Econ 234C – Corporate Finance
Lecture 9:
External Investment (III): Biased Investors
External Investment (IV): Biased Managers

Ulrike Malmendier
UC Berkeley

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Outline (merger lectures)

- External Investment (III): Biased Investors (Market Inefficiencies)

- External Investment (IV): Biased Managers (Managerial Hubris)

Research sheet?

1 Reminder: Stylized Facts and Link to Theory

Empirical findings:

- Huge economic significance (whether measured in dollar value of deals, dollar value of firms involved, shareholder value destroyed at announcement, job lost/created/changed, ..)

- Merger waves

- Merger waves at different times in different industries

- Negative effect on value for shareholders of acquiring company at announcement

- Large amount of stock financing in the 1990s (70% any stock; 58% all stock) compared to 1970s/1980s (45% any stock; 37% / 32% all stock)

The free riding problem

Neoclassical Argument: "Mergers are market instruments to prevent inefficient firm management. If managment creates less value than possible, raiders acquire the company, fire management, implement value-maximizing management decisions, and sell with profit."

Grossman-Hart (1980) Counter-Argument: If raiders do not reap the full benefit (return to) raiding, they will undertake too few acquisitions.

Free-riding intuition: Raiders share benefit with shareholders who otherwise do not sell their shares (but hold on to them and reap the proportional benefit from the acquistion as shareholder).

But the empirically more relevant problem seems to be that there might be 'too many' mergers not 'too few.'

2 Biased Investors (Market Inefficiencies)

Shleifer-Vishny (2003) Model

Two firms A and T with

- Capital Stock: K_A and K_T

- "Short-Run" (Current) Value:
$$V_A = S_A K_A$$
$$V_T = S_T K_T$$
$$V = S(K_T + K_A)$$

  w.l.o.g. $S_A > S_T$. (S, S_A, S_T are valuations per unit of capital.)

(Typically $S_A > S > S_T$.)

$\implies$ Short-run gains from mergers: $V - V_A - V_T$

$\implies$ For example, 0 perceived synergies if S such that

$$S(K_A + K_T) - S_A K_A - S_T K_T = 0$$

- "Long-Run" Values:

$$\overline{V}_A = qK_A$$
$$\overline{V}_T = qK_T$$
$$\overline{V} = q(K_A + K_T)$$

$\implies$ Long-run gains from mergers: ?.

- Managers act in own interest and exploit market irrationalities.

- Investors draw no inferences about the **LR** from merger announcements!

Typical Case: A acquiring T

- A pays PK_T ($\geq S_T K_T$)

  – E.g. $P = S_T \implies$ No takeover premium.

  – E.g. $P = S \implies$ Payment proportional to **SR** combined value.

- Announcement effects

  – Acquirer:?
    Answer:

  – Target:?
    Answer:

$\implies$ A-shareholders lose from dilution $(S - S_A < 0)$ or gain from "money machine" $(S - S_A > 0)$

$\implies$ A-shareholders gain from high SR assessment of synergy relative to price $(S - P > 0)$.

- Long-run abnormal returns if cash payment

  - Combined: 0

  - For A-Shareholders: $(q - P)K_T.$ $\longrightarrow$ Why?
    Answer:

  - For T-Shareholders: $(P - q)K_T.$ $\longrightarrow$ Why?
    Answer:

- Long-run abnormal returns if stock payment
  if $T-$shareholders get $x = \frac{PK_T}{S(K_A+K_T)}$.

  $\longrightarrow\longrightarrow$ What are the **implicit assumptions** to get to x??

  $\longrightarrow\longrightarrow$ How does the ST announcement effect compare?

  $\longrightarrow\longrightarrow$ Justification?

  Answer:

  – Combined Value:

  – For A-Shareholders: $(1 - \frac{P}{S})qK_T$. $\longrightarrow$ Why?

  Answer:

– For T-Shareholders: $(\frac{P}{S} - 1)qK_T$. $\longrightarrow$ Why?

Answer:

$\Longrightarrow$ In the LR, A-shareholders gain from high SR-valuation $(S > P)$.

$\Longrightarrow$ Compare to gains/losses with cash financing.

Answer: .

Result: Difference between LR value creation and LR (mean-reversion) returns.

- LR return of A without acquisition: $(q - S_A)K_A$. (Negative if A initially overpriced.)

- *Incremental* LR return of A from acquisition: $(1 - \frac{P}{S})qK_T$. (Positive if $P < S$.)

$\implies$ In the LR, A-shareholders gain from high valuation $(S - P > 0)$ even if overall LR return is negative. ("Not as negative as they would have been without the acquisition.")

Conclusions

- Predictions of Market Timing Theory

  1. Characteristics of stock mergers: $S_A > S > q$ (preferred over cash) and $S_A > S > P$ (positive return); (but $q \lesseqgtr P$)

     - Acquirer has high prior returns (is overvalued) $\implies S_A \geq S > q$ (signs: earnings manipulation, insider selling)

     - Stock mergers disporportionately high when aggregate or industry valuations are high.

     - Stock mergers disporportionately high when valuations are highly disperse.

2. Characteristics of cash mergers $S < q$ (preferred over stock) and $q > P$ (pos return)

 – Target has low prior returns (is undervalued) $\implies q > P \geq S_T$.

 – Cash mergers disporportionately high when aggregate or industry valuations are low.

Caveats

- Horizons.

  – E.g. if A has short horizon, the stock acquisition possible even if both A and the merged company are overvalued relative to T: $(S - S_A)K_A + (S - P)K_T > 0$.

- As they say themselves in the beginning: this is about mergers in the 90s!

- Merger waves: they, too, need positive correlation (in over-/under-valuation).

Empirical issues:

How could you get a good benchmark for over/under-valuation?

How could you separate the Tobin's Q effect from the over/under-valuation effect?

How could you get a good measure of the LR returns of the acquirers?

3 External Investment (IV): Overconfidence

Roll (JB 1986): The Hubris Hypothesis

- Let's step back from assuming a given acquirer A and a given target T. Instead: N potential acquirers of a given target T.

- Valuation process

  – Acquirers $A_1, A_2, ..., A_n, ..., A_N$ evaluate T

  – Current market values $V_{A_1}, V_{A_2}, ..., V_{A_N}, V_T$

  – Expected value of merger for A_n: $E_n[V_n] - V_{A_n}$

- How much should company A_n bid (at most)?

  - Vickrey (1961) for private values,
    Milgrom and Weber (1982) for common/affiliated values.

  - If expectation based on signal drawn from a common distribution:
    $b_n < E_n[V_n] - V_{A_n}$

    * E.g. buy-out firm $E_n[V_n] - V_{A_n} = E_n[V_T]$ and
      signals about future value of T drawn from common distribution.

    * Then $b_n < E_n[V_T]$.

  - Else: winner's curse.

- Hubris hypothesis (version 1): Bidders do not account for winner's curse and bid (up to) $E_n[V_T]$.

- Hubris hypothesis (version 2): Bidders account for winner's curse, shade their bid, but over-estimate the private-value element.

- Additional plausibility arguments:

  - We observe bids $b_n > V_T$ but not (rarely) $b_n < V_T$; thus we observe upwards bias but not downwards error.

  - Little opportunity to learn from past mistakes (few acquisitions over a managers lifetime, noisy outcome).

– Executives appear particularly prone to display overconfidence in experiments.

– Three main factors:

  ∗ Being in control (incl. illusion of control)

  ∗ High commitment to good outcomes

  ∗ Reference point not concrete

(Weinstein, 1980; Alicke et al., 1995)

Missing piece:

$\longrightarrow$ Difference in opinion (between rational investors/market and overoptimistic managers) affects bidding behavior.

How?

$\longrightarrow$ **Heaton (FM 2002)**

$\longrightarrow$ **Malmendier and Tate (2007)**

3.1 Single Acquiror with Full Bargaining Power

- Market value of acquiror $A = V_A$; A-manager's valuation of $A = \widehat{V}_A$.

- Market value of target $T = V_T$.

- A has access to internal resources $\overline{c}$ (cash and other non-diluting assets); uses $c \leq \overline{c}$ to pay target shareholders. If no merger takes place, c is 0 (and the full $\overline{c}$ is part of the firm value V_A).

- Target shareholders are paid with c and / or shares of the merged company.

- Market value of the combination of A and T after paying out $c = V(c)$; A-manager's valuation of the combination of A and $T = \widehat{V}(c)$.

- Overconfident A-manager
  - overvalues own company: $\widehat{V}_A > V_A$,
  - overvalues the merger, $\widehat{V}(c) - V(c) > \widehat{V}_A - V_A$ for some c.

- How much does CEO pay for T? How much in shares after cash payment c? How does it depend on overconfidence?
  Answer:

- When does a rational CEO conduct the takeover?
  Answer:

- Denoting the merger synergies as $e \in R$, we can decompose $V(c)$ into

$$V(c) = V_A + V_T + e - c. \tag{1}$$

$\implies$ Rational CEO makes the first best acquisition decision: acquires iff $e > 0$, *independently* of the available $\bar{c}$.

$\implies$ Since the capital market is fully efficient, there is no extra cost of raising external capital to finance the merger and the CEO is indifferent among cash, equity, or a combination.

- When does an overconfident CEO conduct the takeover?

Answer:

(continued)

- Denoting the "perceived" additional merger synergies as $\widehat{e} \in R_{++}$, we can decompose $\widehat{V}(c)$:

$$\widehat{V}(c) = \widehat{V}_A + V_T + e + \widehat{e} - c. \tag{2}$$

$\implies$ Overconfident CEO acquires iff $e + \widehat{e} > \frac{V_T - c}{V(c)}(\widehat{V}(c) - V(c))$.

$\implies$ That is, he merges whenever actual and perceived merger synergies exceed the perceived loss due to dilution.

- **Implication 1:** *An overconfident CEO exhausts his supply of internal (non-diluting) assets before issuing equity to finance a merger.*

Proof.

(continued)

- **Implication 2:** A rational CEO never conducts a value-destroying merger. An overconfident CEO does a value-destroying merger if perceived synergies $\hat{e}$ are sufficiently large relative to perceived undervaluation $(\widehat{V}_A - V_A)$ and the portion of the deal financed by equity $\frac{V_T - c}{V(c)}$.

Proof.

- **Implication 3:** (i) If $\overline{c} \geq V_T$, an overconfident CEO conducts any merger a rational CEO would conduct and some mergers a rational CEO would not. (ii) If $\overline{c} < V_T$, an overconfident CEO does some (value-destroying) mergers a rational CEO would not and a rational CEO does some (value-creating) mergers that an overconfident CEO would not.

Proof.

3.2   Competing Acquirors

- Consider N potential acquirors A_n, $n = 1, ..., N$. Denote by W_n the A_n manager's maximal willingness to pay for T.

- How large is W_n?
  Answer:

In an English auction with $\max W_n \geq V_T$ the equilibrium outcome is (ignoring ties):

1. The winning bidder is A_{n^*}, where $n^* = \arg\max_n W_n$.

2. The winning bid is $b^* = \max\{(\max_{n \neq n^*} W_n), V_T\}$.

- Define 'overpayment' as a transfer from the winner A_{n^*} to T that is higher than the sum of target value and synergies, $V_T + e_{n^*}$,

- **Implication:** If the winning acquiror A_{n^*} is overconfident, he will over-pay if $\max_{i \neq i^*} W_i \in (V_T + e_{n^*}, W_{n^*})$.

$\implies$ Competition and heterogeneity in synergies may induce overconfident CEOs to over-pay.

$\implies$ Contrary to Roll's theory, an overconfident bidder does not always bid higher than a rational bidder! An overconfident bidder who is considerably more overconfident about the value of his own company than about the merger may lose the takeover contest.

Note: Same results for variations in bargaining strength.

3.3   Further Extensions

External vs. internal investment.

- Overconfidence: about own company $+$ about synergies with target.

- **But:** if overconfidence about own company due to overvaluation of internal investment projects $\implies$ could counteract acquisitiveness if resources are scarce.

Repurchases

- Overconfident CEO may use internal resources to repurchase shares (which the CEO perceives to be undervalued).

- **But:** if maximizing current shareholder value, CEO will not undertake such a transaction since any gain to remaining shareholders is offset by a loss to the former shareholder.

Merger waves.

- Tradtional overconfidence does **not** easily capture merger waves.

- Overconfidence with rational market interaction can capture merger waves:
    - Net effect of overconfidence on merger frequency is ambiguous: overestimation of merger synergies versus reluctance to raise external finance.
    - As inflows of cash or capital market conditions mitigate perceived financing constraints, the overestimation of synergies dominates and overconfidence leads to increased merger frequency.

Overconfidence of target CEOs.

- Overconfidence *may* be a feature distinguishing acquirors from targets.

- Additional comparative statics if we allow target managers to also be overconfident:

– Acquisitions of target firms with overconfident management are more likely to be hostile. (The overconfident target management might believe they can create at least as much value as the potential acquirors and, hence, reject shareholder-value increasing bids as too low.)

– Acquirors may have to pay higher premia for targets with overconfident managers, even in friendly deals.

– In both cases, overconfidence on the side of the target management can be beneficial to the target shareholders.

3.4   Empirical Predictions

Prediction 1. Overconfident CEOs are more likely to conduct mergers with a high probability of failure and negative expected returns.

Prediction 2. Among CEOs with abundant internal resources (e.g. large cash reserves and low leverage), overconfident CEOs are more likely to conduct acquisitions.

Prediction 3. The expected returns to merger announcements are lower for overconfident than for non-overconfident CEOs.

Readings for next week or week after:

- Intro into capital structure: Frank and Goyal, Tradeoff and Pecking Order Theories of Debt. To appear in Espen Eckbo (ed.): The Handbook of Empirical Corporate Finance, Elsevier Science. (Good overview.)

- Myers, The Capital Structure Puzzle

- Graham, The Tax Benefits of Debt