

Chapter 21

Mergers and Acquisitions

Learning Objectives

After reading this chapter, students should be able to:

- ◆ Identity the different types of mergers and the various rationales for mergers.
- ◆ Conduct a simple analysis to evaluate the potential value of a target firm and discuss the various considerations that influence the bid price.
- ◆ Explain whether the typical merger creates value for the participating shareholders.
- ◆ Discuss the value of other transactions such as leveraged buyouts (LBOs), corporate alliances, and divestitures.

Lecture Suggestions

In this chapter we discuss mergers, LBOs, merger rationales, classifications, merger regulation, and merger analysis. In addition, we discuss corporate alliances and private equity investments. Finally, we talk about divestitures and the rationale behind them.

What we cover, and the way we cover it, can be seen by scanning the slides and Integrated Case solution for Chapter 21, which appears at the end of this chapter solution. For other suggestions about the lecture, please see the “Lecture Suggestions” in Chapter 2, where we describe how we conduct our classes.

DAYS ON CHAPTER: 2 OF 56 DAYS (50-minute periods)

Answers to End-of-Chapter Questions

- 21-1** Horizontal and vertical mergers are most likely to result in governmental intervention, but mergers of this type are also most likely to result in operating synergy. Conglomerate and congeneric mergers are attacked by the government less often, but they also are less likely to provide any synergistic benefits.
- 21-2** A tender offer might be used. Although many tender offers are made by surprise and over the opposition of the target firm's management, tender offers can and often are made on a "friendly" basis. In this case, management (the board of directors) of the target company endorses the tender offer and recommends that shareholders tender their shares.
- 21-3** An operating merger involves integrating the company's operations in hopes of obtaining synergistic benefits, while a pure financial merger generally does not involve integrating the merged company's operations.
- 21-4** Disney's management could (and did) argue that its stock was worth more than \$4.22 per share, and that if Steinberg had taken control, the remaining stockholders would be out in the cold and exploited by Steinberg. Perhaps so, but most nonmanagement stockholders (1) would prefer \$4.22 to \$2.875, (2) were upset at having management give away \$60 million of their value to Steinberg, (3) believed that by no means could Steinberg treat them worse than did the current management, and (4) were more than a little suspicious that management's primary motive was to keep their jobs and perks.
- Personally, we regarded the Disney affair as a flagrant abuse of outside stockholders by a management desperate to keep control. However, we must note that Disney's stock is selling for around \$34 in November 2011 (even after a 3-for-one split in July, 1998), so perhaps management was right. Also, though, Disney's old management is largely gone, and a new and perhaps better group now has control. Perhaps Steinberg was right about the value of the assets, and perhaps his actions forced a desirable management change. Still, and if so, Disney's stockholders paid a steep price (\$60 million) to get the management change.
- Legislation might be desirable, but there is a danger that legislation will help incompetent managers fight off legitimate and desirable efforts to put corporate assets into more effective hands. Markets work reasonably well, but the Disney situation does make it clear that a manager really can threaten to commit corporate suicide and use this tactic to fend off proposed takeovers. Still, a balanced package of legislation would, in our judgment, do more good than harm in preserving the efficiency of our capital markets.
- 21-5** Academicians have long argued that conglomerate mergers that produce no synergy are not economically efficient because (1) overhead costs are incurred in managing the combined enterprise, thus lowering earnings; and (2) relevant risk is not reduced, because the combined firm's beta is a weighted average of the betas of the merged firms. In other words, investors could, individually, get whatever benefits of diversification there are by buying the stocks of the two firms without incurring unnecessary overhead. The recent state of corporate divestitures attests to the merits of this position. The only logical rationale for nonsynergistic conglomerate mergers is that debt capacity may be increased by lowering the risk of bankruptcy. This would increase the value of the merged company. In general, it is safe to conclude that one should be wary of nonsynergistic mergers.

Solutions to End-of-Chapter Problems

21-1 $D_1 = \$2.00$; $g = 5\%$; $b = 0.9$; $r_{RF} = 5\%$; $RP_M = 6\%$; $P_0 = ?$

$$\begin{aligned} r_s &= r_{RF} + RP_M(b) \\ &= 5\% + 6\%(0.9) \\ &= 10.4\%. \end{aligned}$$

$$\begin{aligned} P_0 &= \frac{D_1}{r_s - g} \\ &= \frac{\$2.00}{0.104 - 0.05} \\ &= \$37.04. \end{aligned}$$

21-2 $D_1 = \$2.00$; $g = 7\%$; $b = 1.1$; $r_{RF} = 5\%$; $RP_M = 6\%$; $P_0 = ?$

$$\begin{aligned} r_s &= r_{RF} + RP_M(b) \\ &= 5\% + 6\%(1.1) \\ &= 11.6\%. \end{aligned}$$

$$\begin{aligned} P_0 &= \frac{D_1}{r_s - g} \\ &= \frac{\$2.00}{0.116 - 0.07} \\ &= \$43.48. \end{aligned}$$

21-3 On the basis of the answers in Problems 21-1 and 21-2, the bid for each share should range between \$37.04 and \$43.48.

21-4 a. The appropriate discount rate reflects the riskiness of the cash flows to equity investors. Thus, it is Black-Wolf's cost of equity, adjusted for leverage effects. Since Goldilocks' $b = 1$, $RP_M = r_M - r_{RF} = 14\% - 8\% = 6\%$, then:

$$r_s = r_{RF} + (r_M - r_{RF})b = 8\% + (14\% - 8\%)1.47 = 16.82\% \approx 16.8\%.$$

b. The value of Black-Wolf is \$14.93 million:

0	1	2	3	4	5
	16.8%				
	1.30	1.50	1.75	2.00 ^{g = 6%}	2.12
1.11	← × 1/(1.168)			19.63	
1.10	← × 1/(1.168) ²				
1.10	← × 1/(1.168) ³				
1.10	← × 1/(1.168) ⁴				
11.62				21.63	
V = \$14.93 million					

$$CF_5 = CF_4(1.06) = \$2.00(1.06) = \$2.12.$$

Value at t_4 of CF_5 and all subsequent cash flows is:

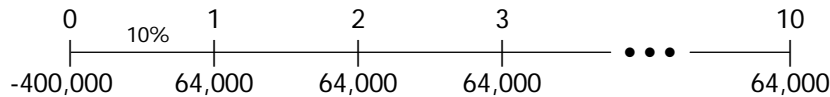
$$V_4 = \frac{CF_5}{r_s - g} = \frac{\$2.12}{0.168 - 0.06} = \$19.63.$$

Alternatively, input 0, 1.30, 1.50, 1.75, and 21.63 ($2.00 + 19.63$) into the cash flow register, I/YR = 16.8, NPV = ? NPV = \$14.93.

c. $P_{Max} = V/N = \$14.93/1.2 = \$12.44.$

Since Goldilocks is paying exactly what Black-Wolf is worth, the acquisition has a zero net present value and Goldilocks' share price should remain at its current price.

21-5



$CF_0 = -\$400,000$; $CF_{1-10} = \$64,000$; and $r = 10\%$.

Input -400,000 and 64,000 (10x) into the cash flow register, I/YR = 10, and solve for NPV = -\$6,747.71. Since the NPV of the investment is negative, Stanley should not make the purchase.

21-6

- a. Since the cash flows are equity returns, the appropriate discount rate is that cost of equity which reflects the risk inherent to this cash flow stream. This cost is Pixable's cost of equity:

$$r_s = r_{RF} + (RP_M)b = 8\% + (4\%)1.50 = 14\%.$$

- b. The continuing value is \$1,143.4:

$$\text{Continuing value} = \frac{\$74.8(1.07)}{0.14 - 0.07} = \$1,143.4.$$

- c. Annual cash flows are calculated as follows:

	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
Sales	\$450.0	\$518.0	\$555.0	\$600.0
Cost of goods sold (65%)	<u>(292.5)</u>	<u>(336.7)</u>	<u>(360.7)</u>	<u>(390.0)</u>
Gross profit	\$157.5	\$181.3	\$194.3	\$210.0
Selling/Admin. expenses	<u>(45.0)</u>	<u>(53.0)</u>	<u>(60.0)</u>	<u>(68.0)</u>
EBIT	\$112.5	\$128.3	\$134.3	\$142.0
Interest	<u>(18.0)</u>	<u>(21.0)</u>	<u>(24.0)</u>	<u>(27.0)</u>
EBT	\$ 94.5	\$107.3	\$110.3	\$115.0
Taxes (35%)	<u>(33.1)</u>	<u>(37.6)</u>	<u>(38.6)</u>	<u>(40.3)</u>
Net income/Cash flow	<u>\$ 61.4</u>	<u>\$ 69.7</u>	<u>\$ 71.7</u>	<u>\$ 74.8</u>

The value of Pixable to SingTel's shareholders is the present value of the cash flows that accrue to the shareholders:

$$V = \frac{\$61.4}{(1.14)^1} + \frac{\$69.7}{(1.14)^2} + \frac{\$71.7}{(1.14)^3} + \frac{\$1,218.2}{(1.14)^4} = \$877.2.$$

Alternatively, input 0, 61.4, 69.7, 71.7, and 1218.2 ($74.8 + 1143.4$) into the cash flow register, I/YR = 14, and solve for NPV = \$877.2.

Comprehensive/Spreadsheet Problem

Note to Instructors:

The solutions for Parts a and b are provided at the back of the text; however, the solution to Part c is not. Instructors can access the *Excel* file on the textbook's web site or the Instructor's Resource CD.

21-7 See Parts a, b, and c on the preceding page.

d.	Offer price per share =	NPV _{Pixable}	/	Shares outstanding (in thousands)		
	Offer price per share =	\$876.7	/	120		
	Offer price per share =	\$7.31				

Integrated Case

21-8

B&Q PLC

Merger Analysis

B&Q, a global home improvement and garden center retailer that specializes in do-it-yourself materials and garden equipment, is cash-rich because of several consecutive good years. One of the alternative uses for the excess funds is an acquisition. Tracy Wong, B&Q's treasurer for the Beijing office and your boss, has been asked to place a value on a potential target, Old Sheng's Hardware, a small chain that operates in the Guangzhou Province of China; and she has enlisted your help.

Table IC 21.1 indicates Wong's estimates of Old Sheng's earnings potential if it comes under B&Q's management (in millions of dollars). The interest expense listed here includes the interest (1) on Old Sheng's existing debt; (2) on new debt that B&Q would issue to help finance the acquisition; and (3) on new debt expected to be issued over time to help finance expansion within the new "O division," the code name given to the target firm. The retentions represent earnings that will be reinvested within the O division to help finance its growth.

Old Sheng's Hardware currently uses 40% debt financing, and it pays local-plus-state taxes at a 30% rate. Security analysts estimate Old Sheng's beta to be 1.2. If the acquisition were to take place, B&Q would increase Old Sheng's debt ratio to 50%, which would increase Old Sheng's beta to 1.3. Further, because B&Q is highly profitable, taxes on the consolidated firm would be 40%. Wong realizes that Old Sheng's Hardware also generates depreciation cash flows, but she believes that these funds would have to be reinvested within the division to replace worn-out equipment.

Wong estimates the risk-free rate to be 9% and the market risk premium to be 4%. She also estimates that cash flows after 2015 will grow at a constant rate

of 6%. B&Q management is new to the merger game, so Wong has been asked to answer some basic questions about mergers as well as to perform the merger analysis. To structure the task, Wong has developed the following questions, which you must answer and then defend to B&Q's board.

A. Several reasons have been proposed to justify mergers. Among the more prominent are (1) tax considerations, (2) risk reduction, (3) control, (4) purchase of assets at below-replacement cost, and (5) synergy. In general, which of the reasons are economically justifiable? Which are not? Which fit the situation at hand? Explain.

Answer: [Show S21-1 through S21-3 here.] The economically justifiable rationales for mergers are synergy and tax consequences. Synergy occurs when the value of the combined firm exceeds the sum of the values of the firms taken separately. (If synergy exists, then the whole is greater than the sum of the parts, and hence synergy is also called the "2 + 2 = 5" effect.)

A synergistic merger creates value that must be apportioned between the stockholders of the merging companies. Synergy can arise from four sources: (1) operating economies of scale in management, production, marketing, or distribution; (2) financial economies, which could include higher debt capacity, lower transactions costs, or better coverage by securities' analysts that can lead to higher demand and, hence, higher prices; (3) differential management efficiency, which implies that new management can increase the value of a firm's assets; and (4) increased market power due to reduced competition. Operating and financial economies are socially desirable, as are mergers that increase managerial efficiency, but mergers that reduce competition are both undesirable and illegal.

Another valid rationale behind mergers is tax considerations. For

example, a firm that is highly profitable and consequently in the highest corporate-tax bracket could acquire a company with large accumulated tax losses, and immediately use those losses to shelter its current and future income. Without the merger, the carry-forwards might eventually be used, but their value would be higher if used now rather than in the future.

The motives that are generally less supportable on economic grounds are risk reduction, purchase of assets at below replacement cost, control, and globalization. Managers often state that diversification helps to stabilize a firm's earnings stream and thus reduces total risk, and hence benefits shareholders. Stabilization of earnings is certainly beneficial to a firm's employees, suppliers, customers, and managers. However, if a stock investor is concerned about earnings variability, he or she can diversify more easily than can the firm. Why should Firm A and Firm B merge to stabilize earnings when stockholders can merely purchase both stocks and accomplish the same thing? Further, we know that well-diversified shareholders are more concerned with a stock's market risk than its stand-alone risk, and higher earnings instability does not necessarily translate into higher market risk.

Sometimes a firm will be touted as a possible acquisition candidate because the replacement value of its assets is considerably higher than its market value. For example, in the early 1980s, oil companies could acquire reserves more cheaply by buying out other oil companies than by exploratory drilling. However, the value of an asset stems from its expected cash flows, not from its cost. Thus, paying \$1 million for a slide rule plant that would cost \$2 million to build from scratch is not a good deal if no one uses slide rules.

In recent years, many hostile takeovers have occurred. To keep

their companies independent, and also to protect their jobs, managers sometimes engineer defensive mergers which make their firms more difficult to “digest.” Also, such defensive mergers are usually debt-financed, which makes it harder for a potential acquirer to use debt financing to finance the acquisition. In general, defensive mergers appear to be designed more for the benefit of managers than for stockholders.

An increased desire to become globalized has resulted in many mergers. To merge just to become international is not an economically justified reason for a merger; however, increased globalization has led to increased economies of scale. Thus, synergism often results—which is an economically justifiable reason for mergers.

Synergy appears to be the reason for this merger.

B. Briefly describe the differences between a hostile merger and a friendly merger.

Answer: [Show S21-4 here.] In a friendly merger, the management of one firm (the acquirer) agrees to buy another firm (the target). In most cases, the action is initiated by the acquiring firm, but in some situations the target may initiate the merger. The managements of both firms get together and work out terms that they believe to be beneficial to both sets of shareholders. Then they issue statements to their stockholders recommending that they agree to the merger. Of course, the shareholders of the target firm normally must vote on the merger, but management’s support generally assures that the votes will be favorable.

If a target firm’s management resists the merger, then the acquiring firm’s advances are said to be hostile rather than friendly. In this case, the acquirer, if it chooses to, must make a direct appeal to

the target firm's shareholders. This takes the form of a tender offer, whereby the target firm's shareholders are asked to "tender" their shares to the acquiring firm in exchange for cash, stock, bonds, or some combination of the three. If 51% or more of the target firm's shareholders tender their shares, then the merger will be completed over management's objection.

- C. Use the data developed in Table IC 21.1 to construct the O division's cash flow statements for 2012 through 2015. Why is interest expense deducted in merger cash flow statements, whereas it is not normally deducted in a capital budgeting cash flow analysis? Why are earnings retentions deducted in the cash flow statement?

Table IC 21.1 Estimates of Old Sheng's Hardware Data for Merger Analysis

	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
Net sales	\$60.0	\$90.0	\$112.5	\$127.5
Cost of goods sold (60%)	36.0	54.0	67.5	76.5
Selling/administrative expense	4.5	6.0	7.5	9.0
Interest expense	3.0	4.5	4.5	6.0
Necessary retained earnings	0.0	7.5	6.0	4.5

Answer: [Show S21-5 through S21-7 here.] The easiest approach here is to create cash flow statements for the H division, assuming that the acquisition is made (in millions of dollars).

	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
Net sales	\$60.0	\$90.0	\$112.5	\$127.5
Cost of goods sold (60%)	36.0	54.0	67.5	76.5
Selling/administrative expense	4.5	6.0	7.5	9.0
Interest expense	<u>3.0</u>	<u>4.5</u>	<u>4.5</u>	<u>6.0</u>
Earnings before taxes	\$16.5	\$25.5	\$ 33.0	\$ 36.0
Taxes (40%)	<u>6.6</u>	<u>10.2</u>	<u>13.2</u>	<u>14.4</u>
Net income	\$ 9.9	\$15.3	\$ 19.8	\$ 21.6
Retentions	<u>0.0</u>	<u>7.5</u>	<u>6.0</u>	<u>4.5</u>
Cash flow	<u>\$ 9.9</u>	<u>\$ 7.8</u>	<u>\$ 13.8</u>	<u>\$ 17.1</u>

Note that these statements are identical to standard capital budgeting cash flow statements except that both interest expense and retentions are included in merger analysis. In straight capital budgeting, all debt involved is new debt that is issued to fund the asset additions. Hence, the debt involved all costs the same, r_d , and this cost is accounted for by discounting the cash flows at the firm's WACC. However, in a merger the acquiring firm usually both assumes the existing debt of the target and issues new debt to help finance the takeover. Thus, the debt involved has different costs, and hence cannot be accounted for as a single cost in the WACC. The easiest solution is to explicitly include interest expense in the cash flow statement.

In regards to retentions, all of the cash flows from an individual project are available for use throughout the firm, but some of the cash flows generated by an acquisition are generally retained with the new division to help finance its growth. Since such retentions are not available to the parent company for use elsewhere, they must be deducted in the cash flow statement.

With interest expense and retentions included in the cash flow statements, the cash flows are residuals that are available to the acquiring firm's equity holders. Smitty's management could pay these out as dividends or reinvest them in other divisions of the firm, as they see fit.

<p>D. Conceptually, what is the appropriate discount rate to apply to the cash flows developed in Part C? What is your actual estimate of this discount rate?</p>
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Answer: [Show S21-8 and S21-9 here.] As discussed above, the cash flows are residuals, and they belong to the acquiring firm's shareholders. Since interest expense has already been considered, the cash flows are riskier than the typical capital budgeting cash flows, and they must be

discounted using the cost of equity rather than the WACC. Further, the discount rate must reflect the riskiness of the flows, and these cash flows have Old Sheng's business risk, not B&Q's business risk.

However, the market risk of the O division is not the same as the market risk of Old Sheng's operating independently, because the merger affects Old Sheng's leverage and tax rate. B&Q's investment bankers have estimated the O division's beta will be 1.3 after the merger and the additional leverage has been employed.

To obtain the required rate of return on equity, note that $r_{RF} = 9\%$ and $RP_M = 4\%$. Thus, the O division's required rate of return on equity, which is the appropriate discount rate to apply to the merger cash flows, is 14.2%:

$$\begin{aligned} r_{s(\text{O division})} &= r_{RF} + (r_M - r_{RF})b_{\text{O division}} \\ &= 9\% + (4\%)1.3 = 14.2\%. \end{aligned}$$

E. What is the estimated continuing value of the acquisition; that is, what is the estimated value of the O division's cash flows beyond 2015? What is Old Sheng's value to B&Q? Suppose another firm were evaluating Old Sheng's Hardware as an acquisition candidate. Would it obtain the same value? Explain.

Answer: [Show S21-10 through S21-12 here.] The 2015 cash flow is \$17.1 million, and it is expected to grow at a 6% constant growth rate in 2016 and beyond. With a constant growth rate, the Gordon model can be used to value the cash flows beyond 2015:

$$\begin{aligned} \text{Continuing value} &= \frac{(\text{2015 Cash flow})(1+g)}{r_s - g} \\ &= \frac{\$17.1(1.06)}{0.142 - 0.06} \\ &= \$221.0 \text{ million.} \end{aligned}$$

Adding the continuing value, the cash flow stream looks like this (in millions of dollars):

	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
Annual cash flow	\$9.9	\$7.8	\$13.8	\$ 17.1
Continuing value	—	—	—	<u>221.0</u>
Cash flow	<u>\$9.9</u>	<u>\$7.8</u>	<u>\$13.8</u>	<u>\$238.1</u>

Now, the value of Old Sheng's to B&Q is the present value of this stream, discounted at 14.2%, or \$163.9 million.

If another firm were valuing Old Sheng's Hardware, they would probably obtain an estimate different from \$163.9 million. Most important, the synergies involved would likely be different, and hence the cash flow estimates would differ. Also, another potential acquirer might use different financing, or have a different tax rate, and hence estimate a different discount rate.

- F.** Assume that Old Sheng's has 10 million shares outstanding. These shares are traded relatively infrequently; but the last trade, made several weeks ago, was at a price of \$9 per share. Should B&Q make an offer for Old Sheng's Hardware? If so, how much should it offer per share?

Answer: [Show S21-13 through S21-18 here.] With a current price of \$9 per share and 10 million shares outstanding, Old Sheng's current market value is $\$9(10) = \90 million. Since Old Sheng's expected value to B&Q is \$163.9 million, it appears that the merger would be beneficial to both sets of stockholders. The difference, $\$163.9 - \$90.0 = \$73.9$ million, is the added value to be apportioned between the stockholders of both firms.

The offering range is from \$9 per share to $\$163.9/10 = \16.39 per share. At \$9, all of the benefit of the merger goes to B&Q's shareholders, while at \$16.39, all of the value created goes to Old

Sheng's shareholders. If B&Q offers more than \$16.39 per share, then wealth would be transferred from B&Q's stockholders to Old Sheng's stockholders.

As to the actual offering price, B&Q should make the offer as low as possible, yet acceptable to Old Sheng's shareholders. A low initial offer, say \$9.50 per share, would probably be rejected and the effort wasted. Further, the offer may influence other potential suitors to consider Old Sheng's Hardware, and they could end up outbidding B&Q. Conversely, a high price, say \$16, passes almost all of the gain to Old Sheng's stockholders, and B&Q's managers should retain as much of the synergistic value as possible for their own shareholders.

Note that this discussion assumes that Old Sheng's \$9 price is a "fair," equilibrium value in the absence of a merger. Since the stock trades infrequently, the \$9 price may not represent a fair minimum price. Old Sheng's management should make an evaluation (or hire someone to make the evaluation) of a fair price and use this information in its negotiations with B&Q.

G.	What merger-related activities are undertaken by investment bankers?
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Answer: [Show S21-19 here.] The investment banking community is involved with mergers in a number of ways. Several of these activities are: (1) helping to arrange mergers, (2) aiding target companies in developing and implementing defensive tactics, (3) helping to value target companies, (4) helping to finance mergers, and (5) risk arbitrage—speculating in the stocks of companies that are likely takeover targets.