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Bidding strategies and takeover premiums: A review ☆

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ABSTRACT

I review recent empirical research documenting offer premiums and bidding strategies in corporate takeovers. The discussion ranges from optimal auction bidding to the choice of deal payment form and premium effects of poison pills. The evidence describes the takeover process at a detailed level, from initial premiums to bid jumps, entry of rival bidders, and toehold strategies. Cross-sectional tests illuminate whether bidders properly adjust for winner's curse, whether target stock price runups force offer price markups, and whether auctions of bankrupt firms result in fire-sale discounts. The evidence is suggestive of rational strategic bidding behavior in specific contexts.

Contents

☆ This article was written in conjunction with the broader review of corporate takeovers in Betton, Eckbo, and Thorburn (2008a). I am indebted to Sandra Betton and Karin Thorburn. I am also grateful for the suggestions and comments made by editors of the Journal of Corporate Finance's special issue on Corporate Control, Mergers and Acquisitions, in particular Jeffry Netter and Mike Stegemoller.

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1. Introduction

This essay reviews recent empirical studies of takeover premiums and bidding behavior in corporate takeovers. There is growing research interest in the details of the takeover process from the initial bid through the final contest outcome. Succeeding with a takeover bid is difficult and involves strategies as the target may force the bidder to raise the offer price, reject all offers by the initial bidder in favor of a rival, and even reject all bidders. Betton, Eckbo, and Thorburn (2007) report that the initial bidder wins the target in only two-thirds of ten thousand initial control bids for US public targets 1980–2002. Moreover, it wins less often when the initial bid is in the form of an invitation to negotiate a merger as opposed to a tender offer, and when the initial bidder is private. Also, when a rival bidder enters the contest, the rival wins the auction twice as often as the initial bidder. In sum, initiating a takeover is risky business. With the substantial resources committed to the takeover process, bidders obviously need to think strategically in order to maximize the expected value of bid initiation.

With the emergence of machine-readable data sources such as Thomson Financial (SDC), researcher now have large-scale access to initial and final offer premiums to investigate the nature of observed bid strategies. A variety of questions are being examined: What determines the initial bid premium? If the initial bid is rejected, what should be the bid revision strategy (bid jump)? Do bidders fully account for the possibility of a winner's curse? Do bidders mark up the initially planned offer price in response to a runup in the target stock price ("markup pricing")? Should the bidder acquire a toehold in the target, and is there evidence of toehold-induced (rational) overbidding in offer premiums? Do auction bids for financially distressed firms reflect a "fire-sale" discount? How does the choice of payment method affect bid premiums? How do offer premiums respond to a target defensive mechanism such as a poison pill? Empirical evidence on all of these issues are reviewed below.

Empirical tests of bidding theories are also important for the broader debate over bidder rationality and the efficiency of the market for corporate control. As is well known, bidder abnormal stock returns are typically small and often negative around takeover announcements. Roll (1986) was the first to suggest that bidder overconfidence or "hubris" may go a long way in explaining the surprisingly low bidder takeover gains. The relatively poor bidder performance remains a pervasive and puzzling phenomenon also today. Since part of the problem is one of properly estimating and interpreting bidder announcement returns, however, direct evidence on offer premiums and bidding behavior is of key interest in this debate.[1]

Theory addresses optimal bid strategies when target shareholders free-ride, and when the initial bid risks attracting competition and target resistance. In general, optimal strategies depend on the specifics of the takeover setting, such as the selling mechanism (merger negotiations v. auction) and the information environment. In addition to the initial offer premium and subsequent bid revisions, strategic choices include acquiring a pre-bid ownership stake (toehold) in the target, and selecting an optimal payment method (mix of cash and securities).

The most important of these offer parameters is the *initial* bid premium, which is also the main focus of this review. Bid initiation carries a first-mover advantage which the bid strategy presumably is designed to protect. To the extent that strategic bidding behavior exists, it is more likely to be evident in the first offer than in subsequent bids. After the initial bid, the race is on: bidder entry costs are sunk, toehold acquisitions are expensive (they take place at market prices reflecting the expected takeover premium), and it may be difficult to lower any cash portion that defines the payment method selected by the first bidder.

[1] Bidder announcement returns are subject to attenuation bias due to partial anticipation, and they reflect valuation impacts of factors beyond the value of the takeover per se (including revelations about bidder managerial quality and exogenous changes in industry conditions).

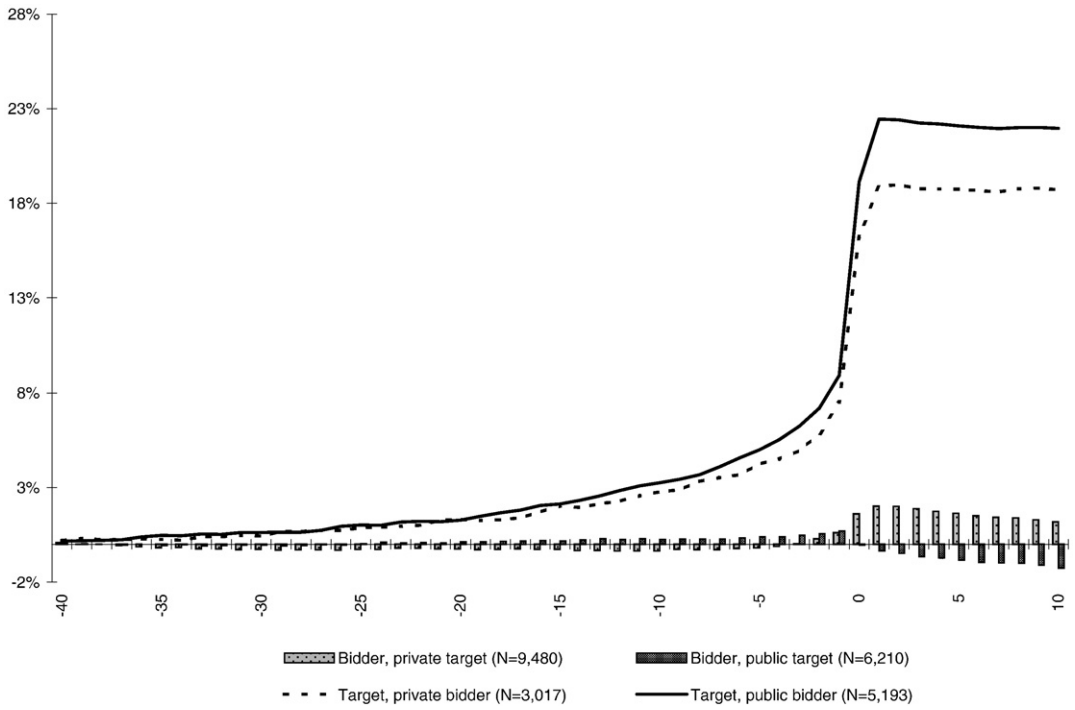

Fig. 1. Percent average cumulative abnormal stock returns to targets and initial bidders from day −40 through day 10 relative to the initial control bid date. U.S. targets 1980–2005. Source: Betton, Eckbo, and Thorburn (2008a).

Much of the empirical tests use a basic auction setting to illustrate optimal bids. This is a natural approach in the context of corporate takeovers. Whether the bid is in the form of a tender offer or an invitation to negotiate a merger agreement, the takeover process resembles an auction setting in important ways. A public tender offer is an auction in the sense that bidding is open and target shareholders are allowed to tender their shares to the highest bidder within the tender period. However, takeover auctions initiated by the bidder are made complex by the fact that the seller reserve price is often unknown ex ante. This added complexity over standard auction settings initiated by the target helps explain the substantial number of takeover contests where no bidder wins.

The auction analogy is also useful when the bidder invites the target to negotiate a merger agreement to be put to a shareholder vote. Betton, Eckbo, and Thorburn (2007) and Aktas, de Bodt, and Roll (2008) present models of merger negotiations in which the outside option is a tender offer (auction). In a very real sense, merger negotiations occur in the shadow of an auction, so the expected auction outcome affects the bargaining power of the negotiating parties. In the U.S., the bidder risks losing the target to a rival even *after* the target signs a merger agreement: Delaware case law on director fiduciary duties requires merger agreements to include a "fiduciary out" clause which permits target directors to evaluate competing offers before the shareholder vote. As indicated above, the data confirms that having signed a merger agreement is not a guarantee against the risk that the takeover process turns into an open auction for the target.

The review is organized as follows. Section 2 presents summary information on total (bidder plus target) takeover gains, bidder announcement returns, and offer premiums. This helps set the stage for the subsequent discussion of bidding strategies and their implications for offer premiums and bidder returns. Section 3 discusses premium effects within the classical free-rider model, the model's empirical relevance for actual takeover settings, and evidence on the response of offer premiums to the introduction of mandatory disclosure. In Section 4, I focus on specific auction settings and discuss issues such as preemptive bidding, bid jumps, markup pricing, winner's curse, toehold-induced overbidding, the disappearing toehold phenomenon, and fire-sale discounts. Section 5 reviews several hypotheses for the bidder's choice of payment method, while Section 6 discusses premium effects of poison pills. Section 7 concludes the review.

2. Takeover gains

Rational bidding requires that the total (bidder plus target) expected synergy gain from the takeover is positive. Thus, I begin by reviewing evidence on this fundamental requirement. I then summarize recent broad-based evidence on bidder announcement returns, which also serves as a link to the discussion of the valuation effects of the bidder's choice of payment method later in this review. Finally, given the central focus on offer premiums in this survey, I provide a brief summary of recent large-sample evidence on the magnitude and cross-sectional determinants of initial and final offer premiums.

Table 1
Large-sample ($N>1000$) estimates of announcement-induced average cumulative abnormal stock returns (ACAR) to U.S. bidders

Study	Sample	ACAR(day τ_1, day τ_2) (*=significant at 10% level)
Loderer and Martin (1990)	$N=1135$ completed mergers, 274 completed tender offers, and 3296 "other" acquisitions (not classifiable as merger or tender offer) by public acquirers, where the offer is announced in the Wall Street Journal, 1996–1984.	ACAR(−5, 0) is 1.7%* for 970 cases 1966–1968, 0.57%* for 3401 cases 19860–1980, and −0.1% for 801 cases 1981–1984. Bidder announcement returns smaller for larger bidders and decreasing in the relative size of the target firm.
Eckbo and Thorburn (2000)	U.S. and Canadian bidders acquiring $N=1,846$ targets in Canada, 1964–1983.	Announcement-month abnormal stock return are zero when the bidder is a U.S. company and significantly positive when the bidder is a Canadian company (all acquiring Canadian targets). The relative size of the bidder is a key determinant of the different performance of U.S. and domestic Canadian bidders.
Betton and Eckbo (2000)	Initial and rival bidders in $N=1353$ tender offer contests for public targets, 1971–1990.	(1) Day 0 is the initial bid date: ACAR(−60, 0) is 1.3% for initial bidders and 2.2% for rival bidders. (2) Day 0 is the second bid date: ACAR(−60, 0) is 1.2% for initial bidders, and 6.1%* for rivals.
Fuller, Netter, and Stegemoller (2002)	$N=3135$ takeovers, 1990–2000, by 539 public acquirers with at least 5 successful control bids within three years. Minimum deal size is $1 million.	ACAR(−2, 2) is 1.8%* for total sample of bidders, −1.0%* when target is public, 2.1%* when target is private, and 2.8%* when target is a subsidiary.
Akbulut and Matsusaka (2003)	$N=3466$ successful mergers between public firms, 1950–2002.	ACAR(−2, 1) is 1.2% for "related" acquisitions (bidder and target have at least one 3-digit SIC code in common) and 1.1%* for unrelated acquisition.
Officer (2003, 2004)	$N=2511$ attempted mergers and tender offers between public firms, 1988–2000 (Officer, 2003).	ACAR(−3, 3) is −1.2%* for the total sample.
Moeller, Schlingemann, and Stulz (2004, 2005)	$N=12,023$ acquisitions, 1980–2001. Minimum deal value is $1 million and 1% of the acquirer's assets.	ACAR(−1, 1) is 1.1%* for total sample, 2.3%* for small acquirers, and 0.1% for large acquirers. Using dollar values, bidders loose a total of $221 billion in market capitalization over day −1 to +1. This aggregate loss is driven by a small number of very large deals concentrated to the 1998–2001 period.
Bhagat, Dong, Hirshleifer, and Noah (2005)	$N=1018$ tender offers for public targets.	ACAR(−5, 5) is 0.2% with a median dollar return of −1.2 million.
Song and Walkling (2005)	$N=3389$ acquisitions, 1985–2001. Minimum deal value is $10 million.	ACAR(−1, 0) for the first bidder after a 12-month dormant period in the industry is 0.7%*, and 0.04% for subsequent bidders. Consistent with an attenuation effect of partial anticipation of takeover activity.
Bradley and Sundaram (2006)	$N=12,476$ completed acquisitions by 4116 public companies, 1990–2000.	ACAR(−2, 2) is 1.4% for the total sample, −0.7% for public targets, and 1.9% when the target is private. Bidding firms experience a large stock price runup over the two-year period preceding the bid. This runup is greater for stock bids than for cash bids.
Savor (2006)	$N=1484$ (159 failed and 1335 successful) merger bids, 1990–2000. The bid is nonhostile and all-cash (359 successful cases) or all-equity (976 successful cases). Minimum deal size is 5% of bidder market value.	ACAR(−1, 1) is −3.5%* for all-stock bidders and 1.0%* for all-cash bidders. Similar results for the full sample of failed acquirers.
Dong, Hisrshleifer, Richardson, and Teoh (2006)	$N=3137$ merger bids and tender offers between public firms, 1978–2000	ACAR(−1, 1) ranges from −0.2% (when target is ranked as relatively "undervalued") to −1.8% (when target is ranked as relatively "overvalued")
Moeller, Schlingemann, and Stulz (2007)	$N=4322$ all-cash and all-stock bids, 1980–2002. Minimum deal value is $1 million and 1% of the acquirer's assets.	ACAR(−1, 1) for the total sample is 0.8%. When target is public, ACAR(−1, 1) is −2.3% in all-stock deals and 0.7% in all-cash deals. When the target is private, ACAR(−1, 1) is 3.4% in all-stock deals.
Bargeron, Schlingemann, Stulz, and Zutter (2007)	$N=1292$ completed all-cash takeovers of US public targets by private and public bidders, 1990–2005.	Average target announcement $CAR_{(-1,1)}$ is 32% for public bidders and 22% for private bidders.
Betton, Eckbo, and Thorburn (2007, 2008b)	$N=10,806$ initial control bids for public targets: 7076 merger bids from 1980–2002 and 3730 tender offers from 1973–2002.	ACAR(−1, 1) is −1.2%* for total sample and −0.15%* if the bidder has a toehold. In Betton, Eckbo, and Thorburn (2008b), ACAR(−1, 1) is −1.9%* for merger offers, and an in significant 0.3% for tender offers.

Table 1 (*continued*)

Study	Sample	ACAR(day τ_1, day τ_2) (*=significant at 10% level)
Betton, Eckbo, and Thorburn (2008c)	N=15,987 initial control bids by public bidders for public or private targets, 1980–2005: 13,985 merger bids and 1468 tender offers.	ACAR(−1, 1) is 0.69% with a significantly negative z-statistic of −3.9 for initial bidders in mergers, and 0.76 (insignificant) for initial bidders in tender offers. Large public bidders acquiring public targets and paying with all cash produces ACAR(−1, 1) of −2,2%*.Small public bidders acquiring private targets in allstock offers produces ACAR(−1, 1) of 6.5%*.

2.1. Total gains

In their classical survey, Jensen and Ruback (1983) conclude from the empirical evidence that the value-weighted sum of takeover-induced abnormal stock returns to bidders and targets is positive and significant.[2] In Betton, Eckbo, and Thorburn (2008a), we present estimates of total takeover gains using a comprehensive sample of fifteen thousand initial control bids for U.S. targets over the period 1980–2005. The findings are replicated in Fig. 1 which shows the daily cumulative abnormal returns from day −40 through day 10 relative to the initial offer announcement for both bidders and targets, classified by the respective firms' public status. The cumulative abnormal returns to targets are somewhat greater when the bidder is public than when the bidder is private. Several studies provide evidence of a valuation impact of the public status of the bidder and target firms in U.S. takeovers,[3] and will be discussed further below.

The average target runup typically constitutes about one-third of the total runup plus the announcement abnormal returns, and the largest target abnormal returns occur in all-cash offers, where the sum of the runup and the announcement return is 28%. Using market capitalizations on day −42, the value-weighted sum of the runups of the bidder and target firms, and the value-weighted sum of the announcement-induced abnormal return are both positive and significant.[4] The sum the combined abnormal returns over the runup and announcement periods averages a statistically significant 2%. Thus, total takeover gains are positive on average.[5]

2.2. Bidder announcement returns

Table 1 lists bidder announcement returns as reported by nineteen large-sample studies, most of which are based on data from SDC. A typical finding is small (less than 1%) but significantly negative average bidder announcement returns, in particular if the bidder is large and offers all-stock as payment for the target in a merger proposal. Moreover, bidder announcement returns are typically positive and insignificant in tender offers. To get a sense of the magnitudes, when using the sample underlying Fig. 1 the three-day average abnormal stock return is 0.69% with a z-statistic of −3.9 for initial merger bids, and a statistically insignificant 0.76% for initial bidders making tender offers.[6]

The literature shows that two key drivers of negative bidder returns is the size of the bidder's total equity (Asquith et al., 1983; Eckbo and Thorburn, 2000; Moeller et al., 2004, 2005) and the target's status as a public or private firm (Bradley and Sundaram, 2006; Bargeron et al., 2007; Betton et al., 2008c). This average effect is summarized in Table 2 for the sample in Betton, Eckbo, and Thorburn (2008a). When the initial bidder (i) is relatively large (in the upper-size quartile), (ii) is bidding for a public target, and (iii) is offering all-stock as payment, the average three-day announcement-period abnormal stock return is as low as −2.21%. Moreover, the "best-case" scenario is the combination of a small bidder (lower size-quartile), private target, and, again, *all-stock* as payment, which produces an average bidder abnormal return of as much as 6.46%.

The finding fact that all-stock offers appear in both of these two samples with extreme bidder valuations is relevant for the discussion of the payment method choice later in this review (Section 5). Bidder size and target public status appear to swamp the valuation effect of the payment method choice per se. Notice also the finding of Moeller, Schlingemann, and Stulz (2005) that bidder size—and the associated negative bidder returns—were particularly large in 1999 and 2000. Betton, Eckbo, and Thorburn (2008c) argue that the significant bidder size effect is largely confined to that particular time period.

2.3. Offer premiums

Prior to the availability of offer pries on SDC, the empirical takeover literature conventionally used target cumulative abnormal stock returns around takeover bids as a proxy for offer premiums. This proxy is, of course, problematic as target abnormal stock returns

[2] Subsequent comprehensive surveys have reached a similar conclusion: Jarrell, Brickley, and Netter (1988), Eckbo (1988), Andrade, Mitchell, and Stafford (2001), Burkart and Panunzi (2006), Martynova and Renneboog (2007), and Betton, Eckbo, and Thorburn (2008a).

[3] Chang (1998), Fuller, Netter, and Stegemoller (2002), Moeller, Schlingemann, and Stulz (2004), Bradley and Sundaram (2006), and Officer, Poulsen, and Stegemoller (2007).

[4] Betton, Eckbo, and Thorburn (2008a) report that, for the 4803 pairs of listed bidders and targets, the average combined runup is 0.7% with a z-value of 4.3, while the average combined announcement return is 1.06% with a z-value of 14.6.

[5] In Betton, Eckbo, and Thorburn (2008a) we also report estimates of five-year post-merger abnormal stock returns. These estimates tend to be significantly negative when using the buy-and-hold, matched-firm estimation technique, and insignificantly different from zero when using the calendar-time portfolio technique. Long-run performance estimates primarily address issues of market efficiency and the correct asset pricing model, and is therefore not discussed further here.

[6] The z–statistic is the average value of the t–statistic for the null of zero abnormal return multiplied by $\sqrt{N}$. A value of the average abnormal return that is positive but close to zero may have a negative z value due to skewness.

Table 2
Summary of initial bidder three-day announcement-period abnormal returns, 1980–2005

Sample	Public targets		Private targets	
	N	CAR(−1,1)	*N*	CAR(−1,1)
A: Large bidders				
All-stock	769	−0.0221**	445	0.0010
All-cash	439	−0.0030**	88	0.0026**
B: Small bidders				
All-stock	495	−0.0006	872	0.0646**
All-cash	190	0.0306**	184	0.0176**

Source: Betton, Eckbo, and Thorburn (2008a). Initial bidder cumulative abnormal returns for the window −1,1 relative to the initial control bid. Large bidders are bidders in the upper quartile of market capitalization on day −42 (in constant 2000 dollars) and small bidders are bidders in the lower quartile of market capitalization on day −42. The cutoff values for the upper and lower quartiles are $134 million and $2.2 billion respectively. The method of payment is determined from the SDC 100% cash or 100% stock consideration field. The public status of the target is determined from SDC. **Represents significance at the 1% level (2 sided test).

reflect not only the offer price but also the probability of competition and bid failure at the initial offer date. The attenuating effect of the residual uncertainty about bid success at the initial offer announcement is important: it tends to produce offer premium estimates in the vicinity of 25–30% in Fig. 1 when, as shown in the last two columns of Table 3, the true offer premium is about 45–50%.[7]

The availability of SDC has spurred large-sample studies based directly on offer prices. With offer prices, premium estimation is reduced to finding the best "base" price with which to scale the known offer price. In principle, the correct base price is the pre-offer secondary market price of the target which the bidder relies on in order to determine the initial offer premiums. While this base price is unobservable, it is common to select a target share price two or three months prior to the first bid (in Table 3 the base price is 42 trading days prior to the initial offer announcement). The usual motivation, which is supported by Fig. 1, is that a price this far back from the initial bid is largely free of market anticipation of the pending offer.[8]

The last two columns of Table 3 show average initial and final offer premiums relative to the target share price forty-two days prior to the initial bid announcement (adjusted for splits and dividends). The table uses the sample in Betton, Eckbo, and Thorburn (2007). Two-thirds of ten thousand initial bids are from the period 1990–2002, and 72% of the sample represents merger bids. The data is collected primarily from SDC which lists *official* or public bids for the target only. As emphasized by Boone and Mulherin (2007c), targets increasingly initiate takeovers on their own. That is, some targets privately solicit bidder interest and select a negotiating partner among the respondents. Whenever this happens, the initial bid identified by the SDC (and listed in Table 3) is the winner of the private round of target solicitations.

The average initial offer premium is 45% across the total sample with premium data (while not shown, the median offer premium is consistently a few percentage points lower than the mean). The final premium is almost identical (46%) reflecting the large portion of the sample where the initial price is also the final price (single-bid contests). There is a small difference in initial and final offer premiums in the first and the second part of the sample period. Initial (final) offer premiums are 44% (45%) in mergers and 47% (50%) in tender offers. Separating ex post single- and multiple-bidder contests, the average initial and final premiums in multiple-bidder contests is 41% and 53%, respectively. For single-bidder contests, the initial premium averages 45% (final 45%).

Table 3 also shows that initial (and final) offer premiums are somewhat lower when the bidder is private: 40% versus 46% for public acquirers, respectively. Average premiums are almost identical in all-cash and all-stock/mixed offers, however, the multivariate regressions discussed next indicate that all-cash bid premiums tend to be higher. Finally, contests with hostile targets have both the highest initial bid premium (49% versus 44% for friendly targets) and final offer premium (61% versus 45%).

Table 4 shows cross-sectional determinants of the offer premiums using the offer premium data in Betton, Eckbo, and Thorburn (2008b). The explanatory variables are grouped into "Target characteristics", "Bidder characteristics", and "Deal characteristics". The regressions alternately use a time dummy for offers taking place in the early sample period (1980–1989) and year fixed effects. Notice also that the information in these variables is known at the time the offer premium was set. The variable "Hostile target response" is included as a determinant of the initial offer premium because this information is most likely known at the outset. However, the variable "multiple bidders" is not and is therefore included as a determinant of the final offer premium only.[9] The results are summarized as follows:

(1) The initial and final offer premiums are *higher* after the 1980s; when the bidder is a public company; when the initial bid is an all-cash offer; and the higher the pre-bid target runup.

[7] The difference between actual premiums and abnormal return estimates is also affected by the estimation error in the model generating expected stock returns. The estimation error is compounded when using target stock returns over long windows to capture the final premium at the very end of the takeover process.

[8] Several pre-SDC studies report hand-collected offer prices. For example, Bradley (1980) presents the first systematic offer price analysis in the context of public tender offers. Jarrell and Bradley (1980) and Eckbo and Langohr (1989) study the impact of disclosure regulations on offer prices. Walkling (1985) uses offer premiums to predict tender offer success. Eckbo and Langohr (1989) examine the effect of disclosure rules and method of payment (cash versus stock) on tender offer premiums, while Betton and Eckbo (2000) examine bid jumps and offer premium determinants in more than 1,200 tender offers.

[9] Not surprisingly (given the relative paucity of multiple-bid contest), the explanatory variables have similar coefficients and level of significance for both the initial and final offer premiums.

Table 3
Deal characteristics and initial and final offer premiums in 10,806 control contests for public U.S. targets, 1973–2002

Sample	Number of cases	Deal value ($ million)		% of contests where the winner is:			Average offer premium (%)	
		Mean	Median	Initial bidder	Rival	No bidder wins	Initial bid	Final bid
All contests	10,806	715	89	66.6	3.7	29.7	44.5	46.1
1973–1989	3,730	312	60	58.7	5.2	36.1	45.0	48.5
1990–2002	7,076	903	108	70.7	3.0	26.4	44.2	45.0
Merger bid	7,750	827	92	63.5	3.3	33.2	43.6	44.5
Tender offer	3,056	433	78	74.8	4.8	20.4	46.5	50.2
Acquirer public	6,726	902	112	75.6	3.2	21.3	46.1	47.5
Acquirer private	4,080	285	52	51.7	4.6	43.7	40.1	42.6
Single bidder	9,944	693	88	70.5	0.0	29.5	44.8	45.4
Multiple bidders	862	989	101	20.6	47.8	31.7	41.1	53.2
Target friendly	10,295	688	85	68.0	3.2	28.8	44.1	45.1
Target hostile	511	1,204	183	34.4	16.3	49.2	49.0	60.9
All cash	4,185	320	66	69.1	4.0	27.0	44.1	46.6
Stock/mixed	6,621	1,048	119	65.0	3.6	31.4	44.7	45.8

Source: Betton, Eckbo, and Thorburn (2007). A control bid is defined as the bidder owning less than 50% of the target shares prior to the bid and seeking to own at least 50% of the target shares. Successive control bids for the same target are then grouped into a control contest. A given control bid initiates the contest if there are no other public control bids for the same target over the preceding six months. All subsequent control bids within six months of a previous bid belong to the same contest, and the contest ends when there are no additional control bids for the same target over the following six-month period. The initial offer premium is $p_{ini}/p_{-41}-1$, where p_{ini} is the first offer price, p_{-41} is the target stock price on day −41 adjusted for splits and dividends, and 0 is the day of the initial control bid. The final offer premium is $p_{fin}/p_{-41}-1$, where p_{fin} is the last offer price in the contest.

(2) The initial and final offer premiums are *lower* the greater the target total equity capitalization prior to the initial bid; when the target's book-to-market ratio (B/M) exceeds the industry median B/M (i.e., when the target is a growth company relative to industry rivals); when the initial bid is a tender offer; and when the initial bidder has a positive toehold.
(3) The initial and final offer premiums are *unaffected* by the presence of a target poison pill; target hostility to the initial bid;[10] target stock liquidity; the presence of multiple bidders; and whether the takeover is horizontal.

The recent literature provides some additional offer premium evidence. For example, Officer (2003) and Bates and Lemmon (2003) show that offer premiums are significantly greater when the SDC indicates the existence of a target termination agreement, while Bargeron (2005) find lower premiums in the presence of a target board/management tender agreement. Moeller (2005) present evidence indicating that powerful entrenched target CEOs reduce takeover premiums. Chatterjee, John, and Yan (2008) find that takeover premiums are larger the greater the disagreement between the earnings forecasts of financial analysts following the target. Levi, Li, and Zhang (2008) use RiskMetrics Group data on board structure and find that bid premiums are affected by the gender composition of the board. Specifically, bid premiums are lower when the bidder CEO is female, and the higher the target board's proportion of female directors (provided that the female directors are independent appointees).[11]

I now turn to various bidding hypotheses and their implications for offer premiums.

3. Free-riders and mandatory disclosure

3.1. Offer premiums and the free-rider problem

An early workhorse in the theoretical takeover literature is the free-rider model of Grossman and Hart (1980b) and Bradley (1980). They analyze the incentives of dispersed, non-cooperative target shareholders to accept a tender offer from a single bidder, and the resulting inefficiency of the takeover market. To illustrate, suppose the target's pre-offer (stand-alone) share price is equal to zero, and that it is common knowledge that the post-takeover share price will equal $v>0$. The value-increase v may be thought of as synergy gains resulting from the bidder taking control of the target. The bidder makes a conditional unrestricted bid b for 50% of the target shares (sufficient to transfer control of the target to the bidder).[12] A risk-neutral target shareholder i tenders only if the offer price exceeds the expected value of her share if she retains it:

$$\text{Tender if } b \geq \Pr(\text{Success}|i \text{ Retain})v \tag{1}$$

where $\Pr(\cdot)$ denotes the probability that the offer succeeds given that the shareholder does not tender.[13]

By inspection of Eq. (1), the target shareholder is more willing to tender the lower is the post-takeover value v, and the more she believes that retaining reduces the takeover's probability of success. As the number of target shareholder becomes large, however,

[10] Note that most of the hostile bids took place in the 1980s when the time dummy shows average premiums were significantly lower.
[11] Since several of the variables used to explain the offer premium are themselves endogenous choice variables (payment method, toehold, hostility, termination agreements, bidder's public status), some of the reported effects may not be robust to endogeneity. Betton and Eckbo (2000), Officer (2003) and Betton, Eckbo, and Thorburn (2007) use systems of equations and various corrections for self-selection. See Li and Prabhala (2007) for a comprehensive survey of self-selection models in corporate finance.
[12] "Conditional" means no shares will be purchased if less than 50% are tendered. "Unrestricted" means any or all tendered shares above 50% will be purchased.
[13] We are ignoring taxes. For example, when b is paid in cash, the offer may trigger a capital gains tax liability.

Table 4
Determinants of the offer premium in 4889 control contests for U.S. public targets 1980–2002

	Initial offer premium		Final offer premium	
Mean	0.43		0.48	
Median	0.37		0.39	
St. dev.	0.46		0.47	
Intercept	0.296 (0.000)	0.256 (0.000)	0.296 (0.000)	0.254 (0.000)
A: Target characteristics				
Size: ln of target market capitalization on day −42	−0.030 (0.000)	−0.027 (0.000)	−0.030 (0.000)	−0.027 (0.000)
Target book-to-market>industry median	0.025 (0.000)	0.029 (0.000)	0.024 (0.000)	0.029 (0.000)
Target runup: $\ln(p_{-1}/p_{-42})$	0.808 (0.000)	0.811 (0.000)	0.808 (0.000)	0.811 (0.000)
Amihud liquidity	8.55 (0.311)	13.29 (0.114)	8.71 (0.302)	13.46 (0.110)
Poison pill dummy	−0.016 (0.606)	0.000 (0.990)	−0.016 (0.604)	−0.001 (0.987)
B: Bidder characteristics				
Positive toehold (vs. zero toehold)	−0.023 (0.032)	−0.025 (0.024)	−0.023 (0.032)	−0.025 (0.024)
Acquiror public (vs. private)	0.015 (0.079)	0.023 (0.008)	0.015 (0.072)	0.023 (0.007)
Horizontal takeover (same industry)	−0.004 (0.608)	−0.004 (0.664)	−0.004 (0.618)	−0.004 (0.673)
C: Deal characteristics				
Tender offer (vs. merger)	−0.061 (0.000)	−0.066 (0.000)	−0.061 (0.000)	−0.066 (0.000)
All cash consideration (vs. stock or mixed)	0.019 (0.017)	0.021 (0.012)	0.019 (0.017)	0.021 (0.012)
Hostile target response (vs. friendly or neutral)	0.020 (0.185)	0.020 (0.185)	0.019 (0.216)	0.019 (0.216)
Multiple bidders (vs. single bidder contest)			0.009 (0.497)	0.008 (0.501)
Announced in 1980–1989 (vs. 1990–2002)	−0.016 (0.056)		−0.017 (0.050)	
Year fixed effects	No	Yes	No	Yes
Adjusted R^2	0.424	0.436	0.423	0.436
F-value	300.3 (0.000)	115.3 (0.000)	277.2 (0.000)	111.9 (0.000)

Source: Betton, Eckbo, and Thorburn (2008b). The table shows OLS estimates of the initial and final offer premium, defined as $\ln(p_{\text{initial}}/p_{-42})$ and $\ln(p_{\text{final}}/p_{-42})$, respectively, where p_{initial} is the initial offer price, p_{final} is the final offer price in the contest, and p_{-42} is the stock price on day −42 adjusted for splits and dividends. Amihud liquidity is the average value of $|R_i|/(p_i S_i)$ over days $i \in \{-250, -42\}$, where R_i is the % holding period return, p_i is the closing price and S_i is the number of shares traded. Industry is the four-digit SIC code in CRSP. The sample is 4,889 control bids 1980–2002 for U.S. targets with a stock price≥$1 and a market capitalization≥$10 million. p-values are in parenthesis.

the probability that any single shareholder is pivotal for the outcome of the bid becomes arbitrarily small. For such shareholders, the tender criterion in Eq. (1) reduces to:

$$\text{Tender if } b \geq v \tag{2}$$

Since the bidder has no economic incentive to make the bid in Eq. (2), these shareholders are in effect free-riding on a decision by others to tender. Of course, if all shareholders behave this way, the takeover opportunity never materializes.[14]

Making every target shareholder pivotal by a conditional and restricted offer for 100% is unlikely to help. Because the bidder gains control after receiving 50% of the shares, refusing to purchase those shares if she is one share short of 100% is not credible. Also, allowing the bidder to be better informed than target shareholders (about v) does not solve the problem. Individual target shareholders now demand an offer price $b \geq E(v|\text{Offer})$ in order to tender, where the right-hand-side is the expected valuation of the bidder given that he makes an offer. An offer below this expectation leads target shareholders to infer that $b < v$ and therefore to retain their shares. In this case, there does not exist a rational expectations (perfect Bayesian) equilibrium in which the bidder expects to make a profit from the takeover.[15]

There are a number of ways to mitigate the free-rider problem so that the bidder gains on the acquired target shares. Two frequently mentioned mechanisms are post-takeover dilution (Grossman and Hart, 1980b) and pre-takeover toehold acquisition (Shleifer and Vishny, 1986). Post-takeover dilution reduces the "back-end" value of the takeover, and may be enforced through a two-tiered tender offer. The first tier is a bid b while the back end is a minority buyout (enforced by the bidder after acquiring control in the front end) at a lower value $v_d < v$. Alternatively, if fair price rules prevent the minority buyout to take place at a price below the front-end price, the bidder may resort to self-dealing ("asset tunneling") which is harmful to minority shareholders after the takeover. Examples of such dilution techniques are asset sales at prices below market value, transfer pricing favorable to the majority shareholder, excessive compensation schemes, and so on. These schemes create a wedge between the post-takeover share value to the acquirer and minority shareholders and enables the acquirer to make a profit. Although such transfers may enhance the ex ante efficiency of the takeover market, they are controversial and legally difficult to enforce ex post.[16]

A firm contemplating making a bid for the target may also decide to purchase target shares (a toehold) in the market at the pre-bid (no-information) target share price. The implications of such toehold acquisitions for optimal bidding are discussed in detail in

[14] Just as the free-rider problem can discourage value-increasing bids, value-reducing bids—bids where the post-takeover value of the target is less than its pre-offer value—may be encouraged due to a "pressure-to-tender" problem (Bebchuk, 1985): Conditional on the offer succeeding, tendering may dominate retaining and receiving an even lower value. Thus, paradoxically, there may be "pressure-to-tender" when the bidder is value-reducing. The root cause of this result is, as above, that each target shareholder bases the tendering decision on a comparison between b and v, ignoring the pre-takeover value.

[15] Hirshleifer and Titman (1990) prove the existence of a separating equilibrium in which the offer price fully reveals v.

[16] Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2007) survey the opportunities for corporate insiders around the world to dilute minority shareholder value through self-dealings deemed *legal* under a country's corporate laws. Under the European Takeover Directive (article 14), member-states may grant acquirers a squeeze-out right, i.e., the right to compel post-takeover minority shareholders to sell their shares after the acquirer has purchased 90% of the target shares.

the next section. In the context of the free-rider problem, the important point is that the toehold bidder may gain on the toehold while making zero profits on the shares acquired in the formal takeover bid. Let δ denote the fraction of the target post-takeover value that may be diluted ex post, and α the fraction of the target shares held by the bidder prior to the offer, respectively. The bidder makes the conditional unrestricted offer of

$$b^* = (1-\delta)v \tag{3}$$

which yields a bidder profit of

$$v-(1-\alpha)b^* = \alpha v + (1-\alpha)\left(v-b^*\right) = \alpha v + (1-\alpha)\delta v \tag{4}$$

The first term, αv, is the gain on the toehold shares, while the second term is the profits on the shares purchased in the takeover. The second term, $(1-\alpha)\delta v$, shows that dilution is costly for the bidder in that it also reduces the value of the bidder's toehold shares. Thus, the larger the initial stake α, the lower the controlling shareholder's incentive to dilute ex post. In other words, a corporate insider with a larger equity stake is more prone to act in the outside (minority) shareholders' interest (Jensen and Meckling, 1976; Burkart et al., 1998).

3.2. Is the free-rider problem important in practice?

What is the empirical relevance of the free-rider problem in corporate takeovers? The most direct way to evaluate this question is to look at the frequency of (pivotal) blockholders in corporate shareownership structures. A large blockholder likely accounts for the possibility that her tendering decision affects the probability that the offer will succeed. In this case, shareholders are willing to tender at a price lower than indicated by expression (1) above (Bagnoli and Lipman, 1988; Holmstrom and Nalebuff, 1992).[17]

The evidence on corporate ownership structures around the world suggests that the existence or one or more large blockholder is the rule rather than the exception.[18] In the United States and elsewhere, small and midsized publicly traded companies typically have one or more large shareholder (defined as a minimum 5% holding).[19] In large-cap firms, individual (or family) block-holdings are less frequent in the United States; however, large blocks held by financial institutions such as pension funds are common for large firms. As highlighted by Holderness (2006), the evidence challenges the view—originating with Berle and Means (1932)—that U.S. ownership is largely dispersed, and it suggests that free-rider problems in takeovers may be a rarity.[20]

A more indirect way to evaluate the empirical relevance of free-rider problems is to examine characteristics of observed takeover bids. First, the unequal distribution of takeover gains between target and bidder firms—with most if not all of the total gains typically accruing to the target—is often cited in support of the existence of the free-rider problem (Hirshleifer, 1995; Burkart and Panunzi, 2006). However, competition among bidders also lowers the winning bidder's share of synergy gains. Second, toehold bidding—perhaps the most obvious way to mitigate expected free-rider problems—is extremely rare in control-oriented acquisitions (Betton et al., 2007). Third, since merger negotiations per se avoid the free-rider problem,[21] it is interesting to compare offer premiums in mergers and tender offers. Recall from Table 4 that the marginal impact of a tender offer is to *lower* offer premiums. Overall, it is difficult to argue that the large initial offer premiums in takeovers are driven by free-rider problems.

3.3. Premium effects of the introduction of disclosure rules

The 1968 Williams Act, the main federal law governing public tender offers, requires an orderly auction mechanism: the tender offer must be open for a minimum 20 business days; competing bid and material bid revisions automatically extend the offer period by 10 days; target shareholders may withdraw all tendered shares for any reason (typically in response to a higher bid)

[17] In Holmstrom and Nalebuff (1992), there are N target shareholders of equal size, and the bidder needs K of these to tender in order to acquire control. They show that there exists a mixed strategy equilibrium where the takeover succeeds and the bidder makes a positive expected profit. In this equilibrium, individual target shareholders tender with a probability $p=K/N$. Expected profits go to zero when N becomes large.

[18] Following the early international evidence of La Porta, Lopez-de-Silanes, and Shleifer (1999), detailed information on corporate ownership structures has appeared for East Asia (Claessens et al., 2000), Western Europe (Faccio and Lang, 2002; Franks et al., 2005), and the United States (Holderness et al., 1999; Holderness, 2006; Helwege et al., 2007; Dlugosz et al., 2006).

[19] The definition of a block varies in the literature from 5% to 20%. Note that a relatively small block may become pivotal depending on the ownership distribution of the remaining shares. A natural empirical measure of pivotal is the Shapley transformation of the block (Shapley, 1953). The Shapley value is the probability that the block will be pivotal, computed using all possible shareholder coalitions (with the block) in which the coalition determines the voting outcome. See, for example, Eckbo and Verma (1994) and Zingales (1994) for applications in corporate finance.

[20] Holderness (2006) studies a random sample of 10% of the firms trading on the NYSE, Amex, and NASDAQ. Large shareholders (which include institutional holdings) on average own 39% of the voting power of the common stock. Moreover, 96% of the firms have at least one 5%+blockholder, and the average holding of the largest blockholder is 26%. Holderness also reports that 89% of the firms in the S&P 500 Index have large blockholders. Thus, free-rider problems are unlikely. Whether the evidence also challenges the seriousness of the Berle-Means warnings of agency costs associated with delegated management in public firms is, of course, a different issue. It is possible that a large block held by a financial institution (as opposed to an individual investor) carries with it serious agency problems when seen from the point of view of the firm's individual shareholders.

[21] Notice, however, that although the free-rider problem does not exist in terms of the negotiated offer premium, it may reappear during the subsequent shareholder vote over the proposed agreement.

within 15 days; and the bidder must purchase target shares on a pro rata basis among those who tenders.[22] The Williams Act also requires public information disclosure.[23]

The Williams Act was in part a response to perceived takeover abuses in the 1960s, such as "midnight mergers" where the bidder quickly gained control of the target shares using all-cash purchases in the market and privately from blockholders. While the stated intention of the Act is the protection of target shareholders, a concern for potential bidders is that the mandatory disclosure rules also act to increase the ability of potential rival bidders to compete for the target. As pointed out by Grossman and Hart (1980a) and Jarrell and Bradley (1980), an active market for corporate control presupposes that initial bidders expect to have an advantage over potential rivals when search costs are sunk. Mandatory disclosure rules which increase expected competition among bidders possibly raise offer premiums and therefore deter some bids.[24]

Jarrell and Bradley (1980) examine whether the disclosure provisions of the Williams Act have raised tender offer premiums. They find that the average cash tender offer premium increased from 32% to nearly 53% following the passage of the Act in 1968. Consistent with higher premium costs, Schipper and Thompson (1983) present evidence indicating that a sample of frequent acquirers earned significantly negative abnormal returns over the months surrounding announcements of the introduction of the Williams Act. Also, Asquith, Bruner, and Mullins (1983), Loderer and Martin (1990) and others report that gains to bidder firms in mergers are on average lower after 1968.

Nathan and O'Keefe (1989) find that the premium increase after the introduction of the Williams Act is not restricted to cash tender offers: Cash *mergers* experienced an increase in the average premium from 30 to 67%, while security exchange mergers saw an increase in the average premium from 30 to 54%. They also show that the majority of the increase in the average offer premium takes place after 1972. This delay is puzzling and raises the question of whether the premium increase is due to the Williams Act (which was amended in 1970) or to some other economic phenomenon.

The Williams Act introduced both disclosure rules and a minimum 20-day offer period. Providing rival bidders with time to respond to the initial bid (the 20-day wait period) is obviously key to increased competition. Thus, the studies of the Williams Act do not isolate the premium impact of the disclosure rules. Specifically, studies of the Williams Act do not answer the fundamental question of whether the introduction of disclosure rules affect offer premiums in an environment where rival bidders already have time to respond.

Eckbo and Langohr (1989) provide evidence on this question using a different institutional setting. France introduced mandatory disclosure rules for public tender offers in 1970—much like those in the Williams Act. The difference is that France had already established a minimum (four-week) tender offer period much earlier (in 1966). Eckbo and Langohr (1989) find that the average offer premium in successful cash tender offers increased from 34% to nearly 61% after the 1970 disclosure regulations. Since the minimum tender offer period remained at one month throughout their sample period, this indicates that disclosure requirements *alone* can cause a substantial increase in average offer premiums. Eckbo and Langohr (1989) also study a contemporaneous control sample of privately negotiated controlling-block trades, exempt from the 1970 disclosure regulation. Premiums in these alternative control acquisitions did not increase after 1970.

4. Auctions and overbidding incentives

4.1. Takeover auctions

A second work horse in the theoretical literature on takeover bidding is the competitive auction. Here, the bidder faces a single seller in the form of a large target shareholder or a target management with sufficient authority to commit to selling in the auction. As Dasgupta and Hansen (2007) note in their survey, auction theory plays an important prescriptive role: to inform a company's board or regulators about the impact of selling processes or rules on shareholder wealth, efficiency, and welfare. They also note that, for such prescriptions to be useful, the auction model must reasonably mimic the actual takeover bidding environment. One important characteristic of any auction is the seller's commitment to stick to the rules of the game. For auction-theoretic results to apply, the seller must be trying to secure the best price for the firm's shareholders by committing to a selling mechanism.[25] As noted in the introduction, since a publicly traded target's board of directors has a fiduciary obligation to accept the highest offer (provided the board has placed the target "in play"), a takeover is arguably much like an auction even if the target initially negotiates a merger agreement.

[22] Contrary to takeover regulations in many Western countries (Berglof and Burkart, 2003), the Williams Act does not include a mandatory bid rule. A mandatory bid rule requires the bidder to proceed with an offer for 100% of the target shares after acquiring a certain stake in the target (Burkart and Panunzi, 2003). Mandatory bid rules do, however, exist in certain states, including Pennsylvania and Maine. The mandatory bid price varies with jurisdiction, but is typically a function of the price(s) the bidder paid for the initial stake.

[23] A tender offer is disclosed through a 14D filing with the SEC. Also, irrespective of any plans to acquire the target, an investor purchasing 5% or more of the target shares must file Form 13D with the SEC within a ten-day period. The 13D includes statements concerning the purchaser's intention with respect to the eventually purchase of control. Anti-fraud provisions were added to the Williams Act in 1970 to back up these disclosure requirements.

[24] However, severe penalties on the release of false (or misleading) information may benefit some bidder firms by making their otherwise voluntarily disclosed information more credible (Eckbo and Langohr, 1989). This positive effect is greater the lower the correlation between rival bidders' private valuations of the target (i.e., the more unique the bidder's contribution to total synergy creation).

[25] For example, in a first-price auction, in which bidders optimally shave their bids, the seller must be able to commit not to allow further bid revisions by the losing bidder (who, after losing, may want to submit a bid higher than the winning bid).

Table 5
Median percentage bid-jumps in multibid tender offer contests, 1971–1990

	Sample size	% Offer price revision $(p-p_{initial})/p$	% Premium revision $(p-p_{initial})/(p_{initial}-p_{-60})$
I. All multibid contests			
Jump from first to second bid	454	10.00	30.77
Jump from first to final bid	457	14.29	65.08
Average bid-jump throughout contest	457	5.43	16.67
II. Contests where second bid is by initial bidder			
Jump from first to second bid	264	7.91	24.40
Jump from first to final bid	264	13.21	35.93
Average bid-jump throughout contest	264	5.00	14.97
III. Contests where second bid is by rival bidder			
Jump from first to second bid	190	13.90	45.20
Jump from first to final bid	193	17.86	59.70
Average bid-jump throughout contest	193	6.67	22.99

Source: Betton and Eckbo (2000). $p_{initial}$ is the initial bid price and p is either the second or the final bid price (as indicated by the first column). Thus, the third column shows the percent change in the initial bid *price*. p_{-60} is the target share price 60 days prior to the initial bid. Thus, the fourth column shows the percent change in the initial bid *premium*.

The typical assumption is of an open, ascending (English) auction with zero entry and bidding costs, and where the winning bidder pays the second-highest bid.[26] Bidder valuations v (synergies) are private knowledge, but the seller knows the probability distribution function over v, $G(v)$. Since bidders tend to have different skill levels in terms of managing the target assets, it is often assumed that the valuations v are uncorrelated across bidders—a private value. Alternatively, bidder valuations may be correlated—a common value environment which requires bidders to shave their bids in anticipation of the winners curse.

In a common-value setting, bidders receive private and noisy signals as to the true (common) value of the target. Bidding the full value of the signal would cause the bidder with the largest positive signal error to win and overpay (the "curse"). Optimal bidding takes this possibility into account by reducing the bid to the point where the expected value of the bid *conditional on winning* is non-negative. Thus, testing for the presence of a winner's curse is equivalent to testing the hypothesis that bidders are rational (properly shave the bids). This hypothesis is discussed further below. In a private value setting, bidders know their true valuations and thus do not face a winner's curse.

It is also commonly assumed that the bidder's outside option is status quo. That is, the payoff to the bidder is zero when losing the auction. This assumption is effectively relaxed when the bidder has a toehold (Burkart, 1995; Bulow et al., 1999; Betton et al., 2007), or a target termination agreement, or when the takeover is a response to changes in industry competition (Morellec and Zhdanov, 2005; Akdogu, 2007; Molnar, 2008). The toehold provides a positive payoff when the toehold bidder loses to a rival (who purchases the toehold). A termination contract also pays off when the bidder loses and no other bidder wins and the target remains independent. Also, a worsening of the competitive industry equilibrium can place the unsuccessful bidder at a competitive disadvantage vis a vis the winner.

4.2. Preemptive bidding and bid jumps

Takeovers are characterized by large bid jumps. The bid jump from the pre-bid (no-information) target share price to the initial offer price is by far the largest jump in a takeover contest. As shown in Table 5, which is reproduced from Betton and Eckbo (2000), there are significant bid jumps also following the initial bid.[27] The average jump from the initial to the second bid price in the contest is 10%, implying a 31% change in the initial offer premium. The jump from the first to the final bid average 14% (a 65% revision in the initial offer premium), and the average bid-jump throughout the entire contest is 5% (average premium increments of 17%). The evidence of significant bid jumps is consistent with the presence of bidding costs. This in turn support the notion in Fishman (1988) that initial bidders may strategically raise the first bid in an attempt to deter competition.[28]

The high premiums and jumps are consistent with the hypothesis that takeover benefits are in part common to several potential bidders, such as benefits emanating from replacing inefficient target management or using voting control to extract value from ex post minority shareholders in the merged firm. These and other forms of bidder-target complementarities often do not require specialized resources owned by a single potential bidder firm. As pointed out in Section 3.3 on premium effects of mandatory disclosure, in the absence of specialized resources, the first bidder is concerned that the initial bid will alert potential rivals to a profit opportunity.

In his model of preemptive bidding, Fishman (1988) assumes that bidders must pay an investigation cost in order to identify their private valuations of the target. If both bidders enter (so both investigation costs are sunk), an open English auction with

[26] With zero entry and bidding costs, optimal bid increments are infinitesimal, so the winning bidder pays the second highest price whether or not the auction is defined formally as a firs-price or second-price auction.
[27] To my knowledge, this is the only systematic evidence on bid jumps published in the takeover literature.
[28] See also Hirshleifer and Ping (1990) and Daniel and Hirshleifer (2008) for implication of bidding costs for optimal bidding strategies.

costless bidding ensues and the winner pays $b = \min[v_1, v_2]$. However, there may exist an initial bid that deters the second bidder from paying the investigation cost and entering the auction. Specifically, a high initial (all-cash) bid signals that the initial bidder has a relatively high private valuation for the target, which reduces rival bidders' expected value of winning. For a sufficiently large investigation cost, the expected value is negative and the rival does not enter.

Testing preemption arguments is difficult since one obviously cannot observe deterred bids. One must look to auxiliary or related model predictions, and the following results seem relevant in this respect. First, as shown in Betton and Eckbo (2000) and Betton, Eckbo, and Thorburn (2008a), entry of a rival bidder is relatively rapid when it occurs (within three weeks in tender offers). Again, a rapid rival entry response is consistent with relatively low investigation costs—perhaps because takeover benefits are partly common to several potential bidders—requiring a relatively high initial premium to deter entry.

A rapid entry response will also result if potential rival bidders have been able to complete much of their evaluation *prior* to the initial bid. This is possible whenever the corporate resources required to produce synergy gains from the takeover have industry-specific components. In this case, potential rival bidders quickly update their priors of a takeover opportunity with the information in the initial offer—possibly resulting in a higher bid. This hypothesis suggests that takeover announcements are associated with positive industry wealth effects and that rival bidders tend to operate in the same industry as the target.[29]

As indicated earlier, auction outcomes are sensitive to bidder asymmetries. One important form of bidder asymmetry is uneven bidder toeholds. In theory, even small toehold differences can have a large impact on entry and competition (Bulow et al., 1999). In Betton and Eckbo (2000), we show that when a rival bidder enters a takeover contest with a positive toehold, the toehold size is on average of roughly the same size as that of the initial bidder (approximately 5%). It is as if the rival bidder realizes the initial bidder's toehold advantage and wants to neutralize it upon entry. This is also suggestive of correlated bidder private valuations and where the initial bidder may have (often unsuccessfully) attempted to deter competition through jump bidding and toehold acquisitions.

Finally, in Betton and Eckbo (2000) and Betton, Eckbo, and Thorburn (2007) we report that the average offer premium in tender offers where the initial bidder succeeds with the first bid is marginally higher than the average *initial* offer premium in takeover contests that develop multiple bids. This is consistent with the argument that the premiums in single-bid successful contests are preemptive in the sense of Fishman (1988). The premium effect is weak, however, as the probability of rival bidder entry appears unaffected by the initial offer premium (Betton et al., 2008b). Overall, additional work is needed to determine the extent of preemptive bidding in the offer premium data.

4.3. Do target runups cause offer price markups?

Initial takeover bids are typically preceded by substantial target stock price runups (Fig. 1). Runups are typically thought to reflect takeover rumors generated from various public sources, such as Schedule 13(d) filings with the Securities and Exchange Commission (SEC) disclosing stake purchases of 5% or more in the target, media speculations and "street talk". In other words, the conventional view is that runups reflect information about the target that is known to the bidder.[30] Under this view, the runup simply substitutes for an already planned offer premium and does not require the bidder to raise the planned offer price before making the first bid ("the substitution hypothesis").

Schwert (1996) argue that the runup may alternatively reflect an increase in the target's *stand-alone* value and thus require the bidder to mark up the offer price. Since the true cause of the runup is unknown to the negotiating parties, this possibility presents the initial bidder with a dilemma:

> "Suppose that you are planning to bid for control of a company and, before you can announce the offer, the price of the target firm's stock begins to rise coincident with unusually high trading volume. You have not been buying the target company's stock, and there is no reliable evidence to show who has been buying. Do you go forward with the offer exactly as you had planned? Or do you take into account the recent movement in the target's stock price and adjust your bidding strategy?" (Schwert, 1996, p. 153–154)).

Note that this dilemma exists for the *initial* bidder only as any second bidder responds to the initial bid and not to the initial runup per se.

Schwert (1996) examines this markup question by regressing the final offer premium on the pre-bid runup in a sample of 1814 mergers and tender offers from the period 1975–1991. In his analysis, the runup is the cumulative target abnormal stock return from day −42 through day −1 relative to the first bid for the target (day 0), while his proxy for the final premium is the target abnormal return over the event window [−42, 126] (or until target delisting if before day 126). The coefficient on the runup variable in this regression is 1.13, which means that a dollar runup in the target stock price is associated with a final premium that is higher by approximately a dollar. Schwert infers from this evidence that bidders systematically mark up the offer price so that target runups are costly for bidders.

In Betton, Eckbo, and Thorburn (2008b), we revisit Schwert's markup pricing hypothesis using *initial offer prices* directly in more than seven thousand bids for U.S. targets over the period 1980–2002. The evidence indicates a strong positive association between offer premiums and runups: a dollar increase in the runup is associated with an increase of $0.8 in the initial offer price.

[29] For evidence on intra-industry wealth effects of takeovers, see Eckbo (1983, 1992), Song and Walkling (2000), Fee and Thomas (2004), Shahrur (2005) and Section 6 in Betton, Eckbo, and Thorburn (2008a) for a review.

[30] Jarrell and Poulsen (1989) and King and Padalko (2005) conclude that runups are primarily a result of public information. Meulbroek (1992) and Schwert (1996) find greater target runups in cases where the SEC subsequently alleges insider trading.

The paper points out that neither this result nor the results in Schwert (1996) necessarily mean that the markup actually takes place *after* the runup. The "markup" may take place ex ante (before the runup), in which case we're back to the substitution hypothesis.

To illustrate, suppose that total (bidder plus target) takeover synergies are either "high" or "low". If bidders expect competition to drive most of the total gains to the target (as suggested by the evidence on bidder announcement returns), a preemption strategy is to raise the planned offer price for high-synergy targets *ex ante*. If takeover rumors allow outside investors to distinguish high and low synergy targets, target runups and total premiums will be highly correlated in the data even in the absence of any offer price markup ex post. That is, the substitution hypothesis does not rule out a positive cross-sectional correlation between and premiums and runups.

Absent detailed information about the bidder's price-setting process, it is difficult to empirically distinguish Schwert's ex post markup pricing hypothesis from the substitution hypothesis with ex ante markup. However, Betton, Eckbo, and Thorburn (2008b) show that regressions of *bidder* abnormal announcement returns on the *target* runup produces a positive and highly significant coefficient. That is, greater target runups (and thus offer premiums) are associated with greater bidder synergies from the takeover. In other words, the target runup is an empirical proxy for *total* takeover synergies in the cross-section. This result is interesting in out itself (we know of no other know proxies for total synergies), and it suggests that the target runup is unlikely to deter bidder toehold purchases during the runup period. Consistent with this view, Betton, Eckbo, and Thorburn (2008b) also report that while short-term toehold purchases tend to raise the runup, toeholds are associated with lower (not higher) initial and final offer premiums.

4.4. Do bidders properly adjust for "winner's curse"?

As summarized in Section 2.2, bidder gains are on average close to zero, and bidder shareholders have only a fifty-fifty chance of coming out ahead from the takeover announcement. In some cases, bidder losses are so substantial that they suggest a breakdown of the firm's corporate governance system. In light of the poor bidder returns, Roll (1986) suggests that bidder managements may exhibit "hubris" (overconfidence) when competing to win the target firm. While the data appears to reject the joint hypothesis of overbidding and zero total takeover gains (Section 2.1), the potential for falling prey to overconfidence and/or a winner's curse remains an interesting and ongoing research question.[31]

For example, Malmendier and Tate (2008) construct an empirical proxy of CEO overconfidence in 394 large U.S. firms (1980–1994) based on the CEO's personal portfolio decisions (specifically, whether or not they delay executive option exercise beyond some threshold date suggested by rationality). They present two empirical hypotheses: First, the acquisition propensity of overconfident CEOs should be greater than for rational CEOs, in particular when the firm has sufficient internal resources to pay for the target (so the firm does not need to raise external financing). Second, the average merger undertaken by overconfident CEOs should generate less value for the acquirer than those by rational bidders. The sample CEOs undertake about 900 mergers and the two behavioral empirical predictions are supported by the data. The principle of conditioning the tests on some proxy for overconfidence is important. Additional research is needed, however, to indicate whether the same evidence also rejects rational bidder behavior.

To what extent do bidder returns reflect irrational overbidding? Several recent papers estimate bidder returns in successive takeover transactions and find diminishing returns on average.[32] This pattern of bidder abnormal return is consistent with behavioral arguments (overconfidence and a failure to learn from earlier mistakes). However, it is also consistent with neoclassical hypotheses (diminishing returns in a competitive market for corporate control). Moreover, serial acquirers are likely to generate partial anticipation of future takeover events which reduces abnormal stock returns around successive takeover announcements.[33] Overall, the evidence indicates that gains to serial acquirers are positive on average, and one cannot infer from this evidence whether bids properly adjust to a potential winner's curse.

The winner's curse is a concept developed for auction settings where bidder valuations have a common component. At the extreme, every bidder has the *same* valuation for the auctioned item—a "pure" common value setting. An example would be a target where bidders are going to use the target resources simply as a financing vehicle for future investments by the bidder. Or, the change of control may allow the bidder to simply replace inefficient target management. A third example would be that the bidder is purchasing the target purely as a speculation in its future resale value. The point is that specialized resources owned by the bidder is irrelevant for the production of takeover gains. If generating target gains in fact requires unique bidder resources, bidder valuations are to some extent private (not a pure common value).

To illustrate the winner's curse, let each bidder i receive a private signal t_i about the true value of the acquisition before bidding starts. With N bidders, each bidder's valuation is a common function of all the signals: $v_i = v(t_1, t_2, \ldots, t_N)\ \forall i$. That is, at the start of the auction, each bidder has information that, if made public, would affect the remaining bidders' estimate of the value of the acquisition. It is this valuation link between bidders' information signals which, if unaccounted for, leads to the winner's curse.

[31] Unlike a situation where a rational but entrenched CEO overinvests in mergers, the overconfident CEO actually thinks he or she maximizes shareholder value. Thus, while a compensation package exhibiting pay-performance sensitivity may correct the agency problem of the former, it may not work for a CEO exhibiting hubris.

[32] See, e.g., Fuller, Netter, and Stegemoller (2002), Billett and Qian (2005), Croci (2005), Ismail (2006), Ahern (2006), and Aktas, de Bodt, and Roll (2008).

[33] See Malatesta and Thompson (1985) and Eckbo, Maksimovic, and Williams (1990) for models of partial anticipation. Schipper and Thompson (1983) find that firms that announce intentions to undertake entire acquisition programs on average earn significantly positive abnormal stock returns. Song and Walkling (2000, 2005) also present evidence that partial anticipation of takeover activity attenuates bidder announcement returns.

Winning the auction means that the winner had the highest value estimate. Moreover, although each bidder's estimate is an unbiased ex-ante estimate of the common value, the highest of those estimates is biased high.[34]

Suppose there are only two bidders and that the target is worth $v = t_i + t_j$ to each, where each t_i is an independent draw from the uniform [0, 1] distribution.[35] At the start of the auction, each bidder estimates the value of the target as:

$$v_i = t_i + E(t_j) = t_i + 1/2. \tag{5}$$

However, if the bidders are symmetric (each bidder uses the same bid strategy as a function of the signal), conditional on winning in a first-price ascending auction, this estimate changes to:

$$v_i|t_j<t_i = t_i + E(t_j|t_j<t_i) = t_i + t_i/2<t_i + 1/2. \tag{6}$$

That is, assuming the payoff from losing is zero, to avoid the winner's curse, the winner must replace the unconditional expected value of the signal with the lower expected signal conditional on winning, $t_i/2$.[36]

The bid adjustment necessary to correct for the winner's curse increases with the number of bidders and with the degree of uncertainty in the bidder valuations.[37] Conversely, failure to properly correct for the winner's curse causes bidder losses to increase in the degree of competition and valuation uncertainty. Boone and Mulherin (2007a) examines these prediction using a sample of 308 completed takeovers, 1989–1999. Of these, 145 are classified as "auctions" and 163 are "negotiations". In the former, the seller contacted multiple potential buyers, while the latter refers to a sales process in which the selling firm focused on a single buyer. Presumably, final winning bid prices reflect the degree of competition in the private as well as in the subsequent public round of bidding. The authors use data from SEC filings to identify the number of private offers preceding the first public bid.

Accounting for the endogeneity between bidder returns and competition, they reject the hypothesis that bidder returns are negatively related to takeover competition and uncertainty in the value of the target. They also fail to find any negative effects of bidding competition on subsequent post-takeover operating performance. Moreover, they investigate the role of investment banks in the takeover process and conclude that prestigious banks hired by the bidder do not promote the winner's curse. Overall, the authors conclude that "the breakeven returns to bidders in corporate takeovers stem not from the winner's curse but from the competitive market for targets that occurs predominantly prior to the public announcement of bids." (Boone and Mulherin, 2007a, p.1).

4.5. Rational toehold-induced overbidding

Betton, Eckbo, and Thorburn (2007) and Aktas, de Bodt, and Roll (2008) derive optimal bids in a takeover setting where merger agreements are negotiated in the shadow of a competitive auction. As indicated in the introduction, merger agreements must include a fiduciary-out clause: the target board is legally obligated to remain open to higher offers from other bidders, until target shareholders have voted the proposed deal. Betton, Eckbo, and Thorburn (2007) also argue that the fiduciary-out clause has contributed to the widespread use of target termination agreements in merger proposals.[38]

Betton, Eckbo, and Thorburn (2007) derive optimal auction bids when the bidder has both a toehold and a termination agreement. It is instructive to review the optimal bids, as these form the basis for empirical tests also discussed below. The auction setting is one with two risk-neutral bidders with private valuations that are i.i.d. with distribution and density functions $G(v)$ and $g(v)$, respectively. The initial bidder (B1) has toehold $\alpha \in [0, 0.5)$ acquired at the normalized pre-takeover target share price of zero. B1 has negotiated a merger agreement with the target management that includes a termination fee $t \in (0, v)$. A rival bidder (B2) challenges the agreement and forces an open auction. The termination fee is paid by B2 if B2 wins, or by the target if neither B1 nor B2 wins (the target remains independent). The no-bidder-wins outcome occurs with an exogenous probability θ.[39]

Since the termination fee represents a claim of t on the target, the fee reduces B2's private valuation to $v_2 - t$. B2's optimal bid is therefore $b_2^* = v_2 - t$: bidding less risks foregoing a profitable takeover, while bidding more risks overpaying for the target.[40] Given B2's optimal bid, and noting that the net termination fee paid to B1 if B2 wins is $(1-\alpha)t$, B1's expected profits from bidding b is

$$E(\Pi) = \left\{(v)G(b+t) - (1-\alpha)\int_t^{b+t}(v_2 - t)g(v_2)dv_2 + (t + \alpha b)[1 - G(b+t)]\right\}(1-\theta) + t(1-\alpha)\theta \tag{7}$$

---

[34] In a private value auction setting, which is used extensively in Section 4.5 below on optimal toehold bidding, $v_i = v(t_i)$ for all i. That is, given their signals, bidders have complete information about the value of the acquisition to themselves, and there is no bias.

[35] Klemperer (1998) use this setting for the so-called "wallet game". In this game, two students bid for the sum of the cash in their two respective wallets. The price in the ascending auction is raised gradually until one student quits, at which point the winner pays that price for the two wallets.

[36] The symmetric equilibrium bid strategy is $b = 2t_i$. To see why, if both bidders follow this strategy, the bidder i wins if $2t_j < b$, or $t_j < b/2$. The expected gain from winning is $\int_0^{b/2}(t_i + \tilde{t} - 2\tilde{t})d\tilde{t} = t_i(b/2) - (1/2)(b^2/4)$. The bid which maximizes this expected gain is $b = 2t_i$. See Klemperer (1998) for a discussion of other equilibria.

[37] See McAfee and McMillan (1987) for a review.

[38] A termination agreement provides the bidder with a compensation in the form of a fixed fee ("breakup fee") or an option to purchase target shares at a discount ("lock-up option") should the target withdraw from the agreement (Burch, 2001; Officer, 2003; Bates and Lemmon, 2003; Boone and Mulherin, 2007b).

[39] The probability θ captures exogenous factors that may derail merger negotiations or cause all bidders to abandon a takeover auction. For example, the market may revise upwards it's estimate of the target's stand-alone value during the contest, causing the takeover to be unprofitable for both B1 and B2. Betton, Eckbo, and Thorburn (2007) reports that close to 30% of the takeover contests end up in the no-bidder-wins state. This issue is discussed further below.

[40] This optimal bid is the "ratchet solution" in Hirshleifer (1995) adjusted for t.

The right-hand side is the sum of four components. The first three (inside the curly brackets) are, respectively, B1's expected private value, the expected payment for the target, and the expected value from selling the toehold α and receiving t when B2 wins the auction. The fourth term is the expected payoff when no bidder wins. Using Eq. (7), the first order condition for profit maximization, $\partial E(\Pi))/\partial b=0$, implies an optimal bid for B1 of:[41]

$$b_1^* = v_1 - t + \alpha h\left(b_1^*\right), \tag{8}$$

where $h\left(b_1^*\right) \equiv \frac{1-G\left(b_1^*\right)}{g\left(b_1^*\right)}$. Notice the following from Eq. (8):

- The toehold induces "overbidding", i.e., a bid greater than the private valuation v_1. This means that B1 may win even if B2 is the higher-valuation bidder (when $v_1<v_2<b_1^*$).
- The effect of the termination fee is to induce "underbidding". For example, a bidder with zero toehold and a termination agreement walks away from the target when rival bids exceed v_1-t (quitting means receiving t while continued bidding implies an expect profit of less than t). Since B2's bid is also reduced by t (B2 finances the termination fee), t is effectively paid by target shareholders.
- Since B1's optimal bid is increasing in the toehold, the probability that B1 wins the auction is also increasing in the toehold. Since B2's optimal bid is v_2-t, there is no corresponding reduction in the probability that B1 wins deriving from the existence of a termination fee.
- The optimal bid b_1^* is equivalent to the optimal reserve price by a monopolist seller in a "take-it-or-leave-it" offer. This is intuitive since the toehold bidder is part seller (of the toehold) when losing the contest to B2.

Bulow, Huang, and Klemperer (1999) and Dasgupta and Tsui (2003) examine toehold bidding in a pure common-value setting where both B1 and B2 have toeholds but of unequal size (asymmetric toeholds). Toehold bidding induces overbidding also in a common-value setting, and they show that holding B1's toehold constant, B2's probability of winning goes to zero as B2's toehold gets arbitrarily small. Even small differences in toeholds can produce significant benefits for the bidder with the greater toehold. Moreover, the expected winning sales prices are decreasing in the difference between the toeholds of B1 and B2. This suggests an incentive on the part of the target to sell a toehold to B2—and for B2 to purchase a toehold—in order to "even the playing field". Consistent with this, Betton and Eckbo (2000) find that when a rival bidder enters a takeover contest with a toehold, the toehold size is on average of roughly the same size as that of the initial bidder (approximately 5%).

4.6. Does toehold-induced overbidding exist?

In Eq. (8), bidders optimally bid v adjusted for any toehold α and termination fee t. "Overbidding" occurs when $b^*-v>0$, which is an unobservable quantity. Eckbo and Thorburn (2009-this issue) develop an overbidding test which does not require observations on $b^*-v>0$. Their setting is bankruptcy auctions in Sweden, where firms filing for bankruptcy are automatically auctioned off. The auction is open and first-price, and the highest bid determines whether the firms will be continued as a going concern or liquidated piecemeal. As reported by Thorburn (2000), the auctions are quick—lasting an average of two months—and relatively cost-efficient. Moreover, three-quarters of the 260 sample filing firms survive the auction as a going concern. The average auctioned firm has $5 million in sales and assets of $2 million ($8 million and $4 million, respectively, in 2007 dollars), and it has an average of forty-five employees.[42]

In the sample of Swedish bankruptcies, the main creditor is always a single bank. The bankruptcy event effectively creates an instant "creditor toehold" of $\alpha=1$ when the creditor's debt is impaired at filing. A value of $\alpha=1$ follows because the bank, being the secured creditor with an impaired debt claim, is effectively the seller of the auctioned firm. As shown by Hotchkiss and Mooradian (2003) as well (in the context of Chapter 11 sales), a creditor toehold induces overbidding in the same manner as a bidder toehold outside of bankruptcy.

As a monopolist seller, the bank benefits from setting a reserve price in the auction. Swedish bank regulations prevent the bank from bidding directly (which would support a reserve price). However, Eckbo and Thorburn (2009-this issue) observe that the bank often finances the winning bidder and use this observation to motivate the following proposition: Bank financing of a bidder in the auction (say B1) allows the bank to induce B1 to submit a jointly optimized coalition bid b_c^* that implies overbidding. As in Section 4.5, overbidding forces a wealth transfer from B2 to the bank-bidder coalition whenever B2 wins the auction. This potential rent transfer raises expected auction revenue and the bank's expected debt recovery rate, and is in principle sufficiently large to induce B1 to participate in the coalition. One mechanism for the bank to compensate B2 for the cost of overbidding is by granting a lower interest on the loan if B1 wins.

[41] To ensure uniqueness, $G(v)$ must be twice continuously differentiable and satisfy the monotonicity condition $\partial(1-G(v))/\partial g(v)\geq 0$.

[42] By comparison, a majority of Chapter 11 filings are also by small private firms: Chang and Schoar (2007) report average sales of $2 million and twenty-two employees in a large and representative sample of Chapter 11 filings between 1989 and 2003. Bris, Welch, and Zhu (2006) report that the median firm filing for Chapter 11 has assets of $1 million.

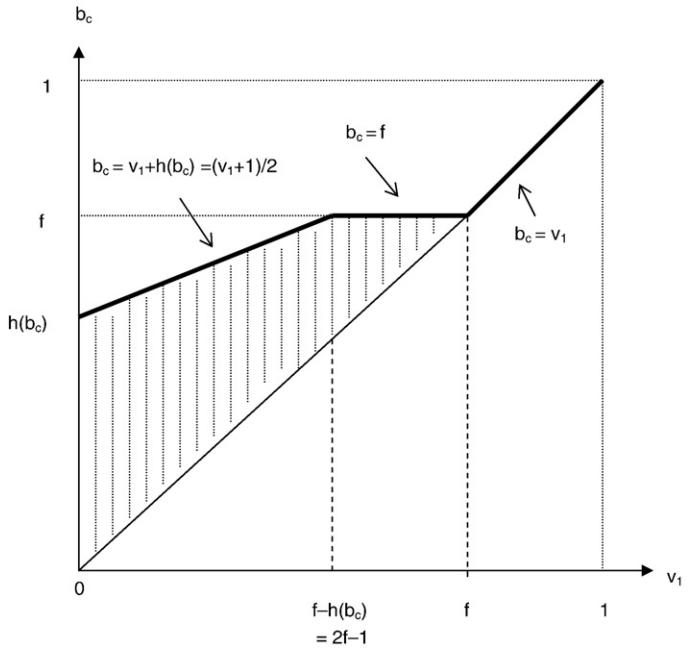

Fig. 2. The bank-bidder coalition's optimal bid, $b_c^*(v_1)$, and the expected amount of overbidding (shaded area), assuming a piecemeal liquidation value l of zero. The figure is drawn assuming bidder valuations are distributed uniform, $v_i \sim U[0,1]$. The coalition-bidder's private valuation is v_1, f is the face value of the bank's debt, and $h(b_c)$ is the inverse hazard rate at b_c. When $v_1 \leq 2f-1$, the coalition fully overbids: $b_c^*=(v_1+1)/2$. When $f>v_1>2f-1$, the coalition partially overbids: $b_c^*=f$. When $v_1 \geq f$, the coalition does not overbid: $b_c^*=v_1$. Source: Eckbo and Thorburn (2009-this issue).

Let f denote the face value of the bank's debt claim. The coalition's optimal bid is then:

$$b_c^* = \begin{cases} v_1 + h(b_c) & \text{if } v_1 \leq f - h(b_c) \quad \text{(unconstrained overbidding)} \\ f & \text{if } f - h(b_c) < v_1 < f \quad \text{(constrained overbidding)} \\ v_1 & \text{if } v_1 \geq f, \quad \text{(no overbidding)} \end{cases} \tag{9}$$

Here, the unconstrained overbidding price is identical to the bid in Eq. (8) but with $\alpha=1$ and a termination fee $t=0$. The key for testability is the constraining effect of the bank-debt face value f on the coalition's optimal bid. The constraint imposed by f is illustrated in Fig. 2 which assumes the uniform distribution, $v \sim U[0,1]$. The horizontal axis plots v_1 and the bold-faced line shows the coalition bids b_c. Each bold-faced segment corresponds to the optimal bids in Eq. (9). The first segment is the unconstrained overbidding price, while the second (horizontal) segment is the constrained overbidding price. Constrained overbidding begins when v_1 is such that the unconstrained bid price equals the face value f. The third segment starts when $v_1 > f$. Here, the bank's debt is fully paid off without overbidding, so that $b_c^*=v_1$. In sum, the coalition optimally overbids *only* if the bank's debt claim is impaired at the outset of the auction as further overbidding just benefits junior creditors.

To develop the overbidding test, let l denote an estimate of the bankrupt firm's piecemeal liquidation value at the beginning of the auction. In Sweden, the bankruptcy trustee publicizes a professional estimate of l before the auction starts. Since l is the sum of the value of the firm's assets if each were sold individually, l effectively plays the role of a price floor for bidders attempting to purchase the firm as a going concern.[43] Introducing $l>0$ lowers overbidding incentives by lowering the constrained overbidding price from f to $f-l$. This in turn lowers the expected amount of overbidding (the shaded area in Fig. 2).

To test this cross-sectional prediction, Eckbo and Thorburn (2009-this issue) scale f with l and regress winning auction premiums on the bank's debt recovery rate *if the firm were to be liquidated piece-meal*: where $r \equiv \min[l/f, 1] \in [0,1]$. Since r captures the degree of bank-debt impairment at the beginning of the auction, the model predicts that winning auction premiums are decreasing in r. The cross-sectional regressions provide robust support for this prediction in the subsample where firms are purchased as going concerns. Moreover, this test rejects overbidding when the theory says there should be none, such as for auctions where the bank's debt is unimpaired ex ante ($l \geq f$) or when the firm ends up being liquidated piecemeal.

The empirical analysis in Eckbo and Thorburn (2009-this issue) is a first step towards testing for the existence of overbidding directly based on auction prices. Empirical evidence on toehold-induced overbidding in takeovers more generally (outside of bankruptcy) is indirect. For example, theory implies that overbidding increases the probability of winning, which is supported by studies of corporate takeover bids with equity toeholds (Betton and Eckbo, 2000; Betton et al., 2007). On the other hand, because one cannot directly verify the existence of the bank-bidder coalitions hypothesized in Eckbo and Thorburn (2009-this issue), one

[43] This is supported by the auction premium data: when the firm is liquidated piecemeal, auction prices average only 8% above l. In contrast, when the firm is purchased as a going concern, the final auction price more than doubles the value l on average. See Eckbo and Thorburn (2009-this issue)

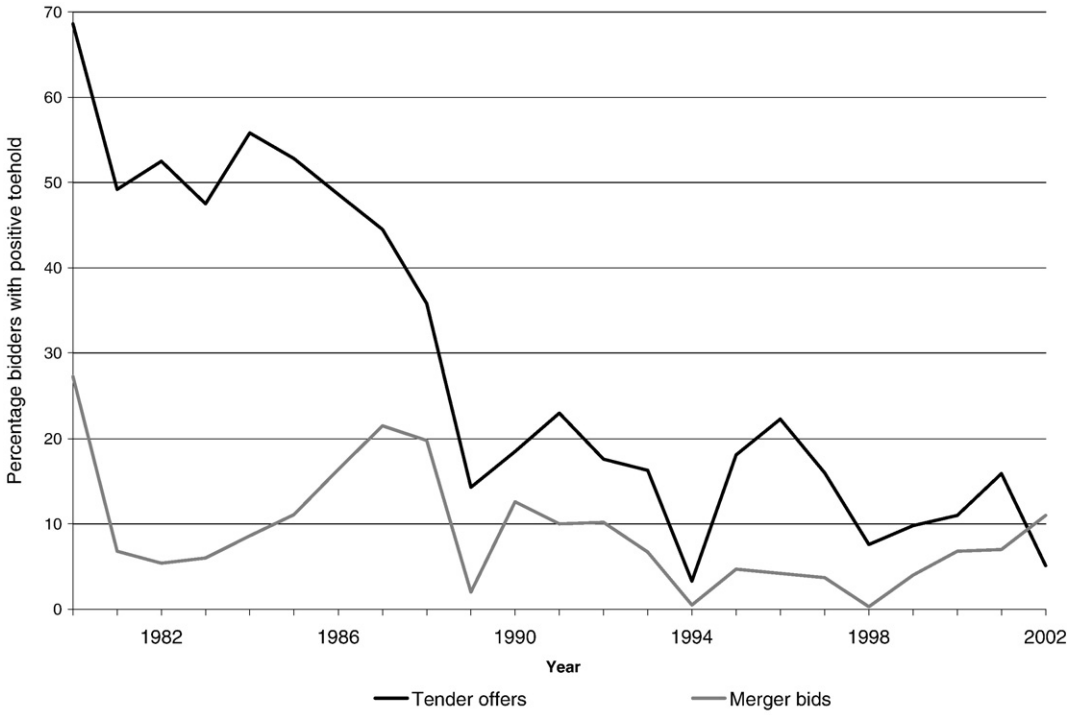

Fig. 3. Annual percentage of initial control bidders with a positive toehold in the target, classified by the type of the initial bid. U.S. public targets. Source: Betton, Eckbo, and Thorburn (2007).

also cannot rule out the possibility that the auction-premium evidence in that paper is the result of other forms of bidding incentives. Eckbo and Thorburn (2009-this issue) formulate but rule out one such alternative, namely that entrenched bank managers attempt to hide non-performing loans from their superiors by colluding with the acquirer to simply "roll over" the debt.

Finally, overbidding may (but need not) result in allocative inefficiency. The inefficiency occurs when the bank-bidder coalition wins against a higher-valuation bidder. To examine this possibility, Eckbo and Thorburn (2009-this issue) estimate the post-bankruptcy operating performance of firms sold as going concern The evidence shows that post-bankruptcy operating performance is independent of overbidding incentives and at par with that of the bankrupt firms' industry rivals.

4.7. The disappearing toehold phenomenon

The case for acquiring a toehold before initiating a takeover bid is compelling. The toehold not only reduces the number of shares that must be purchased at the full takeover premium, it may also be sold at an even greater premium should a rival bidder enter the contest and win the target. This expected toehold gain raises the bidder's valuation of the target, which in turn helps overcome free-rider problems (Section 3.1) and make the toehold bidder a more aggressive competitor in the presence of rivals (Section 4.5). Early empirical research supports the existence of toehold benefits. Walkling (1985), Jennings and Mazzeo (1993), and Betton and Eckbo (2000) show that toehold bidding increases the probability of winning the target. Consistent with entry deterrence effects of toeholds, Betton and Eckbo (2000) and Betton, Eckbo, and Thorburn (2008b) also find that toeholds are associated with lower offer premiums in winning bids.

However, toehold bidding has in fact been declining dramatically over the past two decades and is now rare. This decline is apparent in Fig. 3 which plots toehold data from Betton, Eckbo, and Thorburn (2007). The toeholds in Fig. 3 include target shares held by the bidder long term as well as shares purchased within six months of the actual offer date (short-term toeholds). Betton, Eckbo, and Thorburn (2007) report a sample-wide toehold frequency of 13%. Moreover, the sample-wide frequency of short-term toeholds—defined as target shares purchased within six months of the offer—is only 2%. In sum, toehold benefits notwithstanding, toeholds acquired as part of an active bidding strategy are almost non-existent.

Presumably, rational bidders avoid toeholds as a response to large toehold costs. Several potential sources of toehold costs have been suggested in the literature, ranging from mandatory information disclosure and market illiquidity, to costs associated with target management resistance to the takeover.

Consider first the argument that mandatory disclosure rules make toeholds too costly because they reveal the bidder's intentions early in the takeover process. As discussed above, toehold purchases of 5% or more have triggered mandatory disclosure requirements (13d filings with the Security and Exchange Commission) since the 1968 Williams Act. Also, under the 1976 Hart–Scott–Rodino Antitrust Improvements Act, share acquisitions exceeding a certain threshold ($60 million in

2007) trigger notification to the antitrust agencies. As shown in Fig. 3, however, toehold bidding was relatively common in the early 1980s. The passage of disclosure rules in the 1970s cannot explain this time series pattern. Also, the decline in toehold bidding occurs despite a general increase in market liquidity over the entire sample period.[44] Furthermore, Betton, Eckbo, and Thorburn (2007) report that the average toehold size (when positive) is as large as 20%, and 13% for short-term toeholds. It is difficult to explain the observed bimodal toehold distribution (centered on either zero or large toeholds) by appealing to general market illiquidity.

Goldman and Qian (2005) point to a toehold cost when entrenched target management successfully thwarts the takeover bid. In their model, entrenched target managements may resist a bidder in order to retain private benefits of control. The degree of target entrenchment is unknown ex ante and, in equilibrium, signaled ex post through the size of the bidder's toehold in successfully resisted offers. The idea is that it is more difficult (requires greater target management entrenchment) to successfully defeat bidders with larger toeholds.[45] Successful resistance causes the target share price to drop, and the price drop is greater the greater the bidder's toehold (due to the greater negative signal about target management entrenchment). Bidders trade off expected toehold benefits (greater success probability) with expected toehold costs (greater target price decline when the bid fails), causing some bidders to select small or even zero toeholds. Betton, Eckbo, and Thorburn (2007) test this prediction and fail to find supporting evidence. They infer that the potential for a toehold loss in the event that all bids fail following target resistance is unlikely to explain the disappearing toehold phenomenon.

Betton, Eckbo, and Thorburn (2007) develop and test a model in which bidder toehold costs arise endogenously. As in Goldman and Qian (2005), some target managements oppose a takeover. However, the target decision to oppose is now a direct function of the toehold itself—capturing the notion often heard in practice that toehold bidding is "aggressive". The takeover game starts with the initial bidder approaching the target with an invitation to negotiate a merger. In line with the "fiduciary out" requirement discussed earlier, a merger agreement is followed by a wait period before the shareholder vote during which time the target board must reasonably consider any rival bids that emerges. The expected outcome of this "open auction" period determines the outcome of merger negotiations ex ante. Since a toehold affects the expected auction outcome (as per Eq. (8) above), it also affects the willingness of entrenched target managements to accept the bidder's invitation to negotiate.

If the target management accepts merger negotiations, it issues a target termination agreement to the bidder. If the target management rejects negotiations, however, the bidder foregoes the benefit of the termination agreement and incurs resistance costs during the takeover process. These toehold-induced bidder costs make it optimal for some bidders to approach the target without a toehold. That is, the expected toehold cost creates a *toehold threshold* (a minimum toehold size) below which the optimal toehold is zero.

Betton, Eckbo, and Thorburn (2007) estimate the toehold threshold to be 9% for the average initial bidder. This threshold is consistent with the observation that the distribution of actual toeholds is bimodal, centered on either zero or large toeholds. While nearly 90% of initial bidders have zero toeholds, nonzero toeholds average as much as 20% of the target shares. Under the threshold model, bidders selecting zero toehold find that the toehold threshold is too costly to purchase in the market (e.g. due to market illiquidity). Bidder electing to go for the toehold "jump" the threshold hurdle, producing large average toeholds. The model also predicts that the likelihood of toehold bidding decreases in the toehold threshold estimate, which the empirical evidence supports.

The toehold threshold model is consistent with another stylized fact, namely that toeholds are much more common in hostile than in friendly takeovers. Fifty percent of the initial bidders in hostile contests have toeholds. If target management is expected to resist irrespective of the toehold size, then acquiring a toehold is always optimal.[46] Thus, the toehold threshold model also predicts a higher toehold frequency in hostile bids. This prediction is supported by the evidence, and it is consistent with the observed decline in the frequency of toehold bidding over the 1990s (Fig. 3). The decline coincides with a general reduction in hostile bids due to a widespread adoption of strong takeover defenses such as poison pills.

In the absence of synergistic opportunities with the target ($v=0$), the owner of a toehold may contemplate making a (false) bid in an attempt to put the target in play. That is, the bidder may try to sell the toehold to a potential rival bidder or (anonymously) to an unwitting market anticipating a successful takeover. Bagnoli and Lipman (1996) presents a model with a single bidder selling the toehold shares to individual noise traders through a market maker before calling off the takeover bid. While charges of price manipulation go back at least to the greenmail episodes of the late 1970s, systematic empirical evidence on the feasibility of this type of price manipulation is virtually nonexistent. The context of hostile bids is potentially interesting since hostility may induce the target to produce a white knight committed to purchase the toehold.

4.8. Auctions and fire-sale discounts

A fire-sale discount results when the auction price is below the assets' fundamental value (the value in best alternative use). The literature highlights temporary demand-side conditions that may give rise to such a discount. For example, since financial distress tends to be contagious within an industry (Lang and Stulz, 1992), high-valuation industry rivals may themselves be financially

[44] Small toeholds, for which concerns with liquidity and disclosure are unimportant, can also have significant investment value as they retain many of the strategic benefits of larger ones. Toehold benefits arise as long as the toehold is greater than that of the rival bidder (Bulow et al., 1999; Dasgupta and Tsui, 2004).

[45] Recall that, with optimal bidding, greater toeholds increase the probability that the toehold bidder will win against rival bidders.

[46] Similarly, toehold bidding occurs when the target's optimal strategy is to never resist.

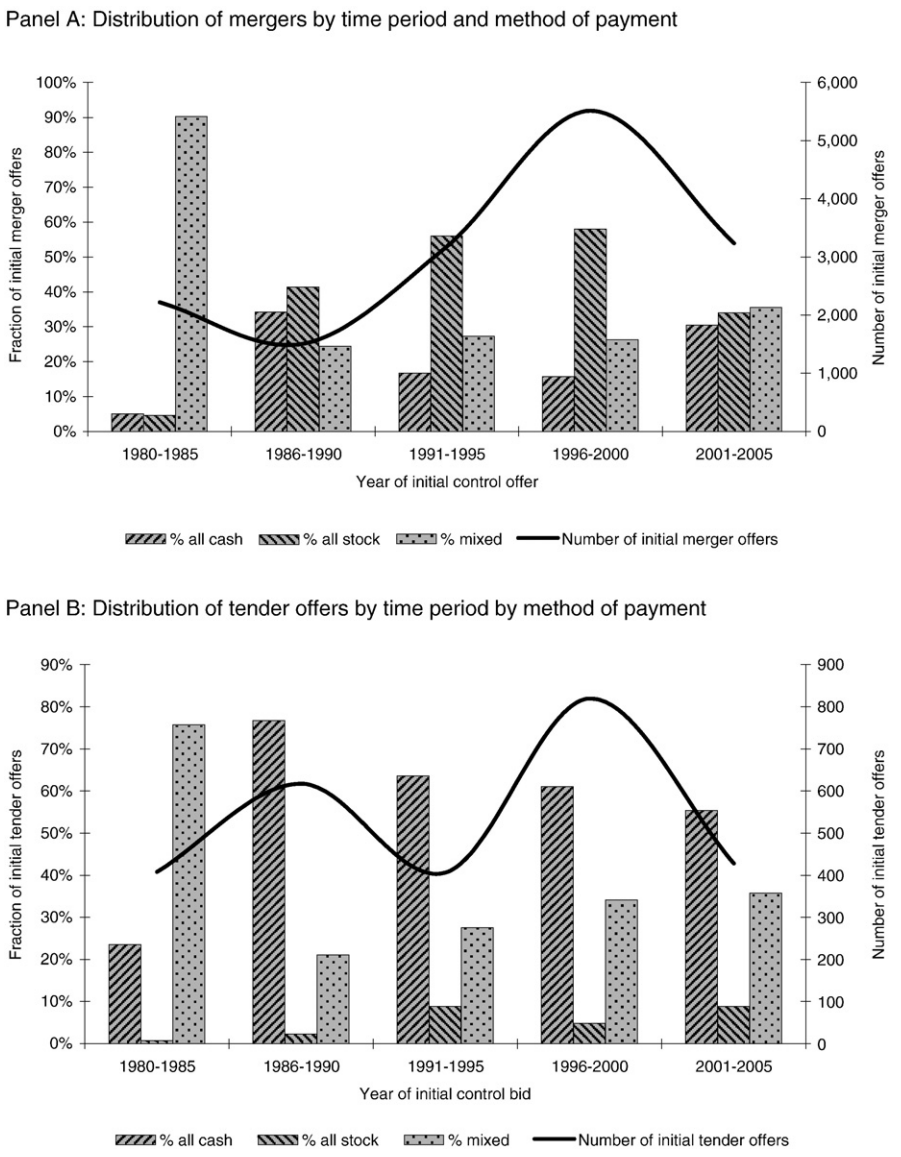

Fig. 4. The initial control bidder's use of all-cash, all-stock, and mixed cash-stock as method of payment. Total sample of 13,503 merger bids and 2678 tender offers with SDC information on payment method. U.S. targets, 1980–2005. Source: Betton, Eckbo, and Thorburn (2008a).

constrained and unable to bid in the auction (Shleifer and Vishny, 1992; Aghion et al., 1992). Industry debt overhang may also attenuate industry rivals' incentive to invest in the distressed firm (Myers, 1977; Clayton and Ravid, 2002). As industry rivals are unwilling to bid, the risk increases that relatively low-valuation industry outsiders win the auction—at fire-sale prices. The chance of this happening is greater for unique or specific assets with few potential buyers (Williamson, 1988).[47]

Eckbo and Thorburn (2008) test the fire-sale hypothesis using automatic Swedish bankruptcy auctions. The Swedish auction setting is particularly interesting in this context as it represents mandatory auctions of entire bankrupt firms as going concerns. The paper estimates a cross-sectional model for the auctioned firm's fundamental value, and computes the difference between actual and model prices. A fire-sale discount is said to exist if this difference is adversely affected by measures of industry-wide illiquidity and financial distress. While there is evidence of fire-sale discounts in auctions that lead to *piecemeal liquidation*, the paper finds no evidence of fire-sale discounts in going-concern premiums. Also, there is no evidence of lower prices when the buyer is an industry outsider, or when the firm is sold back to its previous owner/manager

[47] Several U.S. studies present evidence on fire-sale discounts in voluntary asset sales, both in and out of Chapter 11. For example, Pulvino (1998, 1999) provides evidence of fire-sale discounts for the sale of individual aircrafts. Ramey and Shapiro (2001) and Officer (2007) study liquidity discounts associated with distressed plant closings and corporate targets outside of bankruptcy, and Acharya, Bharath, and Srinivasan (2007) examine recovery rates for U.S. firms defaulting of their debt.

Table 6
Selected hypotheses and U.S. evidence concerning the choice of payment method in takeovers

Theories	Hypotheses	Evidence
A. Taxes and the payment method		
U.S. Internal Revenue Code, Section 368 governing statutory merger.	*H1: Cash deals may be relatively costly as the implied capital gains tax penalty forces higher target premiums.*	Carleton, Guilkey, Harris, and Stewart (1983): Probability of stock offer increases in bidder's market-to-book ratio.
Gilson et al. (1988)	In a cash-for-stock deal, target shareholders pay capital gains tax immediately (the deal is taxable if target shareholders receive less than 50% of the deal in bidder stock). The buyer steps up the tax basis with the takeover premium. In a Stock deal, however, target capital gains taxes are deferred until shares received are sold. No step-up of tax basis for buyer. Buyer in stock deal may make a Section 338 election to be treated as cash deal (Bruner, 2004).	Huang and Walkling (1987), Hayn (1989): Target announcement returns in U.S. deals higher for taxable than tax-deferred transactions. Franks, Harris, and Mayer (1988): Reach similar conclusion for control-oriented takeovers in U.K. However, the all-cash premium effect is present also *before* the introduction on capital gains taxes. Eckbo and Langohr (1989): Find higher target premiums in all-cash tenders offers for control as well as for minority buyouts in France. Brown and Ryngaert (1991): Find empirical support for their proposition that stock should not be used by bidders selecting taxable offers.
B. The payment method choice motivated by asymmetric information		
Myers and Majluf (1984)	*H2: One-sided information asymmetry: Investor concern with adverse selection produces a negative market reaction to the news of a stock deal.*	Travlos (1987), Asquith, Bruner, and Mullins (1987), Servaes (1991), Brown and Ryngaert (1991), Smith and Kim (1994), Martin (1996), Emery and Switzer (1999), Heron and Lie (2004), Schlingemann (2004) and many others show that bidder announcement-induced abnormal stock returns are on average negative in all-stock offers for public targets. However, bidder announcement returns are non-negative in all-stock offers for private targets (Chang, 1998; Fuller et al., 2002; Moeller et al., 2004; Bradley and Sundaram, 2006; Officer et al., 2007).
Hansen (1987) Fishman (1989)	*H3: Two-sided information asymmetry: Paying with securities induce targets to make more efficient accept/reject decisions than with cash. Stock offers are less likely when (i) the bidder has a relatively large total equity size, and (ii) when the target undervalues the bidder's shares.*	Hansen (1987): Probability of stock offer increases in bidder's asset size as well as in the size of its liabilities. Chemmanur and Paeglis (2003): Probability of stock offer increases in a measure of market mispricing of bidder shares and falls as the dispersion of analyst forecast of bidder earnings increases.
	The value of a stock offer is contingent on the true values of both the bidder and the target. A cash offer that undervalues the target will be rejected, while an equivalent stock offer may be accepted because the stock offer will rise in value ex post. This ex post price effect is smaller the smaller the size of bidder's total equity relative to the target's. The more the target undervalues the bidder's stock, the more costly a given stock offer, and the more likely the bidder is to use cash.	Betton and Eckbo (2000): Probability that the target accepts the initial bid in tender offer contests is lower for stock offers than for cash bids. Travlos (1987): Bidder's announcement-induced abnormal stock returns lower for stock offers than for cash bids.
Eckbo, Giammarino, and Heinkel (1990) Berkovitch and Narayanan (1990)	*H4: Two-sided information asymmetry where bidders in equilibrium choose a mix of cash and stock. There exists a fully revealing separating equilibrium in which the greater the proportion of the deal paid in cash, the greater the true value of the bidder.*	Eckbo, Giammarino, and Heinkel (1990), Eckbo and Thorburn (2000): The average announcement-induced abnormal stock returns to bidders are highest for all-cash deals, lowest for all-stock deals, with mixed cash-stock deals in between.
	In Eckbo, Giammarino, and Heinkel (1990), target adverse selection pushes the bidder towards using stock as payment method, while target undervaluation of bidder shares pushes the bidder towards cash. The market uses the proportion of the deal paid in cash to separate low-value from high-value bidders. In equilibrium, bidder announcement-induced abnormal stock returns are an increasing and convex function of the cash portion of the deal. In Berkovitch and Narayanan (1990), the bidder's choice of cash-stock mix affects target returns as well. Greater potential bidder competition raises the optimal amount of cash, and with actual competition all but the lowest type make all-cash offers.	Eckbo, Giammarino, and Heinkel (1990): In cross-sectional regressions, bidder announcement-induced abnormal stock returns are increasing in the cash portion of the deal as predicted. However, the data rejects convexity. Betton, Eckbo, and Thorburn (2008c): Shows frequent use of mixed cash-stock offers in tender offers. Moreover, there is evidence that multiple bids raise the use of cash, however, the amount of stock used in competitive contests remains significant.
C. Capital structure and corporate control motives for the payment method choice		
Ross (1977) Jensen (1986)	*H5: The payment method is selected as part of a broader capital structure choice. Moreover, some bidder managements select (possibly debt financed) cash over stock as payment method in order to avoid diluting their private benefits of control in the merged firm.*	Capital structure: The cash portion of the bid must be financed internally or by a previous security issue. Schlingemann (2004), Toffanin (2005) find a link between the market reaction to takeover announcements and financing decision in the previous year.

Table 6 (*continued*)

Theories	Hypotheses	Evidence
Harris and Raviv (1988) Stulz (1988)	In Ross (1977) increased leverage raises expected managerial-specific bankruptcy costs. In Jensen (1986), paying with cash drains free-cash flow and reduces agency costs. In Harris and Raviv (1988), Stulz (1988), managers act to protect private benefits of control.	Yook (2003) find greater bidder gains in all-cash offers when the takeover causes down-grading of the merged firm's debt (due to increased leverage). The results are consistent with agency costs of free cash flow (Jensen, 1986). Control: Amihud, Lev, and Travlos (1990), Martin (1996), Ghosh and Ruland (1998) find that bidder management shareholdings in the U.S. have negative effect on stock financing. Studying European mergers, Faccio and Masulis (2005) find that corporate control incentives to choose cash are particularly strong when in bidder firms with relatively concentrated shareownership structures. Martynova and Renneboog (2006) finds a link between the quality of a country's corporate governance system and the market reaction to stock as payment form.
D. Behavioral motives for the payment method choice		
Shleifer and Vishny (2003)	*H6: Bidders are able to sell overpriced stock to less overpriced targets*	The propensity of all-stock offers increases with M/B ratios (Rhodes-Kropf et al., 2005; Ang and Cheng, 2006; Dong et al., 2006). This supports the behavioral argument provided M/B is a fundamental driver of takeovers.
Rhodes-Kropf and Viswanathan (2004)	Bidders attempt to cash in on a temporary market overvaluation of their stocks. In Shleifer and Vishny (2003) they succeed because targets have "short time horizon". In Rhodes-Kropf and Viswanathan (2004) they succeed because targets accept more bids from overvalued bidders during market valuation peaks because they tend overestimate synergies during these periods.	Harford (2005): A macroeconomic measure of capital liquidity (interest rate spreads) drives merger activity and drives out M/B as a predictor of merger activity. This is inconsistent with the behavioral argument. Betton, Eckbo, and Thorburn (2008c): There are nearly as many mixed cash-stock offers as all-stock offers, also in the recent period of high market valuations and peak merger activity (1996–2000). Mixed offers are an enigma in the model of Shleifer and Vishny (2003). The fact that the substantial market runup prior to year 2000 did not induce a greater use of all-stock offers as a proportion of all merger bids is inconsistent with the behavioral argument.

(a saleback). The evidence also indicates that the main creditor (the bank) counters the potential for excessive liquidation by sometimes promoting a pre-filing private workout (in the form of a sales proposal), or a "prepackaged" bankruptcy filing. In sum, the Swedish auction bankruptcy system appears to generate a degree of bidder competition that is sufficient to avoid serious concerns with auction fire-sales.

5. Strategies for the payment method

5.1. Frequency of payment forms

Takeovers are settled in cash and various forms of securities. The cash amount is typically financed using accumulated retained earnings (financial slack) or debt issues prior to the takeover. The merger agreement sets out how the bidder will settle any non-cash portion of the merger payment. Frequently used contingent payment forms include stock swaps, collars, clawbacks and earnouts.[48] Contingent payment forms allow bidder and target shareholders to share the risk that the target and/or bidder securities are overvalued ax ante.

When the bidder pays the target in the form of bidder stock, the merger agreement specifies the exchange ratio (the number of bidder shares to be exchanged for each target share). A collar provision provides for changes in the exchange ratio should the level of the bidder's stock price change before the effective date of the merger. This helps insulate target stockholders from volatility in the bidder's stock price. Collar bids may have floors and caps (or both), which define a range of bidder stock prices within which the exchange ratio is held fixed, and outside of which the exchange ratio is adjusted up or down. Thus, floors and caps guarantee the target a minimum and a maximum payment.

The total payment to target shareholders may also be split between an upfront payment and additional future payments that are contingent upon some observable measure of performance (earnouts, often over a three-year period). This helps close the deal when the bidder is particularly uncertain about the true ability of the target to generate cash flow. It provides target managers with an incentive to remain with the firm over the earnout period, which may be important to the bidder. The downside is that the

[48] Officer (2004, 2006), Kohers and Ang (2000), Cain, Denis, and Denis (2005).

earnout may distort the incentives of target managers (an emphasis on short-term over longer-term cash flows), and it may induce the new controlling shareholder (the bidder) to manipulate earnings in order to lower the earnout payment. Thus, earnouts are not for everyone.

Betton, Eckbo, and Thorburn (2008a) show the distribution of all-cash, all-stock, and mixed cash-stock offers in their sample of 13,503 initial merger bids and 2678 initial tender offers from the 1980–2005 period. This information is reproduced in Fig. 4. For the overall sample, 26% of the initial bidders use the all-cash method while the groups of all-stock and mixed offers each cover 37% of the initial bids. The use of the various payment methods clearly differs between merger bids and tender offers: the majority of tender offers use all-cash or a mix of cash and stock, while the majority of merger bids are in the form of all-stock (with the exception of the 1980–1985 period when 90% of the initial merger bids offered a mix of cash and securities). Importantly, comparing the two subperiods 1990–1995 and 1996–2000, the percentage all-stock offers in initial merger bids were approximately 55% in *both* periods. In other words: (1) nearly half of the initial merger bids in the 1990s use some cash as payment, and (2) the percentage all-stock merger bids remained unaffected by the significant runup in overall market valuations in the 1996–2000 period.

Table 6 summarizes a number of economic hypotheses and related empirical evidence concerning the choice of payment method. The associated empirical evidence is a combination of determinants of the probability of a specific payment method choice (e.g. all-cash versus all-stock), and announcement-induced abnormal stock returns as a function of the payment method. The hypotheses deal with tax effects, deal financing costs under asymmetric information, agency and corporate control motives, and behavioral arguments. These hypotheses are not necessarily mutually exclusive, so a given payment choice may reflect elements of several theories. I discuss each of these hypotheses next.

5.2. Taxes

The U.S. Internal Revenue Code (IRC) requires target shareholders to immediately pay capital gains taxes in an all-cash purchase. If the merger qualifies as a tax-free reorganization under Section 368 of IRC, for example by using all-stock as method of payment, target shareholder capital gains taxes are deferred until the shares received in the deal are sold. Mixed cash-stock offers are treated as either all-cash bids or the stock part is treated as an all-stock bid depending on the cash portion and other characteristics of the deal. There is a carry-over of the tax basis in the target to the acquiring company, unless a 338 election is made. Under a 338 election, there is a step-up of the tax-basis of the target assets to the price paid in the takeover (Bruner, 2004). Such elections imply a capital gains tax in the target, and are used only in rare circumstances such as when there are substantial target net operating losses (NOLs) due to expire, or when the target is a subsidiary.

Given these differences in the tax treatment, there is little doubt that taxes play an important role in the bidder's choice of payment method. The more difficult empirical issue is whether the bidder in all-cash offers must pay target shareholders a compensation up front both for the realization of a potential capital gains tax penalty and for the value of the target's unused tax benefits. This depends, of course, on the relative bargaining power of the bidder and the target and is therefore transaction specific. For example, targets that have low-cost substitute ways of capitalizing on unused tax benefits will force bidders to pay for these in the deal (Gilson et al., 1988).

Hypothesis H1 in Table 6 holds that targets will receive higher offer premiums in all-cash bids than in all-stock offers, where the difference is compensation for the capital gains tax penalty inherent in the cash bid. Early studies that classify takeover premiums according to the payment method include Huang and Walkling (1987) and Hayn (1989) on U.S. data, and Franks, Harris, and Mayer (1988) and Eckbo and Langohr (1989) on acquisitions in the U.K. and France, respectively. This evidence shows that takeover premiums are indeed significantly greater in all-cash deals that in all-stock offers, which is consistent with H1. Also, Brown and Ryngaert (1991) find empirical support for their hypothesis that stock are less likely to be found in taxable offers (offers where less than 50% of the offer is to be paid in bidder stock).

On the other hand, Franks, Harris, and Mayer (1988) show that takeover premiums in the U.K. were greater in cash deals even *before* the introduction of capital gains taxes. Moreover, Eckbo and Langohr (1989) argue that for a tax compensation to induce tendering behavior, it must be included in the value of the option to tender (as opposed to keeping) the target shares. They approximate this option value with the difference between the offer price and the expected post-offer target share price, and find that this difference is indistinguishable across all-stock and all-cash offers. They also show that the larger total premium in all-cash offers carries over to minority buyouts which convey few if any bidder tax benefits (as the two firms are already consolidated for accounting purposes). This evidence does not support the view that the larger takeover premiums observed in all-cash deals are driven by the tax hypothesis H1.

5.3. Information asymmetries

Hypotheses H2–H5 in Panel B of Table 6 suggest that the payment method choice may be economically important—and give rise to premium effects—even in the absence of taxes. When the bidder and target are asymmetrically informed about the true value of their respective shares, the payment method may cause information revelation and affect both the division of synergy gains and the probability that the offer is successful. Hypothesis H2 is motivated by the adverse selection argument of Myers and Majluf (1984) and the associated financing "pecking order" suggested by Myers (1984). H2 focuses on the implication for the market's reaction to the all-stock vs. all-cash announcement: Equity issues to relatively uninformed target shareholders may cause a negative market reaction as investors hedge against the possibility that the bidder's stock is overpriced.

There is substantial empirical evidence that seasoned equity offerings are on average met with a negative market reaction (approximately −3%)—even when the SEOs are fully underwritten by reputable investment banks. This is consistent with the hypothesis that outside investors are somewhat nervous that the typical equity issue may be overpriced—despite the substantial due diligence effort and reputational risk exposure of underwriters. The evidence on bidder returns by several of the studies summarized in Tables 1 and 6 indicates that all-equity acquisition announcements also tend to cause a statistically significant (approximately) 1% price bidder price drop when the target is a public company.[49] However, as discussed above (Table 2), bidder announcement returns are non-negative (or even positive) in all-stock offers for *private* targets.

Thus, it appears that the overall information impact of the stock sale in all-stock takeovers is dominated by other offer characteristics for some bidders. Disentangling the information content of the payment method choice therefore requires cross-sectional restrictions on bidder announcement returns based on theory. Hansen (1987), Fishman (1989) and Eckbo, Giammarino, and Heinkel (1990) provide theoretical analyses that incorporate adverse selection but where the bidder's choice of payment method is modeled explicitly.

An important insight of Hansen (1987) is that ex-post means of payments such as stock can increase the seller's revenue beyond what cash payments can do.[50] This point is easily illustrated using our second-price, independent private value auction with two bidders ($v_1 > v_2$). If bidder 1 (B1) wins with an all-cash offer, the target receives v_2 (the second price). Alternatively, with all-stock as the payment method, the bidder offers the target the ownership fraction z_i in the merged firm. Suppose B1 and B2 have the same stand-alone value v. The optimal bid is the fraction z_i which satisfies

$$(v + v_i)(1 - z_i) = v, \tag{10}$$

or $z_i = v_i/(v + v_i)$. This leaves each bidder with a post-acquisition value equal to the pre-acquisition (stand-alone) value. If B1 wins, the target receives

$$z_2(v + v_1) = \frac{v + v_1}{v + v_2} v_2 > v_2 \tag{11}$$

since $v_1 \geq v_2$. In other words, the all-stock offer extracts a higher revenue from the winning bidder than does the all-cash bid, resulting in more efficient sell decisions by the target.[51]

Another insight is that all-stock payment may increase the expected deal value for the bidder if there is little or no uncertainty concerning the true bidder value. Consider a single bidder B who has all the bargaining power. Denote B's with-synergy value as $v_B \equiv v + v_i$. Assume v_B is known to everyone, and that B1 only knows the probability distribution over the true target value, $v_T \in [\underline{v}_T, \bar{v}_T]$, where $\underline{v}_T < \bar{v}_T$. Moreover, suppose B's strategy is to ensure bid success.[52] The all-cash offer is therefore $c = \bar{v}_T$. This means that B expects to overpay for the target by the amount $\bar{v}_T - E(v_T|\text{accept})$, where the expectation is conditional on the target accepting the bid. The corresponding all-stock offer solves $z(v_B + \bar{v}_T) = \bar{v}_T$, or $z = \bar{v}_T/(v_B + \bar{v}_T)$. The expected overpayment cost is now

$$z[v_B + E(v_T|\text{accept})] - E(v_T|\text{accept}) = \frac{v_B}{v_B + \bar{v}_T}[\bar{v}_T - E(v_T|\text{accept})]. \tag{12}$$

Since $v_B/(v_B + \bar{v}_T) < 1$, the expected overpayment cost of securities is less than that of cash, reflecting the contingent nature of stock as payment form (payment in shares causes the target to share in the overpayment ex post). Cash, on the other hand, precommits the bidder to a target value ex ante.

If we allow also v_B to be private information (two-sided information asymmetry), then the above preference for a stock offer is reversed provided the bidder shares are sufficiently undervalued by the target. With two-sided information asymmetry, let $\hat{v}_B$ denote target beliefs about bidder value. In this case, the all-stock offer which guarantees success solves $z(\hat{v}_B + \bar{v}_T) = \bar{v}_T$, and the difference between the expected overpayment cost of an all-stock and an all-cash offer becomes

$$\bar{v}\frac{(v_B - \hat{v}_B) - (\bar{v}_T - E(v_T|\text{accept})}{v_B + E(v_T|\text{accept})} \tag{13}$$

which is positive or negative depending on whether the target undervalues ($v_B - \hat{v}_B > 0$) or over-values ($v_B - \hat{v}_B < 0$) the bidder shares, respectively. Consistent with this, Chemmanur and Paeglis (2003) find that the probability of a stock offer falls when measures of bidder share underpricing increase.

[49] See, e.g., Travlos (1987), Asquith, Bruner, and Mullins (1987), Servaes (1991), Brown and Ryngaert (1991), Martin (1996), Emery and Switzer (1999), Heron and Lie (2004), Schlingemann (2004). Because the level of communication between bidder and target management teams in merger negotiations is greater than that between underwriters and the market in SEOs, the potential for adverse selection is also smaller, thus the smaller price drop in all-equity bids than in SEOs.

[50] See also Hansen (1985) and DeMarzo, Kremer, and Skrzypacz (2005), and Dasgupta and Hansen (2007) for a review.

[51] In Fishman (1989), the alternative to cash is a debt instrument secured in the *target's* asset. This eliminates target uncertainty about the true value of the bidder's payment also for all-security offers and leads to efficient target accept/reject decisions.

[52] This bid strategy is maintained in the model of Eckbo, Giammarino, and Heinkel (1990). In Hansen (1987), high-value bidders separate themselves by lowering their all-stock offers z, which is costly as it reduces the probability that the target will accept. The signaling cost is the reduction in the bidder's expected synergy gains from a reduction in z.

As discussed earlier (Fig. 4), mixed cash-stock offers are pervasive over the entire 1980–2005 period. Eckbo, Giammarino, and Heinkel (1990) and Berkovitch and Narayanan (1990) model equilibrium mixed offers.[53] In the separating equilibrium of Eckbo, Giammarino, and Heinkel (1990), bidder types are separated by the fraction of the total target payment that is paid in cash. Consistent with a separating equilibrium, Eckbo, Giammarino, and Heinkel (1990) and Eckbo and Thorburn (2000) find that abnormal announcement returns are on average highest in all-cash offers, lowest in all-stock deals, with mixed offers in between.[54]

Eckbo, Giammarino, and Heinkel (1990) present cross-sectional regressions tests of their signaling model. To illustrate, let γ_j denote the announcement-induced bidder abnormal return. The separating equilibrium implies that

$$\gamma_j = h_j\left(\frac{c_j}{v_T}\right), \quad h_j', h_j'' > 0, \tag{14}$$

where c_j is the cash payment, v_T is the average pre-bid target value, and the superscripts denote first and second derivatives of the nonlinear signaling function h, respectively. That is, in the separating equilibrium, the market reaction to the takeover announcement is an increasing and convex function of the cash portion of the deal. Since the variables may be readily estimated, this theory is testable via a cross-sectional regression of the form

$$\gamma_j = \delta_0 + \delta_1\left(\frac{c_j}{v_T}\right) + \delta_2\left(\frac{c_j}{v_T}\right)^2 + \ldots + u_j, \quad j = 1, \ldots, N. \tag{15}$$

The first regressor provides a test for the "increasing" part ($\delta_1 > 0$) and the second for convexity ($\delta_2 > 0$). The regression tests confirm $\delta_1 > 0$, however, the estimate of δ_2 is indistinguishable from zero across a number of different tests. Additional empirical tests are required to sort out why convexity fails.[55]

5.4. Capital structure and control motives

Under hypothesis H5 in Panel C of Table 6, the payment method is selected as part of a broader capital structure choice. Moreover, some bidder managements select cash over stock to avoid diluting private benefits of control. Attempts to link the payment method choice to financing sources for the cash portion of the bid are only starting to emerge. Schlingemann (2004) and Toffanin (2005) examine whether the market reaction to the payment method choice is a function of the type of cash financing. While the market is aware of any pre-bid public security issues, the acquisition bid announcement possibly resolves uncertainty regarding the use of the issue proceeds. If this resolution is economically important, the source of financing for the cash portion of the bid will affect the market reaction to the takeover attempt. The empirical results indicate a prior-cash-financing-source component in acquisition announcement returns.

Schlingemann (2004) reports that, after controlling for the form of payment, financing decisions during the year before a takeover play an important role in explaining the cross section of bidder gains. Bidder announcement period abnormal returns are positively and significantly related to the amount of ex ante equity financing. This relation is particularly strong for high Q firms. He further reports a negative and significant relation between bidder gains and free cash flow. This relation is particularly strong for firms classified as having poor investment opportunities. The amount of debt financing before a takeover announcement is not significantly related to bidder gains. Interestingly, Toffanin (2005) finds that the well-known positive market reaction to all-cash bids requires the cash to have been financed either using internal funds (retained earnings) or borrowing. All-cash acquisitions financed by a prior equity issue earn zero or negative abnormal returns.

Early theories incorporating private benefits of control in the contexts of takeovers and capital structure choice are Stulz (1988) and Harris and Raviv (1988). In our context, an all-cash offer preserves the bidder's control position, while an all-stock offer may significantly dilute this position (e.g. a "merger of equals"). The potential for control dilution may therefore drive the use of cash. Several empirical papers examine the payment method choice from this angle. For example, Amihud, Lev, and Travlos (1990), Martin (1996), Ghosh and Ruland (1998) all find that bidder management shareholdings in the U.S. have negative effect on stock financing. Similarly, studying European mergers, Faccio and Masulis (2005) find that corporate control incentives to choose cash are particularly strong when in bidder firms with relatively concentrated shareownership structures. Overall, corporate control motives are likely to play a role in some all-cash mergers. Martynova and Renneboog (2006), who also examine acquisitions in Europe, find a link between the quality of a country's corporate governance system and the market reaction to stock as payment form. All-stock offers are more likely in countries with greater levels of shareholder rights protection.

[53] In Hansen (1987) and Fishman (1989), bidders select between all-stock and all-cash offers, but do not mix the two.

[54] These two studies use mergers in Canada where offering less than 50% of the deal in cash does not trigger capital gains taxes. In the U.S., the tax code confounds the analysis as it in of itself discourages mixed offers where the cash portion exceeds 50% (Brown and Ryngaert, 1991).

[55] Note that the equilibrium signaling function h_j in Eq. (14) holds for a *single* bidder j. Identifying h_j via cross-sectional tests therefore requires the additional assumption that bidder private information is independently and identically distributed across takeovers (so $h_j = h\ \forall j$). Violation of this cross-sectional assumption creates a family of convex signaling curves and thus an identification problem. For example, increases in the variance of the distribution over bidder j private information causes the theoretical h_j function to rotate in the (γ_j, h_j) space.

5.5. Behavioral arguments for all-stock payment

Even in the absence of synergy gains, a merger may be in the interest of bidder stockholders if the alternative of no merger is worse:

> "From our perspective, the central feature of this [AOL Time Warner] acquisition is not technological synergies, but rather the attempt by the management of the overvalued AOL to buy the hard assets of Time Warner to avoid even worse returns in the long run." (Shleifer and Vishny, 2003, p. 295).

This "market-driven merger" hypothesis is typically discussed in the context of merger waves, largely because merger waves are correlated with economic expansions and high stock market valuations.[56] The main idea is that bull markets may lead bidders with overvalued stock as currency to purchase the assets of undervalued (or less overvalued) targets (H6).

In Shleifer and Vishny (2003), target managements accept overpriced bidder stock as they are simply assumed to have a short time-horizon. In Rhodes-Kropf and Viswanathan (2004), rational (Bayesian) managers accept too many all-stock merger bids when the stock market booms and too few when the market is low. In their model, the market's pricing error has two components, one economy-wide and another that is firm-specific. When receiving a bid, the target attempts to filter out the market-wide error component. The Bayesian update puts some weight on there being high synergies in the merger, so when the market-wide overvaluation is high, the target is more likely to accept the offer. In other words, bids tend to look better in the eyes of the target when the market is overvalued.

Rhodes-Kropf, Robinson, and Viswanathan (2005), Ang and Cheng (2006) and Dong, Hisrshleifer, Richardson, and Teoh (2006) find that merger waves coincide with high M/B ratios. One argument is that the M/B ratio is a reliable proxy for market overvaluation and that investor misvaluations tend to drive merger waves. High market valuations may be a fundamental driver of merger waves as bidders attempt to sell overpriced stock to targets (and succeed). Harford (2005) argues instead that the driver of merger waves is market liquidity, and that market liquidity is the fundamental driver of *both* M/B ratios and merger waves. He constructs a measure of aggregate capital liquidity based on interest rate (default) spreads, and uses this measure in a "horse race" with M/B ratios in predicting industry merger waves. He finds that waves are preceded by deregulatory events and high capital liquidity. More importantly, he shows that the capital liquidity variable eliminates the ability of M/B ratios to predict industry merger waves, and concludes that aggregate merger waves are caused by the clustering of shock-driven industry merger waves, not by attempts to time the market.

When evaluating market-driven merger hypotheses, it is also important to look at the proportion of all-stock mergers in the overall population. As pointed out earlier (Fig. 4), there are nearly as many mixed cash-stock offers as all-stock offers, even in the recent period of high market valuations and peak merger activity (1996–2000). Because mixing cash and stock increases the ability of undervalued bidders to separate out from the pool of overvalued bidders (Eckbo et al., 1990), the substantial presence of mixed offers undermines the pooling equilibrium of Shleifer and Vishny (2003). Also, the finding that the substantial market runup prior to year 2000 did *not* induce a greater use of all-stock offers as a proportion of all merger bids further undermines the behavioral argument. In sum, while some bidders undoubtedly get away with selling overpriced stock to their targets, there is little systematic evidence that this determines the form of payment in takeovers.

6. Offer premiums and poison pills

A poison pill ("shareholder rights plan") is a permanent threat to dilute the value of a blockholder—typically defined as one holding 15% or more of the company's stock. The dilution takes place by allowing shareholders other than the blockholder to purchase (or exchange old for) new shares at half price. As this right is akin to a dividend, the pill may be adopted by the board anytime (including the day after receiving an unsolicited bid—a "morning after pill") and without shareholder vote. Since, to my knowledge, no bidder has yet triggered a pill, the perceived cost of triggering must be high, effectively forcing the would-be acquirer to negotiate with the target board and management. Should the target refuse to negotiate (appealing to the board's right to "just say no"), the only way around the pill appears to be to launch a proxy contest simultaneously with the offer. If the proxy contest succeeds, the bidder replaces the board with directors who are willing to rescind the pill. Board classification (staggered election of directors), however, prevents this strategy from working (Bebchuk et al., 2002, 2004; Bebchuk and Cohen, 2005).[57]

The number of hostile takeovers has declined dramatically after the 1980s—the decade where pill adoptions became popular (Comment and Schwert, 1995; Betton et al., 2008a). Defenders of poison pills argue that a pill enhances shareholder wealth by improving the target's bargaining strength (conditional on receiving a bid). This argument suggests that poison pills should be associated with higher takeover premiums. However, the evidence in Table 4 shows that targets with poison pills receive offer

[56] There is substantial evidence of industry-clustering of mergers (Mitchell and Mulherin, 1996; Mulherin and Boone, 2000; Andrade, Mitchell, and Stafford, 2001; Maksimovic and Phillips, 2001; Andrade and Stafford, 2004; Harford, 2005). Merger waves are also affected by industry deregulations, such as that of the airline industry in 1970s (Spiller, 1983; Slovin et al., 1991) and of the utility industry in 1992 (Jovanovic and Rousseau, 2004; Becher et al., 2008).

[57] Masulis, Wand, and Xie (2007) report that acquisition announcement-period stock returns are significantly lower for bidders with staggered boards, possibly because board classification reduces forced board turnover and quality. On the other hand, Bates, Becher, and Lemmon (2008) find that board classification does not reduce the probability that a firm, once it is targeted, is ultimately acquired. Moreover, targets with classified boards appear to extract premiums equivalent to those of single-class boards. Rose (2008) concludes that the presence of staggered boards have more of a detrimental impact of firm value when management is relatively entrenched.

premiums that are on average indistinguishable from offer premiums received by non-pill targets. A similar result has been reported by several studies, including Comment and Schwert (1995), Field and Karpoff (2002), and Heron and Lie (2006).

What explains the surprising neutral impact of pills on observed offer premiums? Possible interpretations include the following:

H1. Poison pills do not convey bargaining power.

H2. Poison pills convey bargaining power and increases takeover premiums relative to what premiums would have been for the same target without a pill.

H3. Poison pills convey bargaining power which is used to benefit target management at the expense of target shareholders.

H4. Poison pills provide bargaining power, but "shadow" pills are as effective as adopted pills.

Hypotheses H2–H4 maintain that pills convey bargaining power, but that a comparison of offer premiums in samples of firms with or without pills is fraught with econometric difficulties. Pill adoptions are voluntary, which raises complex issues of endogeneity (H2). Controlling for self-selection is also difficult, however, because the marginal effect of a poison pill depends on the firm's entire governance system, including executive compensation (H3). Also, in order to isolate true premium effects of pills, empirical work relies on the existence of two samples, one representing "poison" and the other "placebo" effects (Comment and Schwert, 1995). This sampling is difficult if not impossible if as in H4 *all* firms effectively have ready access to the pill at any point in time (Coates, 2000).

As to H3, Heron and Lie (2006) find that targets of hostile bids are more likely to adopt poison pills when they have classified boards, suggesting that the two antitakeover devices are interdependent. Moeller (2005) concludes that targets with powerful CEOs receive lower takeover premiums. A key question is what package of capital gains, cash and subsequent employment do target CEOs accept in exchange for relinquishing control. Another important issue is whether target CEOs sacrifice premiums paid to their own outside shareholders in return for a favorable "golden handshake".[58] Walkling and Long (1984), Cotter and Zenner (1994), Wulf (2004) and Hartzell, Ofek, and Yermack (2004) all present evidence on acquisition-induced compensation of target firm CEOs. Hartzell, Ofek, and Yermack (2004) analyze a sample of 311 negotiated mergers between 1995 and 1997. They conclude from their evidence that "acquirers overtly pay certain CEOs to surrender managerial control over the firm's assets, or equivalently, that some CEOs "purchase" executive jobs in the buyer by foregoing cash payments that they might otherwise have obtained" (p.39). Also, they present some evidence indicating an inverse association between selling shareholder premia and unusual bonuses received by the target CEO as a reward to "step aside".[59]

H1 maintains that pills are ineffective as a bargaining tool. For example, the bidder may believe that target board is not committed to trigger the pill. As a case in point, consider the failed 1996 takeover attempt by U.S. Surgical Corporation of medical device maker Circon Corporation. Exercising the Circon pill would have required Circon shareholder to pay approximately $800 million in cash into a company with a pre-takeover total equity value of $150 million. In return for this massive (and expensive) cash infusion, Circon shareholders would lose a 70% takeover premium and stood to gain only $10 million from the resulting dilution of U.S. Surgical's shareholding in Circon. In general, a pill with this structure may lack credibility and therefore have little effect on bargaining outcomes.[60]

As pointed out by Schwert (2000), the definition of target "hostility" used in the literature probably captures plenty of targets that are ready to negotiate with or without the pill. Bidders that are able to look beyond the pill and determine whether negotiations are possible (based on observable target characteristic or on the bidder's own ability to persuade a hostile target management), may reach a final bargaining outcome that is largely indistinguishable from that observed in samples of ex ante "friendly" targets. This may also help explain why empirical evidence shows that the probability of receiving a bid (and ultimate bid success) is either unaffected or only slightly lower for targets with strong antitakeover defenses.[61]

7. Conclusions

There is growing research interest in the details of the takeover process from the initial bid through the final contest outcome. This essay reviews empirical evidence on bid strategies, takeover premiums and associated bidder returns, with a particular emphasis on the initial bidder. Bidding theory addresses optimal bid strategies when target shareholders free-ride, and when the initial bid risks attracting competition and target resistance. In addition to the initial offer premium and subsequent bid jumps, the initial bidder's strategic arsenal include post-offer dilution of minority target shareholders, use of state-contingent payment methods, markup pricing in response to new information, toeholds, termination agreements, and legal maneuvering when the target is hostile.

[58] Yermack (2006) presents evidence on severance packages more generally, in a sample of *Fortune 500* companies.

[59] As the authors recognize, since the study uses a sample of completed mergers only, it does not provide information on the sort of packages that other target CEOs turn down in attempted mergers that were not completed. Thus, the question of whether larger CEO packages come at the expense of target shareholders remains open.

[60] In the Circon case, Circon chairman and CEO Richard Auhll appeared to be protecting large private benefits of control. Using information on SDC, approximately half of all pills are cash pills (the exercise price is paid in cash rather than by an exchange of securities.

[61] Comment and Schwert (1995), Field and Karpoff (2002), Heron and Lie (2006).

The evidence is suggestive of rational and strategic bidder behavior in specific contexts. For example, bid jumps are largest for the very first bid and when this bid ends up winning the target (consistent with preemptive bidding). Moreover, theory implies a deterrent effect of toeholds on competition, and the evidence suggests that bidders in fact trade off toeholds and offer premiums. In one auction setting (bankruptcy auctions) offer premiums are consistent with rational toehold-induced overbidding incentives, while in another (target takeover solicitations) bidders appear to avoid the winner's curse.

Large-sample evidence on offer premiums is only starting to emerge. The initial offer premiums average nearly 50% over the past three decades, with additional jumps when bid revisions are required. Notwithstanding the high initial offer premium, initial bids carry a substantial risk of failure (approximately 30% of all initial bids fail). The average offer premium in successful single-bid takeover contests is higher than the average initial offer premium in *multi-bid* contests. This is consistent with the greater premium preempting competition in ex post successful single-bid cases. Bid revisions are substantial when the initial bid attracts competition and/or is revised by the initial bidder. The average bid-jump from the first to the second bid in the contest of 10%, a 31% change in the offer premium. A "jump" of a different kind is the tendency for bidders to mark up the offer price so that it varies almost one-to-one with the target stock price runup prior to the first bid. Offer premiums (both initial and final) are greater after the 1980s, greater for public than for private bidders, and greater in all-cash offers than when the payment is all-stock in the bidder firm. Moreover, offer premiums are lower for toehold bidders, and unaffected by either the presence of a target poison pill or target hostility to the initial bid.

Toehold bidding fell dramatically after the 1980s. This fall coincides with the rise of structural takeover defenses beginning in the 1980s. In theory, toehold bidding conveys substantial strategic advantage of rival bidders, particularly in a common-value setting. Since many of these advantages come at the expense of the *target*, some targets may be reluctant to negotiate if the bidder has a toehold. If so, acquiring a toehold prior to attempting friendly merger negotiations may backfire: if the target refuses, the bidder foregoes not only things like a termination agreement but also the opportunity to examine the target books—which is crucial for pricing of the merger. Another way to put this is that a toehold must be large to be worth it—larger than 10% by some (conservative) estimates. This argument possibly explains the dual observation that toeholds are large when they exist, and that they occur mostly in hostile bids.

The choice of payment method is strategic for several reasons. Over the past three decades, bidders initiating takeover bids for U.S. targets offered all-cash as payment in about one-quarter of the cases, all-stock in one-third and a mix of stock of cash also in one-third of the takeovers. The majority of tender offers are all-cash or a mix of cash and stock, while the majority of merger bids are in the form of all-stock. All-cash and mixed cash-stock offers are predominant in tender offers. Moreover, mixed stock-cash offers rose to become the most frequently used payment method in mergers by 2001. The percentage all-stock offers in initial merger bids were approximately 50% throughout the 1990s: the percentage all-stock merger bids did not increase with the substantial runup in market valuations towards the end of the 1990s. Consistent with information-based theories, offer premiums are greater in all-cash offers than in all-stock offers.

The pervasive negative market reaction to all-stock merger bids by public bidders is reminiscent of the negative market reaction typically observed in response to announcements of seasoned equity offers. The analogy is appealing since the timing of the equity issue is determined endogenously by the issuer in both events, and thus involve some degree of adverse selection. On the other hand, stock-swaps in mergers are closer to private placements than they are to an underwritten seasoned equity offering—and there is substantial evidence that the market reaction to private placement is positive on average (Eckbo et al., 2007). Moreover, the market reaction to merger stock swaps is positive when the target is private. Additional research is needed to establish the empirical relevance of asymmetric information arguments for the strategic payment choice.

Overall, the empirical evidence reviewed here is relevant for the broader debate over bidder rationality and the efficiency of the market for corporate control. While much remains to be done, the picture emerging is one where bidder behavior is consistent with optimizing behavior in certain contexts. Coupled with the fact that total (target plus bidder) takeover gains are positive on average, such behavior supports the neoclassical view of takeovers. While some bidders undoubtedly exhibit overconfidence and simply pay too much for control of the target, the evidence appears to indicate some degree of restraint in the bidding process—as if bidders act strategically.

References

Acharya, V.V., Bharath, S.T., Srinivasan, A., 2007. Does industry-wide distress affect defaulted firms? Evidence from creditor recoveries. Journal of Financial Economics 85, 787–821.

Aghion, P., Hart, O., Moore, J., 1992. The economics of bancruptcy reform. Journal of Law, Economics and Organization 8, 523–546.

Ahern, K.R., 2006. Markets talk, firms listen: T dynamics of repeat acquirers. Working paper. UCLA.

Akbulut, M.E., Matsusaka, J.G., 2003. Fifty years of diversification announcements. Working paper. Marshall School of Business, University of Southern California.

Akdogu, E., 2007. Value-maximizing managers, value-increasing mergers and overbidding. Working paper. Southern Methodist University.

Aktas, N., de Bodt, E., Roll, R., 2008. Negotiation under the threat of an auction: friendly deals, ex ante competition and bidder returns. Working Paper. University of California at Los Angeles.

Amihud, Y., Lev, B., Travlos, N., 1990. Corporate control and the choice of investment financing: the case of corporate acquisitions. Journal of Finance 45, 603–616.

Andrade, G., Mitchell, M., Stafford, E., 2001. New evidence and perspectives on mergers. Journal of Economic Perspectives 15, 103–120.

Andrade, G., Stafford, E., 2004. Investigating the economic role of mergers. Journal of Corporate Finance 10, 1–36.

Ang, J.S., Cheng, Y., 2006. Direct evidence on the market-driven acquisition theory. Journal of Financial Research 29, 199–216.

Asquith, P., Bruner, R., Mullins, D., 1983. The gains to bidding firms from merger. Journal of Financial Economics 11, 121–139.

Asquith, P., Bruner, R., Mullins, D., 1987. Merger returns and the form of financing. Proceedings of the Seminar on the Analysis of Securities Prices 34, 115–146.

Bagnoli, M., Lipman, B.L., 1988. Successful takeover without exclusion. Review of Financial Studies 1, 89–110.

Bagnoli, M., Lipman, B.L., 1996. Stock price manipulation through takeover bids. RAND Journal of Economics 27, 124–147.

Bargeron, L., 2005. Do shareholder tender agreements inform or expropriate shareholders? Working paper. University of Pittsburgh.
Bargeron, L., Schlingemann, F.P., Stulz, R.M., Zutter, C., 2007. Why do private acquirers pay so little compared to public acquirers? Journal of Financial Economics forthcoming.
Bates, T.H., Lemmon, M.L., 2003. Breaking up is hard to do? An analysis of termination fee provisions and merger outcomes. Journal of Financial Economics 69, 460–504.
Bates, T.W., Becher, D.A., Lemmon, M.L., 2008. Board clasification and managerial entrenchment: evidence from the market for corporate control. Journal of Financial Economics 87, 656–677.
Bebchuk, L.A., 1985. Toward undistorted choice and equal treatment in corporate takeovers. Harvard Law Review 98, 1695–1808.
Bebchuk, L.A., Cohen, A., 2005. The costs of entrencged boards. Journal of Financial Economics 78, 409–433.
Bebchuk, L.A., Coates, J.C., Subramanian, G., 2002. The poerful anti-takeover force of staggered boards: theory, evidence, and policy. Stanford Law Review 54, 887–951.
Bebchuk, L.A., Cohen, A., Ferrell, A., 2004. What matters in corporate governance? Working paper. Harvard University.
Becher, D.A., Mulherin, J.H., Walkling, R.A., 2008. Industry shocks and merger activity: an analysis of U.S. public utilities. Working paper. Drexel University.
Berglof, E., Burkart, M., 2003. European takeover regulation. Economic Policy 36, 171–213.
Berkovitch, E., Narayanan, M., 1990. Competition and the medium of exchange in takeovers. Review of Financial Studies 3 (2), 153–174.
Berle Jr., A.A., Means, G.C., 1932. The Modern Corporation and Private Property. Macmillan, New York, NY.
Betton, S., Eckbo, B.E., 2000. Toeholds, bid jumps, and expected payoff in takeovers. Review of Financial Studies 13, 841–882.
Betton, S., Eckbo, B.E., Thorburn, K.S., 2007. Merger negotiations and the toehold puzzle. Journal of Financial Economics forthcoming.
Betton, S., Eckbo, B.E., Thorburn, K.S., 2008a. Corporate takeovers. In: Eckbo, B.E. (Ed.), Handbook of Corporate Finance: Empirical Corporate Finance, vol. 2, pp. 291–430. chap. 15, (Elsevier/North-Holland, Handbooks in Finance Series).
Betton, S., Eckbo, B.E., Thorburn, K.S., 2008b. Markup pricing revisited. Working Paper. Tuck School of Business at Dartmouth, Hanover, NH.
Betton, S., Eckbo, B.E., Thorburn, K.S., 2008c. Massive wealth destruction? Bidder gains revisited. Working paper. Tuck School of Business at Dartmouth, Hanover, NH.
Bhagat, S., Dong, M., Hirshleifer, D., Noah, R., 2005. Do tender offers create value? New methods and evidence. Journal of Financial Economics 76, 3–60.
Billett, M.T., Qian, Y., 2005. Are overconfident managers born or made? Evidence of self-attribution bias from frequent acquirers. Working paper. Boston College.
Boone, A.L., Mulherin, J.H., 2007a. Do auctions induce a winner's curse? New evidence from the corporate takeover market. Journal of Financial Economics forthcoming.
Boone, A.L., Mulherin, J.H., 2007b. Do termination provisions truncate the takeover bidding process? Review of Financial Studies 20, 461–489.
Boone, A.L., Mulherin, J.H., 2007c. How are firms sold? Journal of Finance 62, 847–875.
Bradley, M., 1980. Interfirm tender offers and the mrket for corporate control. Journal of Business 53, 345–376.
Bradley, M., Sundaram, A., 2006. Acquisitions and performance: a re-assesment of the evidence. Working Paper. Duke University.
Bris, A., Welch, I., Zhu, N., 2006. The costs of bankruptcy: Chapter 7 liquidation versus Chapter 11 reorganization. Journal of Finance 61, 1253–1303.
Brown, D.T., Ryngaert, M.D., 1991. The mode of acquisition in takeovers: taxes and asymmetric information. Journal of Finance 46, 653–669.
Bruner, R.F., 2004. Applied Mergers & Acquisitions. John Wiley & Sons, New York.
Bulow, J., Huang, M., Klemperer, P., 1999. Toeholds and takeovers. Journal of Political Economy 107, 427–454.
Burch, T., 2001. Locking out rival bidders: the use of lockup options in corporate mergers. Journal of Financial Economics 60, 103–141.
Burkart, M., 1995. Initial shareholdings and overbidding in takeover contests. Journal of Finance 50, 1491–1515.
Burkart, M., Panunzi, F., 2003. Mandatory bids, squeeze-out, sell-out and the dynamics of the tender offer process. Working paper. European Corporate Governance Institute.
Burkart, M., Panunzi, F., 2006, Takeovers, in Ph. Hartmann, X. Freicas, and C. Mayer, ed.: Financial Markets and Institutions: An European Perspective. forthcoming (Oxford University Press).
Burkart, M., Gromb, D., Panunzi, F., 1998. Why takeover premia protect minority share-holders. Journal of Political Economy 106, 647–677.
Cain, M.D., Denis, D., Denis, D.K., 2005. Earnouts: a study of contracting in acquisition agreements. Working paper. Purdue University.
Carleton, W., Guilkey, D., Harris, R., Stewart, J., 1983. An empirical analysis of the role of the medium of exchange in mergers. Journal of Finance 38, 57–82.
Chang, S., 1998. Takeovers of privately held targets, methods of payment, and bidder returns. Journal of Finance 53, 773–784.
Chang, T., Schoar, A., 2007. The effect of judidial bias in Chapter 11 reorganization. Working paper. Massachusetts Institute of Technology.
Chatterjee, S., John, K., Yan, A., 2008. Takeover premium and divergence of opinions. Working paper. School of Business, Fordham University.
Chemmanur, T.J., Paeglis, I., 2003. The choice of the medium of exchange in acquisitions: a direct test of the double-sided asymmetric information hypothesis. Working paper. Boston College.
Claessens, S., Djankov, S., Lang, L.H.P., 2000. The separation of ownership and control in East Asian corporations. Journal of Financial Economics 58, 81–112.
Clayton, M.J., Ravid, S.A., 2002. The effect of leverage on bidding behavior: theory and evidence from the FCC auctions. Review of Financial Studies 15, 723–750.
Coates, J.C., 2000. Takeover defenses in the shadow of the pill: a critique of the scientific evidence. Texas Law Review 79, 271–382.
Comment, R., Schwert, G.W., 1995. Poison or placebo? Evidence on the deterrent and wealth effects of modern antitakeover measures. Journal of Financial Economics 39, 3–43.
Cotter, J., Zenner, M., 1994. How managerial wealth affects the tender offer process. Journal of Financial Economics 35, 63–97.
Croci, E., 2005. Why do managers make serial acquisitions? An investigation of performance predictability in serial acquisitions. Working paper. Universit degli Studi di Milano-Bicocca.
Daniel, K., Hirshleifer, D., 2008. A theory of costly sequential bidding. Working paper. Anderson Graduate School of Management, UCLA.
Dasgupta, S., Hansen, R.G., 2007. Auctions in corporate finance. In: Eckbo, B.E. (Ed.), Handbook of Corporate Finance: Empirical Corporate Finance, vol. 1, pp. 87–143. chap. 3, (Elsevier/North-Holland, Handbooks in Finance Series).
Dasgupta, S., Tsui, K., 2003. A "matching auction" for targets with heterogeneous bidders. Journal of Financial Intermediation 12, 331–364.
Dasgupta, S., Tsui, K., 2004. Auctions with cross-shareholdings. Economic Theory 24, 163–194.
DeMarzo, P.M., Kremer, I., Skrzypacz, A., 2005. Bidding with securities: auctions and security design. American Economic Review 95, 936–959.
Djankov, S., La Porta, R., Lopez-de-Silanes, F., Shleifer, A., 2007, The law and economics of self-dealing, Journal of Financial Economics forthcoming.
Dlugosz, J., Fahlenbrach, R., Gompers, P.A., Metrick, A., 2006. Large blocks of stock: prevalence, size, and measurement. Journal of Corporate Finance 12, 594–618.
Dong, M., Hisrshleifer, D., Richardson, S., Teoh, S.H., 2006. Does investor misvaluation drive the takeover market? Journal of Finance 61, 725–762.
Eckbo, B.E., 1983. Horizontal mergers, collusion, and stockholder wealth. Journal of Financial Economics 11, 241–272.
Eckbo, B.E., 1988. The market for corporate control: policy issues and capital market evidence. In: Khemani, R.S., Shapiro, D., Stanbury, W.T. (Eds.), Mergers, Corporate Concentration and Corporate Power in Canada. The Canadian Institute for Research on Public Policy, Montreal, pp. 143–225.
Eckbo, B.E., 1992. Mergers and the value of antitrust deterrence. Journal of Finance 47, 1005–1029.
Eckbo, B.E., Langohr, H., 1989. Information disclosure, method of payment, and takeover premiums: public and private tender offers in France. Journal of Financial Economics 24, 363–403.
Eckbo, B.E., Thorburn, K.S., 2000. Gains to bidder firms revisited: domestic and foreign acquisitions in Canada. Journal of Financial and Quantitative Analysis 35, 1–25.
Eckbo, B.E., Thorburn, K.S., 2008. Automatic bankruptcy auctions and fire-sales. Journal of Financial Economics 89, 404–422.
Eckbo, B.E., Thorburn, K.S., 2009. Creditor financing and overbidding in bankruptcy auctions. Journal of Corporate Finance 15, 10–29 (this issue).
Eckbo, B.E., Verma, S., 1994. Managerial shareownership, voting power, and cash dividend policy. Journal of Corporate Finance 1, 33–62.
Eckbo, B.E., Giammarino, R.M., Heinkel, R.L., 1990. Asymmetric information and the medium of exchange in takeovers: theory and tests. Review of Financial Studies 3, 651–675.
Eckbo, B.E., Maksimovic, V., Williams, J., 1990. Consistent estimation of cross-sectional models in event studies. Review of Financial Studies 3, 343–365.

Eckbo, B.E., Masulis, R.W., Norli, Ø., 2007. Security offerings. In: Eckbo, B.E. (Ed.), Handbook of Corporate Finance: Empirical Corporate Finance, vol. 1, pp. 233–374. chap. 6, (Elsevier/North-Holland, Handbooks in Finance Series).
Emery, G., Switzer, J., 1999. Expected market reaction and the choice of method of payment for acquisitions. Financial Management 28 (4), 73–86.
Faccio, M., Lang, L.H.P., 2002. The ultimate ownership of Western European corporations. Journal of Financial Economics 65, 365–395.
Faccio, M., Masulis, R.W., 2005. The choice of payment method in European mergers and acquisitions. Journal of Finance 60, 1345–1388.
Fee, C.E., Thomas, S., 2004. Sources of gains in horizontal mergers: evidence from customers, supplier, and rival firms. Journal of Financial Economics 74, 423–460.
Field, L.C., Karpoff, J.M., 2002. Takeover defenses at IPO firms. Journal of Finance 57, 1857–1889.
Fishman, M.J., 1988. A theory of preemptive takeover bidding. RAND Journal of Economics 19, 88–101.
Fishman, M.J., 1989. Preemptive bidding and the role of the medium of exchange in acquisitions. Journal of Finance 44, 41–57.
Franks, J.R., Harris, R.S., Mayer, C., 1988. Means of payment in takeovers: Results for the U.K. and the U.S., in A. Auerbach, ed.: Corporate Takeovers (NBER, University of Chicago Press).
Franks, J., Mayer, C.P., Rossi, S., 2005. Ownership: evolution and regulation. Working paper. London Business School.
Fuller, K., Netter, J., Stegemoller, M., 2002. What do returns to acquiring firms tell us? Evidence from firms that make many acquisitions. Journal of Finance 57, 1763–1793.
Ghosh, A., Ruland, W., 1998. Managerial ownership and the method of payment for acquisitions, and executive job retention. Journal of Finance 53 (2), 785–797.
Gilson, R.J., Scholes, M.S., Wolfson, M.A., 1988. Taxation and the dynamics of corporate control: the uncertain case for tax-motivated acquisitions. In: Coffe, J.C., Lowenstein, L., Rose-Ackerman, S. (Eds.), Knights, Raiders and Targets: The Impact of the Hostile Takeover. Oxford University Press, New York.
Grossman, S., Hart, O., 1980a. Disclosure law and takeover bids. Journal of Finance 35, 323–334.
Grossman, S.J., Hart, O.D., 1980b. Takeover bids, the free-rider problem, and the theory of the corporation. Bell Journal of Economics 11, 42–64.
Goldman, E., Qian, J., 2005. Optimal toeholds in takeover contests. Journal of Financial Economics 77, 321–346.
Hansen, R.G., 1985. Auctions with contingent payments. American Economic Review 75, 862–865.
Hansen, R.G., 1987. A theory for the choice of exchange medium in the market for corporate control. Journal of Business 60, 75–95.
Harford, J., 2005. What drives merger waves? Journal of Financial Economics 77, 529–560.
Harris, M., Raviv, A., 1988. Corporate control contests and capital structure. Journal of Financial Economics 20, 55–86.
Hartzell, J.C., Ofek, E., Yermack, D., 2004. What's in it for me? CEOs whose firms are acquired. Review of Financial Studies 17, 37–61.
Hayn, C., 1989. Tax attributes as determinants of shareholder gains in corporate acquisitions. Journal of Financial Economics 23, 121–153.
Helwege, J., Pirinsky, C., Stulz, R.M., 2007. Why do firms become widely held? an analysis of the dynamics of corporate ownership. Journal of Finance forthcoming.
Heron, R.A., Lie, E., 2004. A comparison of the motivations for and the information content of different types of equity offerings. Journal of Business 77, 605–632.
Heron, R.A., Lie, E., 2006. On the use of poison pill and defensive payouts by takeover targets. Journal of Business 79, 1783–1807.
Hirshleifer, D., 1995. Mergers and acquisitions: strategic and informational issues. In: Jarrow, Robert A., Maksimovic, Vojislav, Ziemba, William T. (Eds.), Finance, vol. 9 of Handbooks in Operation Research and Management Science. North-Holland, pp. 839–885. chap. 26.
Hirshleifer, D., Ping, I.P.L., 1990. Facilitation of competing bids and the price of a takeover target. Review of Financial Studies 2, 587–606.
Hirshleifer, D., Titman, S., 1990. Share tendering strategies and the success of hostile takeover bids. Journal of Political Economy 98, 295–324.
Holderness, C.G., 2006. The myth of diffuse ownership in the United States. Review of Financial Studies forthcoming.
Holderness, C.G., Kroszner, R.S., Sheehan, D.P., 1999. Were the good old days that good? changes in management stock ownership since the Great Depression. Journal of Finance 54, 435–469.
Holmstrom, B., Nalebuff, B., 1992. To the raider goes the surplus? A reexamination of the free rider problem. Journal of Economics and Management Strategy 1, 37–62.
Hotchkiss, E.S., Mooradian, R.M., 2003. Auctions in bankruptcy. Journal of Corporate Finance 9, 555–574.
Huang, Y.-S., Walkling, R.A., 1987. Abnormal returns associated with acquisition announcements: payment method, acquisition form, and managerial resistance. Journal of Financial Economics 19, 329–349.
Ismail, A., 2006. Will multiple acquirers ever learn? The US evidence from single versus multiple acquirers. Working paper. American University of Beirut.
Jarrell, G.A., Bradley, M., 1980. The economic effects of federal and state regulations of cash tender offers. Journal of Law and Economics 23, 371–407 (2, October).
Jarrell, G.A., Brickley, J.A., Netter, J.M., 1988. The market for corporate control: the empirical evidence since 1980. Journal of Economic Perspectives 2, 49–68.
Jarrell, G.A., Poulsen, A.B., 1989. Stock trading before the announcement of tender offers: Insider trading or market anticipation? Journal of Law, Economics and Organization 5, 225–248.
Jennings, R.H., Mazzeo, M.A., 1993. Competing bids, target management resistance, and the structure of takeover bids. Review of Financial Studies 6, 883–910.
Jensen, M.C., 1986. Agency costs of free cash flow, corporate finance, and takeovers. American Economic Review 76, 323–329.
Jensen, M.C., Meckling, W., 1976. Theory of the firm: managerial behavior, agency costs, and capital structure. Journal of Financial Economics 3, 305–360.
Jensen, M.C., Ruback, R.S., 1983. The market for corporate control. Journal of Financial Economics 11, 5–50.
Jovanovic, B., Rousseau, P.L., 2004. Mergers as reallocation. Working paper. New York University.
King, M.R., Padalko, M., 2005. Pre-bid run-ups ahead of Canadian takeovers: how big is the problem? Working paper. Bank of Canada. 2005-3.
Klemperer, P.D., 1998. Auctions with almost common values. European Economic Review 42, 757–769.
Kohers, N., Ang, J., 2000. Earnouts in mergers: agreeing to disagree and agreeing to stay. Journal of Business 73, 445–476.
La Porta, R., Lopez-de-Silanes, F., Shleifer, A., 1999. Corporate ownership around the world. Journal of Finance 54, 471–518.
Lang, L., Stulz, R., 1992. Contagion and competitive intra-industry effects of bankruptcy announcements. Journal of Financial Economics 32, 45–60.
Levi, M., Li, K., Zhang, F., 2008. Mergers and acquisitions: the role of gender. Working paper. Sauder School of Business, University of British Columbia.
Li, K., Prabhala, N.R., 2007. Self-selection models in corporate finance. In: Eckbo, B.E. (Ed.), Handbook of Corporate Finance: Empirical Corporate Finance, vol. 1, pp. 37–86. chap. 2, (Elsevier/North-Holland, Handbooks in Finance Series).
Loderer, C., Martin, K., 1990. Corporate acquisitions by listed firms: The experience of comprehensive sample, fm 19, 17–33.
Maksimovic, V., Phillips, G., 2001. The market for corporate assets: who engages in mergers and asset sales and are there efficiency gains? Journal of Finance 56, 2019–2065.
Malatesta, P., Thompson, R., 1985. Partially anticipated events: a model of stock price reaction with an application to corporate acquisitions. Journal of Financial Economics 14, 237–250.
Malmendier, U., Tate, G., 2008. Who makes acquisitions? CEO overconfidence and the market's reaction. Journal of Financial Economics 89, 20–43.
Martin, K., 1996. The method of payment in corporate acquisitions, investment opportunities, and management ownership. Journal of Finance 51, 1227–1246.
Martynova, M., Renneboog, L., 2006. Mergers and acquisitions in Europe. In: Renneboog, L. (Ed.), Advances in Corporate Finance and Asset Pricing. Elsevier, pp. 13–75. chap. 2.
Martynova, M., Renneboog, L., 2007. Sources of transaction financing in corporate takeovers. Working paper. Tilburg University.
Masulis, R.W., Wand, C., Xie, F., 2007. Corporate governance and acquirer returns. Journal of Finance 62, 1851–1889.
McAfee, P., McMillan, D., 1987. Auctions and bidding. Journal of Economic Literature 25, 699–738.
Meulbroek, L., 1992. An empirical analysis of illegal insider trading. Journal of Finance 47, 1661–1699.
Mitchell, M., Mulherin, J.H., 1996. The impact of industry shocks on takeover and restructuring activity. Journal of Financial Economics 41, 193–229.
Moeller, T., 2005. Let's make a deal! How shareholders control impacts merger payoff. Journal of Financial Economics 76, 167–190.
Moeller, S.B., Schlingemann, F.P., Stulz, R.M., 2004. Firm size and the gains from acquisitions. Journal of Financial Economics 73, 201–228.
Moeller, S.B., Schlingemann, F.P., Stulz, R.M., 2005. Wealth destruction on a massive scale? A study of acquiring firm returns in the recent merger wave. Journal of Finance 60, 757–782.
Moeller, S.B., Schlingemann, F.P., Stulz, R.M., 2007. How do diversity of opinion and information asymmetry affect acquirer returns? Review of Financial Studies 20, 2047–2078.
Molnar, J., 2008. Preemptive horizontal mergers: theory and evidence. Working paper. Bank of Finland.

Morellec, E., Zhdanov, A., 2005. The dynamics of mergers and acquisitions. Journal of Financial Economics 77, 649–672.
Mulherin, J.H., Boone, A.L., 2000. Comparing acquisitions and divestitures. Journal of Corporate Finance 6, 117–139.
Myers, S.C., 1977. Determination of corporate borrowing. Journal of Financial Economics 4, 147–175.
Myers, S.C., 1984. The capital structure puzzle. Journal of Finance 39, 575–592.
Myers, S.C., Majluf, N.S., 1984. Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics 13, 187–221.
Nathan, K.S., O'Keefe, T.B., 1989. The rise in takeover premiums: an exploratory study. Journal of Financial Economics 23, 101–119.
Officer, M.S., 2003. Termination fees in mergers and acquisitions. Journal of Financial Economics 69, 431–467.
Officer, M.S., 2004. Collars and renegotiations in mergers and acquisitions. Journal of Finance 59, 2719–2743.
Officer, M.S., 2006. The market pricing of implicit options in merger collars. Journal of Business 79, 115–136.
Officer, M.S., 2007. The price of corporate liquidity: acquisition discounts for unlisted targets. Journal of Financial Economics 83, 571–598.
Officer, M.S., Poulsen, A.B., Stegemoller, M., 2007. Information asymmetry and acquirer returns. Review of Financial Studies forthcoming.
Pulvino, T., 1998. Do asset fire-sales exist? An empirical investigation of commercial aircraft transactions. Journal of Finance 53, 939–978.
Pulvino, T., 1999. Effects of bankruptcy court protection on asset sales. Journal of Financial Economics 52, 151–186.
Ramey, V.A., Shapiro, M.D., 2001. Displaced capital: a study of aerospace plant closings. Journal of Political Economy 109, 958–992.
Rhodes-Kropf, M., Robinson, D.T., Viswanathan, S., 2005. Valuation waves and merger activity: the empirical evidence. Journal of Financial Economics 77, 561–603.
Rhodes-Kropf, M., Viswanathan, S., 2004. Market valuation and merger waves. Journal of Finance 59, 2685–2718.
Roll, R., 1986. The hubris hypothesis of corporate takeovers. Journal of Business 59, 437–467.
Rose, M.J., 2008. Heterogeneous impacts of staggered boards by ownership concentration. Journal of Corporate Finance forthcoming.
Ross, S., 1977. The determination of financial structure: the incentive signalling approach. Bell Journal of Economics 8, 23–40.
Savor, P., 2006. Do stock mergers create value for acquirers? Working Paper. Wharton School of Business.
Schipper, K., Thompson, R., 1983. Evidence on the capitalized value of merger activity for acquiring firms. Journal of Financial Economics 11, 85–119.
Schlingemann, F.P., 2004. Financing decisions and bidder gains. Journal of Corporate Finance 10, 683–701.
Schwert, G.W., 1996. Markup pricing in mergers and acquisitions. Journal of Financial Economics 41, 153–192.
Schwert, G.W., 2000. Hostility in takeovers: in the eyes of the beholder? Journal of Finance 55, 2599–2640.
Servaes, H., 1991. Tobin's *q* and the gains from takeovers. Journal of Finance 46, 409–419.
Shahrur, H., 2005. Industry structure and horizontal takeovers: analysis of wealth effects on rivals, suppliers, and corporate customers. Journal of Financial Economics 76, 61–98.
Shapley, L., 1953. A value for n-person games. In: Kuhn, H., Tucker, A. (Eds.), Contributions to the Theory of Games, Volume II. Annals of Mathematics Studies, vol. 28. Princeton: Princeton University Press, pp. 307–317.
Shleifer, A., Vishny, R., 2003. Stock market driven acquisitions. Journal of Financial Economics 70, 295–311.
Shleifer, A., Vishny, R.W., 1986. Large shareholders and corporate control. Journal of Political Economy 94, 461–488.
Shleifer, A., Vishny, R.W., 1992. Liquidation values and debt capacity: a market equilibrium approach. Journal of Finance 47, 1343–1366.
Slovin, M.B., Sushka, M.E., Hudson, C.D., 1991. Deregulation, contestability, and airline acquisitions. Journal of Financial Economics 30, 231–251.
Smith, R.L., Kim, J.-H., 1994. The combined effect of free cash flow and financial slack on bidder and target stock return. Journal of Business 67, 281–310.
Song, M.H., Walkling, R.A., 2000. Abnormal returns to rivals of acquisition targets: a test of the acquisition probability hypothesis. Journal of Financial Economics 55, 143–172.
Song, M.H., Walkling, R.A., 2005. Anticipation, acquisitions and bidder returns. LeBow College of Business Working Paper.
Spiller, P.T., 1983. The differential effect of airline regulation on individual firms and markets: an empirical analysis. Journal of Law and Economics 26, 655–689.
Stulz, R., 1988. Managerial control of voting rights: financing policies and the market for corporate control. Journal of Financial Economics 20, 25–54.
Thorburn, K.S., 2000. Bankruptcy auctions: costs, debt recovery, and firm survival. Journal of Financial Economics 58, 337–368.
Toffanin, M., 2005. Examining the implications of financing choice for cash acquisitions, Unpublished Master of Science Dissertation, Concordia University.
Travlos, N.G., 1987. Corporate takeover bids, method of payment, and bidding firms' stock returns. Journal of Finance 42, 943–963.
Walkling, R., 1985. Predicting tender offer success: a logistic analysis. Journal of Financial and Quantitative Analysis 20, 461–478.
Walkling, R.A., Long, M.S., 1984. Agency theory, managerial welfare, and takeover bid resistance. RAND Journal of Economics xx, 54–68.
Williamson, O.E., 1988. Corporate finance and corporate governance. Journal of Finance 43, 567–592.
Wulf, J., 2004. Do CEOs in mergers trade power for premium? Evidence from mergers of equals. Journal of Law, Economics and Organization 20, 60–101.
Yermack, D., 2006. Golden handshakes: separation pay for retired and dismissed CEOs. Journal of Accounting and Economics 41, 237–256.
Yook, K.C., 2003. Larger returns to cash acquisitions: signaling effect or leverage effect? Journal of Business 76, 477–498.
Zingales, L., 1994. The value of the voting right: a study of the Milan stock exchange experience. Review of Financial Studies 7, 125–148.