

Chapter 21 Mergers, Acquisitions and Corporate Control

Chapter Overview

The *What Companies Do* opening feature discusses the 2007 bid by Australia's BHP Billiton Limited's for Britain's Rio Tinto plc. This hostile takeover attempt, if successful, would have been the third largest takeover in history. However the failure left both companies feeling bruised and battered. The merger was opposed on anti-trust grounds with the proposal that the merger would actually raise the price of iron ore and other key products. Both companies' market capitalisations fell by more than one-third in 2008. 2008 saw many failed takeover bids but BHP–Rio Tinto was the largest of them all.

What Companies Do Discussion Questions

1. Where are the synergies, or cost savings, expected from the merger? Why might bigger seem to be better for mining or media companies and many other firms?
2. Can you describe other business decisions or business experiences in which there appears to be a financial 'home run,' yet politics or other human concerns have the potential to void the deal?

This chapter looks at:

- 21-1. Merger Waves and International Acquisition Activity
- 21-2. Why Do Companies Make Acquisitions?
- 21-3. Do Mergers Create Value?
- 21-4. Merger and Acquisition Transaction Details
- 21-5. Accounting Treatment of Mergers and Acquisitions
- 21-6. Regulation of Mergers and Acquisitions
- 21-7. Corporate Governance

After studying this chapter you should be able to:

- describe the most important forms of corporate control transactions and distinguish between transactions that integrate two businesses and those that split up an existing single business
- discuss the differences between horizontal, vertical and conglomerate mergers
- explain the different methods of payment acquirers use to execute mergers and acquisitions, and discuss how returns to target and bidder company shareholders differ between cash and share mergers
- contrast the motivations of managers who implement value-maximising mergers and acquisitions to those who execute non-value-maximising combinations
- describe the most important regulations that govern corporate control activities, and explain why international corporate control regulations have become much more important recently.

Lecture Guide

This chapter provides an overview to mergers and acquisitions, introducing new terminology. Most students know that the process of two companies joining together is called a merger; they may be less familiar with other types of restructuring: leveraged buyouts, management buyouts, recapitalisations, divestitures and spin offs as well as tender offers.

21-1 Merger Waves and International Activity

Mergers have come in waves – periods of high and low popularity. Merger activity has also been impacted by changes in regulations concerning mergers.

International Activity: The amount of cross border merger activity has also seen an increase in the last decade.

Figure 21.1 Trends in M&A: Total Value of M&A Transactions in the US Hit an All-Time High in 2000.

Figure 21.2 Recent Trends in M&A Activity in Australia and New Zealand: By Total Value of M&A Transactions and By Total Number of Transactions

Figure 21.3 Value of Cross-Border Transactions Involving US Firms in 2010

Figure 21.4 Merger Transactions by Region (1998-2003)

Figure 2.5 Merger Transactions by Region (2004-2009)

Table 21.1 Fifteen Largest Corporate Takeovers, Ranked by Transaction Value

Figure 21.6 Foreign Acquisitions of Australian Targets in 2011, By Jurisdiction, Value and Volume

21-2 Why Do Companies Make Acquisitions?

The purpose of mergers and/or acquisitions is to create value. This section helps answer the following three questions: (1) Does it increase shareholder value, (2) What price is being paid for the acquisition, and (3) Is an acquisition really needed to obtain the hoped-for benefit of the merger?

21-2a Explaining Mergers and Acquisitions

A merger should occur only if it creates value. This can be related back to the equation for cash flows from a firm. The merger must increase revenues, reduce costs, reduce taxes, reduce working capital or fixed asset needs. If the two firms do not create more value together rather than apart, then the merger should not be undertaken. Firms may wish to merge to increase their potential markets, thereby increasing revenues. In addition, mergers may create operational benefits, creating economies of scale or scope. Firms, like the banks mentioned in the opening focus, may be able to operate with fewer facilities and employees, reducing operating costs. Firms may have complementary resources, enabling them to build on each other's strengths.

Firms may want to maximise their managerial expertise. For example, RJR Nabisco purchased Kraft Foods with the intent of having Kraft's expert food managers take charge of their Nabisco foods operations.

Mergers may have financial purposes. If a large, high-rated company purchases a heavily debt-ridden, low rating, high debt cost company, it could immediately refinance the acquired firm's junk bonds, achieving a lower rate of interest and lower interest expense.

This section discusses in detail the major reasons for mergers and acquisitions:

- *Growth:* Mergers are a common motive for a firm to grow because if firms do not continue to grow, they will stagnate and eventually die.
- *Synergies:* When combining two entities creates even more value than they possessed separately then synergy has been achieved. This is another motive for mergers.
- *Market Position:* A merger might occur to attempt to solidify or improve its position in industry.
- *Relative Valuation:* If a firm is seen as undervalued by the market, a merger might take place.
- *Diversification:* When a firm wishes to enter another industry segment, a merger might be the choice.
- *Managerial Explanations:* Sometimes a company wishes to acquire an outstanding management team so undertakes a merger attempt.
- *EPS Accretion:* An increase in EPS can also be a motive.

21-2b Calculating the Effect of a Merger on Earnings Per Share

This section discusses and illustrates the formula for determining post-merger EPS. It also includes an example.

21-3 Do Mergers Create Value?

The value created in a merger will be realised in the form of a premium to acquired company shareholders. It is difficult for a firm to quietly take over another company. The required regulatory filings make it more likely that other companies will enter the fray and a bidding war for the target company will occur.

This section summarises the main empirical findings concerning returns to shareholders, given mode of payment (cash or shares) and the hypotheses advanced to explain excess returns to target company shareholders. The mode of payment is surprisingly important – whether the merger is made using cash or equity payments. Just as issuing new equity sends a signal to the market that a firm is overvalued, paying for an acquisition with equity sends the same negative signal.

21-3a Merger Valuation Methods

This section discusses the following most common merger valuation methods:

- Discounted Cash Flow: As discussed in previous chapters, DCF values the firm on the basis of discounted future expected cash flows.
- Public Comparables: Observable market values of other comparable companies can be used to estimate the value of the firms before and after the merger.
- Precedent Transactions: The valuation can come from other recent transactions that involve the target's competitors or other similar companies.

This section also discusses the difference between equity values and enterprise valuations. This is an important distinction that should be made to students.

23-b Shareholder Gains (or Losses) in Mergers – Returns to Bidder and Target

This section discusses the value accrued by shareholders during a merger/acquisition. Much research has been done on this subject and is illustrated here. It appears that targets often gain in value if the merger is seen as a positive step and bidders often lose money.

Table 21.2 Average Abnormal Returns to Target and Bidders in a Two-Day Window

Figure 21.7 Distribution of Abnormal Returns for Targets in Two-Day Window around Announcements (1991-2010)

21-3c Method of Payment

The method for which payment is made in a merger or acquisition can be of significance.

A *pure share exchange* only involves the exchange of the bidder's equity for the target's equity. This is often done with an issue of new shares. Some mergers are financed by a combination of *mixed offerings*. This is some combination of shares and cash. A company may be purchased with cash, shares or some combination of cash and shares. Mergers may be hostile or friendly. Note that the acquired company's management have a high probability of being replaced even in a friendly merger. When AT&T acquired NCR, one of the first announcements was that the CEO of NCR had left 'to pursue other interests.'

Figure 21.8 Mergers by Financing Mix

Table 21.3 Abnormal Returns to Targets and Bidders in Two-Day Window Conditional on Method of Payment (Tender Offers in SDC, 2000-2010)

21-3d Returns to Bondholders

Ordinary equity is not the only security affected by a merger. Bonds and preferred equity are also impacted. Bonds can actually increase in value when the merger is considered stabilising.

21-3e How Do Target CEOs Make Out?

Most CEOs receive payments anywhere from 10-15 times their annual salary – many times in the form of shares or options.

21-4 Merger and Acquisition Transaction Details

21-4a Types of Mergers

This section discusses the many types of mergers and acquisitions. This section also details some of the terminology concerning merged firms after the merger. Some are fully integrated and no longer exist as a separate name or entity (a *statutory merger*), while others retain their own operations and continue to operate independently, even after the merger (subsidiary merger). A consolidation is the combination of two or more firms, now operating as a third firm. A *reverse triangle merger* occurs when a subsidiary of the bidder merges with the target firm. A *consolidation* is also another possibility. This is when both the bidder and target firms disappear to form a new entity. This has been seen in the airline industry quite often.

21-4b LBOs, MBOs, and Recapitalisations

In a 'public to private' transaction, a formerly public firm becomes private, generally after a leveraged buyout (LBO) or management buyout (MBO). Most of these transactions are financed very heavily with debt financing. This section includes a great deal of terminology which is very important for the student to understand.

21-4c Takeover Defences and Divestitures

This section defines anti-takeover defence terminology – steps a firm can take to discourage takeovers. Many firms have anti-takeover measures in place. In general, these are considered to be anti-shareholder, since shareholders generally realise a premium, often a substantial premium, when one company is purchased by another. In one extreme case, when the Pennsylvania-based Armstrong World Industries was the object of a possible takeover by the Canadian Belzberg brothers, the Pennsylvania state legislature passed a law making hostile takeovers practically impossible in the state. Lawmakers were concerned that jobs and revenues would leave the state and were explicitly looking out for the interests of employees, customers and suppliers, rather than putting shareholders first.

- *Student Involvement:* Ask students why a firm's management might want anti-takeover provisions – about 50% of managers of the acquired firm lose their jobs following a takeover. This potential job insecurity might encourage managers to discourage takeovers. On the other hand, shareholders frequently benefit from a corporate takeover, if they have invested in the firm with a high control premium. How can the firm prevent such conflicts of interest between managers and shareholders?

Not all corporate control actions make the firm larger. Firms may choose to make themselves smaller through divestitures, selling part of the business to another firm, or undertaking spinoffs, creating a new company from the *divested* entity. In general, poorly performing parts of the business are divested or spun off. An *equity carve out* is sometimes called a partial IPO. The parent company generally retains voting control of the carved out company. In a split up, the company disappears as its subsidiaries all become separate, independent companies and in a bust up, a company is bought by another company and then its pieces sold off.

Table 21.4 Commonly Used Antitakeover Devices

21-5 Accounting Treatment of Mergers and Acquisitions

Under International Financial Reporting Standard IFRS-3, acquisitions are accounted for using the acquisition method. The acquiring firm recognises the target's assets and liabilities in its consolidated financial statements at the fair value at the time of the acquisition. The firm must also determine if there is a difference between the fair value and the amount it paid for the target. This section gives a detailed example that can help with these valuation concepts.

21-6 Regulation of Mergers and Acquisitions

21-6a Antitrust Regulation

These sections outline the major laws concerning antitrust enforcements. Since large mergers can reduce competition they are watched carefully.

- **Determination of Anti-Competitiveness**
 - The Herfindahl Index is used to determine how much concentration there is in an industry. The more concentration, the more likely that competition regulators will investigate possible illegal antitrust activities.

Table 21.5 Determination of Anticompetitiveness – Using the Herfindahl Index (HHI)

21-6b International Regulation of Mergers and Acquisitions

International agencies are now taking a greater interest in mergers and acquisitions. This was seen most prominently when the European Commission vetoed the proposed merger between WorldCom and Sprint.

21-6c Other Legal Issues Concerning Corporate Control

The market for corporate control is a way of keeping managers working as efficiently as possible. If a company is not well run, its share price will become depressed and it will be a more attractive takeover candidate.

- *Law Affecting Corporate Insiders:* Many laws have been passed to prevent trading by corporate insiders during critical times. Often call 'black out' days due to the prevention of all trading within the company ranks.
- ASIC is responsible for monitoring market activity.

21-7 Corporate Governance

21-7a Duties of the Board in the Context of M&A

This section covers the duties and obligations of the board of directors during a merger or acquisition.

Mergers, Acquisitions and Corporate Control Summary

This section quickly summarises the main points of this chapter.

Chapter 21 Resource Articles

'Scoring Boards on Governance Has its Risks,' *Wall Street Journal*, 2 October 2002. This article looks at new firms which offer corporate governance research services, now that many investors, in particular institutional investors, are focusing more on corporate governance.

'Where Have the Masters of the Big Mergers Gone?' *Wall Street Journal*, 25 June 2002. This article looks at the decline in US M&A activity and asks if this is just another cycle.

'Gems Among the Trash?' *Business Week*, 15 April 2002. This looks at some spinoffs that have created a great deal of value for investors. It notes that companies typically spin off divisions that are performing poorly.

'Banks Are Back in Takeovers,' *Wall Street Journal*, 24 October 2011. This article discusses banks' willingness to return, post 2008 drop, to the business of backing takeovers and mergers. It also discusses some of the larger recent financing.

Enrichment Exercises

Darden (University of Virginia) has several excellent negotiating merger exercises, where students represent the various parties to a negotiation. The cases are:

From Robert F Bruner, *Case Studies in Finance*, 4th edition:

#40 Chrysler Corporation: Negotiations between Daimler and Chrysler

From Robert F Bruner, *Case Studies in Finance*, 3rd edition:

#37 McCaw Cellular Communications: The AT&T/McCaw Merger Negotiation, set up so parties can represent either AT&T or McCaw

#49 Joint Venture Negotiating Committee: Slavagrad Government of Euroslavia: The GM-Euroslavia Joint Venture Investment Simulation, set up so groups representing four different parties can negotiate.

From Robert F Bruner, *Case Studies in Finance*, 2nd edition:

#44 Gallery of Furs, Inc.: Fur-Industry Merger Exercise

Show students excerpts from the movie, 'Other People's Money.' In the movie, Danny DeVito attempts to takeover Gregory Peck's wire and cable business. From a Hollywood point of view, Gregory Peck is the hero, valiantly defending his company from a heartless corporate raider. From a finance point of view, Danny DeVito is the good guy – creating shareholder value and preventing the firm from continuing to take on negative net present value projects.

Answers to Concept Review Questions

1. Merger waves tend to be positively related to high growth rates in the overall economy and to industry shocks, or industry-wide events such as deregulation that affect the corporate control activities of entire industries. We can study the US market (as the largest M&A market with a rich history). The first US merger wave was in 1897, largely the result of a growing emphasis on a national economy rather than a grouping of regional economies. With more interstate commerce, corporations sought expansion and market power through expansion mergers. Merger activity ended with the US stock market crash of 1904. Another merger wave began shortly after World War I, with horizontal combinations creating oligopolies within industries. Heavily concentrated industries, like mining and manufacturing, turned to vertical mergers to benefit from integration. In the 1960s, the third merger wave consisted of conglomerate mergers. There was greater antitrust enforcement of horizontal and vertical mergers, discouraging those mergers. A merger wave in the 1980s heralded a shift back to corporate specialisation, often using junk bond financing. The most recent wave of mergers started in 1993, primarily stock-swap mergers, fuelled by a rapidly rising stock market. The industry shock theory explains much of the activity in the latest wave. The industries with heavy merger activity were health care, banking and telecommunications, each of which had undergone a recent shock. (Health care: managed care and deregulations; and rapid technological changes in banking and telecommunications.)

A sharp decline in the liquidity of financial markets and an increase in the cost of funds is the best explanation for why M&A activity declined sharply in the last recession.

2. Within a region, barriers to doing a productive deal are likely to be much lower. Barriers include cultural, language, and legal barriers, as well as the logistical issues of managing enterprises that are separated by a great distance.
3. Value maximising motives include increasing operating profit, realising gains from restructuring poorly managed firms, or creating greater barriers to entry in their industry. Value maximising

mergers increase market power, capitalise on economies of scale or create value through the sale of underperforming target resources.

4. In a publicly traded company, investors' opinions on an acquisition are immediately known by the effect the acquisition has on the share price. Further, if the predicted benefit from a merger is not attained quickly, shareholders have the ability to remove management. Private companies do not have such issues, but management is still expected to demonstrate the value of an acquisition eventually.
5. A manager might pursue conglomerate mergers or mergers for corporate diversification because of agency conflicts. A manager is concerned about total risk – his or her personal wealth and job security. The more diversified the company, the better able it will be to weather market fluctuations. This may not be the best choice for shareholders. They can diversify on their own, and they don't need the firm to diversify for them. The manager has more of his/her total wealth tied up in the company and is less able to diversify on his own. Corporate diversification works when there is true value added – when the parts added create synergies, perhaps because of shared overhead expenses. There must be a real cash flow benefit for a merger to be successful. The most widely known case of where corporate diversification has succeeded is with General Electric Corporation.
6. The target managers want to negotiate the highest possible price, so they will argue that precedent transaction multiples should be used to determine the target's value. Bidders will push for a lower valuation, which is likely to come from public comparables or DCF calculations.
7. Even if synergies make the target much more valuable to the bidder than it is as a stand-alone entity, if the bidder is much larger than the target, any gains from the deal will be relatively small compared to the bidder's overall market value, and therefore the bidder's shares may not increase much at all.
8. A statutory merger is when the acquired firm disappears completely as an entity. This is common when the 'brand' or name of the target company has no value to the acquiring company. Should the target firm's 'brand' have value to the acquirer, the target firm will be acquired as a subsidiary of the acquirer (in a subsidiary merger) and retain its name and possibly its management. Another possibility when there is value in the target firm's 'brand' is for the acquirer to create a subdivision that becomes a controlling equity holder in the target firm (i.e. a reverse triangle merger). In a consolidation merger, if the acquirer and target are considered equals, they undertake a 'merger of equals' and will lose their individual names under a newly named entity.
9. A tender offer involves one company (the bidder) making a public offer to purchase all of the shares of the target company that the target's shareholders are willing to 'tender.' This is a method of attempting to acquire voting control of another company in a public bid. A proxy fight occurs when one group of shareholders challenges the incumbent board of directors by seeking to acquire the proxies (assigned rights to vote shares) of other shareholders. This is also an (internal) attempt to acquire control – or at least influence – of the company's board of directors.
10. The two most important methods of paying for corporate acquisitions are with cash and using the company's own shares as a currency. Cash acquisitions are often funded by the bidding firm borrowing the cash needed, although small acquisitions may simply use cash the company has on hand.
11. Target shareholders almost always win in a corporate takeover, but acquirers' returns are mixed. Bhagat, Dong, Hirshleifer, and Noah (2005) finds that the average announcement-period abnormal return for the shareholders of firms launching successful tender offers is very close to zero for their entire 1962-2001 study periods, with these average returns fluctuating between positive and negative over time. Andrade, Mitchell and Stafford (2001) document average announcement-period

excess returns for successful acquiring-firm shareholders of -0.7 per cent using a short event window, and -3.8 per cent using their event period stretching through merger completion.

Two studies by Sara Moeller, Frederik Shlingemann, and René Stulz (2004, 2005) examine acquirer returns by calculating both average percentage return and overall dollar returns to bidding-firm shareholders. They find strong evidence of a size effect, where relatively small bidding firms earn positive returns, but larger bidders fare much worse. They document that the equally weighted abnormal announcement period return to bidders in 12,023 acquisitions over 1980-2001 is 1.1 per cent, but acquiring-firm shareholders lose \$25.2 million on average upon announcement. Their 2005 study shows that these negative dollar returns are concentrated in the frenzied 1998-2001 merger period, and more particularly result from 87 'large loss' bidders that each lost at least \$1 billion in market value in a single transaction.

12. Under current IFRS requirements, target liabilities remain unchanged, but target assets are 'written up' to reflect current market values, and the equity of the target is revised upward to incorporate the purchase price paid. These revised values are then carried over to the surviving firm's financial statements. The intangible asset goodwill is created if the restated values of the target lead to a situation in which its assets are less than liabilities and equity. This goodwill reflects the premium that an acquiring firm is willing to pay in excess of net asset market value in order to capture synergies from the merger – goodwill becomes an intangible asset on the balance sheet. Going forward, the value of this intangible asset must be evaluated to determine if it has been 'impaired' due to a decline in fair value relative to carrying value. If the value of goodwill is impaired, then the amount of the impairment is 'written down' from the goodwill account on the balance sheet and charged off against earnings. Otherwise, it remains unchanged on the balance sheet indefinitely.
13. Companies that have few tangible assets, but tremendous growth prospects can have acquisition values that will be above the fair market value of the assets. These tend to include new technology companies and research intensive companies. Also, targets that provide synergies to the acquirer can be acquired at a price above fair market value because the expected synergies become embedded in the acquisition price. This latter scenario can happen in any industry.
14. This answer can change depending on economic/political conditions. However, companies that are about to face regulatory changes (currently, healthcare and banking) are likely to experience merger activity. Also, as certain markets begin to consolidate (possibly social media in the near future), merger activity will increase. An example in Australia is the merger activity in the financial planning industry that resulted from the new FOFA legislation.
15. Increasing global competition is very likely to spur merger activity. Firms will want to gain footholds in other countries, often through merger with a local company.
16. The **Herfindahl Index (HI)** demonstrates the relationship between corporate focus and shareholder wealth. The HI is computed as the sum of the squared percentages, in this case the proportion of revenues derived from each line of business. Thus, the HI exaggerates the difference between focused and diversified firms. A completely focused firm has an HI of 1.00, while a relatively unfocused company with three lines of business accounting for 50%, 30% and 20% of company revenues has an HI of 0.38 ($0.5^2 + 0.3^2 + 0.2^2$). A merger (or divestiture) increases focus if the HI of the merged firm is greater than that of the acquiring firm prior to the merger, preserves focus if the HI does not change, and decreases focus if the HI declines. The Herfindahl Index is also used to measure how dominated an industry is by one or a few companies, by computing the squared market shares of various companies.
17. Mergers are classified by degree of business concentration to see if a merger will result in too few competitors in a particular industry. The classifications have changed over time because competition has changed over time – first from regional only competition, then national competition and now global competition.

18. Corporate governance refers to how companies are governed, that is, the processes and rules that affect who ultimately makes the decisions in a company. In theory, these rules should have management make decisions that are in the best interests of the shareholders. Unfortunately, there are too many examples of failures in corporate governance which will make answers vary (e.g. Enron, Worldcom, Healthsouth, etc. – more recent examples are failed financial institutions and insurance companies that are under investigation, e.g. AIG and Countrywide).

Answers to End-of-Chapter Questions

Q21-1. What is meant by a change in corporate control? List and describe the various ways in which a change of corporate control may occur.

A21-1. Corporate control refers to the monitoring, supervision and direction of a corporation. A change in corporate control can occur when two firms merge, or through:

- a leveraged buyout or management buyout, when third parties or management buy all of the stock of a corporation (going private transaction), typically financing the purchase with debt financing
- dual class recapitalisation, when one class of shares has greater voting rights, and therefore greater control, of a corporation
- acquisition, when one company purchases another and submerges that company into its existing operations
- proxy fight, when one group of shareholders gathers votes to take control of the board of directors of a corporation.

Q21-2. What is a tender offer, and how can it be used as a mechanism to orchestrate a merger?

A21-2. In a tender offer, one corporation asks shareholders of another corporation to sell, or tender, their shares to the first corporation. If the corporation is able to buy back more than 50% of the shares of the target corporation, then the company has control. This can be used to effect a hostile takeover of the target corporation. Once the first corporation owns more than half of the equity, it can force a merger with the target company.

Q21-3. Elaborate on the significance of the mode of payment for the shareholders of the target firm and their continued interest in the surviving firm. Specifically, which form of payment retains the shareholders of the target firm as shareholders in the surviving firm? Which payment form receives preferential tax treatment?

A21-3. Mergers can be paid for using cash, an exchange of shares in the acquired firm for shares in the acquiring firm, or, rarely, an exchange of shares in the acquired firm for debt, or a combination of these modes of payment. If cash is received, then shareholders of the acquired company must pay capital gains taxes on any gain over their basis in the shares. If the merger is accomplished through an exchange of shares, then no taxes are due unless the shares are sold. In a cash transaction, the shareholders of the acquired company no longer have any stake in the company. If the shareholder receives shares in the acquiring company, then he/she has a proportional interest in the new, merged company.

Q21-4. What is the signalling theory of mergers? What is the relationship between signalling and the mode of payment used in acquisitions? Is there a relationship between the mode of payment used in acquisitions and the level of insider shareholdings of acquiring companies?

A21-4. The signalling theory states that the mode of payment offered by acquiring firms signals inside information to the capital markets. Managers will finance acquisitions with the cheapest source

of capital available. Financing an acquisition with equity signals to the market that equity is a relatively cheap source of capital because the acquirer's share price is overvalued. The capital market will lower the price of the acquirer upon receiving this information.

Q21-5. Empirically, what are the wealth effects of corporate control activities? Who wins and who loses in corporate control contests? What explanations or theories are offered for the differences in returns of acquiring companies' ordinary equity? Why are higher takeover premiums paid in cash transactions than in share transactions? How do other security holders fare in takeovers?

A21-5. Target firm shareholders receive large wealth gains from the premium received for giving up control of the firm. On average, ordinary shareholders of acquiring firms experience positive returns in successful tender offers and virtually zero returns in successful mergers. There are higher returns in cash transactions than in share transactions, and higher returns in tender offers than in mergers. Most tender offers are financed with cash and most negotiated mergers are equity financed. Signalling theory explains why share returns are lower – issuing equity may be sending a signal that the shares of the acquiring company are overvalued.

Bhagat, Dong, Hirshleifer, and Noah (2005) find that the average announcement-period abnormal return for the shareholders of firms launching successful tender offers is very close to zero for their entire 1962-2001 study periods, with these average returns fluctuating between positive and negative over time. Andrade, Mitchell and Stafford (2001) document average announcement-period excess returns for successful acquiring-firm shareholders of -0.7 per cent using a short event window, and -3.8 per cent using their event period stretching through merger completion.

Two studies by Sara Moeller, Frederik Shlingemann, and René Stulz (2004, 2005) examine acquirer returns by calculating both average percentage return and overall dollar returns to bidding-firm shareholders. They find strong evidence of a size effect, where relatively small bidding firms earn positive returns, but larger bidders fare much worse. They document that the equally weighted abnormal announcement period return to bidders in 12,023 acquisitions over 1980-2001 is 1.1 per cent, but acquiring-firm shareholders lose \$25.2 million on average upon announcement. Their 2005 study shows that these negative dollar returns are concentrated in the frenzied 1998-2001 merger period, and more particularly result from 87 'large loss' bidders that each lost at least \$1 billion in market value in a single transaction.

Empirical studies have found that some nonconvertible bondholders experienced wealth gains in mergers, but these gains are driven by the bonds of acquiring firms in non-conglomerate mergers. Convertible bond returns are significantly higher than those of nonconvertible bonds. Increased leverage in a merger causes bondholder wealth losses and certain types of restrictive covenants protect bondholder wealth in mergers. Both convertible and nonconvertible preferred shareholders have significant wealth gains in non-conglomerate mergers.

Q21-6. Describe several different motives for mergers. Are each of these motives likely to increase bidder value?

A21-6. The single most compelling motive for a merger is growth that will lead to additional value. Under the idea of 'synergy', when two firms combine, economies of scale or scope are created that allow for total production to occur at a lower cost. Other synergies allow for either savings or value creation by the combining of complementary expertise that existed separately prior to the merger. Unfortunately, perceived synergy generally never fully materialises and often leads to the acquiring firm paying too high a price for the target firm.

Other motives include:

- 'Market positioning' to get bigger to compete with a rival. Anti-trust issues and overvaluation of the target become critical in this type of merger.
- 'Relative valuation' is a motive when an acquirer is over-valued and a target is under-valued. Under this scenario, the bidder likely has an advantage.

- 'Diversification' or the desire to acquire unrelated firms into a conglomerate is not as popular a reason as it once was. It is difficult to say which firm has the advantage on price in this scenario.
- 'Management incentives' linked to empire building or hubris generally lead to higher prices for bidders because the motivating factor is not value.

Q21-7. Define the types of synergy that may result from mergers. What are the sources of these synergies?

A21-7. Synergies that might result from a merger include:

- Operational synergy, results of economies of scale and scope and complementary resources.
- Managerial synergy, results of efficiency gains from the combination of management teams.
- Financial synergy, results of less volatile cash flows, lower default risk and a lower cost of capital.

The synergies occur because the merged firm is able to operate more efficiently as a single, merged entity than the two firms could when operating independently.

Q21-8. Explain how agency problems may lead to non-value-maximising motives for mergers. Discuss the various academic theories offered as the rationale for these agency problem-induced motives.

A21-8. Sometimes managers gain from mergers, rather than shareholders. According to the managerialism theory of mergers, poorly monitored managers will pursue mergers to maximise their corporation's asset size because managerial compensation is usually based on firm size. The free cash flow theory of mergers states that managers will use free cash flow to invest in mergers that have negative net present values in order to build corporate empires from which the managers will derive personal benefits, including greater compensation. The managerial entrenchment theory of mergers holds that unmonitored managers will try to build corporate empires through the pursuit of negative NPV mergers. The hubris hypothesis of corporate takeovers states that some managers overestimate their own managerial capabilities and pursue takeovers with the belief that they can better manage their takeover target than the target's current management team can.

Q21-9. Why does the precedent transactions valuation method typically yield higher valuations?

A21-9. Precedent transaction multiples are based on completed M&A transactions where a buyer acquires control (sometimes complete control) of a target. Implicit in most acquisitions is both a control premium as well as a premium based on an expectation of creating value through synergies. Therefore, the precedent transaction valuation method typically yields higher valuations because it is inclusive of a control premium and expected synergies.

Q21-10. Would a large technology company and a large conglomerate (that operates in many industries) be good comparable firms for a multiples-based valuation? Why or why not?

A21-10. Just because two companies are the same size does not mean they are comparable from a valuation perspective. When identifying appropriate comparable companies you typically look for industry competitors to control for risk, growth and accounting conventions. Only after looking within an industry would you filter by size.

- Q21-11.** Describe the relationship between conglomerate mergers and portfolio theory. What is the desired result of merging two unrelated businesses? Has the empirical evidence proven corporate diversification to be successful?
- A21-11.** Corporate diversification is not considered a value-maximising merger strategy. The premise of corporate diversification is that the combination of two businesses with less than perfectly correlated cash flows will create a merged firm with less volatile cash flows and inherently lower business risk. Bad outcomes in one business can be offset by good outcomes in another area of the business. Less volatile cash flows are hypothesised to make debt service less risky, lowering default risk and the required return on debt. Empirical evidence has shown that the net effect of conglomerate mergers is zero wealth creation and that any wealth gains experienced by bondholders due to financial strategies are merely redistributed from shareholders. Managers may be motivated to pursue conglomerate mergers to reduce their employment risk.
- Q21-12.** To whom is the board of directors accountable, and how should this responsibility affect how the board of directors treats an acquisition bid?
- A21-12.** The board of directors is accountable to the shareholders and therefore the board should consider the welfare of shareholders in assessing an acquisition bid.

Solutions to End-of-Chapter Problems

Overview of Corporate Control Activities

- P21-1.** A company has four divisions – food, cookware, retail, and credit services – that generate revenues of \$1.5 million, \$3.8 million, \$5.7 million, and \$3.1 million, respectively. Compute the Herfindahl Index (HI) for the company. The company is considering the purchase of a rival retailer, which would increase the retail division's revenues by another \$3.2 million. The company is also considering selling its credit services division. Assuming these two actions occur, what will the HI become? What is the HI if the sale of the credit division does not occur but the rival is acquired?
- A21-1.** Sum all of the sales: \$1.5 million + \$3.8 million + \$5.7 million + \$3.1 million = \$14.1 million
Compute HI: $(\$1.5 \text{ million} \div \$14.1 \text{ million})^2 + (\$3.8 \text{ million} \div \$14.1 \text{ million})^2 + (\$5.7 \text{ million} \div \$14.1 \text{ million})^2 + (\$3.1 \text{ million} \div \$14.1 \text{ million})^2 = 0.2957$
Sum of sales with merger and divestiture: \$14.1 million + \$3.2 million - \$3.1 million = \$14.2 million
Compute HI: $(\$1.5 \text{ million} \div \$14.2 \text{ million})^2 + (\$3.8 \text{ million} \div \$14.2 \text{ million})^2 + (\$8.9 \text{ million} \div \$14.2 \text{ million})^2 = 0.4756$
Sum of sales with merger only: \$14.1 million + \$3.2 million = \$17.3 million
Compute HI: $(\$1.5 \text{ million} \div \$17.3 \text{ million})^2 + (\$3.8 \text{ million} \div \$17.3 \text{ million})^2 + (\$8.9 \text{ million} \div \$17.3 \text{ million})^2 + (\$3.1 \text{ million} \div \$17.3 \text{ million})^2 = 0.3525$
- P21-2.** HHG Consultants has been asked to analyse Carol & Carroll Co. (C&C), which has one retail division. C&C is concerned that it is not focused on its core mission of sales despite only having one division. Each store is divided into departments: casual clothing (CC), formal clothing (FC), outerwear (OW), shoes (S), and specialty items (SI). C&C's initial impression is that all of the departments contribute equally to sales. However, examination of each department's actual sales reveals that the breakdown is very different: \$5.2 billion (CC), \$2.7 billion (FC), \$3.75 billion (OW), \$4.5 billion (S), and \$1.7 billion (SI). Compute a Herfindahl Index based on the departments having equal sales and based on the actual sales. Your conclusion concerning the company becoming unfocused will be based on the actual HI being lower than the equivalent sales HI scenario. What does your analysis find with regard to the focus of C&C's retailing division?

A21-2. HI based on equal sales: $5 \times (20\%)^2 = 0.2000$
 Sum of sales: \$5.2 billion + \$2.7 billion + \$3.75 billion + \$4.5 billion + \$1.7 billion = \$17.85 billion
 Compute HI: $(\$5.2 \text{ billion} \div \$17.85 \text{ billion})^2 + (\$2.7 \text{ billion} \div \$17.85 \text{ billion})^2 + (\$3.75 \text{ billion} \div \$17.85 \text{ billion})^2 + (\$4.5 \text{ billion} \div \$17.85 \text{ billion})^2 + (\$1.7 \text{ billion} \div \$17.85 \text{ billion})^2 = 0.2245$
 C&C should not be concerned about being unfocused because the actual HI is higher than the equal-weighted HI.

P21-3. Company X has three divisions that generate revenues of \$1.3 billion, \$2.5 billion, and \$5.2 billion. Company Y is a competitor with three associated divisions that generate \$2 billion each. Using a Herfindahl Index to measure focus, determine if both Company X and Company Y shareholders would see a merger as an action that would increase or rather decrease focus.

A21-3. Company X sum of sales: \$1.3 billion + \$2.5 billion + \$5.2 billion = \$9 billion
 Company X's HI: $(\$1.3 \text{ billion} \div \$9 \text{ billion})^2 + (\$2.5 \text{ billion} \div \$9 \text{ billion})^2 + (\$5.2 \text{ billion} \div \$9 \text{ billion})^2 = 0.4319$
 Company Y sum of sales: $3 \times \$2 \text{ billion} = \6 billion
 Company Y's HI: $3 \times (\$2 \text{ billion} \div \$6 \text{ billion})^2 = 0.3333$
 Combined sum of sales: \$9 billion + \$6 billion = \$15 billion
 Combined HI: $(\$3.3 \text{ billion} \div \$15 \text{ billion})^2 + (\$4.5 \text{ billion} \div \$15 \text{ billion})^2 + (\$7.2 \text{ billion} \div \$15 \text{ billion})^2 = 0.3688$

Company X's shareholders will view the merger as focus decreasing and Company Y's shareholders will view the merger as focus increasing.

P21-4. Shareholders of the company Up-4-Grabs (U4G) have been offered \$36.00 per share in cash for each of their U4G shares currently selling for \$29.53. What is the control premium being offered in this cash deal? U4G is also considering a stock-swap offer from another firm, BuyNow (BYN). BYN will issue one share for every two shares of U4G. At what price will BYN shares be equivalent to the control premium available in the cash offer? When news leaks out about the merger, BYN shares increase to \$77.00 and U4G shares increase to \$35.24. What control premium does BYN offer now?

A21-4. Control premium for cash deal: $(\$36.00 \div \$29.53) - 1 = 21.91\%$
 BYN share price for equivalent control premium: $2 \times \$36.00 = \72.00
 BYN control premium after news leak: $(\$77.00 \div [2 \times \$35.24]) - 1 = 9.25\%$

P21-5. HBABB Co. has purchased all of the 10 million shares of BOBCO for \$43.75 a share. BOBCO's net asset value is \$350 million. How much goodwill does HBABB need to consider on its balance sheet? Suppose part of the deal requires HBABB to pay \$30 million of BOBCO's debt. Refigure the net asset value (i.e., reduce the debt by \$30 million) and then recalculate the goodwill. One of your accountants tells you that the net asset value should not be changed and that the \$30 million used for BOBCO's debt should be added to the purchase price. Refigure the goodwill calculation and determine if there really is a difference. If there is a difference, which calculation is correct?

A21-5. Goodwill: $\$43.75 \times 10 \text{ million} - \$350 \text{ million} = \$87.5 \text{ million}$
 Goodwill with debt repayment: $\$43.75 \times 10 \text{ million} + \$30 \text{ million} - (\$350 \text{ million} + \$30 \text{ million}) = \$87.5 \text{ million}$
 Goodwill with debt repayment not affecting net asset value: $\$43.75 \times 10 \text{ million} + \$30 \text{ million} - \$350 \text{ million} = \117.5 million
 The \$117.5 million is correct because HBABB retiring debt makes the acquisition more costly. The fact that some of the acquisition money is for a specific portion of debt is irrelevant.

P21-6. Mega Service Corporation (MSC) is offering to exchange 2.5 shares of its own stock for each share of target firm Norman Corporation shares as consideration for a proposed merger. There are 10 million Norman Corp shares outstanding, and its share price was \$60 before the merger offer. MSC's pre-offer stock price was \$30. What is the control premium percentage offered? Now suppose that, when the merger is consummated eight months later, MSC's share price drops to \$25. At that point, what is the control premium percentage and total transaction value?

A21-6. The pre-offer value of Norman Corporation is \$600 million (10 million shares \times \$60/share) and Mega Service Corporation offered 2.5 shares of its own shares (worth \$30/share) as payment, or \$75 per share of Norman Corp. The initial control premium *offered* is thus \$15/share (\$75 offer price – \$60 market price) of Norman Corp shares: a control premium percentage of 25% (\$15 premium \div \$60 initial market price).

When the merger is completed, and MSC's share price has fallen to \$25/share, the value actually received by Norman Corp shareholders is only \$62.50/share (\$25/share MSC \times 2.5 shares MSC for each Norman Corp share). Norman shareholders will thus actually receive a control premium of \$2.50/share or 4.17% (\$2.50 premium \div \$60 initial market price). At that point the total transaction value is \$625 million (10 million shares \times \$62.50/share).

P21-7. Bulldog Industries is offering, as consideration for merger target Blazerco, 1.5 shares for each share of Blazerco. There are 1 million shares of Blazerco outstanding, and its share price was \$50 before the merger offer. Bulldog's pre-offer share price was \$40. What is the control premium percentage offered? Now suppose that when the merger is consummated six months later, Bulldog's share price drops to \$30. At that point, what is the control premium percentage and total transaction value?

A21-7. The pre-offer value of Blazerco is \$50 million (1 million shares \times \$50/share) and Bulldog offered 1.5 shares of its own shares (worth \$40/share) as payment, or \$60 per share of Blazerco. The initial control premium *offered* is thus \$10/share (\$60 offer price – \$50 market price) of Blazerco shares, a control premium percentage of 20% (\$10 premium \div \$50 initial market price).

When the merger is completed, and Bulldog's share price has fallen to \$30/share, the value actually received by Blazerco shareholders is only \$45/share (\$30/share Bulldog \times 1.5 shares Bulldog for each share Blazerco). Blazerco will thus actually receive a *negative* control premium of \$5/share or –10% (–\$5 premium \div \$50 initial market price), because they receive \$45/share for shares worth \$50/share at the beginning of the bid. At that point the total transaction value is \$45 million (1 million shares \times \$45/share).

P21-8. You are the director of capital acquisitions for Crimson Software Company. One of the projects you are considering is the acquisition of Geekware, a private software company that produces software for finance professors. Dave Vanzandt, the owner of Geekware, is amenable to the idea of selling his enterprise to Crimson, but he has certain conditions that must be met before selling. The primary condition set forth is a non-negotiable, all-cash purchase price of \$20 million. Your project analysis team estimates that the purchase of Geekware will generate the following marginal cash flow:

Year	Cash Flow
1	\$1,000,000
2	3,000,000
3	5,000,000
4	7,500,000
5	7,500,000

Of the \$20 million in cash needed for the purchase, \$5 million is available from retained earnings, with a required return of 12%, and the remaining \$15 million will come from a new

debt issue yielding 8%. Crimson's tax rate is 40%. Should you recommend acquiring Geekware to your CEO?

- A21-8.** First, we calculate the weighted average cost of capital (WACC), which is the required return on the proposed acquisition.

$$\begin{aligned} \text{WACC} &= \frac{\$15,000,000}{\$20,000,000}(1 - .40)(8\%) + \frac{\$5,000,000}{\$20,000,000}(12\%) \\ &= .75(.60)(8\%) + .25(12\%) = 3.6\% + 3.0\% = \underline{6.6\%} \end{aligned}$$

Next, we use the 6.6% WACC to find the present value of the forecast marginal cash flow.

$$\begin{aligned} \text{Present Value} &= \frac{\$1,000,000}{(1.066)^1} + \frac{\$3,000,000}{(1.066)^2} + \frac{\$5,000,000}{(1.066)^3} + \frac{\$7,500,000}{(1.066)^4} + \frac{\$7,500,000}{(1.066)^5} \\ &= \$938,086 + \$2,64,018 + \$4,127,607 + \$5,808,078 + \$5,498,478 \\ &= \$18,962,267 \end{aligned}$$

Because the present value of the marginal cash flow from the purchase of Geekware of \$18,962,267 is less than its \$20,000,000 all-cash purchase price, the CEO should not purchase Geekware.

- P21-9.** You are the director of capital acquisitions for Morningside Hotel Company. One of the projects you are deliberating is the acquisition of Monroe Hospitality, a company that owns and operates a chain of bed-and-breakfast inns. Susan Sharp, Monroe's owner, is willing to sell her company to Morningside only if she is offered an all-cash purchase price of \$5 million. Your project analysis team estimates that the purchase of Monroe Hospitality will generate the following after-tax marginal cash flow:

Year	Cash Flow
1	\$1,000,000
2	1,500,000
3	2,000,000
4	2,500,000
5	3,000,000

If you decide to go ahead with this acquisition, it will be funded with Morningside's standard mix of debt and equity at the firm's weighted average (after-tax) cost of capital of 9%. Morningside's tax rate is 30%. Should you recommend acquiring Monroe Hospitality to your CEO?

- A21-9.** We use the 9.0% WACC to find the present value of the forecast marginal cash flow.

Present Value =

$$\begin{aligned} &\frac{\$1,000,000}{(1.09)^1} + \frac{\$1,500,000}{(1.09)^2} + \frac{\$2,000,000}{(1.09)^3} + \frac{\$2,500,000}{(1.09)^4} + \frac{\$3,000,000}{(1.09)^5} \\ &= \$917,431 + \$1,262,512 + \$1,544,367 + \$1,771,063 + \$1,949,794 \\ &= \$7,445,167 \end{aligned}$$

Because the present value of the marginal cash flow from purchasing Monroe Hospitality exceeds the \$5 million cost, Morningside should purchase Monroe Hospitality.

P21-10. Company A plans to acquire Company B. The acquisition would result in incremental cash flows for Company A of \$10 million in each of the first five years. Company A expects to divest Company B at the end of the fifth year for \$100 million. The β for Company A is 1.1, which is expected to remain unchanged after the acquisition. The risk-free rate, R_f , is 7%, and the expected market rate of return, R_m , is 15%. Company A is financed by 80% equity and 20% debt, and this leverage will also remain unchanged after the acquisition. Company A pays interest of 10% on its debt, which will also remain unchanged after the acquisition.

- Disregarding taxes, what is the maximum price that Company A should pay for Company B?
- Company A has a share price of \$30 per share and 10 million shares outstanding. If Company B shareholders are to be paid the maximum price determined in part (a) via a new share issue, how many new shares will be issued, and what will be the post-merger share price?

A21-10. a. First calculate the cost of capital that should be applied to this investment.

$$\begin{aligned}\text{Cost of equity} &= \text{Risk-free rate} + [\text{Beta} \times (\text{Return on the market} - \text{Risk-free rate})] \\ &= 7\% + [1.1(15\% - 7\%)] \\ &= 7\% + 8.8\% \\ &= 15.8\%\end{aligned}$$

Disregarding taxes, Firm A's weighted average cost of capital (WACC) is:

$$\begin{aligned}\text{WACC} &= (\text{weight of debt}) \times r_g + (\text{weight of equity}) \times r_e \\ &= (.20 \times 10\%) + (.80 \times 15.8\%) \\ &= 2\% + 12.64\% \\ &= 14.64\%\end{aligned}$$

$$\begin{aligned}\text{Maximum price} &= \frac{\$10,000,000}{(1.464)^1} + \frac{\$10,000,000}{(1.464)^2} + \frac{\$10,000,000}{(1.464)^3} + \frac{\$10,000,000}{(1.464)^4} + \frac{\$10,000,000}{(1.464)^5} \\ &= \$8,722,959 + \$7,609,001 + \$6,637,300 + \$5,989,690 + \$5,553,548 \\ &= \underline{\underline{\$84,312,498}}\end{aligned}$$

- Number of new shares issued at assumed \$30/share price:

$$\frac{\$84,312,498}{\$30} = \underline{\underline{2,810,417 \text{ shares}}}$$

Given the assumed unchanged β after the acquisition, the post-merger share price is expected to remain at about \$30/share. The pre-merger share price of \$30 was paid for each \$30 of value of the merger, so the post-merger price should remain at this level given there is no change in risk (β) from the post-merger shareholder viewpoint.

P21-11. Charger Incorporated and Sparks Electrical Company are competitors in the business of electrical components distribution. Sparks is the smaller firm and has garnered the attention of the management of Charger, as Sparks has taken away market share from the larger firm by increasing its sales force over the past few years. Charger is considering a takeover offer for Sparks and has asked you to serve on the acquisition valuation team that will turn into the due

diligence team if an offer is made and accepted. Given the following information and assumptions:

- Make your recommendation about whether or not the acquisition should be pursued.
- Assume Sparks has accepted the takeover offer from Charger, and now the new subsidiary must be consolidated within Charger's financial statements. Taking Sparks's most recent balance sheet and a restated market value of assets of \$295.6 million, calculate the goodwill that must be booked for this transaction.

Sparks Electrical Company
Condensed Balance Sheet
Previous Year (2011) (\$ in millions)

Current assets	\$ 12.2
Fixed assets	<u>442.5</u>
Total assets	<u>\$454.7</u>
Current liabilities	\$ 10.1
Long-term debt	<u>150.0</u>
Total liabilities	\$160.1
Shareholders' equity	<u>294.6</u>
Total liabilities and equity	<u>\$454.7</u>

Sparks Electrical Company
Condensed Income Statement
Previous Five Years (\$ in millions)

	2011	2010	2009	2008	2007
Revenues	\$1,626.5	\$1,614.1	\$1,485.2	\$1,380.5	\$1,373.4
Less: Cost of goods sold	<u>1,488.1</u>	<u>1,490.9</u>	<u>1,359.5</u>	<u>1,271.4</u>	<u>1,268.0</u>
Gross profit	<u>\$ 138.4</u>	<u>\$ 23.2</u>	<u>\$ 125.7</u>	<u>\$ 109.1</u>	<u>\$ 105.4</u>
Selling, general & administrative expenses (SG&A)	\$ 41.1	\$ 36.8	\$ 41.2	\$ 35	\$ 36.1
Noncash expense (depreciation & amortisation)	<u>7.3</u>	<u>6.7</u>	<u>7.1</u>	<u>6.6</u>	<u>6.4</u>
Less: Operating expense	<u>\$ 48.4</u>	<u>\$ 43.5</u>	<u>\$ 48.3</u>	<u>\$ 41.6</u>	<u>\$ 42.5</u>
Operating profit (EBIT)	\$ 90.0	\$ 79.7	\$ 77.4	\$ 67.5	\$ 62.9
Less: Interest expense	<u>11.5</u>	<u>12.0</u>	<u>12.0</u>	<u>12.0</u>	<u>12.0</u>
Earnings before taxes (EBT)	\$ 78.5	\$ 67.7	\$ 65.4	\$ 55.5	\$ 50.9
Less: Taxes paid	<u>24.3</u>	<u>20.8</u>	<u>19.9</u>	<u>16.8</u>	<u>15.3</u>
Net income	<u>\$ 54.2</u>	<u>\$ 46.9</u>	<u>\$ 45.5</u>	<u>\$ 38.7</u>	<u>\$ 35.6</u>

Assumptions:

- Sparks would become a wholly owned subsidiary of Charger.
- Revenues will continue to grow at 4.3% for the next five years and will level off at 4% thereafter.
- Cost of goods sold will represent 95% of revenue going forward.
- Sales force layoffs will reduce SG&A expenses to \$22 million next year with a 2% growth rate going forward.
- These layoffs and other restructuring charges are expected to result in expensed restructuring charges of \$30 million, \$15 million, and \$5 million, respectively, over the next three years.
- Noncash expenses are expected to remain around \$7 million going forward.

- Interest expenses are expected to remain around \$11.5 million going forward.
- A tax rate of 31% is assumed going forward.
- Charger's cost of equity is 12%.
- Sparks's current market capitalisation is \$315.7 million.
- Charger will offer Sparks a takeover premium of 20% over current market capitalisation.

A21-11. a. Assume Charger is an all equity firm and plans on remaining so after the merger and that the appropriate discount rate is Charger's 12% cost of equity. The cash flows and present values are calculated in the following table:

Cash Flow Development (\$ in millions)							
	2011	2012	2013	2014	2015	2016	2017
Revenues	\$1,626.50	\$1,696.44	\$1,769.39	\$1,845.47	\$1,924.83	\$2,007.59	\$2,087.90
– Cost of goods sold	<u>1,488.10</u>	<u>1,611.62</u>	<u>1,680.92</u>	<u>1,753.20</u>	<u>1,828.58</u>	<u>1,907.21</u>	<u>1,983.50</u>
Gross profits	\$ 138.40	\$ 84.82	\$ 88.47	\$ 92.27	\$ 96.24	\$ 100.38	\$ 104.39
– SG&A expenses	41.10	22.00	22.44	22.89	23.35	23.81	24.29
– Noncash expense	<u>7.30</u>	<u>7.00</u>	<u>7.00</u>	<u>7.00</u>	<u>7.00</u>	<u>7.00</u>	<u>7.00</u>
Operating income	\$ 90.00	\$ 55.82	\$ 59.03	\$ 62.38	\$ 65.89	\$ 69.57	\$ 73.10
– Interest expense	11.50	11.50	11.50	11.50	11.50	11.50	11.50
– Restructuring expense	<u>0</u>	<u>30.00</u>	<u>15.00</u>	<u>5.00</u>	<u>0</u>	<u>0</u>	<u>0</u>
Taxable income	\$ 78.50	\$ 14.32	\$ 32.53	\$ 45.88	\$ 54.39	\$ 58.07	\$ 61.60
– Taxes paid (31%)	<u>24.30</u>	<u>4.44</u>	<u>10.08</u>	<u>14.22</u>	<u>16.86</u>	<u>18.00</u>	<u>19.10</u>
Net income	<u>\$ 54.20</u>	<u>\$ 9.88</u>	<u>\$ 22.45</u>	<u>\$ 31.66</u>	<u>\$ 37.53</u>	<u>\$ 40.07</u>	<u>\$ 42.50</u>
Free cash flow*	\$73.00	\$58.38	\$55.95	\$55.16	\$56.03	\$ 58.57	\$61.00
+ Value after 2013						<u>762.50**</u>	
Cash flows		\$58.38	\$55.95	\$55.16	\$56.03	\$821.07	

* Operating income – Taxes + Noncash expenses; assumes no investment required in fixed and current assets and 4% growth

** $\$61.00 / (.12 - .04) = \$61.00 / .08 = \$762.50$

PV of cash flows:

@ 12%	\$637.50
– Debt	<u>\$150.00</u>
Equity value	<u>\$487.50</u>

Charger will offer a takeover premium of 20% over current market capitalisation = $1.20 \times \$315.70 = \378.84 million. Based on the calculations in the table above, the firm is worth \$487.50 million, which exceeds Charger's offer price of \$387.84 million by \$108.66 million. Clearly, Charger should pursue the acquisition of Sparks.

* Operating income – Taxes + Noncash expenses; assumes no investment required in fixed and current assets and 4% growth

** $\$61.00 / (.12 - .04) = \$61.00 / .08 = \$762.50$

- b. The assets have a market value of net assets is \$295.60 million. If the firm is purchased for \$378.84, the goodwill is \$378.84 million – \$295.60 million = \$83.24 million.

P21-12. Referring to Problem 21-11, assume it is now two years after the acquisition of Sparks, and you must perform a goodwill impairment test of the subsidiary. Growth expectations have been lowered to 3% going forward. Using the following five-year projection of cash flows and a 12% cost of equity, estimate the value of the subsidiary beyond year 5, the current value of the subsidiary, the current value of goodwill, and any goodwill impairment. Total assets (excluding intangibles) are now \$612.5 million, and total liabilities are \$175.0 million.

Cash Flow Projections for Next Five Years (\$ million)

	2014	2015	2016	2017	2018
Revenues	\$1,815.2	\$1,869.7	\$1,925.7	\$1,983.5	\$2,043.0
Less: Cost of goods sold @ 95% of revenue	<u>1,724.4</u>	<u>1,776.2</u>	<u>1,829.5</u>	<u>1,884.3</u>	<u>1,940.9</u>
Gross profit	\$ 90.8	\$ 93.5	\$ 96.2	\$ 99.2	\$ 102.1
SG&A expense @ 2% growth rate going forward	\$ 23.0	\$ 23.5	\$ 23.9	\$ 24.4	\$ 24.9
Noncash expense (depreciation & amortisation)	<u>7.0</u>	<u>7.0</u>	<u>7.0</u>	<u>7.0</u>	<u>7.0</u>
Less: Operating expense	\$ 30.0	\$ 30.5	\$ 30.9	\$ 31.4	\$ 31.9
Operating profit (EBIT)	\$ 60.8	\$ 63.0	\$ 65.3	\$ 67.8	\$ 70.2
Less: Interest expense	11.5	11.5	11.5	11.5	11.5
Less: Restructuring charges	<u>5.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Earnings before taxes (EBT)	\$ 44.3	\$ 51.5	\$ 53.8	\$ 56.3	\$ 58.7
Less: Taxes paid	<u>13.7</u>	<u>16.0</u>	<u>16.7</u>	<u>17.4</u>	<u>18.2</u>
Net income	<u>\$ 30.6</u>	<u>\$ 35.5</u>	<u>\$ 37.1</u>	<u>\$ 38.9</u>	<u>\$ 40.5</u>
Free cash flow	\$54.1	\$54.0	\$55.6	\$57.4	\$59.0

A21-12. These values were calculated by applying the following equation for each year using the relevant values from the table:

$$\text{Free cash flow} = \text{Operating profit} - \text{Taxes paid} + \text{Noncash expense}$$

To find the horizon value beyond year 5 (i.e., 2015) we estimate the free cash flow in 2016 as:

$$\text{FCF}_{2016} = \$59.0 \times (1.03) = \underline{60.77}$$

Applying the constant growth model we find the value of the firm from 2016 to infinity measured at the end of 2015:

$$P_{2016} = \frac{\$60.77}{0.12 - .003} = \frac{\$60.77}{0.09} = \underline{\underline{\$675.22}}$$

Discounting back to today (the beginning of 2011) at the 12% rate we get:

$$\text{Horizon Value} = \frac{\$675.22}{(1.12)^5} = \underline{\underline{\$383.14}}$$

The present values of the free cash flows from 2011 through 2015 are calculated as:

$$\begin{aligned} \text{PVCF}_{2011-2015} &= \frac{\$54.1}{(1.12)^1} + \frac{\$54.0}{(1.12)^2} + \frac{\$55.6}{(1.12)^3} + \frac{\$57.4}{(1.12)^4} + \frac{\$59.0}{(1.12)^5} \\ &= \$48.30 + \$43.05 + \$39.57 + \$36.57 + \$36.48 + \$33.48 \\ &= \underline{\underline{\$200.88}} \end{aligned}$$

The current value of the subsidiary is the sum of the horizon value and the present value of the cash flows from 2011-2015.

Horizon value	\$383.14
+ PVCF ₂₀₁₁₋₂₀₁₅	<u>200.88</u>
Current value of subsidiary	<u>\$584.02</u>

$$\text{Equity value} = \$584.02 - \$175.00 = \$409.02$$

$$\text{Net asset value} = \$612.5 - \$175.00 = \$437.50$$

The current value of goodwill is now negative

Equity value	\$409.02
– Net asset value	<u>437.50</u>
Goodwill	<u>–\$ 28.48</u>

This result suggests that all of the goodwill of \$83.24 million is impaired and must be written off against earnings because the goodwill currently has a value of \$–28.48.

P21-13. Firms AFD, TYU, CHG, and LAN are competitors within an industry. Their respective sales figures are \$2.8 billion, \$3.9 billion, \$4.8 billion, and \$2.1 billion. What is the Herfindahl Index (HI) for the industry? Is the industry considered highly concentrated, moderately concentrated, or not concentrated? Assuming that two more firms – QBC (\$3.6 billion in sales) and RTY (\$2.7 billion in sales) – are added to the industry figures, does the concentration level of the industry change? (Recompute HI to determine this.) If the three smallest firms (AFD, LAN, and RTY) merged, would the FTC be concerned? If so, why? (Note: The HI is measured in units of %². For example, 50% × 50% = 2,500%² (or, in decimal form, 0.50 × 0.50 = 0.25). To make the conversion from decimal to percentage form mathematically, multiply the answer by 10,000; using the same example, this yields 0.50 × 0.50 × 10,000 = 2,500.)

A21-13. Sum of Sales: \$2.8 billion + \$3.9 billion + \$4.8 billion + \$2.1 billion = \$13.6 billion
 Calculate HI: 10,000*[(2.8 billion ÷ \$13.6 billion)² + (3.9 billion ÷ \$13.6 billion)² + (4.8 billion ÷ \$13.6 billion)² + (2.1 billion ÷ \$13.6 billion)²] = 2730.32. Consequently, the industry is considered 'highly concentrated.'
 Sum of sales with two more firms in industry: \$13.6 billion + \$3.6 billion + \$2.7 billion = \$19.9 billion

Calculate new HI: 10,000*[(2.8 billion ÷ \$19.9 billion)² + (3.9 billion ÷ \$19.9 billion)² + (4.8 billion ÷ \$19.9 billion)² + (2.1 billion ÷ \$19.9 billion)² + (3.6 billion ÷ \$19.9 billion)² + (2.7 billion ÷ \$19.9 billion)²] = 1786.57. The industry is now considered 'moderately concentrated.'
 Combined sale of merged firms: \$2.8 billion + \$2.1 billion + \$2.7 billion = \$7.6 billion
 Calculate HI with merger: 10,000*[(3.9 billion ÷ \$19.9 billion)² + (4.8 billion ÷ \$19.9 billion)² + (7.6 billion ÷ \$19.9 billion)² + (3.6 billion ÷ \$19.9 billion)²] = 2751.70. The industry becomes 'highly concentrated' instead of 'moderately concentrated' with the merger. The FTC would be concerned about this increase in industry concentration.

P21-14. Bogey Pty Ltd. (BOG), with a share price of \$36 and EPS of \$3, purchases Zoe Co., with a pre-acquisition share price of \$20 and EPS of \$2, for a 10% premium. If the deal is financed exclusively with BOG equity and no material synergies are expected, is the deal accretive or dilutive to BOG shareholders?

A21-14. BOG's P/E multiple is $12\times$ ($\$36 / \3). Zoe's post-acquisition implied P/E is $11\times [(\$20 \times 110\%) / \$2]$. In an all-equity deal, if the target has a lower P/E than the acquirer, the deal is accretive (and vice versa). The logic behind this is that the parent is paying less for earnings than its own earnings are worth. In this case, \$1 in earnings for BOG is worth \$12. However, BOG has now just purchased earnings at a rate of \$11 per \$1 of earnings. Mathematically, let's assume BOG has 1 share outstanding worth \$36 and total earnings of \$3. To finance the acquisition BOG issues $0.61 (\$22 / \$36)$ additional shares and distributes to Zoe's shareholders. The new company will have earnings of \$5 ($\$3 + \2) and 1.61 shares outstanding, for an EPS of \$3.10; accretive.

P21-15. Following the previous question, what if BOG instead financed the acquisition entirely with debt at an after-tax cost of 9%? Would the deal be accretive or dilute to earnings for BOG shareholders?

A21-15. For this problem, again pretend BOG has 1 share worth \$36 and the entire company is expected to make \$3 in net income. It borrows \$22 ($\$20 \times 110\%$) to purchase Zoe. It now continues to only have 1 share. The net income for the combined company will be \$3 (BOG net income) + \$2 (Zoe net income) – \$1.98 (interest expense; $\$22 \times 9\%$) = \$3.02. As $\$3.02 > \3.00 this deal is accretive.

A quick trick to solving an all-debt issue is to multiply the after-tax cost of debt by the implied P/E of the target, $9\% \times 11 = 0.99$. If the answer is less than 1.00 the deal is accretive and vice versa. The logic here is whether the earnings will exceed the interest expense.

P21-16. GRJ Corp. just reported \$10 million in after-tax earnings and management expects to grow at 3% in perpetuity with a weighted average cost of capital of 13%:

- How would you value GRJ using a growing perpetuity formula?
- If GRJ's market capitalisation is \$100 million, what does this say about the market's perception of management's growth and/or cost of capital expectations?

A21-16.

$$\frac{\$10 \text{ M} \times 103\%}{13\% - 3\%} = \$103 \text{ M}$$

Using the terminal growth formula we arrive at a valuation of \$103 million. If GRJ's market capitalisation is \$100 million this implies the market believes the growth expectation is too high or the cost of capital is too low.

P21-17. Posada (POS) expects to earn EBITDA of \$4.2 million next year and expects slow but steady growth thereafter. POS's three key competitors (nearly identical operations and growth prospects) are JET (EBITDA of \$5.1 million, market capitalisation of \$30.3 million), PET (EBITDA of \$2.8 million, market capitalisation of \$15.4 million) and MO (EBITDA of \$6.5 million, market capitalisation of \$40 million). What would you estimate POS's market valuation to be?

A21-17. As illustrated in the table below, you can average the EBITDA multiples of the three competitors (because they are deemed to be very similar) and apply the result to POS' EBITDA to arrive at an implied valuation of \$24.6M. This is just one method and given more information you may decide that one or more of the competitors are not a good comparison and remove them from the average.

Firm	EBITDA (\$M)	Market Cap	EBITDA/MC
JET	\$5.1	\$30.3	5.9x
PET	2.8	15.4	5.5x
MO	6.5	40.0	6.2x
Average Multiple			5.9x
POS EBITDA			\$4.2
Implied Valuation			\$24.6

- P21-18.** You are assessing a potential acquisition for a client and your analyst informs you that the historic EBITDA multiple based on public comparables is 5.8 and the historic EBITDA multiple based on precedent transactions is 7.3. If the target is expecting EBITDA of \$90 million, what are the valuations under each method? Can you rationalise the difference between the two?
- A21-18.** Under the public comparables method the company valuation would approximate \$522M (\$90M x 5.8) and under the precedent transactions method the value would be \$657M (\$90M x 7.3). The difference, \$135M, is most likely the present value of both synergies and the control premium.
- P21-19.** A given market was initially segmented evenly among 20 firms (Phase 1). Five years later, the market was still segmented evenly among competing firms, but there were now only 10 firms (Phase 2). Eventually six firms emerged with equal portions of the market (Phase 3), but a move toward deregulation of the industry has prompted two of the firms to merge. Determine the Herfindahl–Hirschman Index for the three phases. Next, determine whether the merger will cause the industry to be considered highly concentrated. In a pre-emptive move (fearing the FTC), the merged firms agree to sell off portions of the market to the other four firms so that the market will be equally divided among all five firms. How does this affect the HI, and is the merger viable under these circumstances?
- A21-19.** Phase 1 HI: $10,000 \cdot 20 \cdot (1 \div 20)^2 = 500.00$
 Phase 2 HI: $10,000 \cdot 10 \cdot (1 \div 10)^2 = 1000.00$
 Phase 3 HI: $10,000 \cdot 6 \cdot (1 \div 6)^2 = 1666.67$
 HI with two merging firms: $10,000 \cdot [4 \cdot (1 \div 6)^2 + (2 \div 6)^2] = 2222.22$. The merger will make the industry 'highly concentrated.'
 HI with five firms having equal sales: $10,000 \cdot 5 \cdot (1 \div 5)^2 = 2000.00$. The HI lowers, but the industry still becomes 'highly concentrated' from being 'moderately concentrated.' The merger may still not be viable based on the increase in concentration.

Answer to MiniCase**Mergers, Acquisitions, and Corporate Control**

Jackson Enterprises (JE) is offering a 25% takeover premium to Michael Studios, Inc. (MSI) for the company's 2 million outstanding shares, which are currently trading for a pre-offer price of \$20 per share.

The balance sheet for MSI is:

Assets		Liabilities	
Current	\$15,000,000	Current	\$ 7,500,000
Fixed	<u>45,000,000</u>	Long-term	<u>25,000,000</u>
Total	\$60,000,000	Total	\$32,500,000
		Owner's equity	<u>27,500,000</u>
		Total liabilities and equity	\$60,000,000

The market value of MSI's fixed assets is \$60,000,000.

The sales (in millions) for the industry by company are:

	Sales
ABC	\$89
CWC	66
DEF	35
JE	45
KOJ	42
MSI	18
SEE	76

Assignment

1. Determine the amount Jackson Enterprises is willing to pay in terms of goodwill.
2. If JE's shares are currently trading at \$62.43, then how many shares should JE offer for every share of MSI?
3. Assuming that MSI will be treated as a separate reporting subsidiary following the merger, develop the balance sheet for the subsidiary.
4. Calculate the Herfindahl Index for the industry both before and after the proposed merger.

Answers

1. Jackson Enterprises is willing to pay \$25 per share ($\20×1.25), or \$50,000,000 for MSI. The market value of MSI's fixed assets is \$60,000,000. That, coupled with the \$15,000,000 in current assets gives MSI's assets a total value of \$75,000,000. Deducting the \$7,500,000 in current liabilities and \$25,000,000 in long-term debt results in a net asset value of \$42,500,000. Thus, the goodwill offered by Jackson Enterprises is \$7,500,000, or \$50,000,000 – \$42,500,000.
2. $\$25/\$62.43 = 0.4$ shares of Jackson for one share of MSI.

3.

Assets	
Current	\$15,000,000
Fixed	\$60,000,000
Goodwill	\$7,500,000
Total	<u>\$82,500,000</u>
Liabilities	
Current	\$7,500,000
Long-term	\$25,000,000
Total	<u>\$32,500,000</u>
Owner's Equity	\$50,000,000
Total liabilities and equity	<u>\$82,500,000</u>

4.

	Pre-merger			Post-merger		
	Sales	Market Share	Market Share Squared	Sales	Market Share	Market Share Squared
ABC	89	23.99%	0.0575	89	23.99%	0.0575
CWC	66	17.79%	0.0316	66	17.79%	0.0316
DEF	35	9.43%	0.0089	35	9.43%	0.0089
JE(New)	45	12.13%	0.0147	63	16.98%	0.0288
KOJ	42	11.32%	0.0128	42	11.32%	0.0128
MSI	18	4.85%	0.0024			
SEE	76	20.49%	0.0420	76	20.49%	0.0420
SUM =	371	100.00%	0.1699	371	100.00%	0.1817
		HI =	1,699		HI =	1,817

Prior to the merger the HI index classifies the industry as moderately concentrated; however, after the merger the industry would be classified as highly concentrated.