CHAPTER 21
MERGERS AND ACQUISITIONS

(Difficulty: E = Easy, M = Medium, and T = Tough)

Multiple Choice: Conceptual

Easy:

Merger tactics **Answer: e Diff: E**

1. Firms use defensive tactics to fight off undesired mergers. These tactics include

   a. Raising antitrust issues.
   b. Taking poison pills.
   c. Getting a white knight to bid for the firm.
   d. Repurchasing their own stock.
   e. All of the statements above are correct.

Mergers **Answer: d Diff: E**

2. Which of the following are given as reasons for the high level of merger activity in the U.S.?

   a. Synergistic benefits arising from mergers.
   b. Reduction in competition resulting from mergers.
   c. Attempts to stabilize earnings by diversifying.
   d. Statements a and c are correct.
   e. All of the statements above are correct.

Mergers **Answer: b Diff: E N**

3. Which of the following statements concerning mergers is most correct?

   a. A conglomerate merger is a merger of firms in the same general industry, but for which no customer or supplier relationship exists.
   b. A horizontal merger is a combination of two firms that produce the same type of good or service.
   c. A congeneric merger is a merger of companies in totally different industries.
   d. Statements a and c are correct.
   e. None of the statements above is correct.

Merger analysis **Answer: d Diff: E N**

4. Which of the following statements concerning merger analysis is most correct?

   a. The goal of merger valuation is to value the target firm's equity, because a firm is acquired from its owners, not from its creditors.
   b. Two key items needed to apply the DCF approach to valuing a business are (1) pro forma statements that forecast the incremental free cash flows expected to result from the merger and (2) a discount rate, or cost of capital, to apply to these projected cash flows.
   c. A financial merger is a merger in which operations of the firms involved are integrated in hope of achieving synergistic benefits.
   d. Statements a and b are correct.
   e. Statements a, b, and c are correct.

Merger analysis **Answer: e Diff: E N**

5. Unlike a typical capital budgeting analysis, a merger analysis usually does incorporate interest expense into the cash flow forecast because

   a. If the subsidiary is to grow in the future, new debt will have to be issued over time to support the expansion.
   b. Acquiring firms never assume the debt of the target firm, so new debt must be obtained by the acquiring firm and the interest expense of this debt must be imputed in the analysis.
   c. The acquisition is often financed partially by debt.
   d. Statements a, b, and c are correct.
   e. Statements a and c are correct.

Defensive strategies **Answer: d Diff: E**

6. Which of the following actions assist managers in defending against a hostile takeover?

   a. Establishing a poison pill provision.
   b. Granting lucrative golden parachutes to senior managers.
   c. Establishing a super-majority provision in the company's bylaws that raises the percentage of the board of directors that must approve an acquisition from 50 percent to 75 percent.
   d. All of the statements above are correct.
   e. None of the statements above is correct.

Miscellaneous merger concepts **Answer: c Diff: E**

7. Which of the following statements is most correct?

   a. A conglomerate merger occurs when a firm combines with another firm in the same industry.
   b. Regulations in the United States prohibit acquiring firms from using common stock to purchase another firm.
   c. Defensive mergers are designed to make a company less vulnerable to a takeover.
   d. Statements a and b are correct.
   e. All of the statements above are correct.

Medium:

Merger motivation **Answer: d Diff: M**

8. Which of the following statements is most correct?

   a. Tax considerations often play a part in mergers. If one firm has excess cash, purchasing another firm exposes the purchasing firm to additional taxes. Thus, firms with excess cash rarely undertake mergers.
   b. The smaller the synergistic benefits of a particular merger, the greater the incentive to bargain in negotiations, and the higher the probability that the merger will be completed.
   c. Since mergers are frequently financed by debt more than equity, financial economies that imply a lower cost of debt or greater debt capacity are rarely a relevant rationale for mergers.
   d. Managers who purchase other firms often assert that the new combined firm will enjoy benefits from diversification such as more stable earnings. However, since shareholders are free to diversify their own holdings at lower cost, such a rationale is generally not a valid motive for publicly held firms.

Merger analysis **Answer: e Diff: M**

9. Which of the following statements is most correct?

   a. A firm acquiring another firm in a horizontal merger will not have its required rate of return affected because the two firms will have similar betas.
   b. Financial theory says that the choice of how to pay for a merger is really irrelevant because, although it may affect the firm's capital structure, it will not affect the firm's overall required rate of return.
   c. The basic rationale for any financial merger is synergy and thus, development of pro-forma cash flows is the single most important part of the analysis.
   d. In most mergers, the benefits of synergy and the price premium the acquirer pays over market price are summed and then divided equally between the shareholders of the acquiring and target firms.
   e. The primary rationale for any operating merger is synergy, but it is also possible that mergers can include aspects of both operating and financial mergers.

LBOs **Answer: e Diff: M**

10. Which of the following statements is most correct?

   a. Leveraged buyouts (LBOs) occur when a firm issues equity and uses the proceeds to take a firm public.
   b. In a typical LBO, bondholders do well but shareholders realize a decline in value.
   c. Firms are unable to sell any assets in the first five years following a leverage buyout.
   d. All of the statements above are correct.
   e. None of the statements above is correct.

Miscellaneous merger concepts **Answer: b Diff: M**

11. Which of the following statements is most correct?

a. If a company that produces military equipment merges with a company that manages a chain of motels, this is an example of a horizontal merger.
b. A defensive merger occurs when the firm’s managers merge with another firm to avoid or lessen the possibility of being acquired through a hostile takeover.
c. Acquiring firms send a signal that their stock is undervalued if they choose to use stock to pay for the acquisition.
d. Statements a and c are correct.
e. None of the statements above is correct.

Multiple Choice: Problems

Easy:

Maximum offer price **Answer: d Diff: E**

12. American Hardware, a national hardware chain, is considering purchasing a smaller chain, Eastern Hardware. American’s analysts project that the merger will result in incremental net cash flows with a present value of $72.52 million, and they have determined that the appropriate discount rate for valuing Eastern is 16 percent. Eastern has 4 million shares outstanding. Eastern’s current price is $16.25. What is the maximum price per share that American should offer?

a. $16.25
b. $16.97
c. $17.42
d. $18.13
e. $19.00

Intercompany dividends **Answer: a Diff: E**

13. A parent holding company sells shares in its subsidiary such that the parent now owns only 65 percent of the subsidiary and thus, the tax returns of the parent and its subsidiary can’t be consolidated. The parent receives annual dividends from the subsidiary of $2,500,000. If the parent’s marginal tax rate is 34 percent and if the exclusion on intercompany dividends is 70 percent, what is the effective tax rate on the intercompany dividends and what are the net dividends received?

a. 10.2%; $2,245,000
b. 10.2%; $2,135,000
c. 23.8%; $1,905,000
d. 10.2%; $1,750,000
e. 34.0%; $1,650,000

Estimating discount rate **Answer: b Diff: E**

14. American Pizza, a national pizza chain, is considering purchasing a smaller chain, Eastern Pizza. American's analysts project that the merger will result in incremental net cash flows of $2 million in Year 1, $4 million in Year 2, $5 million in Year 3, and $117 million in Year 4. (The Year 4 cash flow includes a terminal value of $107 million.) The acquisition would be made immediately, if it is undertaken. Eastern's post-merger beta is estimated to be 2.0, and its post-merger tax rate would be 34 percent. The risk-free rate is 8 percent, and the market risk premium is 4 percent. What is the appropriate discount rate for valuing the acquisition?

    a. 17%
    b. 16%
    c. 15%
    d. 14%
    e. 12%

Medium:

Post-merger beta **Answer: b Diff: M**

15. Firm A, which is considering a vertical merger with another firm, Firm T, currently has a required return of 13 percent. The required return of the target firm, Firm T, is 18 percent. The expected return on the market is 12 percent and the risk-free rate is 6 percent. Assume the market is in equilibrium. If the combined firm will be one and one-half times as large as the acquiring firm using book values what will be the beta of the new merged firm?

    a. 1.20
    b. 1.45
    c. 1.59
    d. 1.72
    e. 2.00

Value of acquisition **Answer: c Diff: M**

16. Pit Row Auto, a national autoparts chain, is considering purchasing a smaller chain, Southern Auto. Pit Row's analysts project that the merger will result in incremental net cash flows of $2 million in Year 1, $4 million in Year 2, $5 million in Year 3, and $117 million in Year 4. The Year 4 cash flow includes a terminal value of $107 million. Assume all cash flows occur at the end of the year. The acquisition would be made immediately, if it is undertaken. Southern's post-merger beta is estimated to be 2.0, and its post-merger tax rate would be 34 percent. The risk-free rate is 8 percent, and the market risk premium is 4 percent. What is the value of Southern Auto to Pit Row Auto?

    a. $60.35 million
    b. $67.00 million
    c. $72.52 million
    d. $81.93 million
    e. $88.23 million

WACC of merged firm **Answer: d Diff: M**

17. Modal Systems currently has total assets of $10 million and a debt to total assets (D/TA) ratio of 30 percent. Modal is considering purchasing Quickswitch Company that has total assets of $6 million and a D/TA ratio of 70 percent. If the component costs of capital for the combined firm will be 12 percent before-tax on debt and 15 percent on equity, and the firm's tax rate is 40 percent, what is the WACC of the merged firm?

    a. 15.00%
    b. 13.65%
    c. 12.66%
    d. 11.49%
    e. 9.75%

Estimating discount rate **Answer: c Diff: M**

18. Karol Kar, Inc. is considering the acquisition of North Star, Inc. North Star is expected to provide Karol Kar with operating cash flows of $14, $19, $20, and $10 million over the next four years. In addition, the terminal value of all remaining cash flows at the end of Year 4 is estimated at $18 million. The merger will cost Karol Kar $41 million which is due now in cash in a single lump sum. If the value of the merger is estimated at $6.00 per share and Karol Kar has 2,000,000 shares outstanding, what equity discount rate must the firm be using to value this acquisition?

    a. 12.42%
    b. 15.86%
    c. 17.24%
    d. 19.60%
    e. 28.44%

Tough:

Value of acquisition **Answer: d Diff: T**

19. Blazer Breaks, Inc. is considering an acquisition of Laker Showtime Company. Blazer expects to receive net cash flows from Laker of $9 million the first year. For the second year, Laker is expected to have EBIT of $25 million and interest expense of $5 million. Also, in the second year only, Laker will require reinvestment of an additional 40 percent of its net income to finance future growth. Laker's applicable marginal tax rate is 34 percent. After the second year, the net cash flows from Laker to Blazer will grow at a constant rate of 4 percent. The firm has determined that 17.5 percent is the appropriate equity discount rate to apply to this merger. Assume that all cash flows occur at the end of the year and that the Laker acquisition will cost Blazer $45 million. Calculate the net cash flow to Blazer for the second year, use that to determine future cash flows, and determine the present value of the proposed acquisition to Blazer.

    a. $ 0.2 million
    b. $ 6.1 million
    c. $ 8.4 million
    d. $12.6 million
    e. $34.9 million

Multiple Part:

(The following information applies to the next five questions.)

Magiclean Corporation is considering an acquisition of Dustvac Company. Dustvac has a capital structure of 50 percent debt and 50 percent equity, with a current book value of $10 million in assets. Dustvac's pre-merger beta is 1.36 and is not likely to be altered as a result of the proposed merger. Magiclean's pre-merger beta is 1.02 and both it and Dustvac face a 40 percent tax rate. Magiclean's capital structure is 40 percent debt and 60 percent equity, and it has $24 million in total assets. The net cash flows from Dustvac available to Magiclean's stockholders are estimated at $4.0 million for each of the next three years and a terminal value of $19.0 million in Year 4. Additionally, new debt issued by the combined firm would yield 10 percent before-tax, and the cost of equity is estimated at 12.59 percent. Currently, the risk-free rate is 6.0 percent and the market risk premium is 5.88 percent.

WACC of merged firm **Answer: b Diff: M**

20. What is the merged firm's WACC?

a. 9.30%
b. 9.76%
c. 10.19%
d. 12.59%
e. 13.06%

Post-merger beta **Answer: c Diff: M**

21. What is the merged firm's new beta?

a. 1.02
b. 1.06
c. 1.12
d. 1.19
e. 1.22

Estimating discount rate **Answer: b Diff: M**

22. What is the appropriate discount rate Magiclean should use to discount the equity cash flows from Dustvac?

a. 15.52%
b. 14.00%
c. 13.84%
d. 13.14%
e. 10.47%

PV of merger cash inflows **Answer: d Diff: M**

23. What is the present value (to the nearest thousand) of the Dustvac cash inflows to Magiclean?

    a. $31,000,000
    b. $25,620,000
    c. $22,847,000
    d. $20,536,000
    e. $14,695,000

Value of acquisition **Answer: a Diff: M**

24. If the acquisition price of Dustvac is 155 percent of Dustvac's current book value of assets, should Magiclean proceed with the acquisition?

    a. Yes, the NPV is $ 5,036,000.
    b. Yes, the NPV is $ 5,500,000.
    c. Yes, the NPV is $10,120,000.
    d. No, the NPV is -$ 5,500,000.
    e. No, the NPV is -$ 805,000.

CHAPTER 21
ANSWERS AND SOLUTIONS

1. Merger tactics **Answer: e Diff: E**

2. Mergers **Answer: d Diff: E**

3. Mergers **Answer: b Diff: E N**

Statement a is the definition of a congeneric merger, while statement c is the definition of a conglomerate merger. Statement b is correct.

4. Merger analysis **Answer: d Diff: E N**

Statement c is the definition of an operating merger rather than a financial merger. Statements a and b are correct; therefore, statement d is the correct answer.

5. Merger analysis **Answer: e Diff: E N**

Statements a and c are 2 of the 3 reasons given in the text as reasons for incorporating interest expense into the cash flow forecast. The third reason given in the text is that the acquiring firms often assume the debt of the target firm, so old debt at different coupon rates is often part of the deal. Therefore, the correct answer is statement e.

6. Defensive strategies **Answer: d Diff: E**

7. Miscellaneous merger concepts **Answer: c Diff: E**

8. Merger motivation **Answer: d Diff: M**

9. Merger analysis **Answer: e Diff: M**

10. LBOs **Answer: e Diff: M**

11. Miscellaneous merger concepts **Answer: b Diff: M**

12. Maximum offer price **Answer: d Diff: E**

$$\text{Price per share} = \frac{\$72.52 \text{ million}}{4 \text{ million}} = \$18.13.$$

13. Intercompany dividends **Answer: a Diff: E**

$$\begin{aligned}\text{Effective tax rate} &= (1 - \text{Exclusion})(\text{Tax rate}) \\ &= (1 - 0.70)(0.34) = 10.2\%.\end{aligned}$$

$$\begin{aligned}\text{Net dividends} &= \text{Gross dividends} - \text{Tax} \\ &= \$2{,}500{,}000 - \$2{,}500{,}000(1 - 0.70)(0.34) \\ &= \$2{,}500{,}000 - \$255{,}000 = \$2{,}245{,}000.\end{aligned}$$

14. Estimating discount rate **Answer: b Diff: E**

k_s = 8% + 2.0(4%) = 16%.

15. Post-merger beta **Answer: b Diff: M**

Calculate the betas of Firms A and T:

$k_A = 0.13 = 0.06 + (0.12 - 0.06)b_{Acquiring}$

$beta_A = 1.17$.

$k_T = 0.18 = 0.06 + (0.12 - 0.06)b_{Target}$

$beta_T = 2.00$.

Calculate the firm weights and new beta:

Combined firm = 1.0 = 1.5(Firm A)

Firm A = 1.0/1.5 = 0.667 of combined firm.

Firm T = 1.0 - 0.667 = 0.333 of combined firm.

$$\begin{aligned} beta_{New} &= 0.667(beta_A) + 0.333(beta_T) \\ &= 0.667(1.17) + 0.333(2.0) \\ &= 0.780 + 0.667 = 1.45. \end{aligned}$$

16. Value of acquisition **Answer: c Diff: M**

Time line (in millions):

0	1	2	3	4	Years
k = 16%					
PV = ?	2	4	5	10	
				TV = 107	
				CF_4 = 117	

k_s = 8% + 2.0(4%) = 16%.

Financial calculator solution (in millions):

Inputs: CF_0 = 0; CF_1 = 2; CF_2 = 4; CF_3 = 5; CF_4 = 117; I = 16.

Output: NPV = \$72.518 ≈ \$72.52.

17. WACC of merged firm **Answer: d Diff: M**

Determine the relative weights of debt and equity in the merged firm (in millions):

	Modal	Quickswitch	Combined Firm	Capital Structure Weights
Debt	0.3(10) = 3.0	0.7(6) = 4.2	7.2	0.45
Equity	0.7(10) = 7.0	0.3(6) = 1.8	8.8	0.55
	10.0	6.0	16.0	1.00

Calculate the WACC using the new capital structure weights:

$k_{d(AT)}$ = 12.0(1 - 0.40) = 7.2%.

Equity cost (given); k_s = 15.0%.

WACC = 0.45(7.2%) + 0.55(15%) = 3.24% + 8.25% = 11.49%.

18. Estimating discount rate **Answer: c Diff: M**

Time line (in millions):

Years	0	1	2	3	4
	-41	14	19	20	10
					18 = Terminal value

Calculate NPV of merger and determine PV of all cash inflows:

NPV_{Merger} = \$6.00/share × 2,000,000 = \$12.0 million.

$$\$12.0 = -\$41 + \frac{\$14}{(1 + IRR_M)^1} + \frac{\$19}{(1 + IRR_M)^2} + \frac{\$20}{(1 + IRR_M)^3} + \frac{\$28}{(1 + IRR_M)^4}.$$

PV of discounted cash flows = 41 + 12 = 53.

Use the complete cash flows to calculate the IRR or k.

Financial calculator solution:

Inputs: CF_0 = -53; CF_1 = 14; CF_2 = 19; CF_3 = 20; CF_4 = 28.

Output: IRR = 17.236 ≈ 17.24% = k_{Merger}.

19. Value of acquisition **Answer: d Diff: T**

Time line (in millions):

Years	0	1	2	3
k = 17.5%	-45	+9	CF_2 = (?)	CF_2(1 + 0.04)

Calculate cash flows to Blazer in the second year:

EBIT	\$25.00	
Less interest	- 5.00	Year 2 CF = \$7.92.
EBT	\$20.00	Year 3 CF = \$7.92(1.04) = \$8.24.
Less taxes @34%	6.80	
NI	\$13.20	
Less reinvestment @ 40%	5.28	
Cash flow to Blazer	\$ 7.92 million	

Numerical solution:

Use DCF constant growth model to discount future cash flows:

$$NPV_{Merger} = -\$45 + \frac{\$9}{(1.175)^1} + \frac{\$7.92}{(1.175)^2} + \frac{\frac{\$8.24}{0.175 - 0.04}}{(1.175)^2}.$$

Financial calculator solution:

Inputs: CF_0 = -45; CF_1 = 9; CF_2 = 7.92 + 61.04 = 68.96; I = 17.5.

Output: NPV = \$12.608 ≈ \$12.6 million.

20. WACC of merged firm **Answer: b Diff: M**

Determine the capital structure of the merged firm (in millions):

	Magiclean	Dustvac	Combined Firm	Capital Structure Weights
Debt	0.4(24) = 9.6	0.5(10) = 5.0	14.6	0.43
Equity	0.6(24) = 14.4	0.5(10) = 5.0	19.4	0.57
Total	24.0	10.0	34.0	1.00

Calculate the WACC:

WACC = 0.43(0.06) + 0.57(0.1259) = 0.0258 + 0.0718 = 0.0976 = 9.76%.

21. Post-merger beta **Answer: c Diff: M**

Calculate the weighted average beta using the relative capital weights of the two firms (in millions):

	Magiclean	Dustvac	Combined Firm
Total assets	24.0	10.0	34.0
Weight	24/34 = 0.706	10/34 = 0.294	1.0
Beta	1.02	1.36	1.12

$Beta_{New\ Firm} = 0.706(1.02) + 0.294(1.36) = 0.720 + 0.40 = 1.12.$

22. Estimating discount rate **Answer: b Diff: M**

The net cash flows from Dustvac are equity cash flows. Magiclean should discount them with Dustvac's cost of equity, assuming that the merger will not significantly alter Dustvac's risk, which is stated in the problem. We can estimate this cost using the Security Market Line (CAPM) and Dustvac's pre-merger beta.

$k_{s(Dustvac)} = k_{RF} + (k_M - k_{RF})Beta_{Pre\text{-}merger} = 0.06 + (5.88\%)1.36 = 14.0\%.$

23. PV of merger cash inflows **Answer: d Diff: M**

Time line:

```
   0  k = 14%  1        2        3        4   Years
   |-----------|--------|--------|--------|
PV = ?        4.0      4.0      4.0     19.0
```

Financial calculator solution:
Inputs: $CF_0 = 0$; $CF_1 = 4000000$; $N_j = 3$; $CF_2 = 19000000$; I = 14.
Output: $PV_{Inflows} = \$20,536,053.$

24. Value of acquisition **Answer: a Diff: M**

Time line:

```
    0  k = 14%  1        2        3        4   Years
    |-----------|--------|--------|--------|
 -15.5         4.0      4.0      4.0     19.0
NPV = ?
```

Acquisition price for Dustvac = 1.55($10,000,000) = $15,500,000.

Financial calculator solution:
Inputs: $CF_0 = -15500000$; $CF_1 = 4000000$; $N_j = 3$; $CF_2 = 19000000$; I = 14.
Output: NPV = $5,036,053.