Preemptive Bidding, Target Resistance and Takeover Premia: An Empirical Investigation

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Research question

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- Average price paid in single bidder takeovers is 50% over the pre-acquisition target stock price
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   High initial bid discourages competitors from paying the entry costs:
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   - Search and investigation costs
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⇒ Aim: Test target resistance and preemptive bidding theories
Overview

**Approach**: structural estimation of an auction model of takeovers that encompasses both explanations
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$\rightarrow$ Estimate distribution of bidders’ valuations and costs of entry

$\rightarrow$ Evaluate contribution of preemptive bidding and target resistance on takeover premia

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$\Rightarrow$ Estimate distribution of bidders’ valuations and costs of entry
$\Rightarrow$ Evaluate contribution of preemptive bidding and target resistance on takeover premia

$\Rightarrow$ **Target resistance is the main determinant of takeover premia**
Stage 1: Competition among two bidders $B_1$ and $B_2$

- $B_1$ privately observes a signal about takeover opportunity ($q$)
- $B_1$ decides whether to pay a cost $c_1$ to learn his valuation $v_1$ for the target and make an initial bid
- $B_2$ observes this bid and then decides whether to pay $c_2$ and learn $v_2$
- Participant bidders compete in an English auction for the target
Stage 2: Shareholder Approval

- The winner of the auction \( B_w \) learns minimum offer \( v_0 \) acceptable by target shareholders \( S \)
- \( B_w \) can top up the winning bid in the auction to \( v_0 \)
- \( S \) decide whether to accept or reject the highest standing offer
Model predictions

Initial Bid

\[ q = 1 \]
\[ c_1 \leq \hat{c}_1 \]

Single bidder contests
\[ v_1 \geq \hat{v} \]

Successful takeover (Node 1)
\[ v_1 \geq v_0; b = max\{\hat{b}, v_0\} \geq v_0 \]

Target remains independent (Node 2)
\[ v_1 < v_0; b = \hat{b} \]

Multiple bidder contests
\[ v_1 < \hat{v} \]

Initial bidder wins (Node 3)
\[ v_1 \geq b = max\{v_0, v_2\} \]

Successful takeover

Rival bidder wins (Node 4)
\[ v_2 > b = max\{v_0, v_1\} \]

Target remains independent (Node 5)
\[ v_0 > b = min\{v_1, v_2\} \]
Contest initiation

Single bidder contests

Initial Bid

\[ q = 1 \]
\[ c_1 \leq \hat{c}_1 \]

Multiple bidder contests

\[ \nu_1 < \hat{\nu} \]
Single bidder contests

$\nu_1 \geq \hat{v}$

- Successful takeover (Node 1)
  \[ \nu_1 \geq \nu_0; \ b = \max\{\hat{b}, \nu_0\} \geq \nu_0 \]

- Target remains independent (Node 2)
  \[ \nu_1 < \nu_0; \ b = \hat{b} \]
Multiple bidder contests

$\hat{v} < v_1$ → Successful takeover

Initial bidder wins (Node 3)

$v_1 \geq b = \max\{v_0, v_2\}$

Rival bidder wins (Node 4)

$v_2 > b = \max\{v_0, v_1\}$

Target remains independent (Node 5)

$v_0 > b = \min\{v_1, v_2\}$
Contest outcomes in the data

Initial Bid
N = 5,137

- Single bidder contests
  N = 4807 (93.58%)
    - Successful takeover
      N = 4258 (82.89%)
    - Target remains independent
      N = 549 (10.69%)

- Multiple bidder contests
  N = 330 (6.42%)
    - Successful takeover
      N = 294 (5.72%)
    - Rival bidder wins
      N = 199 (3.87%)
    - Target remains independent
      N = 36 (0.70%)

Data source: SDC Platinum, bids for control for US public companies, 1988-2006
Estimation results

- Estimation by Indirect Inference (Gourieroux, Monfort and Renault, 1993).
- Comparison of actual and simulated moments:

<table>
<thead>
<tr>
<th>Takeover Outcome</th>
<th>Probability</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Data</td>
<td>Simulation</td>
<td>Data</td>
</tr>
<tr>
<td>Single bidder, suc.</td>
<td>82.89%</td>
<td>81.90%</td>
<td>50.55%</td>
</tr>
<tr>
<td>Single bidder, uns.</td>
<td>10.69%</td>
<td>9.82%</td>
<td>47.86%</td>
</tr>
<tr>
<td>Multiple bidder, $B_1$ wins</td>
<td>1.85%</td>
<td>1.34%</td>
<td>58.43%</td>
</tr>
<tr>
<td>Multiple bidder, $B_2$ wins</td>
<td>3.87%</td>
<td>3.74%</td>
<td>68.73%</td>
</tr>
<tr>
<td>Multiple bidder, $S$ wins</td>
<td>0.70%</td>
<td>3.20%</td>
<td>56.30%</td>
</tr>
</tbody>
</table>
Distribution of valuations

<table>
<thead>
<tr>
<th>Premium over pre-acquisition target stock price</th>
<th>Kernel density</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 %</td>
<td>0</td>
</tr>
<tr>
<td>20%</td>
<td>0.2</td>
</tr>
<tr>
<td>40%</td>
<td>0.4</td>
</tr>
<tr>
<td>60%</td>
<td>0.6</td>
</tr>
<tr>
<td>80%</td>
<td>0.8</td>
</tr>
<tr>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td>120%</td>
<td>1.2</td>
</tr>
<tr>
<td>140%</td>
<td>1.4</td>
</tr>
<tr>
<td>160%</td>
<td>1.6</td>
</tr>
<tr>
<td>180%</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Target shareholders
Second (rival) bidder
First (initial) bidder

<table>
<thead>
<tr>
<th>$v_0$</th>
<th>$v_1$</th>
<th>$v_2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>57.22%</td>
<td>97.17%</td>
</tr>
</tbody>
</table>
Distribution of costs of entry

Mean (%) Mean ($ mil) Median ($ mil) 25-th per. 75-th per.  
$c_i$ 1.96% 10.3 1.43 0.43 5.12
Even small costs of entry matter for preemption

1. If no entry threat ($c_2$ very high), expected premium in successful single bidder contests is 48%
2. In the data this premium is 51% on average
3. Probability that reserve price is higher than preemptive bid is 70.12% in successful single bidder contests

Premia in single bidder contests are mainly determined by target resistance.

1. Initial bidder deters a stronger rival in 8.6% of successful single bidder contests
2. Initial bidder would pay more to acquire the target in auction with probability 47% and by 7.3% on average
Preemptive bidding and Target Resistance

Simulation analysis

- $E(v_0) = 57\% \rightarrow 69\%$
  - Probability that target remains independent: 13\% \rightarrow 21\%
  - Fraction of single bidder contests rises by 2.5\% (91.7\% \rightarrow 94.3\%)
  - Premium in these contests increases by 3.31\%

$\Rightarrow$ Probability of takeover success highly sensitive to target resistance
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$\implies$ Probability of takeover success highly sensitive to target resistance

- $E (c_2) = 2\% \rightarrow 1\%$
  * Fraction of multiple bidder contests: 8\% \rightarrow 19\%
  * Premium in single bidder contests increases by 5\% (51\% \rightarrow 56\%)
  * Final premium determined by the preemptive bid: 30\% \rightarrow 58\%

$\implies$ Probability of multiple bidder competition highly affected by costs of entry
Conclusions

* Estimate auction model of takeover contests using structural approach
* Simulation: The model reasonably fits the moments in the data
* Bidders are very asymmetric: \( E(v_1) = 97\% \), \( E(v_2) = 58\% \)
* Small costs of entry (2%) can rationalize high preemption rates
* Target resistance accounts for most of the takeover premium