

# Lecture 14

并购

# Mergers and Acquisition

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# Merger Announcement

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深圳市麦捷微电子科技股份有限公司

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# Definition

- Merger and acquisition (并购, M&A) : One company (acquirer) uses cash or stock to buy the asset or equity of another company (target) , in order to obtain the control power.
- Three basic legal procedures:
  - Merger or consolidation
  - Acquisition of stock
  - Acquisition of assets
- We also use the term merger, merger and acquisition, and takeover interchangeably.
- In a M&A, the price paid is usually higher than the fair value of the target company (we call it merger premium).

# Merger and Consolidation

- Merger or consolidation: acquires all of the assets and liabilities of the target firm.
  - In a merger, acquiring firm retains name and acquired firm ceases to exist.  $A + B = A$
  - In a consolidation, entirely new firm is created from combination of existing firms.  $A + B = C$
- We call both of them merger for simplicity.
- Compared with partial acquisition
  - Advantage: legally simple
  - Disadvantage: must be approved by stockholders of both firms

# Stock acquisition

- A firm or individual can acquire another firm by purchasing voting shares of the firm's stock
  - Buy from the secondary market
  - Tender offer: all current shareholders can voluntarily tender their shares
- This method is usually for public firms, not private firms.
- Features of stock acquisition
  - No stockholder vote required
  - Can deal directly with stockholders, even if management is unfriendly
  - May be delayed if some target shareholders hold out for more money – complete absorption requires a merger

# Asset Acquisition

- A firm or individual can acquire another firm by directly purchasing all of its physical assets, and meanwhile assuming all the liability.
  - You cannot only buy assets, but leave liability alone.
- This happens mainly for acquiring private firms, and needs the approval of both management and shareholders.
- It is cheaper to buy a firm in the real market, compared to buy it in the capital market. Why?

实物资产

预期现金流

# Merger Procedures

Role	Definition	Key Actions	Post-Merger Status
<b>Acquirer</b>	The company initiating the acquisition to gain control or ownership	Conducts due diligence; Offers consideration; Signs agreement	Remains operational; Integrates target assets/teams
<b>Target Company</b>	The company being acquired, either voluntarily or involuntarily	Evaluates offers; Negotiates terms; Approves deal via shareholders	Ceases independent operation (usually); Becomes a subsidiary/division
<b>Intermediaries</b>	Third parties facilitating the transaction (e.g., investment banks, law firms)	Provides financial advisory; Drafts legal documents; Conducts regulatory filings	Completes assigned tasks post-transaction

# Classification of M&A

Based on the payment method:

- Cash for asset: Firm A uses cash to buy assets of Firm B.
  - Stock for asset: Firm A uses its stock to buy assets of Firm B
  - Cash for stock: Firm A uses cash to buy stock of Firm B.
  - Stock for stock: Firm A use its stock to buy stock of Firm B.
- } Not very common

# Classification of M&A

Based on the industry classification of the two companies:

- Horizontal M&A (横向并购): both firms are in the same industry.
  - M&A between competitors
  - Increase production scale and avoid competition
  - Highly regulated by anti-trust law (反托斯拉法) since it can greatly enhance monopoly power of a single firm.
- Vertical M&A (纵向并购): firms are in different stages of the production process in the supply chain. It can reduce production expense and increase production scale.
- Conglomerate (混合并购): firms are unrelated. Without starting from zero, one firm can diversify into a new industry by acquire a firm in that industry.

# Classification of M&A

Based on the financing source:

- Leverage M&A(杠杆收购): Firm A borrow money from the bank or issue bond to pay the price of Firm B. It is similar to the leverage effect of debt.
- Unleveraged M&A: Firm A uses its own cash or stock to pay the price of Firm B. No borrowing is involved.

# Why a firm want to do a M&A



- Synergy:  $1+1>2$ .
- Increase market share, and hence increase profits
- Reduce competition
- Diversification (多元化经营): enter a new industry

# Synergy (协同效应)

- The motivation for a company to merge another one is because of synergy. That is,  $1 + 1 > 2$ . We also call it merger gain.
- Suppose firm  $A$  is contemplating acquiring firm  $B$ . The synergy from the acquisition is

$$\text{Synergy} = V_{AB} - (V_A + V_B)$$

- The synergy of an acquisition can be determined from the standard discounted cash flow model:

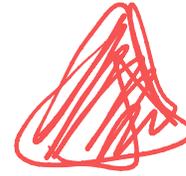
$$\text{Synergy} = \sum_{t=1}^T \frac{\Delta CF_t}{(1 + R)^t}$$

# Sources of Synergy

Recall the calculation of free cash flow, the synergy can come from:

- Revenue enhancement: increase sales.
- Cost reduction: replacement of ineffective managers; economy of scale.
- Tax gains: net operating losses; unused debt capacity.
- Lower new investment required in working capital and fixed assets.

# NPV of Cash Acquisition



- Consider Firm A acquires Firm B. The shareholders of Firm B receive the cash and leave the company.

- **Cost of cash offer** = Cash paid -  $V_B$

- The NPV of a cash acquisition is ( $\Delta V$  is the PV of synergy):

$$\begin{aligned} \text{NPV} &= (V_B + \Delta V) - \text{cash paid} = V_B^* - \text{cash paid} \\ &= \text{Merger gain (synergy)} - \text{Cost of cash offer} \end{aligned}$$

- Value of the combined firm is:

$$V_{AB} = V_A + (V_B^* - \text{cash paid})$$

# NPV of Cash Acquisition: Example

Suppose Firm *A* and Firm *B* have values as separate entities of \$500 and \$100, respectively. If Firm *A* acquires Firm *B*, the merged Firm *AB* will have a combined value of \$700 due to synergies of \$100. The board of Firm *B* has indicated that it will sell Firm *B* if it is offered \$150 in cash. Should Firm *A* acquire Firm *B*?

# NPV of Cash Acquisition: Example

## Answer:

Value of Firm *A* after the acquisition = Value of combined firm - Cash paid  
= \$700 - \$150 = \$550 (Note: cash is paid out to the shareholders of Firm B, and is no longer within Firm AB.)

Because Firm *A* was worth \$500 prior to the acquisition, the NPV to Firm *A*'s stockholders is:  $\$50 = \$550 - \$500 = \$100 - \$50 = \text{synergy} - \text{premium}$ . Then should acquire.

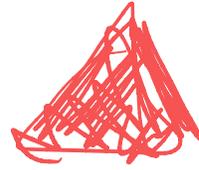
Assuming that there are 25 shares in Firm *A*, each share of the firm is worth \$20 ( $\$500/25$ ) prior to the merger and \$22 ( $\$550/25$ ) after the merger.

# Stock Acquisition



- Consider Firm A acquires Firm B. The shareholders of Firm A issue new shares and Firm B receives  $N$  fraction shares of the combined Firm AB (Not Firm A any more).
- Value of combined firm:  $V_{AB} = V_A + V_B + \Delta V$ . ( $\Delta V$  is the value of synergy)
- The cost of acquisition =  $N \times PV(AB) - PV(B)$ 
  - Depends on the number of shares given to the target stockholders
  - Depends on the price of the combined firm's stock after the merger
- NPV = Merger gain – Cost of stock offer

# Cash vs. Stock Deal



- Sharing gains: target stockholders do not participate in stock price appreciation with a cash acquisition.
- Mis-valuation: acquiring firms may tend to use stock payment when they believe their stock price is overpriced.
- Taxes: cash acquisitions are generally taxable.
- Controlling power: cash acquisitions do not dilute control

# M&A: Example 1

What is the PE of the combined firm after the merger assuming no synergy?

	<b>Global Resources before Merger</b>	<b>Regional Enterprises before Merger</b>
Earnings per share	\$ 1.00	\$ 1.00
Price per share	\$ 25.00	\$ 10.00
Price-earnings ratio	25	10
Number of shares	100	100
Total earnings	\$ 100	\$ 100
Total value	\$2,500	\$1,000

# M&A: Example 1

- Total firm value =  $2500 + 1000 = 3500$ . Total earnings =  $100 + 100 = 200$
- If the deal is fair, the exchange ratio should be 40 shares of Global for 100 shares of regional ( $40 * 25 = 1000$ ).
- So the total shares after the merger should be 140.
- Then we have price to be 25 and earnings per shares to be 1.43
- Finally, we get  $PE = 17.5$

# M&A: Example 1

	Global Resources before Merger	Regional Enterprises before Merger	Global Resources after Merger	
			The Market Is “Smart”	The Market Is “Fooled”
Earnings per share	\$ 1.00	\$ 1.00	\$ 1.43	\$ 1.43
Price per share	\$ 25.00	\$ 10.00	\$ 25.00	\$ 35.71
Price–earnings ratio	25	10	17.5	25
Number of shares	100	100	140	140
Total earnings	\$ 100	\$ 100	\$ 200	\$ 200
Total value	\$2,500	\$1,000	\$3,500	\$5,000

# M&A: Example 2

Suppose Firm *A* and Firm *B* have values as separate entities of \$500 and \$100. The synergy is 100. Suppose Firm *A* exchanges 7.5 of its shares for the entire 10 shares of Firm *B*. The value of each share of Firm *A*'s stock before the acquisition is \$20. Because  $7.5 * \$20 = \$150$ , this exchange *appears* to be the equivalent of purchasing Firm *B* in cash for \$150.

Note: Different from Example 1, the synergy in Example 2 is not zero.

# M&A: Example 2

This is incorrect. The true cost to Firm *A* is greater than \$150.

Note that Firm *A* has 32.5 ( $25+7.5$ ) shares outstanding after the merger. Firm *B* shareholders own 23 percent ( $7.5/32.5$ ) of the combined firm.

Their holdings are valued at \$161 ( $23\% * \$700$ ). Because these stockholders receive stock in Firm *A* worth \$161, the **cost of the merger** to Firm *A*'s stockholders must be \$61 ( $161 - 100$ ), not \$50.

The NPV will be  $100 - 61 = 39$

# M&A: Example 2

Then what should be the exchange ratio be so that Firm B stockholders receive only 150 of Firm A's stock?

We begin by defining  $a$  as the proportion of shares in the combined firm that Firm B's stockholders own. Value of Firm B stockholder after merger should be  $700 * a = 150$ , we have  $a = 21.43\%$

$$\alpha = \frac{\text{New shares issued}}{\text{Old shares} + \text{New shares issued}} = \frac{\text{New shares issued}}{25 + \text{New shares issued}}$$

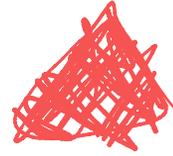
New shares = 6.819.

The price after merger should be  $700 / (25 + 6.819) = 22$

# M&A: Cash vs Stock deal

	Before Acquisition		After Acquisition: Firm A		
	(1) Firm A	(2) Firm B	(3) Cash*	(4) Common Stock <sup>†</sup> Exchange Ratio (.75:1)	(5) Common Stock <sup>†</sup> Exchange Ratio (.6819:1)
Market value ( $V_A, V_B$ )	\$500	\$100	\$550	\$700	\$700
Number of shares	25	10	25	32.5	31.819
Price per share	\$ 20	\$ 10	\$ 22	\$ 21.54	\$ 22

# Managers in M&A



- Managers of bidding firms
  - Managers frequently receive bonuses for acquiring other companies. Their pay is often positively related to the size of their firm
  - Managers' prestige is also tied to firm size.
  - Agency conflicts: managers may proceed M&A with negative NPV for empire building.
- Managers of target firms
  - Because premiums are positive, takeovers are beneficial to the target's shareholders.
  - However, managers of target firms are typically removed after mergers. They thus tend to resist takeovers.

Quick question: Who benefits most in a M&A? Shareholders or managers? In which company?