Takeover Bidding

Professor B. Espen Eckbo
Dartmouth and NHH
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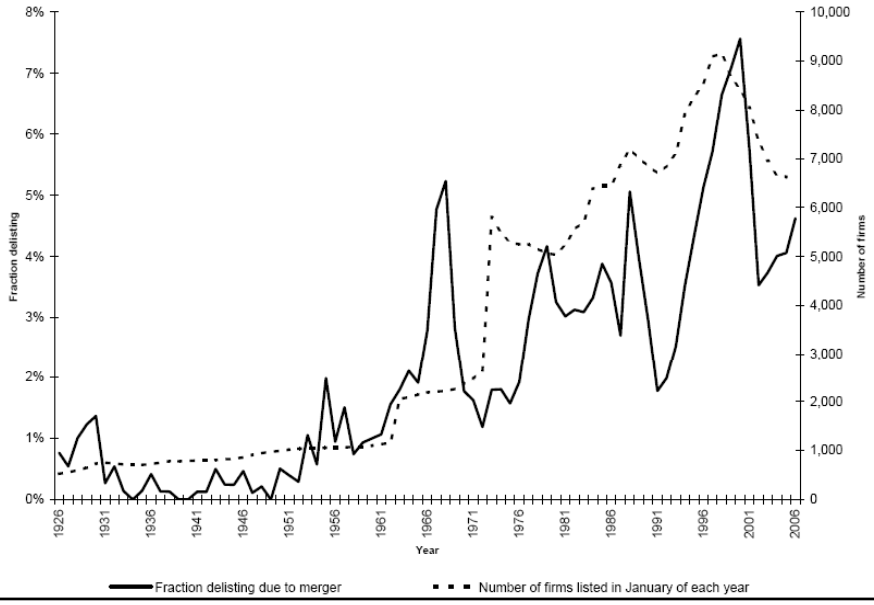
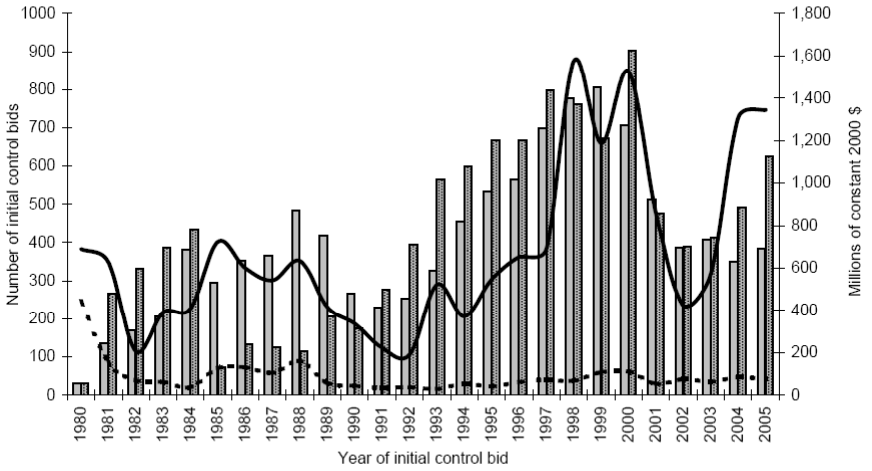
Annual fraction of all publicly traded (CRSP) firms in January of each year with delists due to merger during the year, 1926-2006.



Initial control bids for U.S. targets, by public status of bidder and target, 1980-2005.

Panel A:Deal values by target public status



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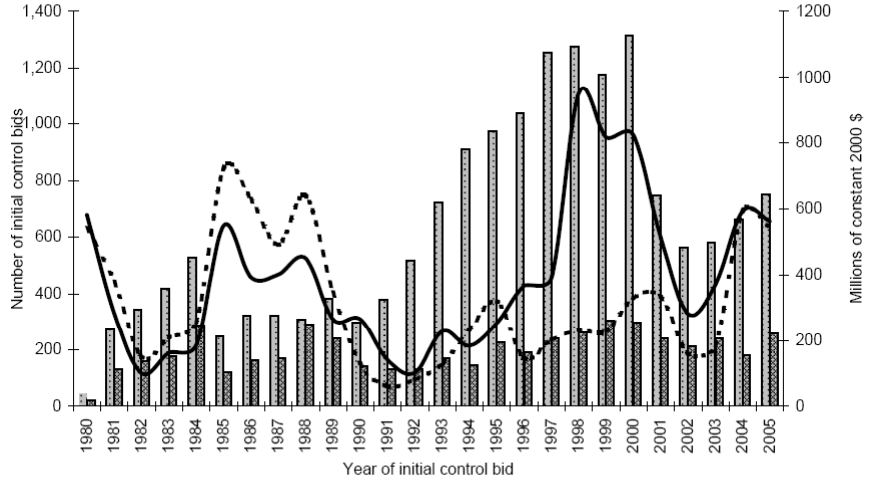
Initial control bids for U.S. targets, by public status of bidder and target, 1980-2005.

Panel B: Deal values by initial bidder public status



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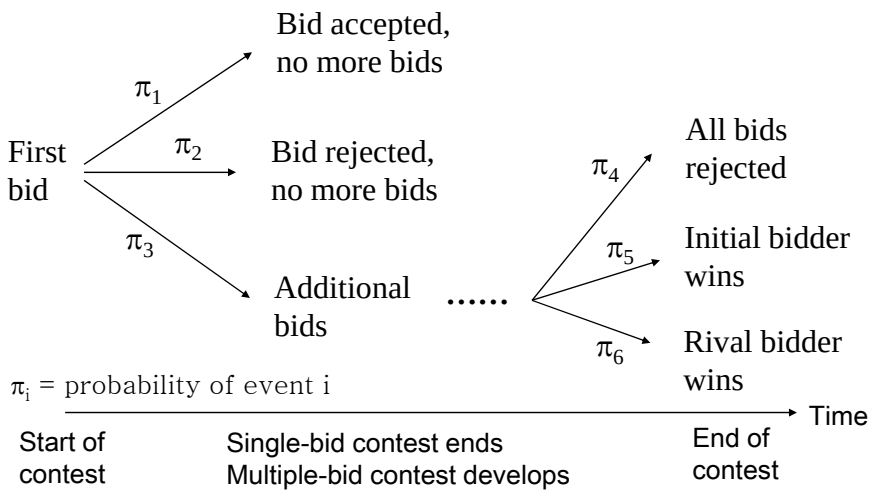
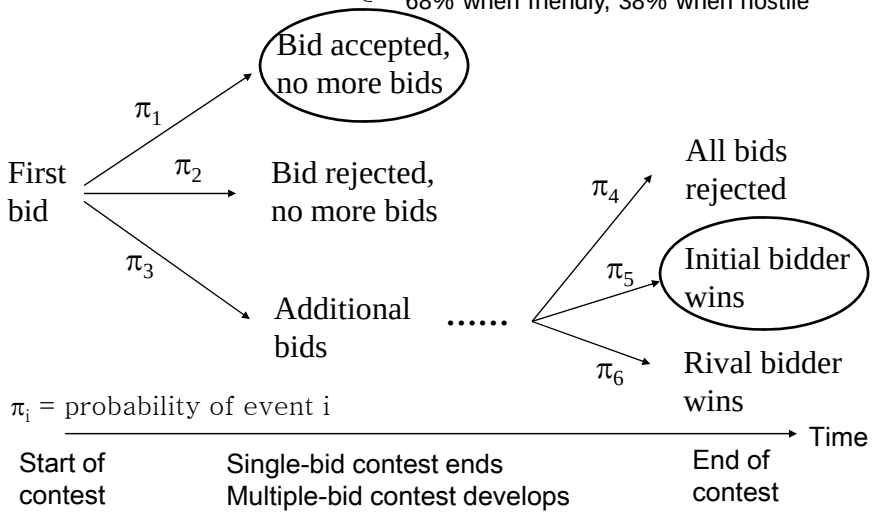
Takeover bidding: Risky business



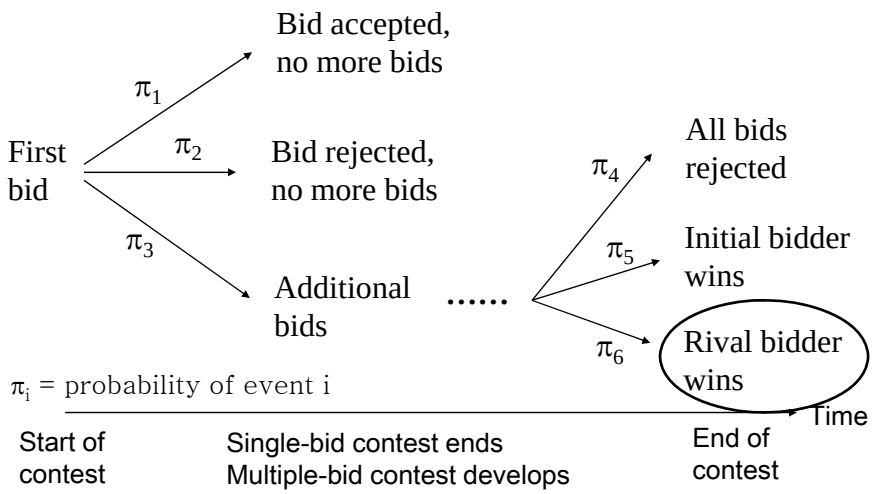
π – Initial Bidder wins:

71% when no rival bids, 21% when rival
64% when merger, 75% when tender offer
59% before 1990, 71% after 1990
76% when bidder public, 52% when private
68% when friendly, 38% when hostile



π - Rival Bidder wins:

- 4% of all contests
- 48% when multiple bidders
- Rival wins twice as often as initial bidder



π_i = probability of event i

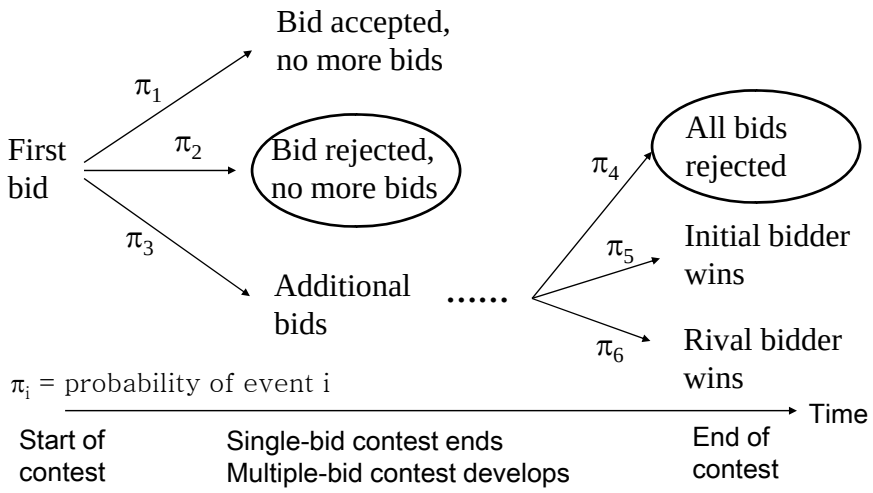
Start of contest

Single-bid contest ends
Multiple-bid contest develops

End of contest

π – No Bidder wins:

- 33% when merger, 20% when tender offer
- 36% before 1990, 26% after 1990
- 21% when bidder public, 44% when private
- 29% when friendly, 49% when hostile



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Multiple-bid contest develops

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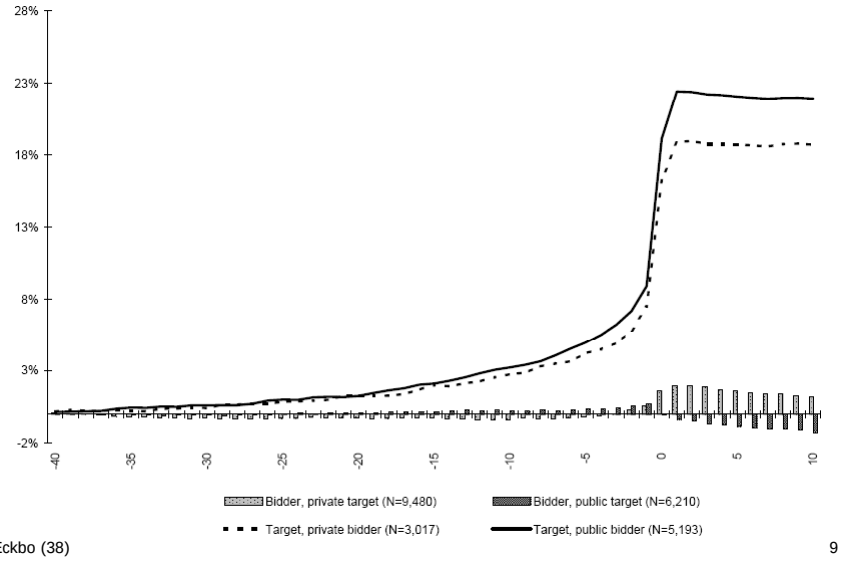
% average cumulative abnormal stock returns to targets and initial bidders from day -40 through day 10 relative to initial control bid.



Total takeover gains

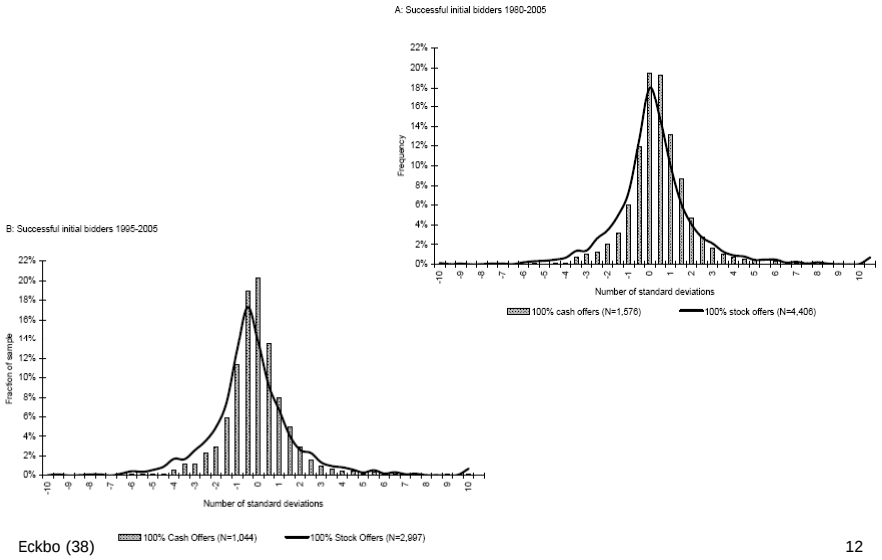
- Value-weighted sum of gains to bidders and targets is on average positive
- However, bidder gains are on average small. Why?
  - Competition among bidders drives synergy gains to target shareholders
  - Bidder asset size on average ten times the size of the target. Thus, an equal dollar gain translates into one-tenth the percentage gain
  - Bidders are frequent acquirers, creating partial anticipation of takeover which attenuates bidder return estimates
- Hubris and overbidding? Bidder trying to sell overpriced stock?
  - Possible, and likely in some cases, but not true on average

Firm size and bidder announcement returns

3-day announcement bidder ACAR, 1980-2005

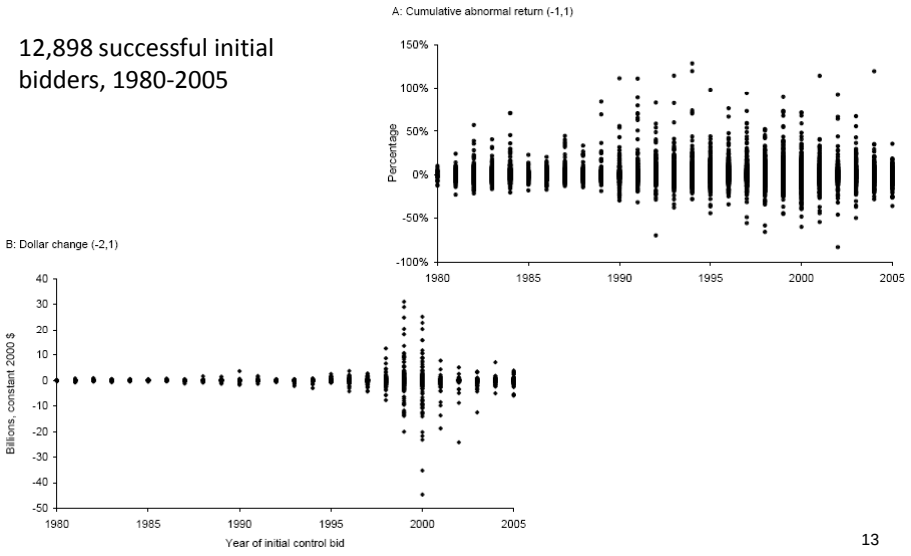
		Public targets		Private targets	
		N	ACAR	N	ACAR
Large bidders: (top quartile MV)	All cash:	769	-0.022**	445	0.001
	All stock	439	-0.003**	88	0.003**
Small bidders: (bottom quartile MV)	All cash:	495	0.001	872	0.065**
	All stock:	190	0.031**	184	0.018**

Standardized dollar abnormal returns to successful initial bidders by method of payment, 1980-2005 (Panel A) and 1995-2005 (Panel B).



Bidder announcement-period abnormal returns and dollar-changes

12,898 successful initial bidders, 1980-2005



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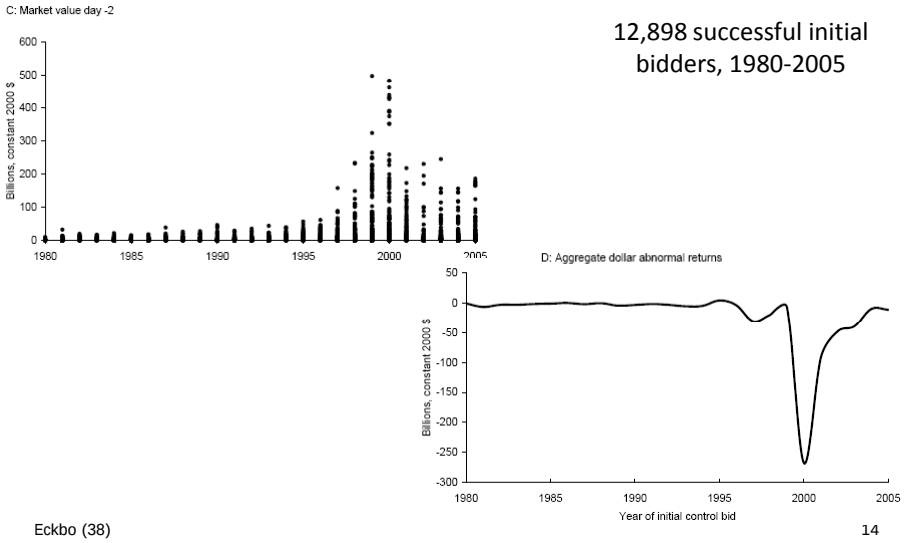
Average market values and aggregate bidder announcement-period dollar CARs



12,898 successful initial bidders, 1980-2005

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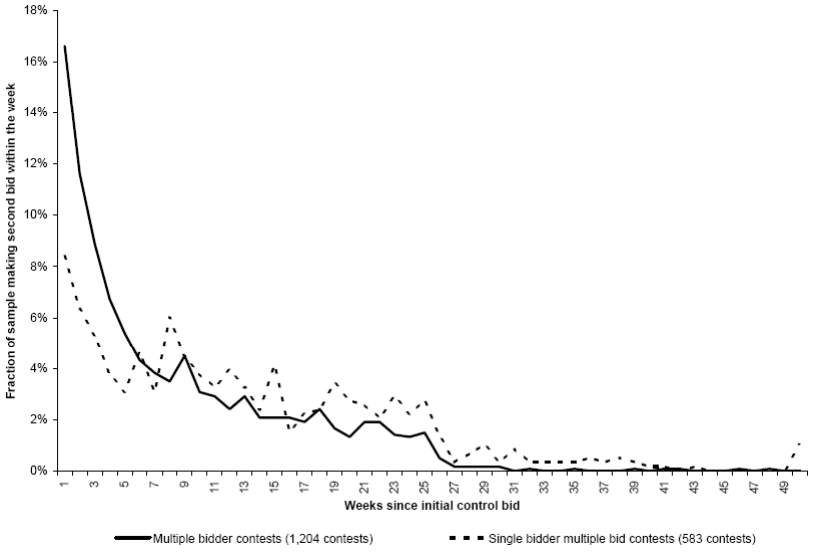
Initial Bids

- What should be the opening bid?
  - Start high to preempt competition?
- Will the information in the opening bid be exploited by rival bidders?
  - Mandatory information disclosure
  - Mandatory minimum offer period
- What other offer parameters are important?
  - Toeholds, payment method, target attitude, target stock price runup, etc.

Weeks from first to second bid in 1,787 contests with multiple bids for U.S. targets, 1980-2005.



Toehold bidding

- Dramatic drop in toehold frequency
- About 10% of 10,000+ initial bidders have toehold (mostly long-term)
- About 2% of initial bidders purchase toeholds during the 6-months leading up to the bid
- When positive, toehold are large (15%)
- When hostile, 50% have toeholds

Annual % of initial control bidders with a positive toehold in the target, classified by the type of the initial U.S. public targets.

Toehold puzzle

- Toehold benefits:
  - Short-term return on toehold (α)—possibly as big as the target premium itself
  - Only needs to purchase (1-α) at offer price
  - May resolve target free-rider problem
  - Increase bidder valuation and so increases the probability of winning
- So, what deters toeholds?

Potential toehold costs

- Bidder toehold benefits mirrors target toehold costs
  - Toehold bidding may be viewed as “aggressive”
- So, target may oppose toehold bidding
  - Refuse to negotiate if bidder has toehold
  - Refusal costly to a bidder that wants to negotiate
- Optimal toehold
  - If the target response depends on the toehold:
    - Either zero or greater than a threshold value
  - If the target response independent of the toehold:
    - Always positive

Toehold-induced overbidding

- If B1 wins, payoff is v_1-(1-α)p_2 with prob. G(p_1)
- If B1 loses, gets αp_1 with prob. 1-G(p_1)

$$\mathrm{E}(\Pi_1) = v_1 G(p_1) - (1-\alpha)\int_0^{p_1} p_2 g(p_2) dp_2 + \alpha p_1 [1 - G(p_1)]$$

$$p_1^* = v_1 + \alpha \frac{1 - G(p_1^*)}{g(p_1^*)}$$

For uniform distribution:

$$p_1^* = \frac{v_1 + \alpha}{1 + \alpha}$$

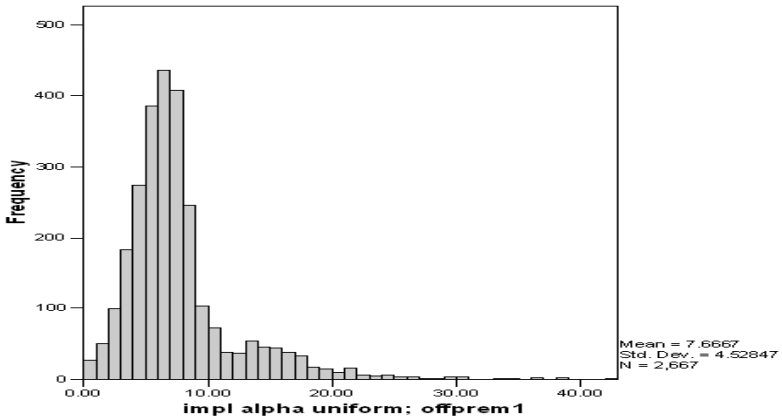
Bidding with lockup/breakup fee

- Lockup: $p_1^* = \frac{1}{1+\alpha}[v_1 + \alpha p_L + \alpha \frac{1 - G(p_1^*)}{g(p_1^*)}]$
- Breakup fee: $p_1^* = v_1(1-t)$

In other words:

- Toehold bidding is “aggressive” (overbidding)
- Breakup fee is “coercive” (underbidding)
- Bidding with lockup is in between (depends on p_L)

Implied toehold threshold



When all bids fail:

- AR if target ultimately unsuccessful
  - Initial bid is a merger: -10% (z=-2.9)
  - Initial bid is a tender offer: 2.4% (z=2.0)
- Does this drive toeholds to zero?
  - Unlikely: cross-sectional regressions show that the target price drop when all bids fail is smaller when bidder has a toehold

Why not copy the bidder?

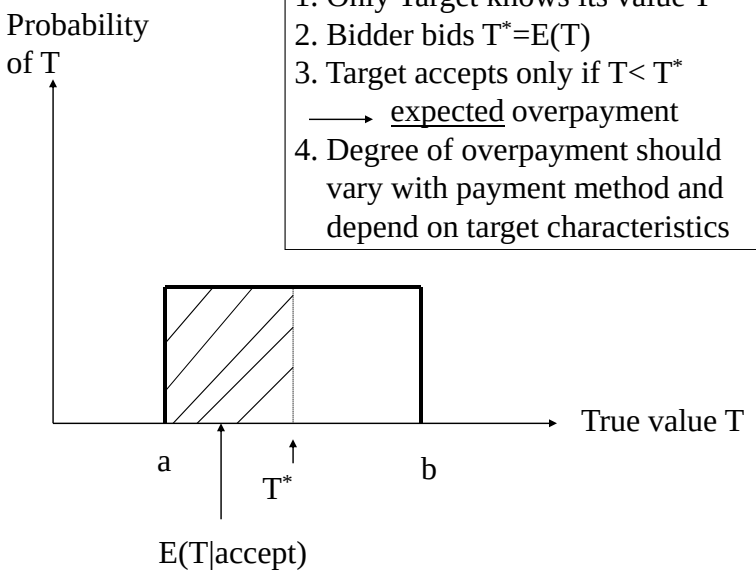
- Could target management adopt the bidder's value-increasing policy for the target?
- If so, the takeover bid will cause a permanent increase in the target share price regardless of the outcome of the offer.
- The evidence indicates the opposite: the target value-improvement seen at the time of the initial offer announcement is reversed if the target firm remains independent.
- In other words, target gains are conditioned on a control change

The payment method

- Types:
  - All-cash
  - All-stock
  - Mixed cash-stock (possibly with debt as well)
- Hypotheses:
  - Taxes
  - Asymmetric information
  - Capital structure and corporate control
  - Behavioral

Adverse Selection Scenario

1. Only Target knows its value T
2. Bidder bids $T^* = E(T)$
3. Target accepts only if $T < T^*$
   → expected overpayment
4. Degree of overpayment should vary with payment method and depend on target characteristics



Asymmetric information costs

- Expected overpayment cost of cash
- Expected overpayment cost of securities
- Expected undervaluation costs
- Expected loss of synergy gains from a failed offer

Case A: Bidder value B is common knowledge. Target value T is private

- T* = maximum target value.
- Bidder decides to offer T* in order to succeed with probability 1
- Compute expected over payment costs (OC) as a function of payment type
- E(OC)=expected value of payment minus expected value of target if it accepts
- All-cash offer: C*=T*

  $E(OC) = T^* - E(T \mid \text{accept}) > 0 \quad (1)$

- All-cash offer: C*=T*

  $E(OC) = T^* - E(T|\text{accept}) > 0 \qquad (1)$

- All-stock offer: $Z^*(B+T^*) = T^*$

where Z=fraction of merged firm

$E(OC) = Z^*[B + E(T|\text{accept})] - E(T|\text{accept})$

$= [B/(B + T^*)][T^* - E(T|\text{accept})] > 0 \quad (2)$

- (1) > (2) because $B/(B + T^*) < 1$

So, in Case A the bidder prefers stock...

- Intuition: Suppose the bidder overpaid (T<T*):
  - The value of the cash payment ex post is not contingent on the realized value of T. So no change in the overpayment
  - The value of bidder stocks used to pay for the target falls, effectively reducing the overpayment ex post

Case B:
T is common knowledge, B is private

- All-cash bid: C=T
  E(OC) = 0

- All-stock bid:
  Let B* denote target's valuation of bidder
  Z*[B*+T]=T or Z*=T/(B*+T)
  E(OC) = [T/(B*+T)](B+T) – T
  E(OC)>0 if B*<B (target undervalues B)
  E(OC)<0 if B*>B (target overvalues B)

Case C:
Two-sided information asymmetry
Neither part knows the true value of the other

- All-cash offer: C*=T*
- All-stock offer: Z*(B*+T*)=T*

Expected OC of all-stock bid minus expected OC of all-cash bid =

$$T^*[(B-B^*)-(T^*-R(T|accept)]/[B+E(T|accept)]$$

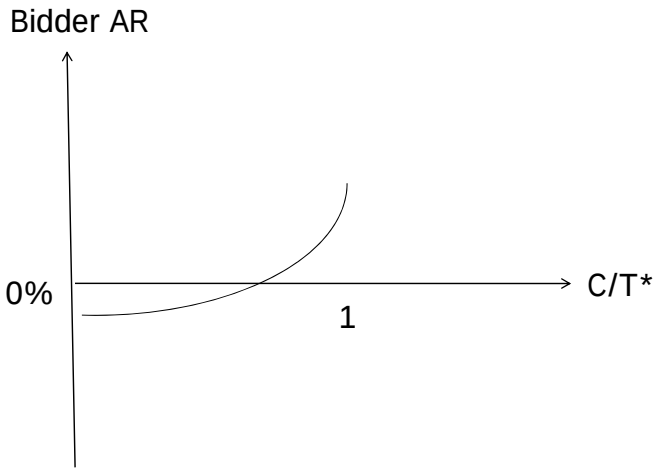
which can be either positive or negative

Case D:
Two-sided information asymmetry and mixed cash-stock offer

- Mixed offer: $C+Z(B^*-C+T^*)=T^*$

  $Z=(T^*-C)/(B^*-C+T)$
- There exists an equilibrium in which:
  - The most overvalued bidder selects all-stock
  - Higher-valued bidders separate themselves from lower-valued bidders by increasing the proportion of the deal paid in cash (C/T*)
- In this equilibrium, bidder announcement returns are increasing in C/T*

Signaling schedule w/mixed offers



Additional hypotheses (Table 4 in BET-08)

- Consideration in addition to taxes and information asymmetries:
  - Capital structure motives
    - Long-term target leverage ratios?
    - Pecking order story?
  - Managerial control motives
    - All-stock offer creates a large, possibly controlling blockholder
    - May prefer to raise cash by issuing debt or a pre-bd public equity offer instead

Payment method interacts with target status

- When the target is public, bidder announcement returns are on average negative in all-stock offers, and increasing in the cash portion of the offer
- When the target is a private company, all-stock offers generate positive bidder announcement returns which are as high (if not higher) than in all-stock offers

The initial bidder's use of all-cash, all-stock, and mixed cash-stock as method of payment.

Betton-Eckbo-Thorburn (2008)