

Corporate Valuation, Restructuring and M&A's

Returns to Mergers – Empirical Evidence

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What are the Returns to Mergers?

Tremendous empirical literature that evaluates the performance of mergers

→ Effectively testing the theories that we outlined before

Theory	Combined Gains	Gains to Target	Gains to Bidder
Economies of Scale / Synergies	positive	positive	nonnegative
Transaction Cost Efficiency	positive	positive	nonnegative
Disciplinary Effects	positive	positive	nonnegative
Agency Costs	negative	positive	more negative
Managerial Entrenchment	negative	positive	more negative
Hubris	zero	positive	negative
Breach of Trust	positive	positive	nonnegative

Combined Returns

Event study evidence

- Jensen and Ruback (1983)
 - Mergers created wealth for target shareholders, roughly break-even for bidders
- Roll (1986) – hubris hypothesis
 - Pointed out that bidders were often larger and returns need to be adjusted for size
 - E.g., bidder has a return of -5% and target a return of 50%
 - Market value is 1000 and 100 for bidder and target respectively
 - Implies that the dollar value created is $(0.95 \times 1000 + 100 \times 1.5) / 1100 - 1 = 0$
 - Only redistribution from bidder to target
- Bradley, Desai and Kim (1988)
 - 236 tender offers, 1963-1984
 - Event window $t=-5$ to $t=5$
 - Target shareholders gain 31.77%, bidder shareholders 0.97%
 - Value-weighted portfolio of matched targets and bidders gains 7.43%
 - “Successful tender offers generate synergistic gains and lead to a more efficient allocation of corporate resources”

Event study evidence

- Kaplan and Weisbach (1992), Servaes(1991) mergers in 1970s and 1980s
 - Combined returns roughly 4%
- Mulherin and Boone (2000) mergers in 1990s
 - Positive combined returns
 - Combined returns are directly related to the size of the takeover event
 - “Our results are consistent with the synergistic theory of the firm . . . and are inconsistent with nonsynergistic models based on managerial entrenchment, empire building and managerial hubris”
- Andrade, Mitchell and Stafford (2001)
 - 3,688 mergers, 1973-1998
 - Combined return to target and bidder is roughly 2%
 - “mergers create value on behalf of the shareholders of combined firms”

Combined Returns

Paper	Time period	No. Of targets	No. Of bidders	Event window	Targ. Return (%)	Bidder Return (%)	Comb. Return (%)
Bradley et al. (1988)	1963-1984	236	236	-5,+5 last bid	31.77%	0.97%	7.43%
Kaplan and Weisbach (1992)	1971-1982	209	271	-5,+5 last bid	26.90%	-1.49%	3.74%
Servaes (1991)	1972-1987	704	384	-1, resolve	23.64%	-1.07%	3.66%
Mulherin and Boone (2000)	1990-1999	281	281	0	20.20%	-0.37%	3.56%
Andrade et al. (2001)	1973-1998	3,668	3,688	-1,1	16.00%	-0.7%	1.8%

- Berkovitch and Narayanan (1993)
 - Consider the correlation between target gains and bidder gains
 - Should be positive if there are synergy gains
 - Agency conflicts imply that there should be a negative relation
 - Consider the correlation between target gains and total gains
 - Hubris implies a lack of correlation
 - 330 tender offers from 1963 to 1988, 250 had positive total gains (76% of tender offers)
 - Correlations between target gains and bidder gains, and target returns and total gains are positive
 - Evidence in favour of synergy, but there are tender offers in which hubris and agency conflicts are important

- Becher (2000) – 558 bank mergers in 1980-1997
 - Major deregulation in the banking industry during the 1990s
 - Event window $t=-30$, $t=5$
 - Combined average returns 3.03% to target and bidder shareholders (3.53% for deregulation period)
 - Conclusion, bank mergers imply synergies and deregulation improved the efficiency of the banking industry

- Brook, Hendershott and Lee (1998)
 - Consider the Interstate Banking and Branching Efficiency Act of 1994
 - It effectively removed barriers to takeovers in the U.S. banking industry
 - Conclusion, deregulation created value
- Houston, James and Ryngaert (2001)
 - Considered 41 bank mergers (1985-1996) with estimates of cost savings and revenue enhancements
 - Cost savings were strongly related to wealth improvements
 - Revenue enhancement estimates did not seem to relate to wealth improvements

Type of Merger - Method of Payment – Multiple Bidders

- Type of merger
 - Jensen and Ruback (1983)
 - Targets in tender offers 30% return, targets in mergers 20%
 - Huang and Walkling (1987) report that when degree of resistance and method of payment are taken into account there is no difference in returns to tender offers and mergers improvements

Factors Related to Target Returns

Payment methods

Paper	Period	Obs.	Window	Cash	Mixed	Stock
Huang and Walkling (1987)	1977-1982	169	(-1,0)	29.3%	23.3%	14.4%
Asquith et al. (1990)	1973-1983	80	(-1,0)	27.5%	32.2%	13.9%
Servaes (1991)	1972-1987	688	(-1, resolve)	26.7%	21.1%	20.5%
Andrade et al. (2001)	1973-1988	3,688	(-1,+1)	20.1%	NA	13.0%
			(-20, close)	27.8%	NA	20.8%

- Cash transactions are associated with significantly higher target returns
- Cash most powerful determinant of target returns
- Why?
 - Cash merger implies that target shareholders have to pay capital gains tax
 - Therefore, the premium paid to get them to tender is larger

Factors Related to Target Returns

Multiple Bidders

Paper	Period	Obs.	Window	Single	Multiple
Bradley et al. (1988)	1963-1984	236	(-20,+1)	29.30%	23.30%
			(-20,+40)	26.65%	46.12%
Servaes (1991)	1972-1987	704	(-1, resolve)	20.80%	30.50%
Schwert (1996)	1975-1991	1,523	(-42,+1)	13.40%	12.70%
			(0, +126)	8.50%	18.20%

- Existence of multiple bidders may lower returns for bidders, both due to competition and losing a bidding war
- Multiple bidder returns seem to increase the returns for the target company
 - They are higher when considering an event window that goes past first bid (i.e. $t=0$)
 - Schwert: “The type of competition feared by the bidder is the best systematic explanation for variation in takeover premiums, and whether this type of competition will occur is not generally known before the first bid occurs.”

What about the target run-up?

Sometimes, targets have abnormal returns prior to the announcement date (so called run-up)

Paper	Period	Obs.	Run- up Window	Run-Up	Announ. Return
Dodd (1980)	1971-1977	151	(-40,-2)	11.2%	13.0%
Keown and Pinkerton (1981)	1975-1978	194	(-25,-1)	13.3%	12.0%
Dennis and McConnell (1986)	1962-1980	76	(-19,-2)	8.11%	8.84%
Huang and Walkling (1987)	1977-1982	204	(-50,-2)	9.1%	23.4%
Bradley et al. (1987)	1963-1984	236	(-20,-1)	10.07%	14.5%
Jarrell and Poulsen (1989)	1981-1985	172	(-20,-1)	11.0%	13.9%
Meulbroek (1992)	1974-1988	145	(-20,-1)	13.0%	17.6%
Barclay and Warner (1993)	1981-1984	108	(-30,-2)	16.3%	15.0%
Schwert (1996)	1975-1991	1,523	(-42,-1)	13.3%	10.1%
Schwert (2000)	1975-1996	2,296	(-63,-1)	12.4%	9.6%
			Average:	11.8%	13.8%

Why is there a run-up?

- Keown and Pinkerton (1981) – insider trading
 - “impending public merger announcements are poorly held secrets, and trading on this nonpublic information abounds”
- Jarrell and Poulsen (1989)
 - Purchases by eventual bidder
 - Speculation by media
- Sanders and Zdanowicz (1992)
 - Use the background section of 14D filings to determine when each of a sample of 30 tender offers were initiated (not necessarily announcement date)
 - The run-up does not begin until the date that the bidder initiates the transaction (privately known), suggesting that the run-up is not just speculation
- Meulbroek (1992)
 - Uses a dataset of insider trading
 - On days with insider trading abnormal returns are 3% which represents half of run-up

Why is there a run-up?

- Schwert (1996)
 - There is no correlation between the run up $(-42,-1)$ and the mark up $(0,+126)$
 - Conclusion: the run-up is just an extra cost for the bidder
- Meulbroek and Hart (1997)
 - Using direct evidence they conclude that illegal insider trading increases takeover premiums

Takeover Premium for Targets

Takeover premium: the percentage difference between the price offered in a merger and a price based on a date prior to the merger offer. Usually cash tender offers.

Paper	Period	Obs	Base Price	Premium
Bradley (1980)	1962-1977	161	Offer -41	49%
Jarrell et al. (1988)	1981-1984	225	Offer -30	53%
Jennings and Mazzeo (1993)	1979-1987	647	Offer -10	23%
Cotter and Zenner (1994)	1988-1991	141, initial	Rumour -30	47%
		141, final	Rumour -30	60%
Betton and Eckbo (2000)	1971-1990	697, single bid	Offer -60	51% ini

- Betton and Eckbo (2000)
 - Initial bid with only one bidder implies a premium of 51%
 - Initial bid when there are multiple bidders implies a premium of 45%
 - Bidders sometimes make a high first bid to deter competition

What factors determine bidder returns?

Method of Payment and Bidder returns

Paper	Period	Obs	Window	Cash	Mixed	Stock
Travlos (1987)	1972-1981	167	(-10,+10)	-0.13%	NA	-1.6%
Asquith et al. (1990)	1973-1983	186	(-1,0)	0.20%	-1.47%	-2.40%
Servaes (1991)	1972-1987	380	(-1, resolve)	3.44%	-3.74%	-5.86%
Andrade et al. (2001)	1973-1998	3,688	(-1,+1)	0.4%	NA	-1.5%

- Cash deals are associated with better bidder performance than stock deals
- Why?

What factors determine bidder returns?

Method of Payment and Bidder returns

- Target firm has assets worth 500 and if the firm would merge with the bidder would realise a Net Present Value of 100
- There are two types of bidding firms (each is equally likely i.e., $p=0.5$)
 - Peach 600 in cash and 400 in other assets, 100 shares outstanding
 - Lemon 200 in cash and 100 in other assets, 100 shares outstanding
- There is Asymmetric Information about the value of the bidding firm
 - The manager knows whether the firm is a peach or a lemon
 - But, the market cannot identify whether a particular firm is a lemon or a peach
 - What is the stock price of bidding firms?
 - The market cannot identify whether a bidder is a lemon or peach. Therefore each is equally likely and the expected value of a bidding firm is $0.5 \times 1000 + 0.5 \times 300 = 650$ and the price=6.5
 - What dilution (fraction of bidding company) will target shareholders require if they are offered a stock deal?

What factors determine bidder returns?

Method of Payment and Bidder returns

- Stock Financed Merger
 - What dilution (fraction of bidding company) will target shareholders require if they are offered a stock deal?
 - Target shareholders cannot identify whether a firm is a lemon or peach
- Therefore the dilution will be:

$$\lambda(\text{Total Merged Firm Value}) \geq \text{Target Firm Value}$$

$$\lambda(\text{Expected Asset Value of Bidder} + \text{Target Value} + \text{NPV}) \geq \text{Target Firm Value}$$

$$\text{In our sample: } \lambda(0.5 \times 1000 + 0.5 \times 300 + 500 + 100) \geq 500 \rightarrow \lambda \geq \frac{500}{1250} = 0.4$$

What factors determine bidder returns?

Method of Payment and Bidder returns

- What is the benefit to the bidding firms of undertaking a stock financed merger?

$$(1 - \lambda)(\text{Value of Bidder} + \text{Target Value} + \text{NPV})$$

- Peach=960
- What is the value of abstaining (not purchasing the firm using stock)?

$$(1)(\text{Value of Bidder})$$

$$(1) \times (1000) = 1000$$

- Peach prefers to abstain rather than finance through stock ($1000 > 960$) when he is pooled with the lemon

What factors determine bidder returns?

Method of Payment and Bidder returns

- The peach will not make a bid for the target using stock.
- Asymmetric information leads to a potentially inefficient outcome since Peach bidders do not undertake mergers that have positive NPVs.
- Is there any way of circumventing this problem? What about paying for the target firm using cash?
- Would the peach undertake the merger with cash?
 - The value of the peach if the merger is paid with cash is

$$1000 + 500 - 500 + 100 = 1100$$

- The payoff to the Peach firm of the alternatives
 - Payoff from cash merger > Abstaining from merger > Stock merger

$$1100 > 1000 > 960$$

- Therefore the peach will undertake the merger, but only with a cash offer

What factors determine bidder returns?

Will the lemon undertake a stock financed merger?

- Once target shareholders observe a stock bid they will infer that the offer must be made by a lemon. Therefore the dilution must be:

$$\lambda(\text{Total Merged Firm Value}) \geq \text{Target Firm Value}$$

$$\lambda(\text{Asset Value of Bidder} + \text{Target Value} + \text{NPV}) \geq \text{Target Firm Value}$$

$$\text{In our sample: } \lambda(300 + 500 + 100) \geq 500 \rightarrow \lambda \geq \frac{500}{900} = 0.56$$

- What is the benefit to lemon of undertaking a stock financed merger?

$$(1 - \lambda)(\text{Value of Bidder} + \text{Target Value} + \text{NPV})$$

$$(1 - 0.56) \times (300 + 500 + 100) = 400$$

- Conclusion: Since the value of a stock financed merger (400) to the lemon is greater than the value of abstaining (300) the lemon will participate

What factors determine bidder returns?

- What does this imply for the stock price reaction associated with merger announcements?
 - The expected stock price for the bidder before the merger is 6.5 ($0.5 \times 1000 + 0.5 \times 300 = 650$)
 - Once the stock-financed merger is announced, the stock price of the bidder is 3
 - Once a cash-financed merger is announced, the stock price of the bidder is 10
- This means that the peach's stock price would increase from 6.5 to 10 when a cash transaction is announced (the lemon cannot pay with cash)
- This simple numerical example can match the stylized facts found in the empirical papers

What factors determine bidder returns?

- Strictly speaking, for our solution to be an equilibrium, we need to verify that no participant has an incentive to deviate
- Peach:
 - Payoff from cash merger $>$ Abstaining from merger $>$ Stock merger
 - $1100 > 1000 > 960$
- Lemon:
 - Payoff from stock merger $>$ Abstaining from merger
 - $400 > 300$
- Who captures the surplus (NPV) from the merger in our example?
- What determines how the surplus is split between the target and the bidder?

What factors determine bidder returns?

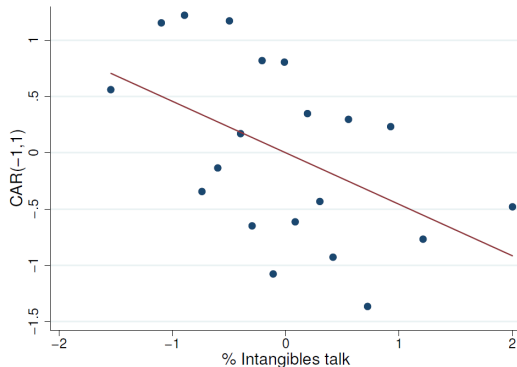
Competition and Bidder Returns

Paper	Period	Obs	Window	Single	Multiple	First	Late
Bradley et al. (1988)	1963-1984	236	(-20,+1)	2.75%	-0.41%	2.0%	-2.5%
			(-20, +40)	2.97%	-0.21%		
Servaes (1991)	1972-1987	384	(-1, resolve)	-0.35%	-2.97%		
Schwert (1996)	1975-1991	1,523	(-42,+1)	1.9%	0.2%		
			(0, +126)	-0.4%	-3.5%		

- This evidence suggests that it is better to lose a takeover contest
- If there are negative returns to winning a takeover contest, why do firms participate?

The role of intangible assets for bidder returns

- Intangible assets have become more and more important, also for M&A deals
→ Acquirers motivate their deals by relying on the role of intangibles (e.g., know-how, innovation). However, it is difficult to assess the value of intangibles.
- ↓ bidder returns if intangibles are mentioned ↑ in announcements (Filipovic, Wagner, 2023)
→ Why?



The role of intangible assets for bidder returns

- Why do bidder returns decrease as the emphasis on intangibles increases?
- Industry effects: M&A deals aren't profitable in industries where intangibles are more important
 - The effect holds within the industry
- Agency problems: Managers who suffer from agency problems use the importance of intangibles to justify the deal
 - The effect does not interact with agency problem indicators
- Hubris: Managers think they can squeeze more value from intangibles. But how can we measure overconfidence?
 - Textual analysis, managers' stock purchases, the payment method.

- In the late 1980s poison pills and takeover regulation in Delaware became stronger.
- Did this hamper the market for corporate control?
- Comment and Schwert (1995) found that the decline in the takeover market in the late 1980s was not due to these factors.
- "Antitakeover measures increase the bargaining position of target firms, but they do not prevent many transactions."

- Is there a way to increase bidder returns?
- Agency problem is one of the reasons behind poor bidder performances.
- Fix these agency problems!
- Falato (2007): Paying more to executives predict better bidder returns in acquisitions.
→ A higher pay attracts better managers, decreasing the agency problems

Postmerger Operating Performance

- Healy, Palepu and Ruback (1992) studied post-acquisition operating performance of the 50 largest U.S. mergers in the period 1979 to 1984.
- They compared pro-forma of the two combining firms in the 5 years prior to the merger with the actual performance of the merged entity in the 5 years after the merger.
 1. Operating cash flows of the merged firm increased relative to industry benchmarks. The increased cash flows were driven by an improvement in asset turnover
 2. Positive combined announcement returns to the takeover
 3. Cash flow improvements are positively related to the size of announcement returns (i.e., when the market is positive to the merger there is a subsequent improvement in performance – support for the efficient market hypothesis)
- Similar conclusions by Andrade et al. (2001)

Long-Term Stock Price Performance

Paper	Time Period	No. Of Obs.	Method	Return
Loughran and Vijh (1997)	1970-1989	947	5-year EW BHAR	-6.5%
Rau and Vermaelen (1998)	1980-1991	2,823	3-year CAR	-4.04%
Mitchell and Stafford (2000)	1961-1993	2,068	3-year EW BHAR	-1%
			3-year VW BHAR	-3.8%
			3-year EW Calendar	-5.0%
			3-year VW Calendar	-1.4%

- Agrawal, Jaffe and Mandelker (1992) reported a 5 year postmerger abnormal return of -10%
- Franks, Harris and Titman (1991) argue that the poor performance is due to benchmark errors

Long-Term Stock Price Performance

- Long-Term Stock Price Performance and Method of Payment

Paper	Time Period	No. Of Obs.	Method	Return
Loughran and Vijh (1997)	1970-1989	314 Cash	5-year EW BHAR	18.5%
		405 Stock	5-year EW BHAR	-24.2%

- Long-Term Stock Price Performance and Book-to-Market

Paper	Time Period	No. Of Obs.	Method	Return
Rau and Vermaelen (1998)	1980-1991	931 Value	3-year CAR	7.64%
		932 Growth	3-year CAR	-17.3%

- Efficient market hypothesis: Information should be incorporated into stock price immediately
- Fama (1970) joint hypothesis
 - When looking at returns to corporate events, like mergers, we are both testing the benchmark model (model of normal returns) and whether the market is efficient
 - Therefore if mergers are associated with abnormal performance ex-post, this can be due to two reasons
 1. Markets are inefficient
 2. Our measure of normal returns is incorrect
 - Event studies avoid the problem of the joint hypothesis since the time horizon that they examine is short (returns should be close to zero)
 - The shorter the horizon the smaller the joint hypothesis problem

Long-Term Stock Price Performance

- Long-Term Stock Price Performance and Method of Payment

Paper	Time Period	No. Of Obs.	Method	Return
Loughran and Vijh (1997)	1970-1989	314 Cash	5-year EW BHAR	18.5%
		405 Stock	5-year EW BHAR	-24.2%
Mitchell and Stafford (2000)	1961-1993	1,039 Cash	3-year VW Calendar	3.6%
		1,029 Stock	3-year VW Calendar	-4.3%

- Long-Term Stock Price Performance and Book-to-Market

Paper	Time Period	No. Of Obs.	Method	Return
Rau and Vermaelen (1998)	1980-1991	931 Value	3-year CAR	7.64%
		932 Growth	3-year CAR	-17.3%
Mitchell and Stafford (2000)	1961-1993	257 Value	3-year VW Calendar	1.1%
		526 Growth	3-year VW Calendar	-7.2%

Long-Term Stock Price Performance: What Gives?

- Very different results!
- Loughran and Vijh, Rau and Vermaelen imply tremendous profits
 1. Go long Cash deals and short stock deals
or
 2. Go long Value firms and short Growth firms
→ This is problematic for market efficiency since it is an easy strategy to implement
- Mitchell and Stafford's results argue that the profits from such a strategy is dubious
- Difference comes down to
 1. Equal-Weighting vs. Value-Weighting
 2. Calendar Time portfolios vs Buy and Hold Abnormal Return or Cumulative Abnormal Returns

Long-Term Stock Price Performance: What Gives?

- Equal vs Value Weighting
 - Equal weighting: invest an equal amount in each firm
 - Value weighting: invest an amount that is proportional to the size of the firm
- If the effect is larger under equal-weighting this implies that the effect is larger for small firms
 1. Small firms are harder to trade – less liquid
 2. We know that small firms outperform (small firms have higher returns)
 - Of course, Loughran and Vijh and Rau and Vermaelen control for size, but perhaps market capitalization does not capture the entire size effect.
- Bottom line: Value-weighting is more conservative

Long-Term Stock Price Performance: What Gives?

- BHAR, CAR vs Calendar Time Returns
- Big difference between these methods: what is an observation?
 - BHAR, CAR – each merger is an observation
 - Calendar Time Returns – each unit of time is an observation (normally each month)
- Why does this matter?
- We know that mergers cluster in time
- Using BHAR or CAR implies that periods of high merger activity like .com boom will weigh more in regression

Long-Term Stock Price Performance: What Gives?

- Using BHAR or CAR implies that periods of high merger activity like .com boom will weigh more in analysis
- Is this a problem?
- Let's suppose that you have 100 million to invest in a merger trading strategy
 - Does Calendar Time Returns or CAR represent the returns to your strategy?
 - The CAR return implies that you effectively have to invest more when there are more mergers
 - The calendar time measurement implies that each period weighs equally (i.e., all the money is put to use in each period)
 - More appropriate metric

Calendar vs Event Time Portfolios

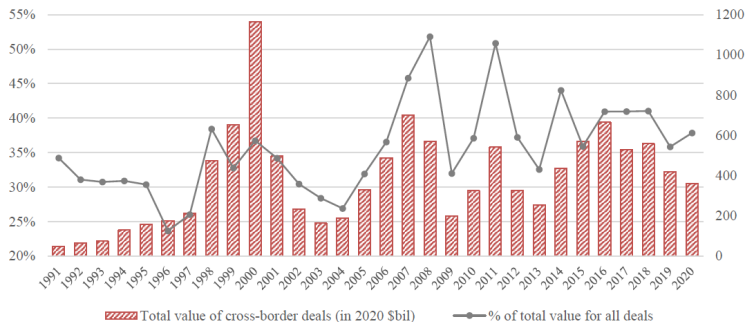
- Yellow Cells indicate an event (e.g. SEO, Merger, Repurchase)

Company	Month					
	1	2	3	4	5	6
A	10%					8%
B		15%				
C		16%			6.25%	
D	12%			-7%		
E	11%		-5%			
F		17%				
Month Return	11%	16%	-5%	-7%	6.25%	8%
$N_{\text{Portfolio}}$	3	3	1	1	1	1
Calendar Time	4.88%					
Event Time	8.33%					

- Calendar Time Return: $(11\% + 16\% - 5\% - 7\% + 6.25\% + 8\%) / 6 = 4.875\%$
- Event Time Return: $(10\% + 12\% + 11\% + 15\% + 16\% + 17\% - 5\% - 7\% + 6.25\% + 8\%) / 10 = 8.325\%$

Cross-Border Deals

- More than 30 percent of M&A deals are cross-border (Erel et al 2022).
- Are cross-border deals different than domestic ones?



- A robust finding: A large positive effect for targets, a small positive effect for acquirers.

	N	Mean	Std. Dev	p25	Median	p75
Acquirer						
CAR[-1,+1]	39,500	0.65%	4.21%	-1.52%	0.27%	2.40%
CAR[-2,+2]	37,906	0.73%	5.14%	-2.00%	0.37%	3.03%
Target						
CAR[-1,+1]	11,585	4.28%	11.84%	-1.27%	0.84%	4.74%
CAR[-2,+2]	11,037	4.67%	12.87%	-1.64%	1.00%	5.70%

- Main reasons for a cross-border deal
 - Regulatory arbitrage (e.g. lower tax rates, more lenient labor regulations)
 - Enter into new markets
 - Country-level stock market movements

- Target returns to mergers are positive
 - Cash mergers are more positive (capital gains) than stock mergers
 - Multiple bidders target returns are larger
- Bidder returns are close to zero
 - Cash mergers are more positive than stock mergers (asymmetric information)
 - Multiple bidder returns lower for bidder
- Combined returns are slightly positive
- There is evidence of ex-post performance improvement after mergers
- Weak evidence of long term abnormal returns after mergers