Econ 234C – Corporate Finance
Lecture 7:
External Investment (I): Stylized Facts
External Investment (II):

Ulrike Malmendier
UC Berkeley

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Outline (next two or three lectures)

1. External Investment (I): Stylized Facts
2. External Investment (II): Corporate Control and Voting
3. External Investment (III): Market Inefficiencies
4. External Investment (IV): Managerial Hubris

1 Mergers and Acquisitions: Introduction

Andrade-Mitchell-Stafford, *JEP* 2001; Holmstroem-Kaplan, *JEP* 2001; Moeller, Schlingemann, Stulz, *JF* 2006

Why do CEOs make acquisitions?

1. Synergies (e.g. economies of scale).
2. Attempt to create market power (e.g. forming monopolies)
3. Incompetent target management $\longrightarrow$ market discipline
4. Self-serving attempts to overexpand (empire-building, hubris).
5. Advantages of diversification (e.g. internal capital market; diversification for undiversified managers)

6. Mergers = reaction to unexpected shocks to industry structure (Explanation for wave/cluster structure in Mitchel and Nulherin, *JFE* 1996, and Andrade, Mitchell, Stafford, *JEP* 2001; could also be the "trigger" in the informational cascades literature.)
   - E.g. technological innovation (creates excess capacity, need for consolidation).
   - E.g. financial innovation.
   - E.g. supply shock (oil prices; foreign competition).
   - E.g. deregulation.
     - 1973: airlines.
     - 1984 and 1996: broadcasting.
     - 1984: entertainment.
     - 1978: natural gas.
     - 1980: trucking.
     - 1994: banks and thrifts.
     - 1992: utilities.
     - 1996: telecommunications.

Importance / Significance of mergers

- Reallocation of resources within and across industries
- 1995: Value of M&A's = 5% GDP and = 48% nonresidential gross investment
- For a firm an "extraordinary event" often doubling its size within months; large organizational uncertainty; movement of human capital

==> Extremely large literature

==> In finance, IO, macro; also relevant for labor, public.

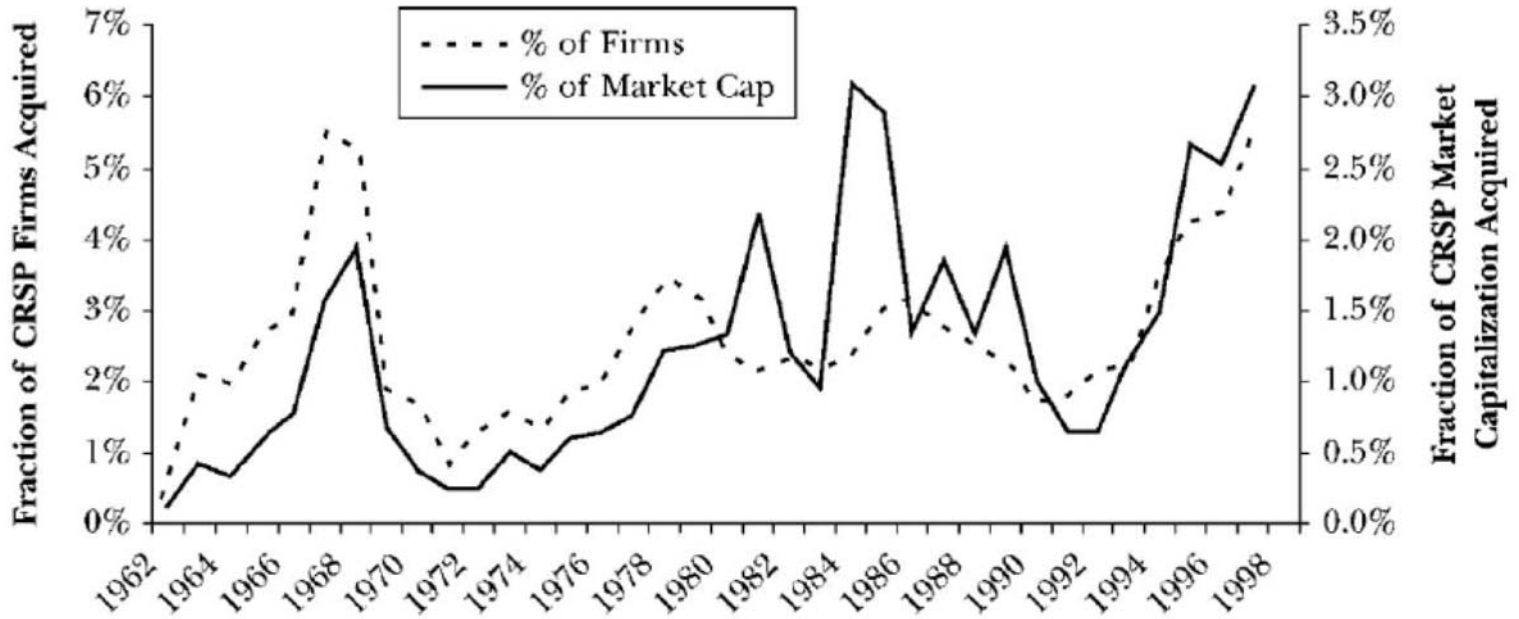
Stylized facts

1. Mergers occur in waves.

- 1920s/1930s: Mergers for market power.
- 1960s: Mergers for diversification (def.: 2-digit SIC).
  - Decreasing since 1960s.
    (1970s: 70%, 1980s: 60%, 1990s: 52%)
  - Ultimately failures.
- 1980s: Mergers for market discipline.
  - 1980s: Half of all major US corporatations received a takeover offer.
  - 14% hostile (only?); 4% in 1990s. (*hostile* = target publicly rejects or acquirer describes it as unsolicited and unfriendly)
- late 1980s and 1990s: Mergers of deregulation.
  - three major waves
  - large multi-billion dollar deals

Figure 1

Aggregate Merger Activity



2. **Within a wave,**
   mergers occur in industry clusters.

- 1970s: Metal Mining, Real Estate, Oil & Gas, Apparel, Machinery

- 1980s: Oil & Gas, Textile, Misc. Manufacturing, Non-Depository Credit, Food

- 1990s: Metal Mining, Media & Telecommunication, Banking, Real Estate, Hotels

3. Merger financing

- 1970s, 1980s: less stock financing
  - 45% any stock
  - 37% or 32% all stock
- 1990s: stock-financing
  - 70% any stock
  - 58% all stock

Why?

... under/overvaluation?

... overconfidence?

... investment bankers?

4. Announcement Effects

- Methodology: Event Study
  - Average abnormal stock market reaction at announcement as measure of value creation / destruction.
  - Hypothesis: efficient capital market (immediate incorporation of expected value change into stock price).
  - Event windows: (a) short: 3 days (-1 to +1) and (b) long: several days prior to announcement to close of merger. **[Problem with (b)?]**
  - Software: Eventus (WRDS)

- AR 1973-1998
  [both acquirer and target publicly traded!]
  [mixing NYSE, NASDAQ, AMEX]:
  value creation (?),
  entirely accruing to target shareholders (!!)
  - Target:
    positive, **significant** (16%) for -/+1
    positive, **significant** (24%) for -20/close
  - Acquirer:
    negative, **insignificant** (-0.7%) for -/+1
    negative, **insignificant** (-3.8%) for -20/close
  - Combined:
    positive, **significant** (1.8%) for -/+1
    positive, **insignificant** (1.9%) for -20/close

- Magnitude
  - Median target value \$230m $\Longrightarrow$ 16% = \$37m
  - Average annual return publicly traded companies = 12% $\Longrightarrow$ 16% normally over 16 months

- Effect much more striking in \$\$ than in % –> Moeller et al.

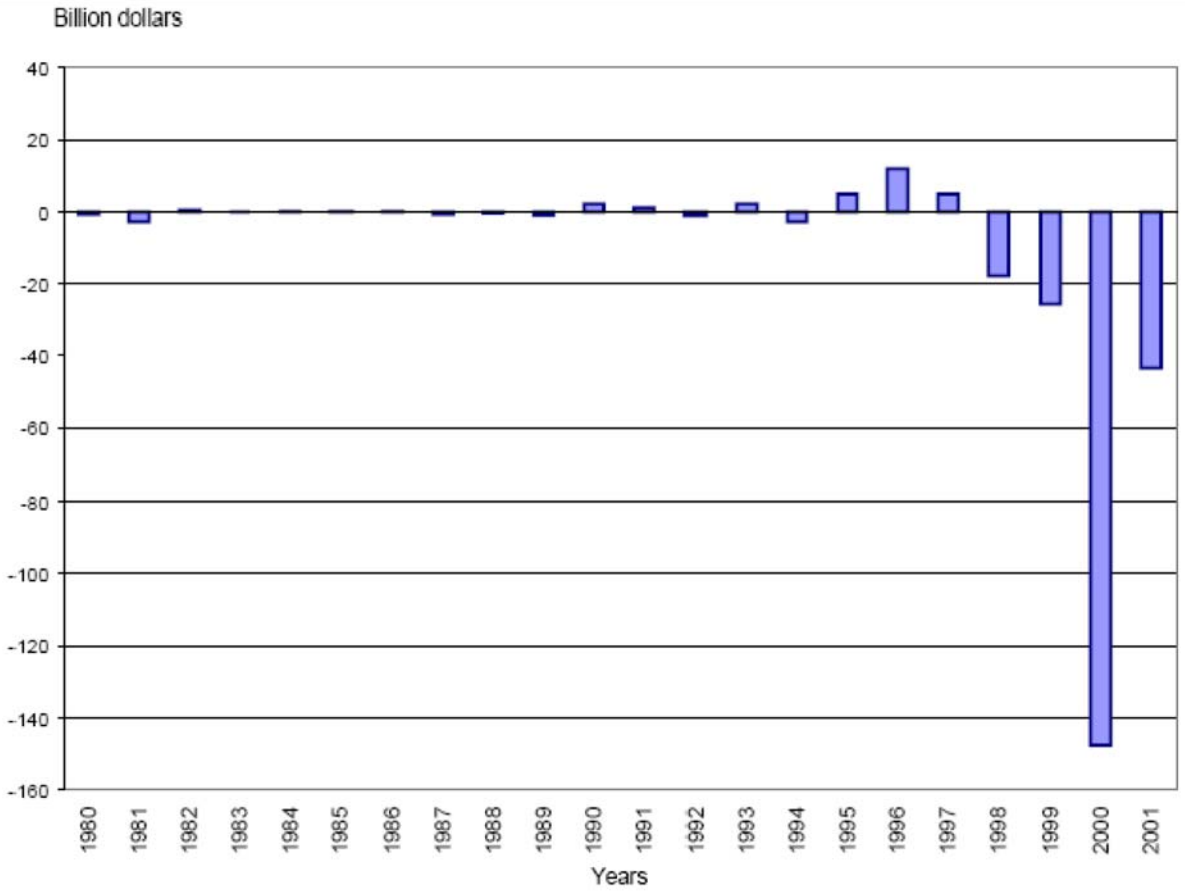


Figure 1. Yearly aggregate dollar return of acquiring-firm shareholders (1980 to 2001). Data are from the SDC Mergers and Acquisitions Database. The graph shows the aggregate dollar return associated with acquisition announcements for each sample year. The aggregate dollar return is defined as the sum of the product of the abnormal return of each announcement multiplied by the equity capitalization of the acquirer.

- Dollar loss of acquiring-firm shareholders = change in the acquiring firm's capitalization over the three days surrounding acquisition announcements (for transactions exceeding 1% of the market value of the assets of the acquirer)

- Sample: yearly aggregate (net) losses to acquiring-firm shareholders for sample of acquisitions of public firms, private firms, and subsidiaries from 1980 through 2001.

- From 1991 to 2001: acquiring firms' shareholders lost an aggregate $216 billion (more than 50 times the $4 billion lost 1980-1990)

- Most of the acquiring-firm shareholder losses took place from 1998 through 2001
  - -$4 billion in the 1980s,
  - +$24 billion 1991-1997
  - -$240 billion 1998-2001.

- NOTE: even the aggregate combined value of acquiring and acquired firms falls by a total of $134 billion (public firm acquisition announcements 1998-2001).

5. Announcement Effects and Financing

- Equity-financed mergers
  - Acquirer: -1.5%, significant (but insignificant over "-20/close")
  - Target: 13%, significant
  - Combined: 0.6%, insignificant

- No-equity financed mergers
  - Acquirer: 0.4%, insignificant
  - Target: 20%, significant
  - Combined: 3.6% significant (but insignificant over "-20/close")

Link to asymmetric information (Myers-Majluf 1984)?

But: variation over time?

But: combination cash/equity?

6. Long-Term Abnormal Returns

- If markets are not fully efficient ...
- *On average*: negative long-term AR acquirer; overwhelms positive combined stock-price reaction at announcements
- *Financing*: [Loughran and Vijh (1997)] five-year long-term AR 1970-89
  - Stock-Financed: -24.2%
  - Cash-Financed: +18.5%
- *Book-to-Market*: [Rau and Vermaelen (1998)] three-year long-term AR 1980-91
  - Value firms: + 7.6%
  - Growth/Glamour firms: -17.3%
  - Why?

    - Fama and French (1992, 1993): increased risk of v alue firms
    - Lakonishok, Shleifer, Vishny (1994): investors mistakenly estimate future performance by extrapolating from past performance

- But: methodological problems
  - Tests of long-term abnormal performance are joint tests of stock market efficiency and a model of market equilibrium (Fama 1970).
  - Abnormal returns are not independent accross firms. (Clustering by industries.)

Next Question: Why and How?

We will think of M&A as "another type of investment" and go over the motivations (models) considered for internal investment.

$$V(c) = V_A + V_T + e - c$$

and

$$V^{old}(c) = \frac{s}{s + s'} \left[V_A + V_T + e - c \right].$$

2 Wrap-Up of 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)

Neoclassical Theory: "mergers are market instruments to prevent inefficient firm management." E.g.: efficiency-improving response to industry shocks (e.g. deregulation).

We will review 3 theoretical / empirical approaches to explain the above facts. All are in (partial) contradiction to the neoclassical view:

1. **Free-riding** (Grossman and Hart, 1980)
   Deviation from neoclassics: Free-riding prevents efficient raiding decisions
2. **Misvaluation** theories (Shleifer and Vishny, 2003)
   Deviation from neoclassics: inefficient markets (investor sentiment / investor biases)
3. **Overconfidence** / Hubris theories (Roll, 1986; Malmendier and Tate, 2007)
   Deviation from neoclassics: managerial biases (at least MT does not need much inefficiency)

3 External Investment (II): 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).

Model

Assumptions, Notation:

- Target firm T with widely dispersed ownership
- Value target without acquisition: V_T
- Value target after acquisition: $V_T + e$
  ($e =$ management improvement; before: synergies)
- t shares outstanding (A needs to acquire at least .5t)
- V_T, e common knowledge, deterministic (for now)
- A bids price P for all t shares; cost of raiding c.

- Equilibrium concept: rule out bids with stochastic outcomes (i.e., bids that succeed sometimes and fail sometimes)
  $\longrightarrow$ Only bids that are expected to be (un)successful with certainty.
  $\longrightarrow$ I.e. individual bidder expects at least .5 (not) to tender with certainty.

Free-riding argument:

Consider a tender offer that is expected to be successful.

- If $P < V_T + e$?

- If $P \geq V_T + e$?

When do raids take place?

- Differences in opinion about value of T after raid: systematically higher valuation of raider ($V_T + \hat{e}$) than of old target shareholders ($V_T + e$).
  - Differences in risk preferences
  - Alternatively: selection on hubris!

- *Create* differences in value: transfer to raider post-raid, e.g.
  - Pay raider salary
  - Issue shares to raider
  - Sell T's assets to raider below value
  - Sell T's output to raider below value

Consider $\phi =$ **post-raid value transfer**.

- For which P is tender offer successful?

- Implication: if $V_T + e - \phi < V_T$, bids can take place below current market price!
  But: such bids below current market price will fail if expected to fail: shareholders do not tender if $P < V_T$.

- Let's assume $P \geq V_T$. Let's assume that raider can make a take-it-or-leave-it offer.

- Implication: lowest tender price?

- Profit of the raider?

Conclusion: When do we reach efficiency?

Note: Raider gets complete control and owns 100% (all shareholders will wish to tender.) Hence no real 'dilution' due to ϕ. The *threat* of dilution / transfer allows to reduce the value to shareholders of retaining their shares.

Ex-ante efficiency

We have shown how ex-post efficiency increases as raids are made more likely.

Raids may also affect ex-ante efficiency, e.g.

- Incumbent T management could obtain $V_T + e_{\text{raider}}$, but:

$$\arg \max_{e \in [0;\infty)} U(e) = 0 \qquad (e.g. U'(e) < 0)$$

- Which e does manager choose for $\phi = 0$?
  Which e for $\phi > 0$?
  (Assume zero utility if fired by raider. Allow for stochastic e_{raider}, c.)

Other remedies

- Conditional offers. Here: conditional on 100% acceptance.
  Intuition: each voter (shareholder) is pivotal.

- Deviate from one-share-one-vote (Grossman and Hart, 1988)
  - Go back to $\phi = 0$ scenario.
  - OSOV: portion of votes = portion of dividend stream (NPV / market value)
  - Different voting rights
    $\Longrightarrow$ bidder can obtain control (50% votes) with less than 50% dividend-rights

$\Longrightarrow$ bidder buys small fraction of dividend rights via high-voting-right shares, willing to pay a premium.

– No general result on optimality of deviation from OSOV. Depends on $U(e)$.

4 External Investment (III): Misvaluation

Shleifer-Vishny 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 $S_A > S > S_T$.)

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

$\Longrightarrow$ For example, zero perceived synergies if S such that

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

- "Long-Run" Values:

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

$\Longrightarrow$ Long-run gains from mergers: 0.

- Managers act in own interest and exploit market irrationalities.

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

Typical Case: $\mathbf{A}$ acquiring $\mathbf{T}$

- A pays PK_T ($\geq S_T K_T$)
  - E.g. $P = S_T \Longrightarrow$ No takeover premium.
  - E.g. $P = S \Longrightarrow$ Payment proportional to **SR** combined value.
- Announcement effects
  - Acquirer:

$$\begin{aligned} & S(K_A + K_T) - PK_T - S_A K_A \\ = \; & (S - S_A)K_A + (S - P)K_T \end{aligned}$$

  - Target:

$$(P - S_T)K_T$$

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

$\Longrightarrow$ 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? (Implicit assumptions about financing?)
  - For T-Shareholders: $(P - q)K_T$. $\longrightarrow$ Why?

- 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??
  $\longrightarrow\longrightarrow$ Justification?

  - Combined Value: 0
  - For A-Shareholders: $(q - P\frac{q}{S})K_T$. $\longrightarrow$ Why?
  - For T-Shareholders: $(P\frac{q}{S} - q)K_T$. $\longrightarrow$ Why?

$\Longrightarrow$ In the LR, A-shareholders gain from high valuation ($S - P > 0$).

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

$\Longrightarrow$ Compare to gains/losses in the SR.

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 $P < S$.)

$\Longrightarrow$ 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

     - Acquirer has high prior returns.$\Longrightarrow q > P \geq S$.
     - Acquirer overvalued (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

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

   - 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.
- 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 really get a good measure of the Long Run returns of the acquirers?

Readings for next week or week after:

- Malmendier and Tate (forthcoming), "Who makes acquistions ..." together with Roll (1986) and Heaton (2002) if you have not done so yet.

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