R-squared	0.02	0.00	0.06	0.01	0.00	0.04
N	1,845	1,639	1,278	1,753	1,552	1,224

Table 4
Variable definitions

Variable name	Variable definition and data source
Deal characteristics	
Large Deal	Dummy=1 if the ratio (deal value/bidder total assets) is in the top quartile, SDC.
All-Stock	All-stock payment (consideration structure = shares), SDC.
Bidder-Initiated	Dummy=1 if the bidder initiated the takeover, hand-collected.
Duration	Time from initiation to agreement in days, hand-collected.
Bidder capital structure	
Size	Natural log of total assets, Compustat.
Leverage	Total debt/total assets, Compustat.
Cash Holding	Cash/total assets, Compustat.
M/B	Market-to-book equity ratio = (year-end closing price * number of shares outstanding) / (total assets - total liabilities), Compustat.
Dividend Dummy	Dummy=1 if total dividends>0, Compustat.
R&D	Research and development expense / total assets; 0 when missing, Compustat.
Asset Tangibility	Property, plant, and equipment / total assets, Compustat.
Operating Efficiency	(Cost of goods sold + selling, general and administrative expense)/(property, plant, and equipment + total current assets - cash - total current liabilities), Compustat.
Target's information about bidder value	
Local Deal	Dummy=1 if the bidder and the target are located within 30 miles. The distance is computed using the spherical law of cosines formula: Distance = R× arccos(sin(lat1).sin(lat2)+cos(lat1).cos(lat2).cos(long2-long1)), where R is the radius of the earth (3963 miles), (lat1,long1) = the bidder coordinates (latitude,longtitude) in radians, and (lat2,long2) the target coordinate in radians. Firm location data are from the zip codes in SDC and their coordinates (lat,long) are from 1987 US Census Gazetteer Files.
H-P Industry Relatedness	Measure based on the TNIC-3 industry classification from Hoberg and Phillips (2016). The TNIC-3 database provides a firm-by-firm pairwise similarity score based on product descriptions from the firm 10Ks. The database covers firm pairs whose score is above a threshold matching the coarseness of three-digit SIC. We assign the relatedness score of zero to firm pairs that are not in the TNIC-3 database.
Recent SEO	Dummy=1 if the bidder issued stock within 18 months prior to the bid, SDC.
Recent Acquirer	Dummy=1 if the bidder announced another merger bid within 18 months before the sample bid, SDC.
Target industry characteristics	
Private Bidder Competition	Fraction of all merger bids in the target's Fama and French 49 (FF49) industry and year in which the bidder is private, SDC.
High-Tech Dummy	Dummy=1 if the bidder is in a high-tech industry covering 47 four-digit Standard Industrial Classification (SIC) codes in the two-digit industries 28, 35, 36, 38, 48, and 73, American Electronic Association.

Table 5
Determinants of stock consideration conditional on target information proxies and bidder-initiation

The table reports the coefficient estimates from probit regressions for the likelihood of all-stock payment (columns 1–4) and Tobit regressions for the fraction of stock (columns 5–8). Columns 1 and 5 show the baseline regressions, columns 2 and 6 add information variables, and the remaining add bidder initiation. The sample comprises completed takeovers of US public targets by US public bidders, 2000–2020. All variables are defined in Table 4. An intercept is included but not reported. t-values are in parentheses. ***, **, and * denotes significance at the 1%, 5%, and 10% level, respectively.

	Probit (y = all-stock)				Tobit (y = fraction of stock)			
Variable	Baseline	Information	Initiation	Interaction	Baseline	Information	Initiation	Interaction
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Controls								
Size	-0.181	-0.195	-0.186	-0.188	-0.233	-0.248	-0.240	-0.242
	(7.38)***	(7.36)***	(6.95)***	(6.99)***	(8.30)***	(8.39)***	(8.04)***	(8.09)***
Large Deal	0.220	0.174	0.174	0.174	0.660	0.596	0.596	0.594
	(2.41)**	(1.89)*	(1.88)*	(1.89)*	(7.07)***	(6.52)***	(6.54)***	(6.56)***
Leverage	0.037	0.006	-0.011	-0.019	0.117	0.065	0.057	0.053
	(0.25)	(0.04)	(0.08)	(0.13)	(0.65)	(0.37)	(0.32)	(0.30)
Cash Holding	0.241	0.117	0.114	0.092	0.269	0.083	0.090	0.065
	(0.64)	(0.31)	(0.30)	(0.24)	(0.64)	(0.20)	(0.22)	(0.15)
M/B	0.014	0.015	0.015	0.005	0.011	0.011	0.011	-0.002
	(2.59)***	(2.60)***	(2.61)***	(0.63)	(1.71)*	(1.71)*	(1.70)*	(0.14)
M/B x Bidder Initiated				0.018				0.020
				(1.59)				(1.58)
Dividend Dummy	0.025	0.061	0.058	0.057	-0.092	-0.056	-0.060	-0.065
	(0.26)	(0.64)	(0.60)	(0.59)	(0.93)	(0.58)	(0.61)	(0.66)
R&D	0.629	0.503	0.458	0.487	0.604	0.385	0.333	0.348
	(1.09)	(0.89)	(0.81)	(0.87)	(0.94)	(0.62)	(0.54)	(0.57)
Asset Tangibility	0.159	0.139	0.125	0.128	0.540	0.500	0.487	0.494
	(1.43)	(1.23)	(1.09)	(1.13)	(4.83)***	(4.49)***	(4.38)***	(4.45)***
Operating Efficiency	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.003
	(0.15)	(0.13)	(0.14)	(0.23)	(0.12)	(0.18)	(0.21)	(0.37)
High-Tech Dummy	-0.117	-0.085	-0.086	-0.093	-0.204	-0.161	-0.162	-0.165
	(1.17)	(0.83)	(0.84)	(0.91)	(1.96)**	(1.55)	(1.57)	(1.59)
Private Bidder Competition	-0.736	-0.682	-0.673	-0.900	-0.835	-0.753	-0.747	-0.737
	(2.62)***	(2.41)**	(2.37)**	(2.02)**	(2.96)***	(2.70)***	(2.68)***	(1.55)
Priv. Bid. Comp. x Bidder-Ini.				0.402				-0.029
				(0.70)				(0.05)
Target information proxies								
Bidder Initiated			-0.202	-0.362			-0.161	-0.255
			(2.45)**	(2.31)**			(1.89)*	(1.51)
Local Deal		0.325	0.328	0.258		0.338	0.338	0.189
		(2.93)***	(2.94)***	(1.52)		(2.86)***	(2.86)***	(0.99)
Local Deal x Bidder Init.				0.134				0.257
				(0.60)				(1.07)
H-P Industry Relatedness		0.856	0.888	0.597		2.000	2.010	1.500
		(2.07)**	(2.13)**	(1.00)		(4.66)***	(4.67)***	(2.25)**
H-P Industry Rel. x Bidder Init.				0.460				0.746
				(0.56)				(0.87)
Recent SEO		0.205	0.210	0.216		0.288	0.287	0.355
		(2.36)**	(2.41)**	(1.65)*		(3.25)***	(3.24)***	(2.49)**
Recent SEO x Bidder Init.				-0.008				-0.111
				(0.05)				(0.64)
Recent Acquirer		-0.046	-0.047	0.003		0.031	0.031	0.029
		(0.37)	(0.37)	(0.01)		(0.25)	(0.26)	(0.15)
Recent Acquirer x Bidder Init.				-0.100				0.001
				(0.42)				(0.01)
Pseudo R-squared	0.10	0.11	0.12	0.12	0.10	0.12	0.12	0.12
N	1,349	1,341	1,341	1,341	1,285	1,277	1,277	1,277

Table 6
Steps in the structural estimation

I. Identify the eight targeted moments in the SMM estimation:

(1) Parameters: $\Theta = (\mu_s, \sigma_s, \mu_\epsilon, \sigma_\epsilon, \mu_k, \sigma_k, \rho_{sM}, \rho_{kM})$, where $s \sim N(\mu_s, \sigma_s^2); \epsilon \sim N(\mu_\epsilon, \sigma_\epsilon^2); k \sim N(\mu_k, \sigma_k^2)$.

Three synergy parameters: $\mu_s, \sigma_s, \rho_{sM}$, identified from the mean and variance of the offer premium (OP) and the regression parameter a_1 from the regression: $OP_i = a_0 + a_1 log(M_i) + a_2 Controls_i + u_i$, where $Controls$ contains year FE, Fama-French-49 FE, target size, leverage, M/B, ROA, cash/assets.[b]

Two misvaluation parameters: $\mu_\epsilon, \sigma_\epsilon$, identified from average bidder announcement returns $[CAR(-1, 3)]$ and the slope b_1 from the regression $CAR(-1, 3)_i = b_0 + b_1 FractionCash_i + b_2 \log(M_i) + b_3 Controls_i + \nu_i$.[c]

Three cash-capacity parameters: $\mu_k, \sigma_k, \rho_{kM}$, identified from the mean and variance of the fraction of the bid paid in cash ($Cash$) and the slope c_1 from $Cash_i = c_0 + c_1 \log(M_i) + c_2 Controls_i + w_i$.

II. Match simulated moments to the data moments:

(2) Form $L = 20$ simulated samples (to be conservative), each with a number of draws equal to (up to) 10 times the total sample of 1,845 takeovers with publicly listed bidders and targets.[d] In the l'th simulated sample, form the vector $\hat{m}^l(\Theta)$ of the simulated moments.[e]

(3) In each simulation, draw two rival bids from the joint distribution of types:

$$(s, \epsilon, k, M) \sim F(N_s(\mu_s, \sigma_s), N_\epsilon(\mu_e, \sigma_\epsilon), N_k(\mu_k, \sigma_k), M(.); \rho_{sM}, \rho_{kM})$$

with the empirical distribution of M and the estimated parameters from the three regressions under item (1) above fed in.[f] Solve the model numerically for the winner/loser (see LTW's online Internet Appendix A.3.1 for the relevant model equations).

(4) With $L = 20$ simulated samples, the SMM estimator searches for the parameter vector $\hat{\Theta}$ that minimizes the distance between the moments $\hat{m}$ estimated from the data and the average model-simulated moments:

$$\hat{\Theta} = \underset{\Theta}{\text{argmin}} \left(\hat{m} - \frac{1}{L}\sum_{l=1}^{L} \hat{m}^l(\Theta)\right)' W \left(\hat{m} - \frac{1}{L}\sum_{l=1}^{L} \hat{m}^l(\Theta)\right)$$

W is the efficient weighting matrix, defined as the inverse of the estimated covariance of moments m. (We estimate this covariance using a Monte Carlo procedure with 1,000 samples of 500 deals each. For each sample, we compute the vector m, and then take the sample covariance across the 1,000 simulated values.)

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[a] The model-parameter notation in this table follows that of Li et al. (2018a).
[b] We measure the offer premium as in Table 2 (offer price relative to the target price one month prior to the announcement) and exclude deals with premiums outside the range [0%, 200%], following Li et al. (2018a).
[c] The abnormal bidder announcement return $CAR(-1, 3)$ used as a moment is estimated with the Market model over the window $(-297, -43)$.
[d] Michaelides and Ng (2000) find that using a simulated sample ten times as large as the empirical sample generates good small-sample performance.
[e] The parameter vector Θ is held constant when generating the lth sample of simulations. Θ changes from l to $l + 1$ if the SMM optimizer proposes a new value for the next evaluation of the objective function (shown explicitly in the table).
[f] In these simulations, the vector $Controls$ is set to zero because those features are outside the theoretical model.

Table 7
Observed data moments and fit of structural model

The table reports the eight observed data moments used in our structural estimation. The symbol in parentheses denotes the parameter each moment helps identify. Panel A shows the mean and conditional variance of the offer premium and its slope with respect to relative acquirer size (log market value ratio, M). Panel B presents the mean fraction of cash and its slope with respect to firm size. Panel C reports the mean bidder announcement return, $CAR(-1,3)$, and its slope with respect to the cash share. Offer premiums outside the range [0%, 200%] are excluded, following Li et al. (2018a). The observed moments are from 1,000 samples of 500 deals each, and estimated separately for the subsamples of bidder- and target-initiated deals (columns 4–5). The sample comprises 1,845 completed takeovers of US public targets by US public bidders (2000–2020). Standard errors, in parentheses, are computed from a Monte Carlo procedure using 1,000 samples of 500 deals each (see Table 6). Column 3 reports the difference between the data and model-implied moments.

	Full sample			Bidder initiations	Target initiations
Data moments	Data (1)	Model (2)	Diff. (3)	Data (4)	Data (5)
Panel A: Offer premium (to estimate bidder synergies)					
Mean (identifies μ_s)	0.463	0.499	-0.04	0.475	0.443
	(0.015)			(0.012)	(0.011)
Conditional variance (identifies σ_s)	0.102	0.089	0.01	0.100	0.106
	(0.012)			(0.009)	(0.009)
Slope a_1 on log(M) (identifies ρ_{sM})[a]	0.033	0.023	0.01	0.035	0.030
	(0.014)			(0.014)	(0.010)
Panel B: Fraction of bid in cash (to estimate bidder cash constraint)					
Mean (identifies μ_k)	0.644	0.631	0.01	0.699	0.564
	(0.019)			(0.015)	(0.013)
Conditional variance (identifies σ_k)	0.139	0.132	0.01	0.135	0.141
	(0.010)			(0.008)	(0.007)
Slope c_1 on log(M) (identifies ρ_{kM})[b]	0.121	0.043	0.08	0.110	0.127
	(0.013)			(0.013)	(0.009)
Panel C: Acquirer announcement return (revelation effect of fraction cash)					
Mean (identifies μ_ϵ)	-0.015	-0.011	0.00	-0.011	-0.021
	(0.005)			(0.003)	(0.004)
Slope b_1 on Cash Frac. (identifies σ_ϵ)[c]	0.051	0.038	0.01	0.039	0.066
	(0.017)			(0.013)	(0.014)

[a] $OP_i = a_0 + a_1 log(M_i) + a_2 Controls_i + u_i$.

[b] $Cash_i = c_0 + c_1 \log(M_i) + b_2 Controls_i + w_i$.

[c] $CAR(-1,3)_i = b_0 + b_1 FractionCash_i + b_2 \log(M_i) + b_3 Controls_i + \nu_i$.

Table 8
Simulated efficiency loss: Total sample

Panel A shows the mean percentage of simulated deals in which the overvalued but lower-synergy bidder wins. Panel B shows the average synergy loss in inefficient deals only, either in percent of the pre-takeover target market value or the highest synergy. Panel C repeats Panel B with the total number of deals as the basis for the computation. The total sample comprises 1,845 completed US public takeovers (2000–2020). The simulated losses are based on 1,000 samples of 500 observations using the baseline structural parameter estimates reported in Section 4.1.

		Percentile				
	Mean	10	25	50	75	90
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Percent of deals that are inefficient						
% inefficient deals	6.10%					
Panel B: Average synergy loss in inefficient deals						
% of target size	10.10	1.03	2.74	6.72	13.73	23.85
% of synergy	19.20	1.82	5.02	12.17	26.62	47.18
Panel C: Average synergy loss in all deals						
% of target size	0.62	0.06	0.17	0.41	0.84	1.45
% of synergy	1.17	0.11	0.31	0.74	1.62	2.88

Table 9
Simulated efficiency loss: Bidder- versus target-initiated transactions

Panel A shows the mean percentage of the simulated deals that are inefficient, where the overvalued but lower-synergy bidder wins. Panel B shows the average synergy loss in inefficient deals only, either in percent of the pretakeover target market value or the highest synergy. Panel C repeats Panel B with the total number of deals as the basis for the computation. Results are shown for the full sample, bidder-initiated cases, and target-initiated contests. The simulated losses in columns 1–2 are based on the full-sample SMM parameter estimates reported in Section 4.1. Columns 3–4 and 5–6 are based on separate SMM estimations of the same eight-parameter model on the conditional moment vectors of the bidder-initiated and target-initiated subsamples, respectively (Table 7, columns 4–5); each subsample's own parameter vector is used in its simulations. Each set of simulated losses uses 1,000 samples of 500 observations drawn under the corresponding parameter vector. The total sample comprises 1,845 completed US public takeovers (2000–2020).

	Full sample		Bidder-initiated		Target-initiated	
	Mean	Median	Mean	Median	Mean	Median
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Percent of deals that are inefficient						
% inefficient deals	6.10		6.27		7.37	
Panel B: Average synergy loss in inefficient deals						
% of target size	10.10	6.72	10.65	6.92	11.48	7.67
% of synergy	19.20	12.17	19.34	12.39	21.81	14.67
Panel C: Average synergy loss in all deals						
% of target size	0.62	0.41	0.67	0.43	0.85	0.56
% of synergy	1.17	0.74	1.21	0.78	1.61	1.08

Table 10
Determinants of stock consideration conditional on bidder firms' cash-targets, target firm information proxies, and bidder-initiation

The table reports the coefficient estimates from probit regressions for the likelihood of all-stock payment (columns 1–4) and Tobit regressions for the fraction of stock (columns 5–8). Columns 1 and 5 show the baseline regressions, columns 2 and 6 add information variables, and the remaining add bidder initiation. *Cash-target* and the *Deviation from Cash-target* are, respectively, the fitted value and residual from year-by-year regressions of cash to total assets on firm characteristics across Compustat firms (Eq. 8). The sample comprises completed takeovers of US public targets by US public bidders, 2000–2020. All variables are defined in Table 4. An intercept is included but not reported. t-values are in parentheses. ***, **, and * denotes significance at the 1%, 5%, and 10% level, respectively.

	Probit (y = all-stock)				Tobit (y = fraction of stock)			
Variable	Baseline	Information	Initiation	Interaction	Baseline	Information	Initiation	Interaction
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Controls								
Size	-0.224	-0.236	-0.228	-0.226	-0.243	-0.257	-0.254	-0.257
	(7.20)***	(6.98)***	(6.72)***	(6.63)***	(7.24)***	(7.30)***	(7.23)***	(7.27)***
Large Deal	0.287	0.248	0.251	0.253	0.722	0.662	0.661	0.659
	(3.01)***	(2.58)**	(2.59)***	(2.62)***	(7.61)***	(7.15)***	(7.16)***	(7.17)***
Leverage	-0.072	-0.111	-0.133	-0.142	0.076	0.015	0.012	0.000
	(0.46)	(0.68)	(0.82)	(0.88)	(0.39)	(0.08)	(0.06)	0.00
Cash-target	-3.69	-3.892	-3.941	-4.036	-2.059	-2.307	-2.836	-2.632
	(3.32)***	(3.43)***	(3.47)***	(3.32)***	(1.74)*	(1.97)**	(2.27)**	(2.10)**
Cash-target x Bidder Ini.				0.342				-0.445
				(0.34)				(0.45)
Deviation from Cash-target	-0.136	-0.245	-0.234	-0.285	-0.219	-0.372	-0.35	-0.423
	(0.31)	(0.55)	(0.52)	(0.64)	(0.47)	(0.83)	(0.77)	(0.93)
M/B	0.014	0.015	0.016	0.001	0.009	0.01	0.01	-0.009
	(2.19)**	(2.37)**	(2.42)**	(0.06)	(1.24)	(1.44)	(1.39)	(0.70)
M/B x Bidder Initiated				0.025				0.029
				(1.92)*				(1.92)*
Dividend Dummy	-0.086	-0.049	-0.055	-0.055	-0.211	-0.171	-0.169	-0.177
	(0.87)	(0.49)	(0.55)	(0.55)	(2.10)**	(1.73)*	(1.71)*	(1.80)*
R&D	2.330	2.209	2.132	2.225	1.975	1.728	1.831	1.828
	(2.96)***	(2.87)***	(2.78)***	(2.93)***	(2.45)**	(2.23)**	(2.34)**	(2.34)**
Asset Tangibility	0.047	0.014	-0.003	0.008	0.479	0.421	0.419	0.422
	(0.36)	(0.10)	(0.03)	(0.06)	(3.70)***	(3.28)***	(3.25)***	(3.30)***
Operating Efficiency	-0.001	-0.001	-0.001	0	0.001	0.002	0.002	0.003
	(0.12)	(0.09)	(0.09)	0.00	(0.19)	(0.26)	(0.31)	(0.46)
High-Tech Dummy	0.005	0.041	0.046	0.019	-0.122	-0.069	-0.077	-0.088
	(0.04)	(0.36)	(0.39)	(0.16)	(1.11)	(0.63)	(0.70)	(0.80)
Private Bidder Competition	-0.649	-0.604	-0.598	-0.728	-0.675	-0.609	-0.606	-0.497
	(2.24)**	(2.08)**	(2.05)**	(1.60)	(2.40)**	(2.20)**	(2.18)**	(1.03)
Priv. Bid. Comp. x Bidder Ini.				0.214				-0.196
				(0.36)				(0.33)
Target information proxies								
Bidder Initiated			-0.211	-0.505			-0.186	-0.299
			(2.43)**	(2.44)**			(1.31)	(1.45)
Local Deal		0.308	0.308	0.212		0.352	0.352	0.13
		(2.60)***	(2.59)***	(1.17)		(2.91)***	(2.91)***	(0.66)
Local Deal x Bidder Init.				0.190				0.391
				(0.79)				(1.59)
H-P Industry Relatedness		1.045	1.076	0.633		2.127	2.118	1.484
		(2.46)**	(2.51)**	(1.04)		(4.90)***	(4.83)***	(2.24)**
H-P Industry Rel x Bidder Ini.				0.732				0.918
				(0.87)				(1.06)
Recent SEO		0.186	0.197	0.120		0.273	0.270	0.301
		(2.03)**	(2.14)**	(0.85)		(3.06)***	(3.03)***	(2.03)**
Recent SEO x Bidder Initiated				0.130				-0.048
				(0.73)				(0.27)
Recent Acquirer		-0.095	-0.094	-0.094		-0.008	-0.012	-0.060
		(0.71)	(0.70)	(0.46)		(0.07)	(0.10)	(0.30)
Recent Acquirer x Bidder Ini.				-0.015				0.088
				(0.06)				(0.37)
Pseudo R-squared	0.10	0.12	0.12	0.13	0.11	0.12	0.12	0.13
N	1,272	1,264	1,264	1,264	1,211	1,203	1,203	1,203

Table 11
Average announcement returns to bidders, targets, and the bidder's close peers

The table reports the average three-day announcement-period stock return $CAR(-1, 1)$, estimated as three times the second daily event parameter (γ_{2i}) in the conditional factor model, Eq. (9). Panel A reports returns of the first public bidder, Panel B target returns, and Panel C returns on a value-weighted portfolio of bidder and target returns. In Panel D, the acquirer's industry peers are the five firms with the highest Hoberg and Phillips (2016) industry-relatedness scores. For these peer firms, γ_{2i} is estimated after forming a portfolio of the five firms, weighted by their industry-relatedness scores. The table reports the t-statistic using the standard error of each γ_i^2 from the regression (see footnote 28). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Sample of completed takeovers of US public targets by US public bidders, 2000-2020.

		Bidder and target-init. (1)	Bidder-initiated (2)	Target-initiated (3)	Bidder-init. –target-init. (4)
Panel A: Acquirer returns					
Full Sample	CAR(-1,1)	-0.014	-0.01	-0.02	0.01
		(10.85)***	(5.85)***	(9.94)***	(2.24)**
	N	1,552	913	639	1,552
Fraction Stock > 0	CAR(-1,1)	-0.03	-0.025	-0.036	0.012
		(19.6)***	(13.01)***	(14.79)***	(1.69)*
	N	865	471	394	865
Panel B: Target returns					
Full Sample	CAR(-1,1)	0.261	0.284	0.228	0.055
		(178.86)***	(157.72)***	(89.88)***	(3.27)***
	N	1,431	848	583	1,431
Fraction Stock > 0	CAR(-1,1)	0.184	0.216	0.144	0.072
		(99.18)***	(90.38)***	(47.87)***	(3.95)***
	N	765	421	344	765
Panel C: Combined acquirer and target returns (value-weighted)					
Full Sample	CAR(-1,1)	0.05	0.059	0.037	0.022
		(53.61)***	(50.54)***	(23.14)***	(2.81)***
	N	1,767	1,039	728	1,767
Fraction Stock > 0	CAR(-1,1)	0.026	0.039	0.011	0.029
		(23.54)***	(24.88)***	(7.65)***	(3.31)***
	N	964	523	441	964
Panel D: Acquirer peer-firm portfolio returns (relatedness-weighted)					
Full Sample	CAR(-1,1)	0.007	0.007	0.007	0
		(11.75)***	(9.42)***	(7.11)***	(0.10)
	N	1,577	868	709	1,577
Fraction Stock > 0	CAR(-1,1)	0.006	0.008	0.003	0.005
		(8.32)***	(8.37)***	(3.43)***	(1.56)
	N	917	447	470	917

Table 12
Bidder initiation and determinants of initial acquirer announcement returns

The table reports OLS coefficient estimates for the bidder's five-day announcement return, $CAR(-1, 3)$, computed from the Market Model $R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it}$ estimated over days $(-297, -43)$, where R_{mt} is the CRSP value-weighted market return. Columns 1 and 5 report baseline specifications with bidder capital-structure controls only; the deal characteristics (*Large Deal*, *All-Stock*) and the *High-Tech* indicator enter from columns 2 and 6 onward. Columns 5–8 implement a Heckman (1979) two-step procedure: a first-stage probit, estimated on the full Compustat universe, predicts whether a firm initiates a bid for a US public target in the subsequent year, controlling for the same firm characteristics as the second stage. Acquirers in bidder-initiated deals receive the inverse Mills ratio; acquirers in target- and jointly-initiated deals receive their non-initiation counterpart. N refers to the second-stage acquisition sample. The sample comprises completed takeovers of US public targets by US public bidders, 2000–2020. All variables are defined in Table 4. t-values are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	OLS				Heckman regression (2nd stage)			
	Baseline	Information	Initiation	Interaction	Baseline	Information	Initiation	Interaction
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Controls								
Size	0.003	0.001	0.001	0.001	-0.103	-0.047	-0.044	-0.048
	(1.62)	(0.39)	(0.28)	(0.36)	(0.64)	(0.58)	(0.54)	(0.58)
Large Deal		-0.041	-0.041	-0.040		-0.041	-0.041	-0.040
		(5.04)***	(5.01)***	(4.98)***		(6.08)***	(6.05)***	(6.03)***
Leverage	0.016	0.022	0.023	0.022	0.153	0.085	0.082	0.087
	(0.81)	(1.16)	(1.17)	(1.20)	(0.73)	(0.78)	(0.75)	(0.79)
Cash Holding	-0.008	0.021	0.021	0.021	0.139	0.089	0.084	0.09
	(0.20)	(0.51)	(0.50)	(0.50)	(0.58)	(0.73)	(0.70)	(0.73)
M/B	-0.001	-0.001	-0.001	-0.001	-0.007	-0.003	-0.003	-0.003
	(2.23)**	(1.06)	(1.05)	(0.56)	(0.81)	(0.71)	(0.68)	(0.71)
M/B x Bidder Ini.				0.000				0.000
				(0.04)				(0.04)
Dividend Dummy	0.000	-0.001	0.000	-0.001	0.067	0.029	0.027	0.03
	(0.01)	(0.10)	(0.08)	(0.14)	(0.65)	(0.57)	(0.53)	(0.57)
R&D	-0.056	-0.005	-0.004	-0.004	-0.479	-0.197	-0.184	-0.201
	(0.80)	(0.07)	(0.05)	(0.06)	(0.74)	(0.59)	(0.56)	(0.60)
Asset Tangibility	-0.008	-0.010	-0.010	-0.010	0.139	0.055	0.051	0.057
	(0.98)	(1.26)	(1.23)	(1.20)	(0.62)	(0.49)	(0.46)	(0.50)
Operating Efficiency	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.68)	(0.80)	(0.80)	(0.84)	(0.55)	(1.13)	(1.15)	(1.19)
High-Tech Dummy		-0.018	-0.018	-0.019		-0.018	-0.018	-0.018
		(2.52)**	(2.51)**	(2.62)***		(2.55)**	(2.55)**	(2.64)***
All-Stock		-0.032	-0.032	-0.029		-0.032	-0.032	-0.029
		(3.64)***	(3.62)***	(2.04)**		(4.63)***	(4.55)***	(3.05)***
All-Stock x Bidder Ini.				-0.005				-0.005
				(0.30)				(0.39)
Target information proxies								
Bidder Initiated			0.005	-0.005			0.005	-0.005
			(0.85)	(0.48)			(0.83)	(0.53)
Local Deal		0.004	0.004	0.004		0.005	0.005	0.004
		(0.46)	(0.45)	(0.21)		(0.54)	(0.54)	(0.29)
Local Deal x Bidder Ini.				0.001				0.001
				(0.05)				(0.07)
H-P Industry Relatedness		-0.017	-0.017	-0.04		-0.016	-0.017	-0.037
		(0.44)	(0.45)	(0.54)		(0.53)	(0.54)	(0.85)
H-P Ind. Rel. x Bidder Ini.				0.042				0.037
				(0.50)				(0.61)
Recent SEO		-0.014	-0.014	-0.026		-0.014	-0.014	-0.027
		(2.19)**	(2.21)**	(2.31)**		(2.38)**	(2.40)**	(2.96)***
Recent SEO x Bidder Ini.				0.020				0.021
				(1.64)				(1.81)*
Recent Acquirer		-0.011	-0.011	-0.011		-0.01	-0.01	-0.01
		(1.64)	(1.64)	(1.58)		(1.24)	(1.26)	(1.21)
Inverse Mills Ratio					-0.572	-0.258	-0.241	-0.264
					(0.66)	(0.59)	(0.55)	(0.59)
R^2 (col 1-4) / χ^2 (col 5-8)	0.02	0.08	0.08	0.08	3.82	96.95	97.95	102.04
N	1,233	1,228	1,228	1,228	1,233	1,228	1,228	1,228

Table 13
Acquirer long-run (36-month) abnormal stock return (α) by deal-initiation.

The table reports the coefficient estimates from calendar-time portfolio regressions, using monthly returns and the four-factor return-generating process shown in Table 11 (Eq. 9 in the text). The dependent variable is the monthly return on acquirer portfolios sorted by deal initiation. The explanatory variables are the Fama and French (1993) three factors ($Market$, SMB, and HML) and the Carhart (1997) momentum (UMD). $Market$ is the excess return on the value-weighted CRSP market index. The constant term α measures the abnormal stock return. The reported α is a monthly abnormal return. Columns 3 and 6 are long bidder-initiated deals and short target-initiated deals. An acquirer enters the portfolio in the month following a bid announcement and is held for 36 months or until delisting, whichever comes first; CRSP delisting returns are included in the delisting month. The sample is limited to bids containing stock in columns 1–3 and all-cash bids in columns 4–6. The bidder-portfolio monthly returns are equal-weighted in Panel A and value-weighted in Panel B. The sample comprises 1,845 completed takeovers of US public targets by US public bidders, 2000-2020 (287 months in the regression). t-statistics (with robust standard errors) are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Fraction Stock > 0			All-cash bids		
	Bidder Initiated	Target Initiated	Bidder Ini.− Target Ini.	Bidder Initiated	Target Initiated	Bidder Ini.− Target Ini.
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Equal-weighted portfolios						
α	0.000	-0.003	0.003	0.004	0.004	0.001
	(0.08)	(1.04)	(1.61)	(2.87)***	(2.27)**	(0.35)
Market	1.187	1.250	-0.038	0.978	1.031	-0.053
	(25.08)***	(20.55)***	(0.75)	(26.17)***	(26.28)***	(1.31)
SMB	0.664	0.897	-0.216	0.135	0.395	-0.303
	(10.38)***	(10.94)***	(3.15)***	(2.46)**	(7.46)***	(5.14)***
HML	-0.050	0.164	-0.188	0.215	0.154	0.067
	(0.87)	(2.25)**	(3.10)***	(4.76)***	(3.26)***	(1.37)
UMD	-0.250	-0.183	-0.060	-0.151	-0.172	0.010
	(6.09)***	(3.49)***	(1.37)	(4.58)***	(5.05)***	(0.27)
R^2	0.82	0.77	0.07	0.80	0.82	0.13
Panel B: Value-weighted portfolios						
α	0.000	-0.001	0.002	0.001	0.000	0.001
	(0.08)	(0.57)	(0.65)	(0.66)	(0.16)	(0.51)
Market	1.032	1.010	0.044	0.892	0.903	-0.014
	(18.32)***	(18.59)***	(0.64)	(25.25)***	(16.40)***	(0.25)
SMB	-0.284	0.048	-0.316	-0.047	0.147	-0.207
	(4.19)***	(0.74)	(3.84)***	(1.09)	(2.22)**	(3.11)***
HML	0.337	-0.004	0.344	-0.252	-0.024	-0.097
	(4.43)***	(0.05)	(3.70)***	(4.86)***	(0.32)	(1.20)
UMD	0.13	-0.061	0.2	-0.055	0.05	-0.072
	(2.65)***	(1.29)	(3.35)***	(1.75)*	(1.04)	(1.48)
R^2	0.64	0.63	0.17	0.74	0.54	0.04

Table 14

Average announcement returns to five-firm portfolios of acquiring firms' industry peers

The table reports average cumulative abnormal returns (CAR) for the acquirer's industry peers over two event windows relative to the M&A announcement date (day 0): (-1, 3) and (-1, 6). CAR is computed as $R_{it} - \hat{R_{it}}$, where $\hat{R_{it}}$ is the expected return estimated from the Market Model, $R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it}$, estimated over the window (-297, -43). R_{mt} is the CRSP value-weighted market return. Columns 1–2 identify peers using the five closest firms based on Hoberg and Phillips (2016) industry-relatedness scores. When fewer than five eligible peers are available within the relevant SIC restriction, the peer portfolio is formed using all available eligible peers. Columns 3–4 and 5-6 further restrict peers to those within the same 3-digit and 4-digit SIC codes, respectively. CARs are equally weighted (Equal Weighted) or weighted by the relative H-P relatedness score (Relatedness Weighted) for each acquirer. The sample comprises completed takeovers of US public targets by US public bidders, 2000-2020. t-values are in parentheses. ***, **, and * denotes significance at the 1%, 5%, and 10% levels, respectively.

	All peers		Same 3-Digit SIC		Same 4-Digit SIC	
Peer weighting	CAR(-1,3)	CAR(-1,6)	CAR(-1,3)	CAR(-1,6)	CAR(-1,3)	CAR(-1,6)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Full sample of public-to-public takeovers						
Equal Weighted	0.006	0.006	0.006	0.005	0.006	0.004
	(3.86)***	(3.26)***	(3.45)***	(2.41)**	(3.07)***	(1.63)
Relatedness Weighted	0.008	0.008	0.007	0.006	0.007	0.005
	(4.62)***	(3.92)***	(3.68)***	(2.70)***	(3.35)***	(1.94)*
N	1,387	1,387	1,207	1,207	1,024	1,024
Panel B: Takeovers with shares as part or all of the payment						
Equal Weighted	0.004	0.002	0.005	0.002	0.004	0.00
	(1.71)*	(0.83)	(1.75)*	(0.73)	(1.48)	(0.41)
Relatedness Weighted	0.005	0.003	0.006	0.004	0.005	0.002
	(2.07)**	(1.07)	(2.05)**	(1.00)	(1.79)*	(0.59)
N	755	755	662	662	565	565
Panel C: Bidder-initiated takeovers with shares as part or all of the payment						
Equal Weighted	0.002	0.001	0.007	0.005	0.003	0.001
	(0.77)	(0.31)	(1.66)*	(1.01)	(0.71)	(0.18)
Relatedness Weighted	0.005	0.003	0.008	0.006	0.004	0.002
	(1.36)	(0.85)	(1.91)*	(1.23)	(0.99)	(0.34)
N	410	410	353	353	302	302

Table 15

Auction characteristics: Financial v. non-financial bidders

The table reports mean and median characteristics of the auction process, split by financial and non-financial bidders. Sample of 1,845 successful acquisitions by US-domiciled public bidders of public targets from 2000 through 2020. ***, **, and * denotes significance at the 1%, 5%, and 10% level, respectively.

	Full Sample			Financial Bidder			Non-Financial Bidder			Financial–Non Financial	
Variable	N	Mean	Median	N	Mean	Median	N	Mean	Median	Δ Mean	t-stat.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Percentage of Stock Payment	1,753	0.41	0.26	66	0.24	0	1,687	0.42	0.29	-0.18	(3.21)***
Stock Payment Indicator	1,845	0.24	0	69	0.12	0	1,776	0.24	0	-0.12	(2.38)**
Premium (Month)	1,737	50.52	34.22	61	35.00	27.27	1,676	51.09	34.39	-16.09	(0.72)

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