Understanding Mergers & Acquisition

Financial Decision Making

Dr. C.-G. Malmström
Professor, Swiss Business School

Understanding Mergers and Acquisitions

Objectives:

1. To give a quick overview of M&A
2. To consider the different definitions of M&A
3. To consider the different types of mergers
4. To understand the main theories of mergers
5. To consider the value of a merger and valuing a firm for merger
6. To consider an important issue in mergers: Asymmetric information
7. To consider the defensive tactics
8. Merger and Social issues

What are Mergers & Acquisitions?

- A merger or acquisition (M&A) involves the combination of two firms into a single entity

Company A

Company B

Company AB

Introduction to Mergers & Acquisitions

- The decision by one firm to acquire another is an investment decision like any other, made under uncertainty, and the same rules apply:

- If PV(AB)>PV(A) + PV(B) | If PV(AB)<PV(A) + PV(B)

NPV>0 | NPV<0

Sharerholders better off | Shareholders worse off

If the NPV of the acquisition is positive, then it will add to shareholders value
If the NPV is negative, it will detract from shareholders value

Introduction to M&A

However, there are a number of interesting issues that make mergers and acquisitions rather different from other investment decisions

This is partly because the NPV of an acquisition can be very difficult to evaluate

Some important questions that naturally arise are:

1. Why do firms decide to merge?
2. Who benefits from a merger?
3. How do you value a company for the purpose of a merger?
4. What can a firm do if it does not want to merge?

What is a Merger?

- A merger (or consolidation) is an agreement between two companies to combine into a single company
- An agreement is made between the boards of the two companies on the terms of the merger, and must have the consent of the shareholders of both companies
- The shareholders of the two companies exchange their shares for shares in the newly formed company
- Often the identities of the original companies disappear
- An example is the 1998 merger of Exxon and Mobil to the company Exxon-Mobil (note that in a merger, there are no external funds required)

What is an Acquisition?

- An acquisition is the purchase of one company by another
- In an acquisition, the board of the bidding company approaches the shareholders of the target company, and makes a tender offer for their shares
- Often the identity of the target company is subsumed by the bidding company. An example of an acquisition agreement is the acquisition of Alcoa by Novartis

More on M&A

- In an acquisition, the bidding company will raise financing for the tender offer through the issue of new debt or equity
- In an acquisition, the tender offer may be cash, or shares in the new company, or some othe form of security
- An acquisition may be friendly (when the board of the target company agrees to the acquisition) or it may be hostile (when the board of the target company does not agree to the acquisition)
- In an acquisition of shares, the bidding company acquires the shares of the target company
- In an acquisition of assets, the bidding company acquires the assets of the target company
- The terms „merger“ and „acquisition“ are commonly used interchangeably, and sometimes referred to as simply „mergers“

How many types of merger are there?

Mergers take place between many types of companies, but can be broadly categorized:

Horizontal Mergers:	Take place between two companies in the same industry, at the same stage of production
Vertical Mergers:	Take place between two companies in the same industry, at different stages of production
Conglomerate Mergers:	Take place between 2 companies that are in unrelated industries
Cross-border Mergers:	Take place between 2 companies registered in different countries

But why would two firms decide to merge?

- In order to answer this question, a number of theories have been proposed:

Theory	Explanation
Synergy theory	Firms merge because the value of the combined firm is greater than the sum of the values of the individual firms
Undervaluation theory	Firms merge because one firm is undervalued
Agency theory	Firms merge to resolve the conflicts between shareholders and managers
Market power theory	Firms merge in order to increase market share and hence profit
Diversification theory	Firms merge to reduce business risk
Growth theory	Firms merge to increase earnings growth

The Synergy Theory

$$PV(AB) > PV(A) + PV(B)$$

The synergy theory says that firms merge because the value of the combined firm is greater than the sum of the values of the individual firms.

Synergies

Operating Synergies | Financial Synergies

Operating synergies occur when a merger between two firms reduces the average cost of production

Financial synergies occur when a merger between two companies reduces the average cost of financing the firms‘ activities

Synergy theory: Operating Synergies

- Operating synergies occur when a merger between two firms reduces the average cost of production

Operating Synergies

Economies of scale

Economies of scope

Economies of scale: Increasing the scale of production generally increases costs less than it increases revenues: the bidding firm and the target firm need only one marketing or R&D division. The combined firm can reduce these costs

Economies of scope: Operating synergies arise from an efficiency gain: The bidding firm may be run more efficiently than the target. After the takeover, the management of the bidding firm increases the efficiency of the combined firm.

Operating Synergies: Economies of Scope

- Economies of scope are related to the efficiency of the firm.

  Firm efficiency = q-ratio = market value of the firm's assets/their replacement value

- A bidding firm may acquire a low q-ratio firm in order to expand because it will be cheaper than to expand organically

Synergy theory: Financial Synergies

- Financial synergies occur when a merger between two companies reduces the average cost of financing the firms‘ activities. These could arise as a result of

- Tax gains: If the bidding firm is profitable but the target firm is making a loss then the total tax bill of the two firms can be reduced by combining.
- Opportunities from internal financing: One firm may be generating lots of cash that must be returned to investors (perhaps it is coming to the end of ist natural life and unable to find many positive NPV projects), while the other firm may need a lot of cash for investment (perhaps it is a young firm in ist growth phase)

…more on Financial Synergies

Financial synergies also arise from

- **An internal capital market**:

  Distributing cash to shareholders and raising cash from shareholders are costly activities. By combining, the two firms can reduce these costs

- **Increased debt capacity**:

  The debt capacity of the combined firm may be greater than the sum of the debt capacities of the individual firms, leadint to greater tax benefits.

The Undervaluation Theory

$$MV(A) < PV(A)$$

- The undervaluation Theory says that firms merge because one firm is undervalued. It relies on the assumption that the market is inefficient: the market price of the target company does not reflect the present value of its expected future cash flows
- Once it has bought the target firm, the bidding firm can either hold on to it, reaping an excess return on its investment, or it can re-sell it.
- Sometimes the bidding firm will split the target firm up into its component divisions and sell these separately. This is known as asset stripping

The Agency Theory: Conflicting Interests

- The agency theory says that firms merge to resolve the conflicts of interest that exist between shareholders and managers.

  When the managers of a firm do not have a significant ownership interest in the firm, they may act in such a way that reduces the value of the firm. Managers will strive to increase their remuneration and perquisites, such as luxury offices and company cars.

More on Agency Theory: Conflicting Interests

- The consequences of these actions is to reduce shareholder value
- However, in an efficient market, the market value of a firm will reflect the consequences of the managers‘ value-reducing actions
- This will increase the probability that the firm is acquired by another firm
- Moreover, managers of a firm know that if the firm is acquired by another firm, their jobs may not be secure, which will, ex ante, induce them to act in the interest of their shareholders and thus minimise the probability that the firm will be acquired

The market Power Theory: Increasing Market Share

- The market power theory says that firms merge in order to increase market share. By increasing market share, firms again monopoly control, and are consequently able to charge higher prices.

- In most countries there are legal restriction, however, on increasing monopoly power. The authorities will usually allow a merger only if it does not lead to a significant increase in monopoly power. Competition Commission: EU, USA

The Diversification Theory

- The diversification theory says that firms merge to reduce business risk through diversification of the firms‘ activities. This would be particularly true of conglomerate mergers.
- If the bidding firm and the target firm are in different industries, whose business cycles are not highly correlated, then by combining, the firms will reduce the variability of their earnings. This will reduce the risk to the shareholders and therefore increase shareholder value

Reduce risk →

Reduce Earnings variability →

Increase shareholder value

….more on the Diversification Theory:

- However, shareholders can diversify risk much more cheaply than firms, and so it is unlikely that firms would merge solely to diversify risk for shareholders →Cheaper for shareholders to diversify risk
- But other stakeholders in the firm (managers and employees) may not be able to diversify risk as easily as shareholders and so merging may be optimal for them →Merging may be oprtimal for other stakeholders
- Bondholders, who have a contractual claim to a fraction of the firm's cash flows, will also benefit from diversification, since it will reduce the probability of bankruptcy →Bondholders will also benefit from diversification

The Growth Theory:

$$g(AB) < g(A) + g(B)$$

- The growth theory says thet firms merge to increase earnings growth
- Example

	Firm A	Firm B
Firm value	2000	1000
Annual earnings	100	100
Number of shares	100	100
Earnings per share	1.0	1.0

…more on The Growth Theory

- Suppose that the two firms merge:
- The earnings of the merged company = the sum of the earnings of the in dividual firms (i.e. 100 + 100 = 200),
- The total value of the merged firm = the sum of the values of the individualfirms (i.e. 2000 + 1000 = 3000)
- If shareholders of the two firms were to maintain the value of their shareholding, the shareholders of Firm A must offer 50 shares in the new firm to the shareholders of Firm B

- Firm A B

Firm value	3000
Annual earnings	200
Number of shares	150
Earnings per share (EPS)	1.33

- However, this growth in EPS is spurious. In particular, this one-off increase in EPS is matched exactly by a decrease in expected future growth in earnings per share , and so the shareholders of Firm A are no better or worse off as a result of the merger.

What is the value of a Merger?

- A firm decides to acquire another firm because it believes that in so doing it will increase shareholder value. This is because it believes that the value of the merged firms is greater than the sum of the values of the individual firms.

- Example:

1. Two firms, A and B, whose fair values as individual firms are VA and VB respectively
2. The value of the merged firm, AB, is VAB
3. The gain from the merger is G = VAB – (VA + VB)
4. The price paid for B isd PB

   Then the cost of the merger is C = PB – VB

   The overall value of the merger is the difference between the gain and the cost, which is

   V = VAB – (VA + VB) – (PB + VB) = VAB – VA - PB

….more on the value of a Merger

- In order to justify a merger, the acquiring firm must ascertain the net value that is added by merger. The way in which this is done depends in part on the motivation for the merger:

  The **undervaluation** theory: If the merger is motivated by the undervaluation theory, then it would be natural simply to value the target firm as an individual firm

  The **synergy** theory: If the merger is motivated by the synergy theory, then it would be natural to value the two firms individually, and then to value the merged firm that includes the synergy

  Alternatively, the synergy could be valued separately and its value added to the combined value of the two individual firms.

….more on the value of a Merger

- In an efficient market, the fair value of a firm should be its market value
- However, the market value of a firm may already reflect the anticipated merger premium. Also the target firm may not be publicly traded and so its market value would not be available
- It is therefore likely that we will need to ascertain the value oof the target firm ourselves. The acquisition of a firm is an investment decision, and can be treated in the usual capital budgeting framework
- However, we can also use comparison firms and comparison transactions in order to ascertain the „fair" value of a firm.

How to value a firm for a Merger?

- One way to value a firm is to see how „similar“ firms are valued by the market
- In particular, we could find comparative firms that have similar characteristics (Size, Industry, Age)
- Having chosen a group of firms that approximately match these characteristics, we could see how the market values these firms relative to some measure of their fundamentals, such as

  Book value of equity, Sales, Earnings

  We could then apply the same valuation to the target firm to approximate the „fair“ market value of the firm. This approach is widely used by investment analysis in M&A departments.

....more on Valuing a firm for a Merger: Comparative Firms

- Example: Suppose for instance, that we want to value Firm A, and we have identified comparative firm B, C and D, and we have collected the following information

	Firm B	Firm C	Firm D
Market value	1000	600	1500
Book value	500	300	500
Sales	200	80	250
Earnings	100	80	150

- We can use these figures to calculate the ratio of market value to fundamental for Firms B,C and D:

Market/book	2.0	2.0	3.0	Average: 2.33
Market/sales	5.0	7.5	6.0	Average: 6.17
Market/earnings	10.0	7.5	10.0	Average: 9.17

….more on Valuing a firm for a Merger: Comparative Firms

- Applying each of these ratios to the fundamentals of Firm A, gives an estimated market value for Firm A

	Firm A	Market ratio	Estimated market value
Book value	400	2.33	932
Sales	200	6.17	1234
Earnings	110	9.17	1009
Average			1058

- The estimated market value is calculated as the product of the fundamental for Firm A and the market ratio
- The average estimated market value of 1058 could then be used as a starting point (i.e. lower bound) in negotiations of the price to be paid for acquiring Firm A
- This approach is particularly used for valuing companies that are not traded and whose market values are therefore not available

….more on Valuing a firm for a Merger: Comparative Firms

- The comparative firms approach attempts to estimate the fair market value of a firm as if it not being acquired
- An alternative approach is to estimate the fair market value of a firm allowing for the fact that it is being acquired. This can be achieved by identifying several comparative transactions
- The firms involved in these transactions can be used in exactly the same way to estimate the „fair“ market value of a target firm. This value can be again used in negotiations of the price to be paid for acquiring the firm, and, in particular, could be used to provide an upper bound to the price to be paid

Valuing a firm for a Merger: DCF approaches

- An alternative approach to valuing a firm is to estimate the cash flows from the firm and to discount these at the appropriate rate. The Discounted Cash Flow (DCF) approach can use:

  1. Free cash flow discounted by the weighted average cost of capital
  2. Free cash flow to equity discounted by the cost of equity
  3. Dividend discounted by the cost of equity

….more on Valuing a firm for a Merger: DCF approaches

- The DCF approach could be applied to the target firm, or to the combined firm including any synergy that might arise as a result of the merger, or could be used to value the synergy separately
- There are potentially very large errors in estimating the target company‘s cash flows, and the appropriate discount rate. It is important to conduct a sensitivity analysis to see how the estimated value of the firm varies as the assumptions of the model are changed
- However, such an analysis may uncover additional information that is not impacted in market prices

Does asymmetric information affect mergers?

- In a merger, the bidding firm can offer cash or shares (or other securities) in return for the equity of the target firm and in an efficient market, it should not matter how the transactions is financed
- However, when there is asymmetric information, that is when not all participants have the same information ablout the fair value of the firms concerned, the offer of shares may reveal information that causes the shareholders of the target firm to revise the price they demand for their equity

How does asymmetric information affect mergers?

- Suppose thet the managers of Firm A are more optimistic than outside investors about the value of their firm. They would prefer to finance the merger with cash since this will be cheaper than financing it using undervalued shares in their own company. Conversely, if the managers of Firm A believe their firm to be overvalued, they would prefer to finance a merger with shares
- Suppose now that the shareholders of B are approached by the managers of Firm A and offered shares, rather than cash. They will know that this reflects the overvaluation of Firm A by ist managers, and will therefore demand a higher price for their equity in Firm B

What is the empirical evidence on the value of mergers?

The theory we have considered so far suggests that merger create value

- in the course of negotiations, the merger price is set in such way that allocates this expected increase in value between the shareholders of the bidding and target firms
- if the theory is correct then the shareholders of either the bidding firm or the target firm, or both, should be better off as the result of a merger
- Assuming that the shareholders of neither the bidding firm nor the target firm are worse off as a result of the merger, the total gain from the merger should be positive

….more on the empirical evidence of value of mergers

Many empirical studies have been conducted in order to test these hypotheses.

Results:

1.Merger's Total Gain >0:

In the overriding number of cases, the total gain from mergers appears to be positive, suggesting that mergers do create value

2. Shareholders of the bidding firm are no better off:

However, there is considerable evidence that the shareholders of the bidding firm are no better off as a result of a merger, particularly when the merger is financed with shares rather than cash

What are the defensive tactics?

- Target firms frequently resist acquisitions, and may deploy a range of defensive tactics, which raise the cost of acquisition and thus reduce the net gain to the acvquiring firm:

Tactics	Explanation
Accounting	Creative accounting may be used to enhance the firm‘s profit forecasts, or the value of the firm‘s assets in order to elicit a higher bid from the acquiring firm
Legal andmerger ahead	Firms may appeal to the monopolies commission to prevent the acquisition going
White knight another	The target company might solicit a bid from company with whom it would prefer to merge

….more on the empirical evidence of value of mergers

3. **Returns of target firms‘ shareholders > 0:**

   In contrast, the shareholders of target firms gain most of the value created by mergers

4. **Return to bidding firms = 0; returns to target 20% - 40%:**

   The return to bidding companies around the announcement date is about zero, while the return to the target company is typically between 20% and 40%

5. **Long run gain persistent**:

   The postmerger performance of merger firms indicates that the value gain from merger activity is persistent

….more on defensive tactics

- Parachute Very high severance payments in the event of a takeover may be written into the contracts of the target company's management
- Crown jewels The target company may sell major assets to make ist acquisition less attractive
- Poison pill Shareholders of the target firm may have the right to buy shares in the new merged firm at a bargaining price, deterring a potential bidder
- Shark repellents A range of clauses may be inserted into the target firm's charter that make acquisition difficult, such as staggered elections of the board of directors, restricting voting rights by large shareholders, or high voting majority requirements.