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Investment Banking

1. Mergers & Acquisitions



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Mergers & Acquisitions

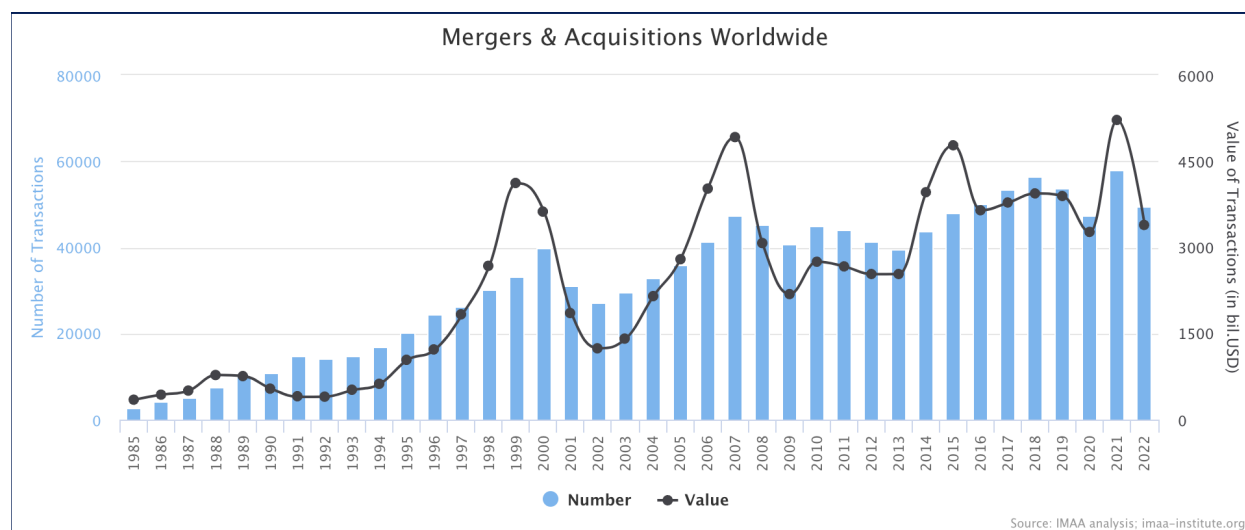
Introduction
Value Creation and Strategy
Valuation



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Introduction

M&A





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Introduction

M&A

Basic Concepts

- **Acquisitions or takeovers includes different transactions**
 - Merger (F)
 - Consolidation
 - Tender Offer (H)
 - Acquisition of assets
 - Buyout
- **Acquisition premium vs. Goodwill**
- **Friendly vs. Hostile acquisition**
- **Merger activity in the United States, UK and Continental Europe has occurred in waves**
 - Neoclassical hypothesis (PEST and Q-theory)
 - Behavioral hypothesis



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Introduction

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Motives

- Reducing costs or increasing market power
 - Strategic realignment
 - Technological change
 - Deregulation
 - Synergy
 - Economies of scale/scope
 - Cross-selling
 - Diversification (Related/Unrelated)
 - Financial considerations
 - Booming stock market
 - Falling interest rates
 - Tax considerations
- Agency problems
 - Ego/Hubris



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Successful or failed transactions?

- Empirical studies using event-study methodology
 - The evidence indicates that the stockholders of target firms are the clear winners in takeovers
 - These gains are much larger in TO (hostile) than in mergers (friendly)
 - The effect of takeover announcements on bidder firm stock prices is not as clear cut
 - Studies indicate that approximately half of all bidding firms earn negative excess returns around the announcement date
 - Since acquirers are substantially larger than targets, the above results translate to small positive overall gains
 - In the long run, acquirers in mergers suffer wealth losses, significant in many studies, but in tender offers they earn insignificantly positive returns in many studies
 - Results are similar to US, UK and Europe



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Successful when...

- Positive abnormal returns to bidders is associated to the following situations:
 - Target is a private firm or a subsidiary of another firm
 - The acquirer is relatively small
 - The target is small relative to the acquirer
 - Cash rather than equity is used to finance the transaction
 - Transaction occurs early in the M&A cycle



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Introduction

M&A Failure...

- **Primary reasons some M&As fail to meet expectations**
 - **Overpayment**
 - Agency conflicts of the acquirer
 - Over-estimating synergy because of hubris
 - Winner's curse when multiple bidders
 - **Slow pace of integration**
 - **Poor strategy**



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Value Creation and Strategy

M&A

Sources of value

- **Coherent acquisition strategy has to be based on one or more of these motives**
 - **Create operating or financial synergy (synergy value)**
 - $V(AB) > V(A) + V(B)$
 - **Take over poorly managed firms and change management (control value)**
 - In the last two decades, has been increasingly cited as a reason for hostile acquisitions
 - **Diversify to reduce risk**
 - Open question whether it can be accomplished more efficiently by investors (through traded stocks) or by firms
 - **Acquire undervalued firms**
 - Very difficult strategy especially when acquiring publicly traded firms in reasonably efficient markets



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Valuation

M&A

3 steps in value the acquisition
of a firm

- 1. *Status quo* valuation of the firm (“as it is”)
 - Value the target firm by estimating the firm value with existing investing, financing and dividend policies
- 2. Control value
 - The value of controlling a firm comes from changes made to existing management policy that can increase the firm value (“as it should be”)
 - Value of Control = Value of firm, optimally managed (“as it should be”) – Value of firm with current management (“as it is”)



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Valuation

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3 steps in value the acquisition
of a firm

■ 3. Synergy value

- Value the firms involved in the merger independently (target firm, optimally managed, i.e., “as it should be”)
- Estimate the value of the combined firm with no synergy, $V(A) + V(B)$
- Build in the effects of synergy into expected growth rates and cash flows, and value the combined firm with: $V(AB)$
- $V(AB) - [V(A) + V(B)]$
- In the case the two firms (acquirer and target) are managed independently after the acquisition you only need to estimate the value of the target firm
- However, in the valuation of the target firm, optimally managed, should be included any proceeds resulting from the sale of non-operating assets and the savings due to redundancy costs.

Valuation

M&A
DCF

- Estimation of Enterprise Value

$$EV_0 = \sum_{i=1}^n \frac{FCFF_i}{(1+k_{wacc})^i} + \left[\frac{TV_n}{(1+k_{wacc})^n} \right]$$

- Estimation of Equity Value

$$EqV_0 = EV_0 - D_0$$

$$EqV_0 = \sum_{i=1}^n \frac{FCFE_i}{(1+k_e)^i} + \left[\frac{TV_n}{(1+k_e)^n} \right]$$



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Valuation

M&A DCF

- **FCFF (Free Cash-Flow to Firm)**
 - $\text{EBIT} \times (1-T) + \text{D\&A} - \Delta\text{WC} - \text{CAPEX}$
 - Cash-flow available to remunerate all capital (debt and equity)

- **FCFE (Free Cash-Flow to Equity)**
 - $\text{FCFF} - \text{Interest (net of taxes)} + \Delta \text{Debt}$
 - Cash-flow available to remunerate equity



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Valuation

M&A
DCF

- k_e - Cost of equity

- CAPM: $r_e = r_f + E(MRP) \times \beta$

- β change with debt – Hamada formula:

$$\beta_L = \beta_U \times \left[1 + (1 - T) \times \frac{D}{E} \right] \quad \longleftrightarrow \quad \beta_U = \frac{\beta_L}{\left[1 + (1 - T) \times \frac{D}{E} \right]}$$

- k_d = risk-free rate + default spread

- Rating
 - YTM

- K_{wacc} – Weighted average cost of capital

- $K_{wacc} = k_e \times E/V + k_d \times D/V \times (1 - T)$
 - $V = E + D$
 - E and D – Market values (**NOT** accounting values)



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Valuation

M&A
DCF

- Terminal (Residual) Value

$$TV_n = \left[\frac{FCFF(E)_{n+1}}{k_{wacc(e)} - g_{FCFF(E)}} \right]$$

- n – forecast horizon
- $FCFF(E)_n$ – $FCFF(E)$ projected to the period n
- $k_{wacc(e)}$ – cost of capital
- $g_{FCFF(E)}$ – $FCFF(E)$ perpetual growth rate after n
 - $g_{FCFF} = \text{ROC} \times \text{EBIT Reinvestment rate}$
 - $g_{FCFE} = \text{ROE} \times (1 - \text{Payout ratio})$
- Some authors state that can also be estimated through EV multiples (more on that later)

$$TV_n = EBIT_n \times \left[\frac{EV}{EBIT} \right]_{benchmark}$$



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Valuation

M&A DCF

- 1. Estimate cash flows, based on the assumptions for its post-acquisition management
- 2. Estimate the terminal value at end of forecast horizon
- 3. Estimate the cost of capital appropriate, given its projected post-acquisition risk and capital structure
- 4. Discount the estimated cash flows
- 5. Add in cash-flows from asset disposals or subtract out cash-flows from business investments
- 6. Subtract debt to give a value for the equity of the target
- 7. Compare the estimated equity value with the pre-acquisition stand-alone value to determine the added value from the acquisition.



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Valuation

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DCF - Example

	2018	2019	2020	2021	2022	2023
Sales	1620.0	1750.0	1890.0	2040.0	2204.0	2204.0
Operating profit	64.8	70.0	75.6	81.6	88.2	88.2
(-) Corporation tax	21.4	23.1	24.9	26.9	29.1	29.1
(-) Additional fixed assets	20.4	22.0	23.8	25.7	27.8	0
(-) Additional working capital	4.8	5.2	5.6	6.0	6.5	0
Free cash flow to the firm (FCFF)	18.2	19.7	21.3	23.0	24.8	59.1
PV of FCFF 2018 to 2022	78					
PV of TV @ 2022	319	←				537 (59.1/11%)
PV of FCFF	397					
(+) Divestment of associate	30					
(+) Sale of Target head office	70					
(-) Long-term loans	90					
Value of Target equity	407					

- The forecast assumes the following values :
 - Actual (2017) sales = 1500
 - Expected sales growth = 8% until 2022 and 0% thereafter.
 - Operating profit margin = 4% of sales.
 - Tax rate = 33%
 - Additional fixed capital = 17% of incremental sales.
 - Additional working capital = 4% of incremental sales.
 - Cost of capital (WACC) = 11%.



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Valuation

M&A Multiples

- **Most used ratios**

- **Equity Value**

- PER – P/E (Price Earnings Ratio)
 - Price/Book – Price Book Value (Market-to-Book Value)

- **Enterprise Value**

- Tobin's q = Market value of firm/Replacement Cost = $EV / (\text{Book Value of Equity} + \text{Book Value of Debt})$
 - $EV/EBIT(DA)$
 - $EV = \text{Market Value of Equity} + \text{Market Value of (net) Debt}$



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Valuation

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Multiples

- PER – P/E (Price Earnings Ratio)

- $PER = \text{Share Price} / \text{EPS}$
- Application of the PER (or other ratio) model implies the following steps:
 1. Examine the most recent and project the future performance under the current target management
 2. Identify those elements of revenue and costs that will be raised or lowered under the acquirer management
 3. Re-estimate the target's future, post-acquisition earnings. on a sustainable basis
 4. Select a benchmark PER (comparable companies in terms of risk and growth)
 5. Multiply the sustainable earnings by the benchmark PER to arrive at a value for equity.



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Multiples - Example

Pre-bid profit/loss of target firm	(\$m)
Turnover	1500
Cost of sales	1380
Gross profit	120
Administrative costs	80
Associate company loss	5
Operating profit (before D&A, EBITDA)	35
Depreciation and amortization (DA)	16
EBIT	19
Interest (\$90 x 10%)	9
Tax (40%)	4
Profit for shareholders	6

■ Effects of Acquisition

- Gains:
- Increase sales by 8% and gross margin to 9% (from 8%)
- Sell of associated company for \$30m and head office for \$70m (both value are net of taxes)



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Valuation

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Multiples - Example

Pro forma income statement	(\$m)
Turnover	1620
Cost of sales	1474
Gross profit	146
Administrative costs	80
Operating profit (before D&A, EBITDA)	66
Depreciation and amortization (DA)	16
EBIT	50
Interest (\$90 x 10%)	9
Tax (40%)	16
Profit for shareholders	25

■ Valuation of the target

- P/E sector ratio – 12
- Value based on earnings – $12 \times 25 = 300$
- (+) Sell head office* – 70
- (+) Sell of associated company* – 30

400

*Only sustainable earnings enter into the P/E model, elements of a transitory nature are identified and valued separately



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Valuation

M&A Multiples

■ EV/EBITDA

- Similar to PER model
- Used heavily by analysts, in recent years, as an alternative measure of valuation
- Allows the comparison between firms with different capital structures
- Main measure in leverage buy-out acquisitions since avoids the problem with the change of the target capital structure after the acquisition
- $\text{Equity} = \text{EV} - \text{Debt}$
- Example
 - EV/EBITDA comparable firm ratio equal to 7
 - Valuation of the target
 - $\text{EV} = 7 \times 66 + 30 + 70 = \562m
 - $\text{Equity} = 562 - 90 = \472m