Panel 1: Research on Merger Outcomes

(Slides & Presentations)

Table 7-1. *Derivation of Asset-Weighted Deviations of Post-Merger from Pre-Merger Profitability in 634-Company Sample*

		Pooling acquisitions		Purchase acquisitions	
Pre-merger asset range (millions of dollars)	*Asset weight* (1)	*Predicted pre-merger return (percent)*[a] (2)	*MACRO-adjusted return (percent)* (3)	*Predicted pre-merger return (percent)*[a] (4)	*MACRO-adjusted return (percent)* (5)
Less than 1.0	0.0083	24.31	28.28	13.50	15.71
1.00–2.49	0.0212	22.67	26.37	13.41	15.61
2.50–4.99	0.0385	21.61	25.14	13.36	15.54
5.00–9.99	0.0456	20.71	24.09	13.31	15.48
10.00–14.99	0.0389	19.99	23.25	13.27	15.44
15.00–19.99	0.0295	19.53	22.72	13.25	15.41
20.00–29.99	0.0625	19.08	22.19	13.22	15.38
30.00–49.99	0.0865	18.48	21.50	13.19	15.34
50.00–99.99	0.1120	17.69	20.58	13.15	15.30
100.00–249.99	0.1260	16.69	19.41	13.09	15.23
250.00–500.00	0.1950	15.58	18.12	13.04	15.16
More than 500.00	0.2360	14.80	17.21	12.99	15.12
Resulting deviation	1.000[b]		6.20[c]		3.076[d]

a. Computed from the regression equation in text note 2.
b. Σ col. (1) = 1.000.
c. Σ col. (1) × [col. (3) − 13.83] = 6.20.
d. Σ col. (1) × [col. (5) − 12.19] = 3.076.

Table 6-3. *Deviations of Divested Lines' Profitability from the Average Operating Income/Assets Percentages of Nondivested Lines in the Same Industry, by Interval between the Date of Profit Report and Initiation of Sell-Off, 1974–81*

Years between profit report and first sell-off	*Lines with full sell-off*		*Lines with partial sell-off*	
	Number	*Deviation (percent)*[a]	*Number*	*Deviation (percent)*[a]
7	58	−1.54 (3.01)	57	−0.34 (1.78)
6	110	−3.48 (2.07)	104	−0.56 (1.59)
5	155	−3.72 (1.44)	155	−1.01 (1.36)
4	191	−6.40 (1.36)	189	−2.33 (1.18)
3	204	−9.92 (1.21)	218	−3.30 (0.95)
2	201	−10.60 (1.22)	226	−4.10 (1.11)
1	210	−13.54 (1.61)	219	−3.76 (0.99)
0	121	−12.73 (2.15)	198	−1.96 (1.12)
< 0[b]	39	−4.91 (3.80)	238	−1.34 (0.94)

a. Values in parentheses are the standard error of the mean.
b. Profits reported after first sell-off.

Comments for Panel on Merger Outcomes
FTC Bureau of Economics Roundtable
December 9, 2002

Robert H. McGuckin
Director
Economic Research

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Overview of Comments

- Structural reform is not just about governments and deregulation
- M&A are key factor in business change and reorganization
- Successful firms build, close, buy, and sell plants and business units:so counterfactual analysis is crucial
- Most mergers exploit opportunities for "synergies": Take a good performer and make them better
- But a significant fraction provide managerial discipline: Improve performance of a poor performer
- "Fix it first" approach to acquisitions makes sense for antitrust approach, efficiencies difficult to measure ex ante

M&A Impacts Pervasive

Plants in Operation 1977-1987

Type of Firm	Plants: Number	Plants: Percent	Employment, 1977: Number in Millions	Employment, 1977: Percent of total
Firms with Acquisitions				
Acquired Between 1977-1987	16,061	11.0%	3.7	28.0%
Owned in 1977 by Firms With Acquisitions	12,487	8.5%	5.1	38.6%
Subtotal: Firms With Acquistions	28,548	19.5%	8.8	66.7%
Firms With No Acquisitions				
Plants Owned in 1977	118,171	80.5%	4.4	33.3%
All Firms	146,719	100.0%	13.2	100.0%

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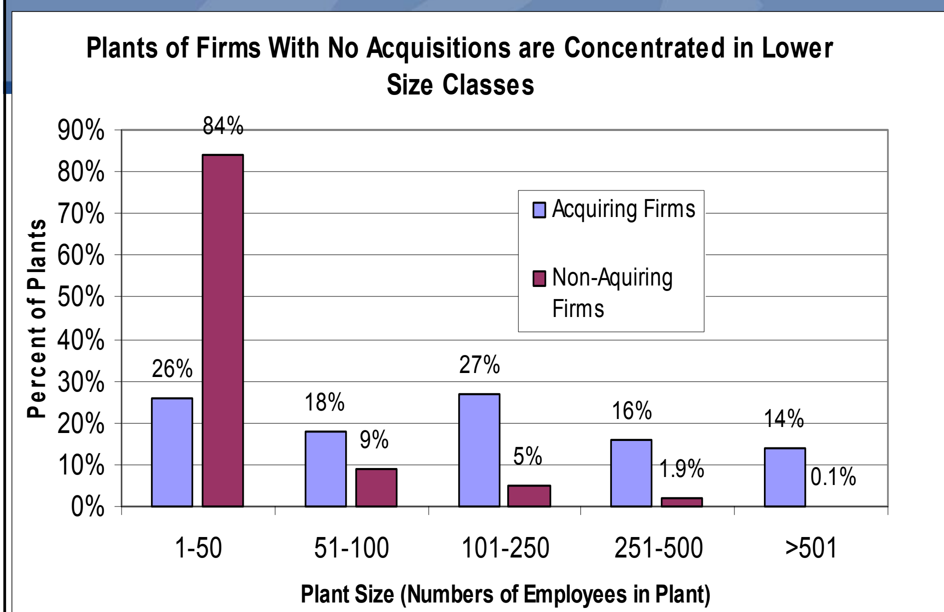

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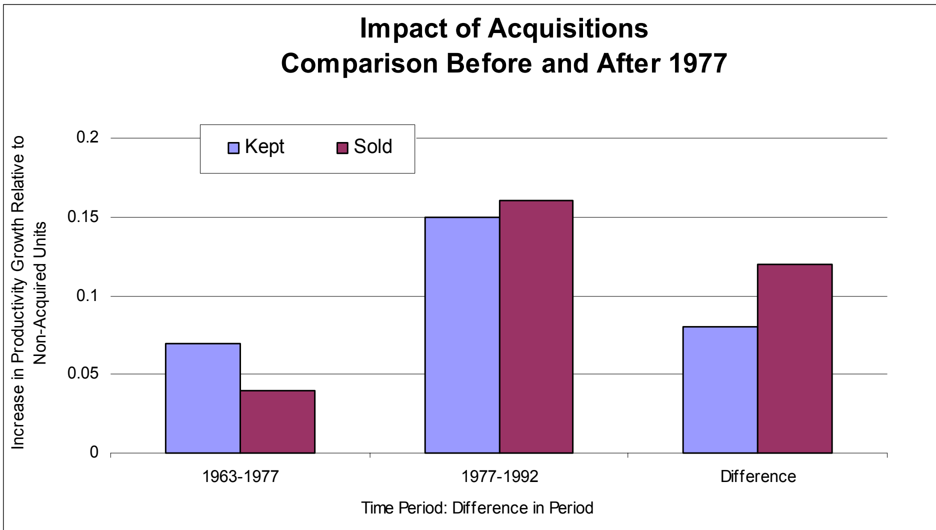
Ownership Change Improves Performance



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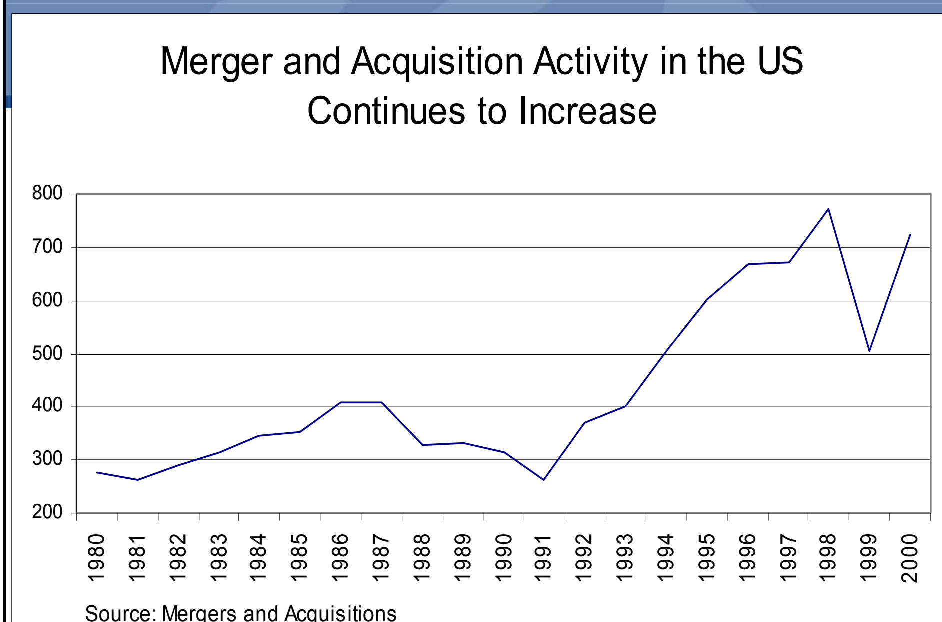

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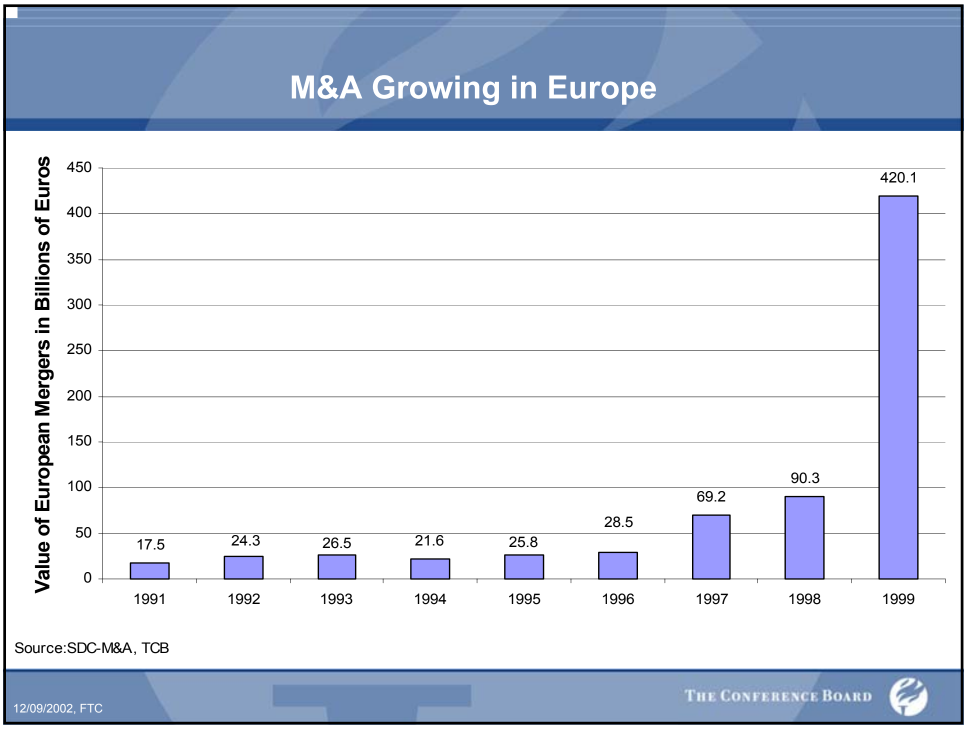
M&A Growing in Europe
Value of European Mergers in Billions of Euros
450
400
350
300
250
200
150
100
50
0
17.5
24.3
26.5
21.6
25.8
28.5
69.2
90.3
420.1
1991
1992
1993
1994
1995
1996
1997
1998
1999
Source:SDC-M&A, TCB
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Mergers: Changes Across Time

Dr. Susanne Trimbath, Ph.D.

Research Economist, Milken Institute

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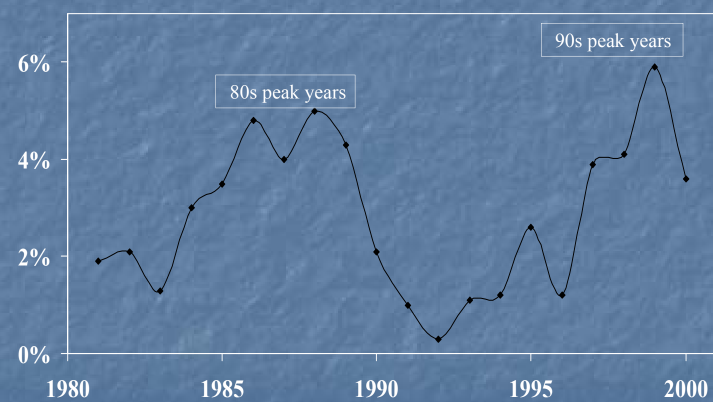
Prepared for Federal Trade Commission Roundtable, December 9-10, 2002

Determinants and Effects: Changes Across Time

- Relatively inefficient firms are chosen as targets.
- Post-takeover, the utilization of resources at the firm level is improved.
- Regardless of "mood" or type of buyer.
- Account for temporal changes in risk.

Volume: Changes Across Time



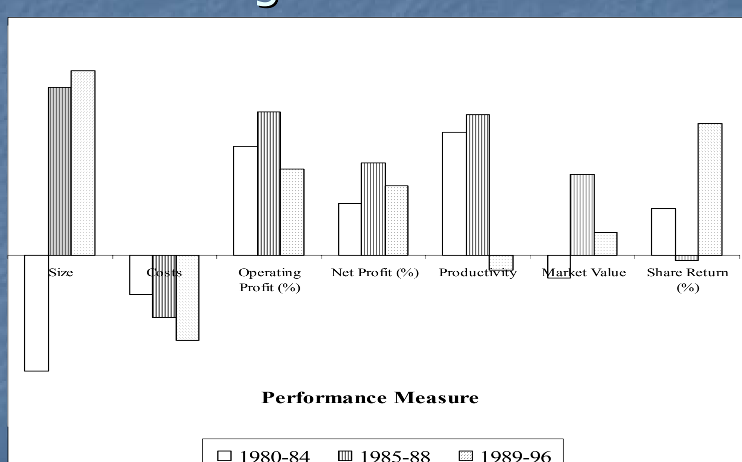
Studies: Changes Across Time

- **Methodology:**
  - 1970s: Multiple Discriminant and Univariate Analysis
  - 1980s: Probability Analysis (probit and logit)
  - 1990s: Hazard Analysis
- **Hypothesis:**
  - 1970s: Takeovers for economies of scale or scope
  - 1980s: Takeovers as wasteful endeavors (heterogeneity)
  - 1990s: Takeovers to enhance economic efficiency
- **Measuring Performance:**
  - 1970s: Accounting rates of return
  - 1980s: Shareholder returns
  - 1990s: Free Cash Flow, Transfers of Wealth, etc.

Evidence: Changes Across Time

- Ravenscraft and Scherer (1987): targets are more profitable
  - Matsusaka (1993): only if they are small
- Palepu (1986): incorrect models, poor prediction accuracy
  - Ambrose and Megginson (1992): some contradictory results in extended sample

Relative Performance: Changes Across Time



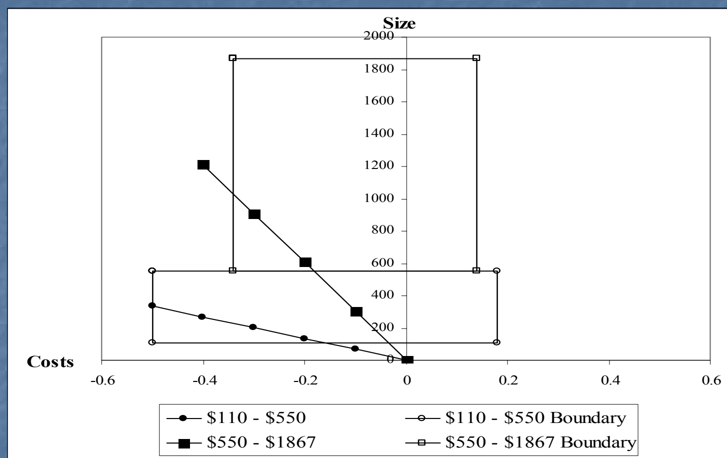
At the Median: Changes Across Time

		Inactive	Target	Buyer
1980-84	Size	484	789**	2760**
	Costs	-0.09	0.00**	-0.02*
1985-88	Size	644	726	1728**
	Costs	-0.15	-0.01**	-0.04**
1989-97	Size	946	901	2860**
	Costs	-0.22	-0.03**	-0.06*

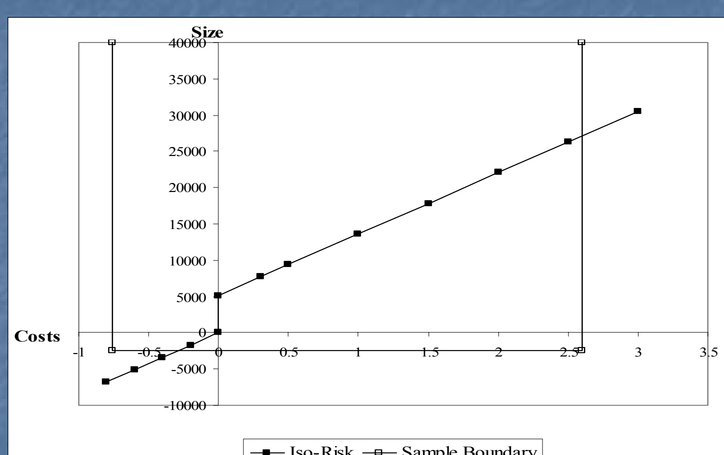
Relative Risk: Changes Across Time

1981-1985, 110 < Size ≤550	0.00233***
1981-1985, 550 < Size ≤1867	0.00053***
1986-1989, Size ≤ 1039	0.00188***
1986-1989, 1039 > Size	-0.00008**
1990-1997, Size	-0.00018***
Costs	1.66540***
Costs Above Industry	0.87686***

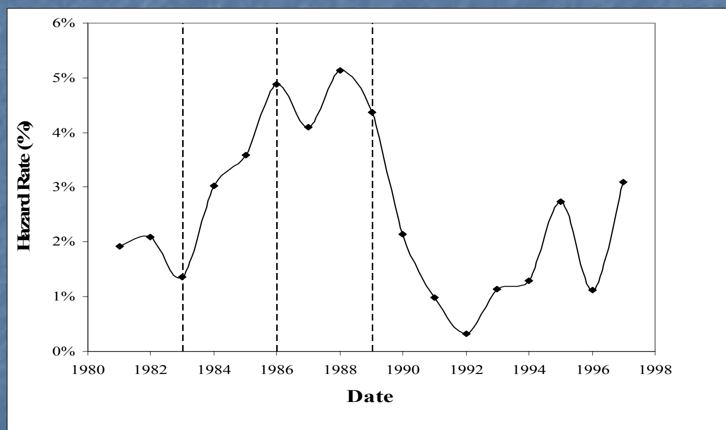
Iso-Risk: Changes Across Time



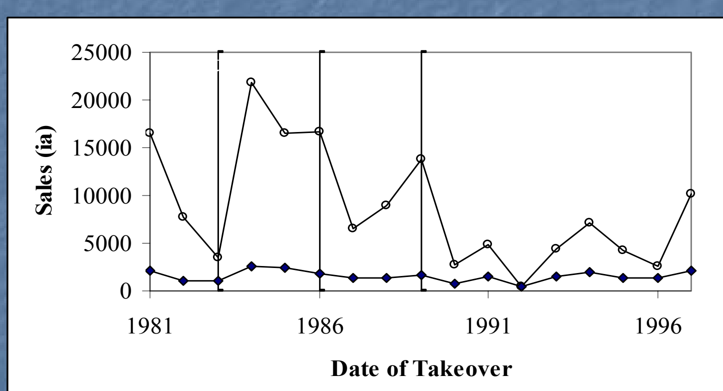
Iso-Risk: Changes Across Time



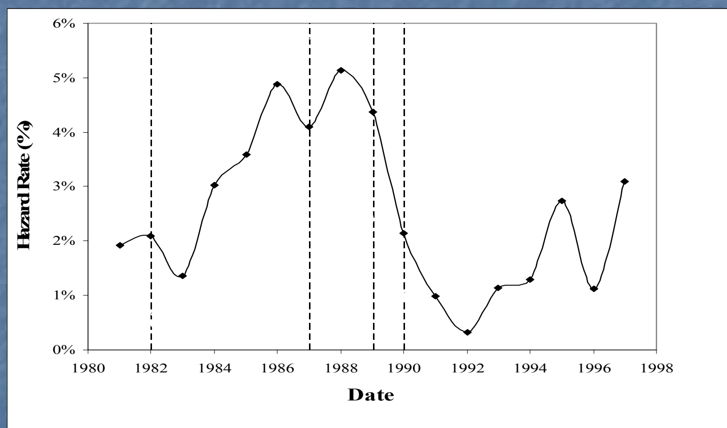
Financing: Changes Across Time



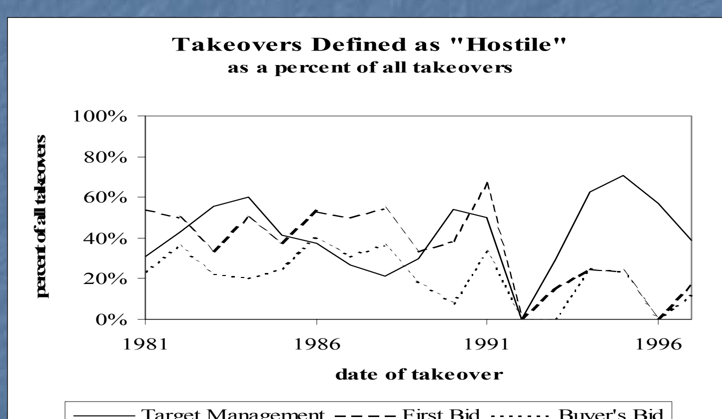
Target Size: Changes Across Time

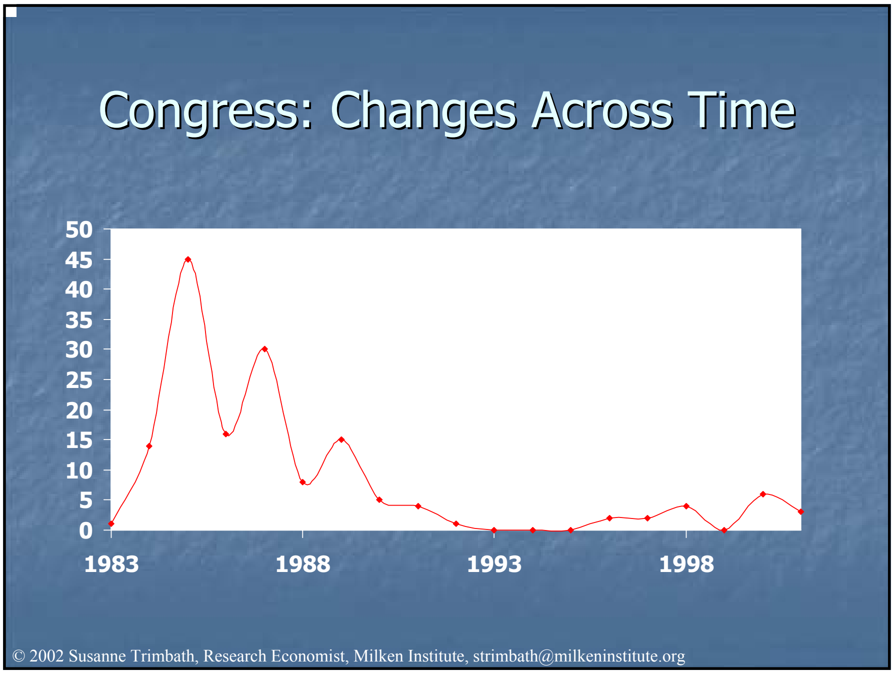


State Laws: Changes Across Time



Mood: Changes Across Time




Congress: Changes Across Time
50
45
40
35
30
25
20
15
10
5
0
1983
1988
1993
1998
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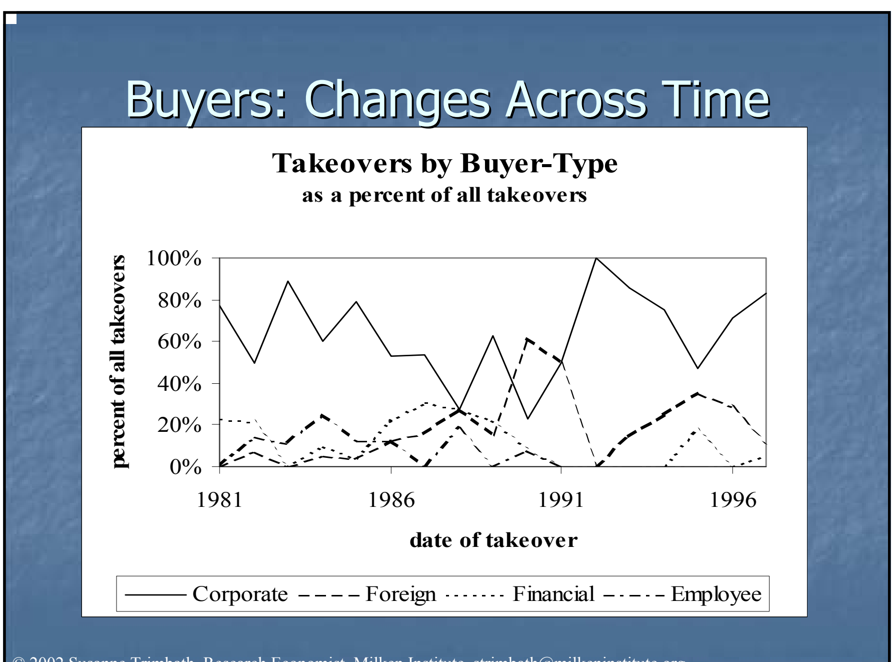
Buyers: Changes Across Time
Takeovers by Buyer-Type
as a percent of all takeovers
percent of all takeovers
100%
80%
60%
40%
20%
0%
1981
1986
1991
1996
date of takeover
Corporate
Foreign
Financial
Employee
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Outcomes: Changes Across Time

- Before 1990: 3% gain; on average cost savings $46 million per merger
- After 1990: 1% gain; on average cost savings $15 million per merger

Savings are per year per merger!

Restructuring:Changes Across Time

- 1900: transcontinental railroad enabled national firms
- 1920: automobile transportation enabled extended local markets, financial market stimulus
- 1960: Stock market premium for growth

Restructuring:Changes Across Time

- 1980: financial innovations enabled large mergers and reduced advantage of internal capital market
- 1990: global competition, technological change, deregulation
- 2000: blurring of industry boundaries, shorter product cycles

Sectors: Changes Across Time

Basic	64%	36%
Cyclical	75%	25%
Non-Cyclical	77%	23%
Energy	82%	18%
Industrial	73%	27%
Technology	52%	48%

Identifying Changes Across Time

- Population Growth: Food, household products
- Product Life Cycles: Technology, pharmaceuticals
- Customer Preferences: Environmental or Ecological Impact, Demographic Shifts
- Post-Exuberance: Excess Capacity, Inefficient Scale

Mergers: Changes Across Time

Dr. Susanne Trimbath, Ph.D.
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www.milkeninstitute.org

Prepared for Federal Trade Commission
Roundtable, December 9-10, 2002

What Do We Know About Merger Outcomes?

Steven Kaplan
University of Chicago Graduate School of Business

Prepared for FTC Merger Outcomes Roundtable
December 9, 2002

Overview

- How can one evaluate merger success?
- What is the empirical evidence in the finance literature re merger success on average?
  - Stock returns.
    - Short-term
    - Long-term
  - Operating / accounting / productivity / divestiture performance.
  - Clinical studies?
- What is the source of gains / losses?
- What micro factors drive merger success / the attainment of those gains?

How can one evaluate merger success?

- Stock price change at announcement.
  - Measures market expectations of change in value from merger.
  - Appropriate measure is combined change in value.
    - Care about bidder and target, not just bidder. (Index fund).
    - Bidder overpayment is irrelevant for policy.
  - Implicit assumptions:
    - Market is well informed on average.
    - No other information released.
- Stock price change over longer run (3 years typical).
  - Implicit assumptions:
    - Merger is important enough to drive stock price.
    - No other information released.
- Change in operating margins over longer run (1 to 3 years typical).
  - Implicit assumptions:
    - Merger is important enough to drive overall operating margins.
    - No other factors important on average.

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Evaluate - 2

- Change in productivity at the plant level over longer run (1 to 3 years).
  - Measures outcome of merger at plant level.
  - Implicit assumptions:
    - Total productivity changes of merger are largely determined by productivity changes at the plant level.
- Analysis of subsequent divestiture.
  - Cannot evaluate non-divestitures.
- Measure actual / expected present value using actual / expected changes in cash flows / values.
  - Implicit assumptions:
    - Expected equals actual.
    - One can measure actual.
- Additional implicit assumption:
  - Merger effects are exogenous. Do not affect behavior of non-merging companies – no disciplinary effects.

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Evaluate - 3

- Assessment:
  - Finance literature measures success using stock market values or measures of cash flow.
    - Does not look at effect on consumers.
  - All of these measures problematic / rely on assumptions.
  - All are potentially informative.
  - Prefer announcement returns as most informative about expected values / ex ante success.
  - Prefer measure of actual cash flows of mergers as ex post measure of success.
    - Difficult to calculate.

Do ann. returns measure expected merger value? Not exactly

- Total changes to value after acquisition announcement:
  - $[A^A\text{-}A^0] + [T^A\text{-}T^0]$
  - Change in acquirer value plus change in target value.
  - A^A = value of acquirer after the acquisition.
  - A^0 = value of acquirer before the acquisition announcement.
  - T^A = value of target after the acquisition.
  - T^0 = value of target before the acquisition announcement.

- Can be further decomposed:
  - $= [A^A\text{-}A^N] + [T^A\text{-}T^N] + [A^N\text{-}A^0] + [T^N\text{-}T^0]$.
  - Each of the four bracketed terms carries a distinct interpretation:
    - Total synergies: $[A^A\text{-}A^N] + [T^A\text{-}T^N]$
    - New information about Acquirer: $[A^N\text{-}A^0]$
    - New information about Target: $[T^N\text{-}T^0]$

Summary of finance literature

- Stock return results based on Andrade, Mitchell, Stafford (2001): "New Evidence and Perspectives on Mergers"
  - CRSP Merger Database
  - U.S. acquirers and targets.
  - 1973 – 1998
- Stock returns.
  - Measures change in expectations of value of target and acquirer.

Announcement Returns - 2

- Over 3 day period around announcement:
  - Combined returns positive, economically and statistically significant.
    - Roughly 2% of combined value.
      - Equivalent to 10%+ of target value.
    - Consistent across all 3 decades.
  - Target returns are clearly positive. 16%.
  - Acquirer returns are insignificantly negative. -0.7%.
- Over period from 20 days before until close:
  - Combined returns are positive, but not significant.
    - Roughly 2% of combined value.
  - Target returns are clearly positive. 24%.
  - Acquirer returns are insignificantly negative. -4%.

Announcement Returns

Table 4

Announcement Period Abnormal Returns by Decade, 1973-1998

	1973-79	1980-89	1990-98	1973-98
Combined				
[-1, +1]	1.5%	2.6% ***	1.4% ***	1.8% ***
[-20, Close]	0.1%	3.2%	1.6%	1.9%
Target				
[-1, +1]	16.0% ***	16.0% ***	15.9% ***	16.0% ***
[-20, Close]	24.8% ***	23.9% ***	23.3% ***	23.8% ***
Acquirer				
[-1, +1]	-0.3%	-0.4%	-1.0%	-0.7%
[-20, Close]	-4.5%	-3.1%	-3.9%	-3.8%
No. Obs.	598	1,226	1,864	3,688

Note: Statistical significance at the 1% and 5% levels are denoted by *** and **, respectively.

- Recall that acquisitions reveal information about acquirer and target that may change expectations of stand alone values.
  - Clearly relevant for stock performance studies.
  - Potentially relevant for accounting-based studies.
- Information about acquirer likely to be conveyed by financing.
  - Equity issues more likely when acquirer fully- / over-valued.
    - Equity as "currency."
    - $[A^N - A^0] < 0$.
    - Combined returns will underestimate value created.
- Acquisitions funded by at least some stock:
  - Combined returns are essentially 0.
    - Target returns are positive. Acquirer returns are negative.
- Acquisitions funded without stock:
  - Combined returns are positive.
    - Target returns are positive. Acquirer returns are zero.

Table 5

Announcement Period Abnormal Returns for Sub-Samples, 1973-1998

	Stock	No Stock	Large Target
Combined			
[-1, +1]	0.6%	3.6% ***	3.0% ***
[-20, Close]	-0.6%	5.3%	6.3%
Target			
[-1, +1]	13.0% ***	20.1% ***	13.5% ***
[-20, Close]	20.8% ***	27.8% ***	21.6% ***
Acquirer			
[-1, +1]	-1.5% ***	0.4%	-1.5%
[-20, Close]	-6.3%	-0.2%	-3.2%
No. Obs.	2,194	1,494	511

Note: Statistical significance at the 1% and 5% levels are denoted by *** and **, respectively.

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Are announcement returns meaningful?

- Yes. Announcement returns are related to subsequent outcomes.
  - Kaplan and Weisbach (1992).
    - Related to subsequent divestiture at a loss.
  - Mitchell and Lehn (1990).
    - Related to subsequent hostile takeover.

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Bottom Line of Event Studies:

- Stockholders appear to view acquisitions as creating value, on average. Combined returns are positive, particularly for non-stock mergers.
  - Investors holding the market – index fund investors – should favor acquisitions.
  - Targets capture most of the value.
- Announcement returns predictive of subsequent outcomes.
- Event studies not so helpful re:
  - Sources of value changes.
  - Determinants of success.

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Longer run returns

- Look at returns to acquirers post-acquisition over following 3 years.
- A number of studies with often conflicting results.
- Most reliable: Mitchell and Stafford (2000).
- Equal-weighted:
  - Negative returns to stock acquisitions (-9.0%).
  - Insignificant returns to non-stock acquisitions (-1.4%).
- Value-weighted:
  - Insignificant returns to stock acquisitions (-4.3%).
  - Insignificant returns to non-stock acquisitions (3.6%).

- Bottom line of longer-term studies
  - Acquirers representing largest part of economic value have returns indistinguishable from 0.
    - Smaller acquirers have negative longer-run returns.
  - Not helpful re source of gains / losses or determinants of success.

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Table 6

Three-Year Post-Merger Abnormal Returns for Acquiring Firms, 1961 to 1993

Portfolio Composition	Equal-Weight	Value-Weight
Full Sample	-5.0% ***	-1.4%
Financed with Stock	-9.0% ***	-4.3%
Financed without Stock	-1.4%	3.6%
Growth Firms	-6.5%	-7.2%
Value Firms	-2.9%	1.1%

Source: Mitchell and Stafford (2000)

Note: Statistical significance at the 1% and 5% levels are denoted by *** and **, respectively.

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Accounting-based Performance Studies

- Mixed results on changes in performance, divestitures, or productivity from mergers.
  - Andrade, Mitchell, and Stafford (2001) (authors positive) / [results mixed]
  - Healy, Palepu, and Ruback (1990) (authors positive) [results mixed]
  - Maksimovic and Phillips (2001) (authors neutral / positive)
  - Kaplan and Weisbach (1992) (authors neutral)
  - McGuckin and Nguyen (1995) (authors neutral)
  - Schoar (2002) (author neutral / negative)
  - Ravenscraft and Scherer (1987) (authors negative)
- Bottom-line: No clear results.
  - Puzzle relative to event study results.

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Clinical studies:

- Kaplan, Mitchell and Wruck (2000). For individual acquisition:
  - Calculate annual cash flows.
  - Calculate value at divestiture.
  - Compare disc. value of post-merger cash flows to pre-merger value.
  - No general results.

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Determinants of gains and losses

- Larger sample, statistical: Most relevant paper is Houston, James and Ryngaert (2001).
  - Look at 41 large bank mergers. Acquirer estimates cost savings and revenue increases at acquisition announcement.
  - Combined returns related to projected cost savings.
    - $1 of cost savings NPV yields $0.58 of stock value.
  - Combined returns negatively (but not significantly) related to projected revenue increases.
- Related versus unrelated mergers.
  - Diversified firms tend to trade at discount. Reason not yet well-established. Could be selection bias.
  - Plant productivity declines in unrelated, but is neutral / increases in related mergers. (Schoar (2002)).
- Limited evidence of market power in other papers.
  - Related transactions typically fare better than unrelated, although not uniformly.

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Micro determinants of success

- Large sample papers not relevant.
- Clinical studies. Kaplan (2000).
  - Mergers driven by technological / regulatory change.
  - Deep understanding of target firm's business.
    - Presumably correlated with related versus diversifying.
  - Organization design and structures appropriate to the business.
  - Appropriate compensation system and incentives.
  - Consistent with results in Bower (2001) and consulting studies.

For deals that succeed, where does the money go?

- All deals:
  - Benefit to consumer if lower costs translate into lower prices.
  - Increased productivity reflected in higher GDP / capita.
  - Extra money may stay within company to be reinvested or be paid out as dividends / share repurchases.
- Cash deals:
  - Extra money initially goes to shareholders of target.
    - Capital reallocated.
  - Extra cash flow of combined company goes to pay off debt.

Synthesis / Conclusion

- Do mergers create value on average? Yes.
  - Rely on announcement returns as critical evidence:
    - Mergers using stock are value neutral.
      - With negative information effect of using stock, difficult to know the true effect of mergers.
    - Mergers using cash are value increasing.
  - Accounting-based studies less reliable:
    - Noise.
    - Even more problematic measuring performance relative to expectations.
  - Mergers associated with technological and regulatory change.
    - Mitchell and Mulherin (1996).

- Who gains? Who loses?
  - Target shareholders gain.
  - Acquirer shareholders neutral.

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Synthesis / Conclusion - 2

- How should one evaluate merger success?
  - Discounted present value of the changes in cash flows from the merger.
  - Ex ante:
    - announcement period returns.
    - "true" expected changes in cash flows (if possible).
  - Ex post:
    - measure the actual changes in cash flows (if possible).

- What drives merger success?
  - Cost cutting / economies of scale rather than top line growth.
  - Deep understanding of target firm's business.
  - Organization design and structures appropriate to the business.
  - Appropriate compensation system and incentives.

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