

THE SCIENTIFIC TAKEOVER EVIDENCE

Professor B. Espen Eckbo

2010

Contents

1	Takeover Activity	3
2	The Payment Method	8
3	Toehold Bidding	11
4	Bid Jumps and Markup Pricing	13
5	Takeover Defenses	15
6	Targets in Bankruptcy	17
7	Offer Premiums	19
8	Takeover Gains	20
9	Bondholders, Management, and Arbitrageurs	24
10	Mergers, Competition and Antitrust	29

1 Takeover Activity

- (1) Merger waves (clustering of takeovers) tend to occur in periods of market booms. They occurred in the late 1800s and early 1900s ("the monopolization wave"), the late 1960s ("the conglomerate wave"), the mid 1980s ("the refocusing wave"), and the late 1990s ("the strategic/global wave").
- (2) There is substantial evidence of industry-clustering of mergers. Regulatory changes and macroeconomic liquidity variables are better predictors of industry merger waves than are market-to-book ratios.
- (3) In the period 1996-2000, when market valuations were particularly high, the sum of all-cash and mixed cash-stock bids was equal to the number of all-stock bids. Also, in this period, the proportion all-stock offers was the same as during the previous five-year periods.

- (4) Despite strong merger patterns, predicting target firms with any accuracy has proven difficult.
- (5) Target firms increasingly initiate the takeover process by soliciting bid indications from a set of potential negotiating partners. The bidder that is selected is recorded as the first bidder in SEC registration documents and therefore by data bases such as SDC (Thomson Financial).
- (6) When organizing all SDC control bids into contest for U.S. targets, there were a total of 35,727 control contests. Of these, the initial bidder proposed a merger in 28,994 cases and made a public tender offer in another 4,500 cases (the balance being 2,224 controlling-block trades).
- (7) In constant 2000 dollars, the merger deal was valued at \$436 million on average (median (\$35 mill.)), while the deal value of the average tender offer was \$480 (median \$79 mill.).

- (8) SDC provides information on the payment method for about half of the cases. Of these, 26% were all-cash deals, 37% were all-stock deals, and 37% were mixed cash-stock deals. All-cash and mixed offers have similar deal sizes, slightly above all-stock deals.
- (9) A total of 590 initial bids are classified as "hostile" and another 435 deals are "unsolicited". Hostile bids have substantially higher than average deal values.
- (10) In approximately thirty percent of all deals, the initial bidder and target operate in the same four-digit SIC industry (horizontal takeover). The two most active takeover sectors are Manufacturing, and Finance/Insurance/Real Estate.

- (11) Two-thirds of the 35,727 initial bidders are public companies, while 37% of the targets are public. In 44% of the initial bids, a public bidder is pursuing a private target (the largest single group of takeovers), with an average deal value of \$114 mill. (median \$23 mill.). The total number of deals involving either a public bidder or target rose sharply in the 1990s.
- (12) Of the 35,727 initial bidders, 11% were foreign companies (primarily Canada and the UK). Deals involving foreign bidders are relatively large.
- (13) The time from the initial offer to the effective takeover date averages 108 trading days (median 96) when the initial bid is a tender offer, and 71 days (median 49) for merger bids. In cases where there are more than one control bid for the target, the time from the first to the second bid averages 40 trading days (median 19).

(14) The likelihood that the initial bidder wins the target is higher when the bidder has a toe-hold, when the payment method is all-cash, when the bid form is tender offer, and when the bidder is a public company. The probability of winning is lower for targets with poison pills, and when the target reaction is negative. All bids fail (no bidder wins) in 22% of the cases, with a greater failure probability for private bidders.

2 The Payment Method

- (15) Bidders initiating takeover bids for U.S. targets over the period 1980-2005 offered all-cash as payment in 26% of the cases, all-stock in 37%, and a mix of stock of cash in 37%.
- (16) 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 (with the exception of the 1980-85 period where most merger bids offered a mix cash=stock payment).
- (17) In the two subperiods 1990-1995 and 1996-2000, the percentage all-stock offers in initial merger bids were approximately 55% in *both* period. This means that (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.

- (18) The payment method choice is in part determined by tax considerations, the degree of information asymmetry between the bidder and the target, the degree of market mispricing of bidder stock, and by corporate control considerations. Stock offers are more likely the greater the bidder's asset size and market-to-book ratio. Stock offers are less likely the greater the bidder management's shareholdings and the greater the dispersion in analyst forecast of bidder earnings.
- (19) Offer premiums are greater in all-cash offers than in all-stock offers. The probability that the initial bidder wins the target is lower for all-stock offers than for cash offers.
- (20) When the target is public, bidder announcement returns are on average negative in all-stock offers and greater in all-cash and mixed cash-stock offers than in all-stock offers. Bidder announcement-induced stock returns are increasing in the cash-portion of the offer.

(21) When the target is a private company, stock offers generate positive bidder announcement returns that are as high—if not higher—than for all-cash bids.

3 Toehold Bidding

- (22) The frequency of toehold bidding in friendly mergers and tender offers has fallen dramatically since the 1980s. Over the 1990-2002 period, 7% of bidders initiating a takeover had toeholds, and only 2% had toeholds acquired in the market shortly prior to launching the bid.
- (23) Toehold bidding remains common in hostile bids (50% frequency).
- (24) Toeholds are large when they exist: on average 20%.
- (25) Toehold bidders tend to pay lower offer premiums and win the target more often than zero-toehold bidders.
- (26) The presence of a bidder toehold attenuates the drop in the target share price when all bids fail.

(27) Since bidder toehold benefits mirror target toehold costs (lower offer price, greater probability of target management being replaced) toehold bidding may be viewed as aggressive by the target. Thus, approaching the target with a toehold may cause some otherwise friendly targets to refuse negotiations. Consistent with this, the data indicates a significantly negative association between the likelihood of the initial bidder approaching with a toehold and the expected value of resistance costs (including the opportunity loss of a termination agreement).

4 Bid Jumps and Markup Pricing

- (28) The average offer premium in successful single-bid takeover contests is somewhat 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.
- (29) Bid revisions are substantial, with an average bid jump from the first to the second bid in the contest of 10% (a 31 % change in the offer premium).
- (30) A dollar increase in the pre-offer target share price runup causes the initial bidder to mark up the total offer premium by \$0.80.
- (31) Markup pricing notwithstanding, bidder takeover gains are increasing in the target runup. Thus, takeovers with greater target runups are more profitable for *both* bidder and target firms, which may also explain why bidders agree to (partial) markup pricing.

(32) Toehold acquisitions during the runup period bidder increases the target runup. When the toehold is acquired by the initial bidder, however, the markup is reduced. No such markup reduction is observed when the toehold is acquired by another investor.

5 Takeover Defenses

- (33) The presence of a majority of independent directors on the board of the target is viewed by the court as a strong indication of satisfaction of the fiduciary duty of loyalty.
- (34) Delaware case law sanctions the right to "just say no" to an unsolicited takeover bid. That is, the board may determine in good faith that the continuing independence of the corporation is in the long-term best interest of the corporation and its stockholders.
- (35) If the board's defensive response is not "draconian" (i.e., it is neither coercive nor preclusive) but "within the range of reasonableness" given the perceived threat, the board is protected by the business judgement rule. A defense that is deemed preclusive because it frustrates, impedes or disenfranchises a shareholder vote is unlikely to be upheld.

- (36) The twin defense of staggered board election and a poison pill ("shareholder rights plan") is "draconian" in the eyes of many economists but not the court. However, "dead hand" pills (where only directors not up for election may vote to rescind the pill) have been struck down.
- (37) The fraction of "hostile" (sum of unsolicited bids and bids where target is explicitly hostile) drops sharply after 1989, from more than 20% in the 1980s to less than 3% by the end of the 1990s.
- (38) Offer premiums are no lower for targets with poison pills.
- (39) There is a small but significantly negative market reaction to the adoption of strong antitakeover amendments such as poison pills and staggered board. The market reacts positively to antigreenmail amendments provided these occur when a takeover is rumored.

6 Targets in Bankruptcy

- (40) There is a trend towards market-based mechanisms for resolving Chapter 11 cases, including sale of the firm to a bidder. Target firms that are sold spend less time in Chapter 11, which lowers bankruptcy costs. Acquirers tend to be in the same industry, and premiums paid are on average lower than in takeovers of non-bankrupt firm in the same industry.
- (41) Premiums paid for targets sold in mandatory, open, first-price, all-cash bankruptcy auctions in Sweden suggest the possibility that the auction mechanism may work well for the typical Chapter 11 case as well (which is of a similar size as the Swedish sample firm).

- (42) The average mandatory auction receives three bids and lasts two months; three-quarters of the auctioned firms are sold as going concern; the prices paid in these going-concern sales do not exhibit fire-sale discounts; and competition among bidders appear to force insiders to pay premiums comparable to those paid by outsiders.
- (43) The bankrupt firm's major creditor (bank) often finances a bidder in the auction, which pushes the auction towards overbidding. Post-bankruptcy operating performance is found to be at par with non-bankrupt industry rivals, regardless of overbidding incentives, suggesting that the auction leads to a relatively efficient restructuring of the target firm.

7 Offer Premiums

- (44) Large-sample evidence on offer premiums are only starting to emerge. This evidence indicates that both the initial and final offer premiums are
- greater after the 1980s;
 - greater for public bidders;
 - greater in all-cash offers;
 - lower for toehold bidders;
 - increasing in the target runup;
 - decreasing in target total equity capitalization and greater if the target's book-to-market ratio exceeds the industry median market-to-book ratio;
 - greater in the presence of substantial dispersion in analysts' earnings forecasts;
 - unaffected by the presence of a target poison pill or target hostility to the initial bid;
 - lower when the bidder CEO is female.

8 Takeover Gains

- (45) The average target cumulative average abnormal stock return (CAR) is positive and significant, both over the runup period and the announcement period. The runup constitutes about one-third of the total runup plus announcement CAR. The largest target CAR occurs in all-cash offers.
- (46) The average, value-weighted combined CAR to bidders and targets is positive and significant over both the runup period and the announcement period. For the overall sample used here, the sum of the combined CAR for the runup- and announcement periods is a significant 1.79%.

- (47) Bidder announcement period CARs average close to zero for the overall sample, with 49% of the bidders having negative CAR. The combination large bidder (here in the upper size quartile), payment in all-stock, and the target being a public company represents a "worst-case scenario" with average bidder announcement-period CAR of a significant -2.21%. The "best-case scenario" for the bidder is the combination of a small bidder (lower size-quartile), private target and *all-stock* as payment. This produces a significant average bidder announcement-period CAR of 6.46%.
- (48) The major driver of negative bidder returns is not, as previously thought, the all-stock payment. Rather, the two key drivers are the target's status a public or private, and bidder size.

- (49) Bidder size was particularly large in 1999 and 2000. These years were unusual relative to years before *and* years after. Cisco, with a (constant 2000 dollar) market capitalization of \$180 billion was the dominant bidder in *both* the upper 1% and lower 1% tails of the distribution of bidder abnormal announcement returns. Removing Cisco from the sample reduces the aggregate bidder dollar wealth loss in 1999-2000 period by almost \$100 billion.
- (50) Studies of long-run abnormal stock returns use either the matched-firm technique or Jensen's alpha (regression constant in an asset pricing model) to measure expected return to the merged firms in the sample. With 15,298 successful takeovers completed during the period 1980-2003, we show that long-run returns are significantly negative based on the matched-firm technique and insignificantly different from zero based Jensen's alpha.

- (51) The standard matched-firm procedure identifies firms that have significantly different factor loadings than the event firms—which undermines their role as "matches".
- (52) A zero-investment portfolio strategy which is long in the merged firms and short in the matched firms fail to produce long-run abnormal stock returns which are significantly different from zero, even for the sample of all-stock mergers.

9 Bondholders, Management, and Arbitrageurs

- (53) Studies of excess returns to bondholders of bidder and target firms find zero or negative gains to bidder bondholders and positive gains to target bondholders. There is no evidence of a wealth transfer from stockholders to bondholders due to a coinsurance effect of mergers. As of the 1990s, target bondholders are often fully protected via event risk covenants.
- (54) Some target firms, particularly those receiving hostile bids, underperform prior to becoming targets. Moreover, CEO turnover increases after hostile bids. These findings indicate a disciplinary role played by the market for corporate control. There is, however, indications that this external control mechanism represents a "court of last resort".

- (55) There is evidence that managers undertaking value-reducing acquisitions face a greater probability of being replaced than do managers undertaking value-increasing acquisitions. That is, bad bidders risk being fired.
- (56) There is evidence that CEO compensation (other than turnover) changes following acquisition activity. The market reaction to merger announcements tend to be positive and greater for CEOs with above-average equity-based compensation, suggesting that compensation affects the quality of managerial investment decisions.
- (57) CEOs with high equity-based compensation tend to seek out targets with relatively high market-to-book ratios (growth firms). This is consistent with high equity compensation inducing risk-taking behavior.

- (58) Empirical measures of CEO "power" helps explain the cross-sectional variation in M&A bonuses. Deal announcement induced abnormal stock returns tend to be lower for CEOs with greater "power", suggesting that power may be misused.
- (59) While a poorly performing acquisition reduces the value of the CEO's portfolio of stocks and options, there is evidence that the value of post-acquisition grants more than compensates for this value reduction. This indicates that CEOs face combination of low downside risk and high upside potential from making good acquisition decisions.
- (60) There is evidence that some target firm CEOs may be sacrificing takeover premium in return for a "golden handshake" from the bidder (to step aside and relinquish control).

- (61) There is evidence that boards dominated by outside directors tend to increase value for their shareholders during an acquisition attempt. Target directors are rarely retained after a completed takeover, and their number of board seats and income levels tend to drop. This indicates that failing as a monitor imposes a personal cost on directors.
- (62) There is substantial evidence of increased trading activity in the bidder and target shares following merger announcements. In all-cash offers, merger (risk) arbitrageurs purchase target shares without shorting the bidder shares. In all-stock deals, arbitrageurs short the bidder stock using the exchange rate. If the exchange ratio is floating, the short sales are postponed until the final pricing has been set and the floating ratio has been fixed.

(63) There are substantial (risk-adjusted) returns to merger arbitrage strategies. Moreover, the short selling activity appears to put downward pressure on the acquirer stock price that may account for almost half of the negative announcement return for acquirers of stock-financed mergers.

10 Mergers, Competition and Antitrust

- (64) Merger-induced changes in product and factor prices translate into abnormal stock returns to the merging firms' industry rivals, upstream suppliers and downstream customers. Market power theories (collusion, predation, buying power) and productive efficiency theories have testable predictions for these abnormal stock returns. Such tests extend the traditional product price analysis in industrial economics.
- (65) The power of tests based on stock returns depend on accurate identification of related firms (rivals, customers, suppliers). Since the evidence indicates significant contagion effects of horizontal merger announcements on these related firms, the tests appear to have sufficient power. Related firms are identified using four-digit SIC codes, Compustat industry segments, and Bureau of Economic Analysis Input/Output tables.

- (65) The tests utilize two sets of sample: Mergers that have been challenged with violation of antitrust laws (or, in the European Union, reviewed for such violation), and non-challenged mergers. For challenged mergers, the tests exploit *two* events with (typically) opposing implications for the industry wealth effects, thus increasing power to reject.
- (67) The empirical studies typically conclude against horizontal market power effects of horizontal mergers, whether or not these were challenged. That is, the observed wealth effects on horizontal rivals and downstream (corporate) customers do not support increased market power. Some studies find traces of monopsony (buying power) effects vis-a-vis upstream suppliers.

(68) A horizontal merger *causes* a measurable increase in industry concentration (equal to twice the product of the market shares of the bidder and target when using the Herfindahl measure of concentration). The classical market concentration doctrine holds that increases in concentration reliably increases the industry's market power and thus industry monopoly rents. Since the abnormal returns to industry rivals directly measures changes in industry rents, regressing the merger-induced rival abnormal returns on the change in industry concentration provides a powerful test of the market concentration doctrine. Empirical tests reject the doctrine.