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Valuation Case Study Exercises

1.1 INTRODUCTION

The purpose of this chapter is to highlight and discuss important concepts in valuation through a series of exercises. These exercises have been intermittently placed in excerpts of a valuation report. You should attempt to complete these exercises as you read the report with reasoning and emphasis on an explanation of your conclusion. The authors' solutions to these exercises can be found in Chapter 2.

The following case presents selected excerpts from a business valuation report that, in its entirety, was in full compliance with the AICPA's Statements on Standards for Valuation Services VS Section 100 and the Uniform Standards of Professional Appraisal Practice. For more information on reports and standards compliance, see Chapters 11 and 12 of *Financial Valuation Applications and Models*, 4th edition. This report format is one of many that analysts can use in presenting business valuations. The schedules have been included and are referenced throughout. Some of the terms, numbers, sources, and other data have been changed for ease of presentation.

1.2 THE VALUATION REPORT

January 2, 20X6

Sherman E. Miller, Esq.
Miller & Hanson
4747 Washington Street, Suite 1740
St. Louis, Missouri 12345

Re: Fair Market Value of a 100% Equity Interest in National Fastener & Machine Co. as of September 1, 20X5

Dear Mr. Miller:

At your request XYZ Appraisal Associates LLC (XYZ) was retained to prepare a valuation analysis and appraisal (valuation engagement and conclusion of value) and detailed/comprehensive appraisal report (the report) to assist you and your client, Ms. Louise Atkins, in the determination of the fair market value of a 100 percent

equity interest in National Fastener & Machine Co. (National Fastener or the Company). This interest is a controlling interest and is therefore marketable. The value conclusion is considered as a cash or cash-equivalent value. The valuation date is September 1, 20X5 (the Valuation Date). This valuation and report are to be used only as of this date and are not valid as of any other date.

EXERCISE 1 Which of the following is the *as of* date for valuation?

- a. Any time within one year
- b. *As of* a single point in time
- c. *As of* a single point in time or six months later
- d. Date that the report is signed

We have performed a valuation engagement and present our detailed report in conformity with the Statements on Standards for Valuation Services VS Section 100 (SSVS) of the American Institute of Certified Public Accountants (AICPA). SSVS defines a valuation engagement as “an engagement to estimate value in which a valuation analyst determines an estimate of the value of a subject interest by performing appropriate procedures, as outlined in the AICPA Statements on Standards for Valuation Services, and is free to apply the valuation approaches and methods he or she deems appropriate in the circumstances. The valuation analyst expresses the results of the valuation engagement as a conclusion of value, which may be either a single amount or a range.”¹

SSVS addresses a detailed report as follows: “The *detailed report* is structured to provide sufficient information to permit intended users to understand the data, reasoning, and analyses underlying the valuation analyst’s conclusion of value.”

EXERCISE 2 This is a detailed report per SSVS. What other types of reports are allowed under SSVS?

¹Statements on Standards for Valuation Services VS Section 100, American Institute of Certified Public Accountants, Appendix C, Glossary of Additional Terms, Section .82, p. 40.

Note: The American Society of Appraisers uses the term *estimate* as part of a limited appraisal. The AICPA usage of the term is equivalent to the result of the highest scope of work specified by the ASA, which is for an Appraisal.

This valuation was performed to assist in the determination of the value solely for purposes of internal operational and tax planning, and the resulting estimate of value should not be used for any other purpose, or by any other party for any purpose, without our express written consent.

EXERCISE 3 The purpose of the valuation of National Fastener is to assist management in internal operational and tax planning. What other purposes are there?

Our analysis and report are in conformance with the 20X6–20X7 Uniform Standards of Professional Appraisal Practice (USPAP) promulgated by the Appraisal Standards Board of The Appraisal Foundation,² and the ethics and standards of the American Society of Appraisers (ASA) and IRS business valuation development and reporting guidelines, the National Association of Certified Valuators and Analysts (NACVA), and the Institute of Business Appraisers (IBA).³

EXERCISE 4 If the analyst belongs to more than one valuation organization with standards, that analyst must comply with the standards of each organization he or she belongs to.

- a. True
- b. False

²The Appraisal Standards Board (ASB) of the Appraisal Foundation develops, interprets, and amends the Uniform Standards of Professional Appraisal Practice (USPAP) on behalf of appraisers and users of appraisal services. The Appraisal Foundation is authorized by Congress as the source of Appraisal Standards and Appraiser Qualifications. USPAP uses the terms *appraisal* and *appraisal report*, which are defined in pages U-1 and U-72, respectively. SSVS uses the terms *valuation engagement* and *detailed report*, which are defined in pages 54 and 22–23, respectively. USPAP also uses the term *appraiser* while SSVS uses the term *valuation analyst*. We use these terms interchangeably in this report.

³Analyst should reference other credentialing organizations as appropriate. Department of the Treasury, Internal Revenue Service, IRM 4.48.4, Engineering Program, Business Valuation Guidelines. “This material is the product of the Valuation Policy Council (VPC), a cross-functional committee with executive representation from LMSB, SBSE, and Appeals. The VPC was established in 2001 to assist IRS leadership in setting direction for valuation policy that cuts across functional lines, and in identifying process improvements to improve compliance and better utilize resources.” Issued July 1, 2006.

Our analysis is also in conformance with Revenue Ruling 59-60, which outlines the approaches, methods, and factors to be considered in valuing shares of capital stock in closely held corporations for federal tax purposes. Revenue Ruling 59-60 is often also considered as useful guidance in valuations performed for nontax purposes.

The standard of value is fair market value defined in Revenue Ruling 59-60 as “the price at which the property would change hands between a willing buyer and a willing seller when the former is not under any compulsion to buy and the latter is not under any compulsion to sell, both parties having reasonable knowledge of relevant facts.” Revenue Ruling 59-60 also defines the willing buyer and seller as hypothetical as follows: “Court decisions frequently state in addition that the hypothetical buyer and seller are assumed to be able, as well as willing, to trade and to be well informed about the property and concerning the market for such property.” Furthermore, fair market value assumes that the price is transacted in cash or cash equivalents. Revenue Ruling 59-60, while used in tax valuations, is also used in many nontax valuations.

Fair market value is also defined in a similar way in the SSVS⁴ as “the price, expressed in terms of cash equivalents, at which property would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller, acting at arm’s length in an open and unrestricted market, when neither is under compulsion to buy or sell and when both have reasonable knowledge of the relevant facts.”

EXERCISE 5 Which of these are standards of value?

- a. Fair market value, fair value financial reporting, investment value
- b. Fair value investment reporting, fair value state actions, intrinsic value
- c. Investment value, intrinsic value, equal value
- d. Fair market value, equal value, investment value

The premise of value is going concern.⁵ The liquidation premise of value was considered and rejected as not applicable, as the going concern value results in a higher value for the interest than the liquidation value, whether orderly or forced.

⁴AICPA Statements on Standards for Valuation Services VS Section 100, page 44, Appendix B, *International Glossary of Business Valuation Terms*, which has been jointly adopted by the AICPA, American Society of Appraisers (ASA), Canadian Institute of Chartered Business Valuators (CICBV), National Association of Certified Valuators and Analysts (NACVA), and the Institute of Business Appraisers (IBA).

⁵The *International Glossary of Business Valuation Terms* defines *going concern* as “an ongoing operating business enterprise,” and *going concern value* as “the value of a business enterprise that is expected to continue to operate into the future. The intangible elements of *going concern value* result from factors such as having a trained work force, an operational plant, and the necessary licenses, systems, and procedures in place.”

In our conclusion of value, we considered the following relevant factors, which are specified in Revenue Ruling 59-60:

- The history and nature of the business
- The economic outlook of the United States and that of the specific industry in particular
- The book value of the subject company's stock and the financial condition of the business
- The earning capacity of the company
- The dividend-paying capacity of the company
- Whether or not the firm has goodwill or other intangible value
- Sales of the stock and size of the block of stock to be valued
- The market price of publicly traded stocks or corporations engaged in similar industries or lines of business

Our analysis included, but was not limited to, the above-mentioned factors.

1.2.1 Understanding with the Client and Scope of Work

Per SSVS, the valuation analyst should establish an understanding with the client. "The understanding with the client reduces the possibility that either the valuation analyst or the client may misinterpret the needs or expectations of the other party. The understanding should include, at a minimum, the nature, purpose, and objective of the valuation engagement, the client's responsibilities, the valuation analyst's responsibilities, the applicable assumptions and limiting conditions, the type of report to be issued, and the standard of value to be used."⁶

Furthermore, "A restriction or limitation on the scope of the valuation analyst's work, or the data available for analysis, may be present and known to the valuation analyst at the outset of the valuation engagement or may arise during the course of a valuation engagement. Such a restriction or limitation should be disclosed in the valuation report (see paragraphs .52*m*, .68*e*, and .71*n*)."⁷

Our appraisal is in accordance with the Uniform Standards of Professional Appraisal Practice (USPAP) promulgated by the American Society of Appraisers and the Appraisal Foundation. "The objective of an appraisal is to express an unambiguous opinion as to the value of a business, business ownership interest, or security, which opinion is supported by all procedures that the appraiser deems to be relevant to the valuation."⁸ It is based on all relevant information available to the appraiser as of the valuation date; the appraiser conducts appropriate procedures to collect and analyze all information expected to be relevant to the valuation, and the appraiser "considers all conceptual approaches deemed to be relevant."⁹

⁶Statements on Standards for Valuation Services VS Section 100, American Institute of Certified Public Accountants, Appendix C, Glossary of Additional Terms, Section .17, p. 6.

⁷Ibid., Section .19, p. 6.

⁸ASA Business Valuation Standards, BVS-1 General Requirements for Developing a Business Valuation.

⁹Ibid.

In accordance with the Scope of Work Rule in USPAP, we must:

1. Identify the problem to be solved;
2. Determine and perform the scope of work necessary to develop credible assignment results; and
3. Disclose the scope of work in the report.¹⁰

To gain an understanding of the operations of National Fastener, we reviewed Company financial information as provided by management and interviewed Company management. To understand the environment in which National Fastener operates, we researched the status of and trends in the various industries that have an impact on it. We also studied economic conditions as of the valuation date and their impact on National Fastener and the industry. To understand the Company's financial condition, we analyzed its financial statements as available.

We considered all valuation approaches and methods and applied the most appropriate methods from the income, asset, and market approaches to value to derive an opinion of value of the subject equity interest (100 percent controlling, marketable interest). Our conclusion of value reflects these findings, our judgment and knowledge of the marketplace, and our expertise in valuation.

Our valuation is set out in the report, which contains the following sections:

- History and Nature of the Business
- General Economic and Industry Outlook
- Book Value and Financial Position
- Approaches to Value
- Income Approach
- Market Approach
- Reconciliation of Valuation Methods
- Conclusion of Value
- Appendixes
 - Appendix A—Assumptions and Limiting Conditions
 - Appendix B—Valuation Representation/Certification
 - Appendix C—Professional Qualifications of the Appraiser
 - Appendix D—Other Sources Consulted
 - Appendix E—Exhibits

In performing our work, we were provided with and/or relied upon various sources of information, including (but not limited to):

- Audited financial statements for National Fastener for the fiscal years ended December 31, 20X0, through December 31, 20X4
- Internal interim financial statements for National Fastener for the eight months ending August 31, 20X5, and August 31, 20X4

¹⁰USPAP 2016–2017, p. 14.

- Tax returns for the Company for the fiscal years ended December 31, 20X0, through 20X4
- Information regarding the management and shareholders of National Fastener
- Information regarding the Company's history and current operations
- National Fastener's Articles of Incorporation and Bylaws
- Data from Duff & Phelps LLC, *20X5 Valuation Handbook—Guide to Cost of Capital*
- Federal Reserve statistical releases
- Current and future economic conditions as forecast by various sources, listed in the Appendix
- Miscellaneous other information

The procedures employed in valuing the subject interest in National Fastener included such steps as we considered necessary, including (but not limited to):

- An analysis of National Fastener's financial statements
- An analysis of National Fastener management's 20X5 expectations and other information supplied by management
- Discussions with management
- An analysis of the fastener industry, as well as the domestic automotive industry
- An analysis of the general economic environment as of the valuation date, including investors' equity and debt-return expectations
- An analysis of other pertinent facts and data resulting in our conclusion of value

There were no restrictions or limitations in the scope of our work or data available for analysis.

Based on our analysis as described in this valuation report, and the facts and circumstances as of the valuation date, the estimate of value as of September 1, 20X5, of a 100 percent equity interest in National Fastener & Machine Co., on a control, marketable basis is \$30,100,000.

This conclusion is subject to the Statement of Assumptions and Limiting Conditions and to the Valuation Analyst's Representation/Certification found in Appendixes A and B of this report. We have no obligation to update this report or our conclusion of value for information that comes to our attention after the date of this report.

EXERCISE 6 Valuation conclusions can be presented as:

- a. A range of values
- b. A single value
- c. An estimate of value
- d. All of the above

EXERCISE 7 This valuation is being done on a marketable, control interest basis. It is also on a control standalone basis. Name six levels of value that are considered in a valuation.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Distribution of this letter and report and associated results, which are to be distributed only in their entirety, is intended and restricted to you and your client, solely to assist you and your client in the determination of the fair market value of the subject interest for internal operational and tax planning purposes and is valid only as of September 1, 20X5. This letter and accompanying report are not to be used with, circulated, quoted, or otherwise referred to in whole or in part for any other purpose, or to any other party for any purpose, without our express written consent.

As is usual in appraisal practice, the approaches and methodologies used in our work did not comprise an examination or any attest service in accordance with generally accepted accounting principles, the objective of which is an expression of an opinion regarding the fair presentation of financial statements or other financial information, whether historical or prospective, presented in accordance with generally accepted accounting principles or auditing standards. We express no opinion and accept no responsibility for the accuracy and completeness of the financial information (audited, reviewed, compiled, internal, prospective, or tax returns), or other data provided to us by others, and we have not verified such information unless specifically stated in this report. We assume that the financial and other information provided to us is accurate and complete, and we have relied upon this information in performing our valuation.

If you have any questions concerning this valuation, please contact Ms. Margaret E. Smith, CPA/ABV, ASA, CVA, CBA, at (800) 000-1234.

Very truly yours,
XYZ Appraisal Associates LLC

1.3 INTRODUCTION

1.3.1 Description of the Assignment

XYZ Appraisal was retained by Mr. Sherman Miller to determine the fair market value of a 100 percent equity interest in National Fastener & Machine Co. (National Fastener or the Company) on a marketable, control basis, as of September 1, 20X5, for internal operational and tax planning purposes.

1.3.2 Summary Description and Brief History of the Company

The Company was incorporated in 1927 in the State of Missouri. National Fastener operates in two segments: fasteners and assembly equipment. The Company's products are sold to the North American automotive industry by employees of the Company and by independent sales representatives. Revenues are primarily derived from sales to customers involved directly or indirectly in the manufacture of automobiles and automotive components. The Company is legally structured as a C corporation.

EXERCISE 8 The subject of this exercise is a C corporation, but analysts will frequently be required to value noncontrolling interests in S corporations. Valuation of S corporations is one of the most controversial issues in business valuations today. The main issue is how to tax-affect S corporation income and, if appropriate, compute an S corporation adjustment. What five models are often considered or used in valuing S corporations?

1. _____
2. _____
3. _____
4. _____
5. _____

National Fastener serves a variety of customers; however, sales to two major companies accounted for approximately 33 percent of revenues during 20X4. Sales to BI Automotive Systems, LLC, accounted for approximately 20 percent and 18 percent of the Company's consolidated revenues in 20X4 and 20X3, respectively. Sales to Hunter & Company accounted for approximately 13 percent and 14 percent of the Company's consolidated revenues in 20X4 and 20X3, respectively. Recently, the Company executed a manufacturing contract with a new customer, which is expected to generate significant revenue growth in the near future.

The Company maintains alternative sources for raw materials. The market is served by multiple suppliers, so prices for raw materials are generally competitive. The Company is not under any long-term contracts for raw materials. Orders are made through purchase orders based on pricing sheets negotiated biannually.

As of December 20X4, the Company had 236 full- and part-time employees. The employees are party to a collective bargaining agreement. The Company is on good terms with the union representing its employees and has recently renegotiated the union contract that now has an X-year term. There are no employment or non-compete agreements.

As of the valuation date, management and key personnel of National Fastener include the following individuals, with their titles shown in Exhibit 1.1.

The fastener and assembly equipment markets are characterized by active and significant competition. No single company in particular dominates the industry. The

EXHIBIT 1.1 Executive Management

<u>Name</u>	<u>Title</u>	<u>Years with Company</u>
Tony Atkins	Chief Executive Officer	34
Michael Johanson	Chief Operating Officer	16
Kimberly A. Kirhofer	Chief Financial Officer and Treasurer	13

Company's competitors include both larger and smaller manufacturers, and segments or divisions of large, diversified companies with substantial financial resources. The primary competitive factors for the Company's products in the market are price, quality, and service. Based on discussions with management, National Fastener's primary competitors include The Eastern Co., Twin Disc, Inc., Midwest Fasteners Corp., National Fastening Systems, and Haven Fastener, Inc.

The competitive environment has changed considerably in recent years as the Company's customers have experienced intense international competition and pressure to reduce costs. As a result, these customers have expanded their sourcing of components beyond domestic boundaries. National Fastener's competition now includes suppliers in other parts of the world that enjoy economic advantages, such as lower labor costs, lower health care costs, and fewer regulatory burdens.

1.3.3 Ownership and Capital Structure of the Company

The Company is legally structured as a C corporation. National Fastener is a privately held company owned by the same family that founded the company many years ago. The Company has a single class of common stock with 10,000 shares issued and outstanding. Exhibit 1.2 presents the ownership of the shares of the Company as of the valuation date:

EXHIBIT 1.2 Ownership

<u>Stockholder</u>	<u>Number of Shares</u>	<u>Percentage</u>
Tony Atkins	5,500	55.00%
Louise Atkins	1,500	15.00%
Veronica Atkins	1,500	15.00%
Anthony Atkins	1,500	15.00%
		<u>100.00%</u>

EXERCISE 9 We are valuing a 100 percent control interest in National Fastener. The percentage of ownership of individual shareholders is not an issue here. However, assume we are valuing the 55 percent interest of Tony Atkins as opposed to the 100 percent in National Fastener. The value of a 55 percent interest in National Fastener would be calculated as 55 percent of the 100 percent control value in National Fastener.

- a. True
- b. False

1.3.4 Standard of Value

The standard of value used in this report is fair market value. Fair market value is defined as:

The price, expressed in terms of cash equivalents, at which property would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller, acting at arm's length in an open and unrestricted market, when neither is under compulsion to buy nor sell and when both have reasonable knowledge of the relevant facts.¹¹

Among other factors, this valuation report considers elements of appraisal listed in the Internal Revenue Service's Revenue Ruling 59-60, which "outline[s] and review[s] in general the approach, methods, and factors to be considered in valuing shares of the capital stock of closely held corporations."¹² Specifically, Revenue Ruling 59-60 states that the following factors should be carefully considered in a valuation of closely held stock:

EXERCISE 10 Revenue Ruling 59-60 is only applicable to estate, gift, and income tax valuations.

- a. True
- b. False

1. *The nature of the business and history of the enterprise from its inception.* National Fastener & Machine Co. began its history as a manufacturer of brake linings and harness rivets in 1920, under the name National Fastener & Specialty Co. In 1927, the Company was incorporated under the laws of the State of Missouri and changed its name to its current form. The Company has grown since its inception, and its customers have remained loyal.
2. *The economic outlook in general and condition and outlook of the specific industry in particular.* The consideration of the economic outlook on a national level, as well as on a regional and local level, is important in performing a valuation. How the economy is performing has a bearing in part on how the Company performs. Overall, the Company outlook is stable.
3. *The book value of the stock and the financial condition of the business.* The Company has a relatively strong balance sheet with a majority of its assets in these categories: cash, certificates of deposit, accounts receivables, inventory, and fixed assets. The fixed assets consist primarily of production equipment with some land and buildings.

¹¹International Glossary of Business Valuation Terms.

¹²Internal Revenue Service, Revenue Ruling 59-60, Section 1.

4. *The earning capacity of the Company.* Revenue increased at a CAGR of 4.2 percent from fiscal 20X2 to 20X4 and 6.8 percent from 20X0 to 20X4. Growth during these periods reflects recovery of domestic auto production. Adjusted income before taxes for the year ended December 31, 20X4, was \$2.9 million or 7.8 percent of revenue, down by approximately 18 percent from the income before tax of \$3.5 million (9.5 percent of revenue) in the prior fiscal year. With the recovery of the automotive industry, the Company has demonstrated a good ability to generate profits.
5. *The dividend-paying capacity of the Company.* The Company has strong dividend-paying capacity. However, the Company has generally retained earnings to support capital investment requirements and internal growth.
6. *Whether the enterprise has goodwill or other intangible value.* It is generally acknowledged that goodwill is often measured by the earnings ability of an enterprise being valued. Goodwill can be broadly defined as characteristics that induce customers to continue to do business with the Company and to attract new customers. The Company has intangible assets such as long-term relationships with customers, its proprietary trademark, and assembled workforce.
7. *Sales of the stock and size of the block to be valued.* There have been no sales of stock of the Company that would provide an indication of value during the period being analyzed.
8. *The market prices of stock of corporations engaged in the same or a similar line of business having their stocks actively traded in a free and open market, either on an exchange or over the counter.* The market approach was considered in this valuation. A search for guideline companies that are similar in nature and size to the Company was performed.

EXERCISE 11 These are the only eight tenets of value in Revenue Ruling 59-60 that need to be considered.

- a. True
- b. False

1.4 NATIONAL ECONOMIC OUTLOOK¹³

The financial success of investments in National Fastener as of the valuation date is dependent upon conditions within the economy and financial/capital markets. A prospective investor tempers the use of historical financial statistics on the basis of anticipated general economic conditions. An analysis of these factors as of the valuation date is therefore incorporated into this valuation analysis. Certain items in the following discussion have been extracted from the cited sources and/or substantially

¹³All of the contents of the economic outlook section of this valuation report are quoted from the *National Economic Review*, second quarter of 20X5, published by Mercer Capital, reprinted with permission, www.nationaleconomicreview.net.

paraphrased based upon them. In conjunction with the preparation of our opinion of fair market value, we have reviewed and analyzed the economic conditions as of September 1, 20X5, the date of valuation. This report includes summary discussions and analysis of the national economy for the second quarter of 20X5.

1.4.1 General Economic Overview

According to advance estimates released by the Department of Commerce's Bureau of Economic Analysis (BEA), Real Gross Domestic Product (GDP), the output of goods and services produced by labor and property located in the United States, increased at an annualized rate of 2.3 percent during the second quarter of 20X5. GDP performance during the second quarter of 20X5 was slightly lower than economists' expectations of 2.6 percent and follows increases of 2.1 percent and 0.6 percent in the fourth quarter of 20X4 and the first quarter of 20X5, respectively. GDP growth was driven largely by consumer spending, which increased 2.9 percent in the second quarter of 20X5, relative to increases of 4.3 percent and 1.8 percent in the fourth quarter of 20X4 and the first quarter of 20X5, respectively. Durable goods growth increased 7.3 percent, following an increase of 6.1 percent in the fourth quarter of 20X4 and an increase of 2.0 percent in the first quarter of 20X5. A survey of economists conducted by *The Wall Street Journal* reflects a consensus GDP forecast of 3.1 percent GDP in the third quarter of 20X5.

The Conference Board (TCB) reported that the Leading Economic Index (LEI), the government's primary forecasting gauge, increased 0.6 percent in June 20X5 to 123.6, after increases of 0.6 percent and 0.8 percent in April and May, respectively. Traditionally, the index is thought to gauge economic activity six to nine months in advance. Multiple consecutive moves in the same direction are said to be indicative of the general direction of the economy. The LEI increased or remained level in each of the past 18 months. Beginning in January 20X5, the base year of the index was changed from 2004 to 2010.

Conference Board economists view the LEI's recent movements as indicative of continuing economic growth in the second half of 20X5. According to TCB economist Ataman Ozyildirim, "The upward trend in the US LEI seems to be gaining more momentum with another large increase in June pointing to continued strength in the economic outlooks for the remainder of the year." He added, "Housing permits and the interest rate spread drove the latest gain in the LEI, while labor market indicators such as average workweek and initial claims remained unchanged."

Six of the LEI's 10 leading economic indicators rose during June 20X5. The positive contributors to the LEI (largest to smallest) included the interest rate spread, building permits, average consumer expectations for business conditions, the Leading Credit Index (inverted), manufacturers' new orders for nondefense capital goods excluding aircraft, and the ISM new orders index. Stock prices declined, and average weekly manufacturing hours, average weekly initial claims for unemployment insurance (inverted), and manufacturers' new orders for consumer goods and materials were unchanged. The rolling six-month percentage change in LEI increased in June 20X5. In June, the Coincident Economic Index increased 0.2 percent and the Lagging Economic Index increased 0.7 percent.

1.4.2 Consumer Spending and Inflation

According to the Bureau of Labor Statistics (BLS), the Consumer Price Index (CPI) increased 0.3 percent in June 20X5 (on a seasonally adjusted basis), following increases of 0.1 percent and 0.4 percent in April and May, respectively. Over the previous 12 months, the CPI increased 0.1 percent and Core CPI increased 1.8 percent, on an unadjusted basis.

The Producer Price Index (PPI), which is generally recognized as predictive of near-term consumer inflation, increased 0.4 percent in June 20X5 (PPI for final demand, seasonally adjusted), after a decline of 0.4 percent in April and an increase of 0.5 percent in May.

1.4.3 The Financial Markets

Due to the Greek financial crisis spurring a sell-off at the end of the quarter, the Dow Jones, the S&P, and the NASDAQ experienced losses during June 20X5. The Dow Jones and the S&P also posted losses for the second quarter of 20X5, while the NASDAQ posted its 10th consecutive quarterly gain. Driven by signs of an improving economy and the anticipation of the Federal Reserve increasing rates, most U.S. Treasury yields rose during the second quarter of 20X5.

1.4.4 Interest Rates

The yield on 10-year Treasury securities set a historic low in 20X1 before falling even further in 20X2. Although 10-year yields recovered somewhat in 20X3, yields declined consistently throughout 20X4. During the second quarter of 20X5, all yields for terms greater than one year increased.

EXERCISE 12 What types of industries would most likely be affected by anticipated changes in interest rates?

1.4.5 Unemployment

According to the Labor Department's Bureau of Labor Statistics (BLS), the unemployment rate was 5.3 percent in June 20X5, down slightly from 5.4 percent and 5.5 percent in April and May, respectively. While the June unemployment rate is lower than rates observed over the past several years, the labor force participation rate is also lower at 62.6 percent (relative to mid- to high-60s prior to the recession). As job availability increases, the labor force could increase due to individuals reentering

the workforce, which could lead to periodic increases in the unemployment rate in the foreseeable future. Economists surveyed by the *Wall Street Journal* anticipate an unemployment rate of 5.1 percent by year-end 20X5 and a further decline to 4.9 percent by June 20X6.

1.4.6 Summary and Outlook

Although the aptly named Great Recession reached its official end in mid-2009, economic growth continues but remains slow in some sectors. Although the housing market has strengthened, growth in the market remains modest. The unemployment rate reached pre-recession levels in December 20X4, but labor force participation remains low. Economic growth is expected to remain positive, though political uncertainty, rising interest rates, and continuing low labor force participation rates are causes for concern. GDP growth expectations from private economists surveyed by *The Wall Street Journal* are on the order of 3.1 percent for the third quarter of 20X5 and 3.0 percent for the fourth quarter of 20X5. Although the Federal Reserve ended its asset purchases, a significant tightening of monetary policy (via an increase in the target federal funds rate) is unlikely in the short run but increasingly likely in the coming quarters and will likely coincide with inflation stabilization. According to the *Livingston Survey* published on June 10, 2015, the long-term (10-year) forecast for the CPI Inflation Rate was a mean and median of 2.20 percent in a range from 1.60 percent to 2.80 percent.¹⁴ The *Livingston Survey* long-term (10-year) forecast for real GDP was a median 2.50 percent and mean 2.42 percent in a range from 1.80 percent to 3.10 percent.

EXERCISE 13 What two economic indicators are probably the most important in valuation?

- a. Unemployment levels and gross domestic product (GDP)
- b. Dow Jones Industrial Average and Producer Price Index
- c. GDP and inflation
- d. Inflation and unemployment levels

1.4.7 National Economic Impact on Valuation

Analyzing the national economy is an important step in performing a valuation because it helps to identify any risk that the economy may have in relation to the Company. In this case, the economy appears to be in recovery with expected slow growth.

¹⁴*Livingston Survey*, Federal Reserve Bank of Philadelphia, June 10, 2015, www.philadelphiafed.org.

EXERCISE 14 In valuing a small geographically concentrated business, which of these types of economic data should be considered?

- a. International, national, regional, local
- b. National, regional, local
- c. Regional, local
- d. Local only

1.5 REGIONAL ECONOMIC DATA (AS OF SEPTEMBER 1, 20X5)¹⁵

The economy remained strong in July and August, but was expanding more slowly than earlier in the year. Reports on consumer spending were mixed.

Construction activity generally was strong, despite softening on the residential side. Overall manufacturing output remained strong, but conditions were varied across industry segments. The labor markets remained much tighter than the rest of the nation, and seasonal demand put additional strain on some sectors of the market.

1.5.1 Consumer Spending

Reports on consumer spending activity were mixed. Sales of appliances, electronics, and lawn and garden goods continued to be strong. Retailers reported that inventories for most goods were in line with their planned levels. Auto dealers reported heavier floor traffic and increases in light vehicle sales. One large auto group noted that service activity was also up and that used car prices strengthened.

1.5.2 Manufacturing

The manufacturing sector generally remained strong, although activity varied by industry segment. According to most automakers, orders for light vehicles remained strong nationwide. Inventories were generally in good shape, although they were reportedly lean for select models. Despite these conditions, the pricing environment remained soft, with an increase in incentive spending noted by some analysts. Producers of agricultural and heavy construction equipment reported further softening in output in recent weeks, and most planned to reduce inventories further next year, although not as aggressively as this year. Reports expected domestic demand would be relatively soft in the coming year, while foreign demand was expected to pick up.

1.5.3 Banking and Finance

Lending activity continued to be mixed. Business lending remained robust, and most bankers suggested that growth was steady. A few reports indicated that overall asset quality on commercial loans might have deteriorated slightly, since intense competition for customers led some lenders to relax standards slightly. Some bankers

¹⁵Ancity, Anystate, Anyregion (fictitious).

appeared to be less optimistic about the near-term commercial lending outlook than they had been in recent months. Household loan demand softened further, according to most lenders, as new mortgage and refinancing activity continued to slow. Reports noted that asset quality on consumer loans improved as existing bank and store credit-card balances were paid down, delinquencies slowed, and personal bankruptcies decreased. A report from one large money center bank attributed this improvement to a lagged effect from strong refinancing activity earlier in the year, and as a result, did not expect the improvement to endure. None of the bankers contacted noted any unusual borrowing by businesses that would indicate an inventory buildup, nor was there any noticeable increase in the demand for cash by consumers.

1.5.4 Labor Markets

Labor markets remained very tight. Demand for workers in most sectors remained strong. Temporary help firms in some metro areas reported increasing demand for manufacturing workers, while there were a few reports of slackening demand for financial service professionals, partly as a result of slowing mortgage applications. On balance, reports suggested that overall wage pressures had not intensified further in recent weeks. Staffing services reports indicated that wages were increasing fastest in the administrative/clerical occupations while a slowdown in wage growth was noted for information technology professionals. Reports from a large trucking firm noted the continued shortage of drivers was especially serious during high seasonal demand for transporting goods. Most reports continued to argue that worker shortages were hampering the economic expansion.

1.5.5 Regional Economic Impact on Valuation

The regional economy should also be analyzed in performing a valuation to help to determine specific risks associated with the particular region in which the Company operates. In this instance, the regional economy is performing very well in many areas.

1.6 LOCAL ECONOMY

Anycity, Anystate was founded in 1810. It has an estimated population of 2,800,000 citizens. The economy is made up primarily of trade, services, and manufacturing. Anycity has the 12th-strongest economy in the nation, according to a 20X5 economic analysis. The analysis studied factors such as employment, per capita personal income and construction, and retail employment.

According to a 20X5 study, Anycity, Anystate was one of the top 10 metropolitan areas in the nation as a hot spot for starting and growing young companies. The survey measured the number of significant start-up firms created during the last 10 years and the number of 10-year-old firms that grew substantially during the past four years. Also, in April 20X5, a national magazine named Anycity one of the top 10 “most improved cities” for business in the United States. Anystate was ranked seventh based on cost of living, educational opportunities, quality of life, and business issues. Construction activity also remained good.

The local economy is another important aspect to consider when performing a business valuation. The local economy represents the immediate environment in which the Company operates. The economy of Anycity, Anystate appears to be doing very well. Thus, in our opinion, there is little risk associated with the local economy that will affect the Company.

1.7 INDUSTRY OUTLOOK: FABRICATED METAL PRODUCTS AND TRANSPORTATION EQUIPMENT

We employed Porter's¹⁶ model of analysis to examine more closely the fastener industry defined by SIC 34, Fabricated Metal Products, Except Machinery and Transportation Equipment, and SIC 37, Transportation Equipment, specifically focusing on subcategory SIC 3714, Motor Vehicle Parts and Accessories.

1.7.1 Fabricated Metal Products Industry

"The fastener industry is remarkably decentralized, with hundreds of small shops producing the majority of fasteners."¹⁷ Over the years, U.S. companies in this industry have experienced significant competition from overseas manufacturers. Manufacturers serving the automotive sector have benefited from improvement in automotive sales, but some analysts are concerned with how long the growth will continue.

1.7.2 Transportation Equipment and Auto Parts Industry

"The automotive industry is the largest manufacturing sector in the United States."¹⁸ From 20X0 to 20X5 (five-year period), the automotive parts industry almost doubled.¹⁹ Original equipment production represents the majority of total automotive parts production, with the remainder being aftermarket equipment.

Demand for auto parts is directly related to automotive sales and production. Since the 2008 recession, production and sales of autos have improved dramatically in North America. In May 20X5, the annualized selling rate of light-vehicle sales was 17.8 million units, which was the highest rate since 10 years prior, July 20X5.²⁰ Sales are expected to continue to grow as the economy improves with a positive outlook for the next few years. "The average vehicle age (which is over 11 years), the number of vehicles in operation, and miles driven should also drive demand for both replacement parts and new vehicles."²¹

¹⁶Michael E. Porter, *Competitive Strategy: Techniques for Analyzing Industries and Competitors* (New York: Free Press, 1998).

¹⁷"Bolts, Nuts, Screws, Rivets, and Washers," *Encyclopedia of American Industries* (Farmington Hills, MI: Gale 2012). *Business Insights: Essentials*.

¹⁸2015 ITA *Automotive Parts Top Markets Report*, July 2015, International Trade Administration, U.S. Department of Commerce, p. 1.

¹⁹Ibid.

²⁰*Auto Parts Industry*, Value Line, June 19, 2015.

²¹Ibid.

Global competition in this industry is intense, but U.S. exports are restricted in many countries by governmental regulation and tariffs. Auto manufacturers generally prefer to source parts from manufacturers located in close proximity to their production locations in order to reduce inventory through just-in-time delivery of parts. Tier 1 suppliers include large global manufacturing companies, but Tier 2 suppliers tend to be small to medium-size enterprises without export business. These businesses may see increasing price competition from foreign companies. “There are more and more parts suppliers entering the market offering lower price points, quality products, and/or advanced technologies. In addition, some of these suppliers receive or have received subsidies provided by their local governments. U.S. manufacturers with aftermarket products that are easy to produce and fairly low tech will face the greatest challenges.”²² To remain competitive, suppliers are focusing on “new products and technologies that improve safety, enhance fuel economy, lower emissions, and support in-car connectivity.”²³

1.7.3 Porter's Five Forces Analysis

1.7.3.1 Industry Competition The domestic automotive industry is highly competitive with many independent domestic and international suppliers competing on price, quality, and service.

1.7.3.2 Threat of Substitute Products The threat of substitute products is low, but existing products compete primarily on price, not on innovation.

1.7.3.3 Threat of New Entrants Based on industry data, foreign companies have been entering the U.S. market, increasing competition for existing market share. As the dollar strengthens against the rest of the world currencies, pricing from foreign suppliers becomes even more attractive. Just-in-time manufacturing requiring that supplier facilities have close proximity to manufacturing facilities will somewhat limit this international competition for certain products.

1.7.3.4 Bargaining Power of Suppliers Bargaining power of suppliers is low because of the competitive alternatives available to buyers.

1.7.3.5 Bargaining Power of Buyers Bargaining power of buyers is very high because the smaller parts manufacturing companies are part of a chain serving very large auto manufacturers with multiple alternative sourcing options.

1.8 IMPACT ON VALUATION OF ECONOMIC AND INDUSTRY OUTLOOK

Based on analysis of the industry and economic outlook, the requirement for aging vehicles to be replaced and repaired should support stable growth for the Company, with continuing price pressures from offshore competition. The median 10-year

²²2015 *ITA Automotive Parts Top Markets Report*, July 2015, International Trade Administration, U.S. Department of Commerce, p. 6.

²³*Auto Parts Industry*, Value Line, June 19, 2015.

forecast CPI and real GDP estimates from the *Livingston Survey* imply a combined forecast 10-year nominal GDP of 4.76 percent.²⁴ Based on the industry and economic data, a long-term perpetuity growth rate of 4.0 percent was assumed for the Company.

EXERCISE 15 Which industry outlook factors are generally the most important in supporting valuation assumptions?

- a. Growth rates, profit margins, and risk
- b. Regulatory and legal issues
- c. Unemployment figures
- d. Minority discounts and/or control premiums

1.9 HISTORICAL FINANCIAL ANALYSIS AND OVERVIEW OF THE COMPANY

Five years of financial data are presented for the fiscal years from 20X0 through 20X4 and the 12 trailing months (TTM) ended August 31, 20X5. See Exhibits 1.3 and 1.4 for the detailed comparative income statement and balance sheet of the Company, respectively. See Exhibit 1.5 for the adjusted comparative income statement.

EXERCISE 16 What is the most important use of historical financial data?

- a. To determine how the company has performed
- b. To assist in supporting anticipated performance
- c. To highlight profitability
- d. To determine average profits

EXERCISE 17 Analysts typically spread five years of financial statements because:

- a. Revenue Ruling 59-60 requires five years.
- b. USPAP and SSVS require five years.
- c. An economic cycle is often captured in five years.
- d. Most business plans are based on five years of projections.

²⁴Combined nominal GDP calculated as $(1 + \text{CPI}) \times (1 + \text{real GDP}) - 1$. Based on the information from the *Livingston Survey* $(1 + 2.20\%) \times (1 + 2.50\%) - 1 = 4.76\%$.

EXHIBIT 1.3 Comparative Income Statement

National Fastener & Machine Co.
Comparative Income Statement
Valuation Date: September 1, 20X5

	12 Months Ended		Years Ended December 31,										3 Yr. Avg.		Compound Growth Rate 'X2 to 'X4
	8/31/20X5		20X4 (1)		20X3 (1)		20X2 (1)		20X1 (1)		20X0 (1)		'X2 to 'X4		
	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	
Net Revenues	35,853,691	100.0	37,135,207	100.0	37,117,830	100.0	34,223,772	100.0	30,915,122	100.0	28,520,510	100.0	36,158,936	100.0	4.2
Total Cost of Goods Sold	27,425,725	76.5	28,845,702	77.7	28,254,775	76.1	26,572,370	77.6	24,265,598	78.5	22,886,772	80.2	27,890,949	77.1	4.2
Gross Profit	8,427,966	23.5	8,289,505	22.3	8,863,055	23.9	7,651,402	22.4	6,649,524	21.5	5,633,738	19.8	8,267,987	22.9	4.1
Total Selling, General & Admin Expenses	5,423,009	15.1	5,439,555	14.6	5,397,861	14.5	5,186,760	15.2	5,033,451	16.3	4,801,641	16.8	5,341,392	14.8	2.4
Net Operating Profit	3,004,957	8.4	2,849,950	7.7	3,465,194	9.3	2,464,642	7.2	1,616,073	5.2	832,097	2.9	2,926,595	8.1	7.5
Other Expense (Income)															
Interest Expense	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	N/M
(2) Other Expense (Income)	(57,190)	-0.2	(56,939)	-0.2	(160,835)	-0.4	(118,099)	-0.3	(249,804)	-0.8	(61,928)	-0.2	(111,958)	-0.3	N/M
Total Other Expense (Income)	(57,190)	-0.2	(56,939)	-0.2	(160,835)	-0.4	(118,099)	-0.3	(249,804)	-0.8	(61,928)	-0.2	(111,958)	-0.3	N/M
Income Before Taxes	3,062,147	8.5	2,906,889	7.8	3,626,029	9.8	2,582,741	7.5	1,865,877	6.0	894,025	3.1	3,038,553	8.4	6.1
Income Tax Provision	824,333	2.3	955,000	2.6	1,147,000	3.1	837,000	2.4	611,000	2.0	288,000	1.0	979,667	2.7	6.8
Net Income	2,237,813	6.2	1,951,889	5.3	2,479,029	6.7	1,745,741	5.1	1,254,877	4.1	606,025	2.1	2,058,886	5.7	5.7
Net Income to Invested Capital	2,237,813	6.2	1,951,889	5.3	2,479,029	6.7	1,745,741	5.1	1,254,877	4.1	606,025	2.1	2,058,886	5.7	5.7
Earnings Before Interest & Taxes	3,062,147	8.5	2,906,889	7.8	3,626,029	9.8	2,582,741	7.5	1,865,877	6.0	894,025	3.1	3,038,553	8.4	6.1
Earnings Before Int., Taxes, Depr. & Amort.	4,336,524	12.1	4,169,614	11.2	4,719,091	12.7	3,576,692	10.5	2,837,373	9.2	1,894,379	6.6	4,155,132	11.5	8.0
Depreciation & Amortization	1,274,377	3.6	1,262,725	3.4	1,093,062	2.9	993,951	2.9	971,496	3.1	1,000,354	3.5	1,116,579	3.1	12.7
Capital Expenditures	1,873,113	5.2	1,735,041	4.7	3,474,858	9.4	1,187,746	3.5	1,611,789	5.2	687,108	2.4	2,132,548	5.9	20.9
Effective Tax Rate	26.9%		32.9%		31.6%		32.4%		32.7%		32.2%		32.3%		N/M

Notes

(1) Source: Audited financial statements

(2) Other income and expense includes the following:

Interest Income	26,155		30,802		34,138		42,282		53,501		30,281	
Gain (loss) on sale of equipment and property	(14,233)		114,658		67,946		192,544		(6,651)		66,088	
Other	45,268		15,376		16,015		14,978		15,078		15,589	

EXHIBIT 1.4 Comparative Balance SheetNational Fastener & Machine Co.
Comparative Balance Sheet

ASSETS	At December 31,												3 Yr. Avg.		Compound		
	At 8/31/20X5		20X4 (1)		20X3 (1)		20X2 (1)		20X1 (1)		20X0 (1)		20X2 to 20X4		20X2 to 20X4		
	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	
Current Assets																	
Cash and cash equivalents	1,602,497	5.4	231,252	0.8	443,608	1.6	392,810	1.5	704,345	2.8	725,524	3.1	355,890	1.3	355,890	1.3	-23.3
Certificate of deposit	5,320,000	17.8	6,058,000	20.9	6,207,348	22.0	7,088,000	27.4	5,880,000	23.7	6,380,000	27.0	6,451,116	23.3	6,451,116	23.3	-7.6
Accounts receivable, net	5,906,646	19.8	5,669,654	19.6	5,510,770	19.6	4,577,932	17.7	4,398,426	17.7	4,017,081	17.0	5,252,785	19.0	5,252,785	19.0	11.3
Inventory	5,010,529	16.8	5,162,474	17.8	4,880,788	17.3	4,936,372	19.1	5,212,040	21.0	4,310,154	18.2	4,993,211	18.0	4,993,211	18.0	2.3
Deferred income taxes	448,191	1.5	446,191	1.5	410,191	1.5	416,191	1.6	420,191	1.7	394,191	1.7	424,191	1.5	424,191	1.5	3.5
Prepaid income taxes	0	0.0	173,656	0.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	N/M
Other current assets	458,528	1.5	348,413	1.2	295,521	1.0	422,332	1.6	347,737	1.4	353,017	1.5	355,422	1.3	355,422	1.3	-9.2
Total Current Assets	18,746,391	62.7	18,089,640	62.4	17,748,226	63.0	17,833,637	68.8	16,962,739	68.2	16,179,967	68.4	17,890,501	64.6	17,890,501	64.6	0.7
Fixed Assets																	
Land and improvements	1,270,242	4.3	1,270,242	4.4	1,238,150	4.4	1,238,150	4.8	1,238,150	5.0	1,250,875	5.3	1,246,173	4.5	1,246,173	4.5	0.9
Buildings and improvements	6,521,533	21.8	6,494,896	22.4	6,438,022	22.9	6,244,064	24.1	6,169,545	24.8	6,354,014	26.9	6,392,327	23.1	6,392,327	23.1	2.0
Production equipment and other	33,970,272	113.7	33,190,789	114.6	31,806,103	113.0	29,495,765	113.8	28,785,896	115.8	28,019,687	118.4	31,497,552	113.8	31,497,552	113.8	6.1
Gross Fixed Assets	41,762,047	139.8	40,955,927	141.4	39,482,275	140.2	36,977,979	142.7	36,193,591	145.6	35,624,576	150.6	39,138,727	141.4	39,138,727	141.4	5.2
Accumulated depreciation	(30,628,391)	-102.5	(30,077,932)	-103.8	(29,073,155)	-103.3	(28,900,113)	-111.5	(28,298,066)	-113.8	(28,145,698)	-119.0	(29,350,400)	-106.0	(29,350,400)	-106.0	N/M
Net Fixed Assets	11,133,656	37.3	10,877,995	37.6	10,409,120	37.0	8,077,866	31.2	7,895,525	31.8	7,478,878	31.6	9,788,327	35.4	9,788,327	35.4	16.0
Total Assets	29,880,047	100.0	28,967,635	100.0	28,157,346	100.0	25,911,503	100.0	24,858,264	100.0	23,658,845	100.0	27,678,828	100.0	27,678,828	100.0	5.7

	At December 31,												3 Yr. Av. Growth Rate		
	At 8/31/20X5		20X4 (1)		20X3 (1)		20X2 (1)		20X1 (1)		20X0 (1)		20X4	20X2 to 20X4	
	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	
LIABILITIES & STOCKHOLDERS' EQUITY															
Current Liabilities															
Accounts payable	1,173,018	3.9	923,819	3.2	924,943	3.3	1,003,647	3.9	968,266	3.9	748,781	3.2	950,803	3.4	-4.1
Accrued wages and salaries	889,749	3.0	605,029	2.1	560,114	2.0	409,695	1.6	374,964	1.5	405,604	1.7	524,946	1.9	21.5
Other accrued expenses	386,161	1.3	520,723	1.8	609,846	2.2	460,245	1.8	453,594	1.8	312,123	1.3	530,271	1.9	6
Unearned revenue and customer deposits	174,828	0.6	69,866	0.2	126,066	0.4	84,905	0.3	151,652	0.6	84,698	0.4	93,612	0.3	-9.3
Interest-bearing debt	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	N/M
Total Current Liabilities	2,623,756	8.8	2,119,437	7.3	2,220,969	7.9	1,958,492	7.6	1,948,476	7.8	1,551,206	6.6	2,099,633	7.6	4.0
Deferred Income Taxes	1,071,275	3.6	1,107,275	3.8	1,065,275	3.8	952,275	3.7	785,275	3.2	745,275	3.2	1,041,608	3.8	7.8
Interest-Bearing Debt	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	N/M
Total Liabilities	3,695,031	12.4	3,226,712	11.1	3,286,244	11.7	2,910,767	11.2	2,733,751	11.0	2,296,481	9.7	3,141,241	11.3	5.3
Stockholders' Equity															
Stockholders' equity	1,138,096	3.8	1,138,096	3.9	1,138,096	4.0	1,138,096	4.4	1,138,096	4.6	1,138,096	4.8	1,138,096	4.1	0.0
Additional paid-in capital	447,134	1.5	447,134	1.5	447,134	1.6	447,134	1.7	447,134	1.8	447,134	1.9	447,134	1.6	0.0
Retained earnings	28,521,884	95.5	28,077,791	96.9	27,207,970	96.6	25,337,604	97.8	24,461,381	98.4	23,699,232	100.2	26,874,455	97.1	5.3
Treasury stock, 171,964 shares at cost	(3,922,098)	-13.1	(3,922,098)	-13.5	(3,922,098)	-13.9	(3,922,098)	-15.1	(3,922,098)	-15.8	(3,922,098)	-16.6	(3,922,098)	-14.2	N/M
Total Stockholders' Equity	26,185,016	87.6	25,740,923	88.9	24,871,102	88.3	23,000,736	88.8	22,124,513	89.0	21,362,364	90.3	24,537,587	88.7	5.8
Total Liabilities & Stockholders' Equity	29,880,047	100.0	28,967,635	100.0	28,157,346	100.0	25,911,503	100.0	24,858,264	100.0	23,658,845	100.0	27,678,828	100.0	5.7
Net Working Capital	16,122,635	54.0	15,970,203	55.1	15,527,257	55.1	15,875,145	61.3	15,014,263	60.4	14,628,761	61.8	15,790,868	57.1	0.3
Net Working Capital excluding Cash & CD	9,200,138	30.8	9,680,951	33.4	8,876,301	31.5	8,394,335	32.4	8,429,918	33.9	7,523,237	31.8	8,983,862	32.5	7.4
Debt-Free Net Working Capital	16,122,635	54.0	15,970,203	55.1	15,527,257	55.1	15,875,145	61.3	15,014,263	60.4	14,628,761	61.8	15,790,868	57.1	0.3
Debt-Free Net Working Capital excluding Cash	9,200,138	30.8	9,680,951	33.4	8,876,301	31.5	8,394,335	32.4	8,429,918	33.9	7,523,237	31.8	8,983,862	32.5	7.4
Total Interest-Bearing Debt	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	N/M

Notes

(1) Source: Audited financial statements

EXHIBIT 1.5 Adjusted Comparative Income Statement

	12 Months Ended		Years Ended December 31,												3 Yr. Avg.		Compound Growth Rate 20X2 to 20X4
	8/31/20X5		20X4 (1)		20X3 (1)		20X2 (1)		20X1 (1)		20X0 (1)		20X2 to 20X4		%		
	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%			
Net Revenues	35,853,691	100.0	37,135,207	100.0	37,117,830	100.0	34,223,772	100.0	30,915,122	100.0	28,520,510	100.0	36,158,936	100.0	4.2		
(2) Costs of Goods Sold	26,151,348	72.9	27,582,977	74.3	27,161,713	73.2	25,578,419	74.7	23,294,102	75.3	21,886,418	76.7	26,774,370	74.0	3.8		
Depreciation & Amortization	1,274,377	3.6	1,262,725	3.4	1,093,062	2.9	993,951	2.9	971,496	3.1	1,000,354	3.5	1,116,579	3.1	12.7		
Total Selling, General & Admin. Expenses	5,423,009	15.1	5,439,555	14.6	5,397,861	14.5	5,186,760	15.2	5,033,451	16.3	4,801,641	16.8	5,341,392	14.8	2.4		
Net Operating Profit	3,004,957	8.4	2,849,950	7.7	3,465,194	9.3	2,464,642	7.2	1,616,073	5.2	832,097	2.9	2,926,595	8.1	7.5		
Total Other Expense (Income)	(57,190)	-0.2	(56,939)	-0.2	(160,835)	-0.4	(118,099)	-0.3	(249,804)	-0.8	(61,928)	-0.2	(111,958)	-0.3	N/M		
Income Before Taxes	3,062,147	8.5	2,906,889	7.8	3,626,029	9.8	2,582,741	7.5	1,865,877	6.0	894,025	3.1	3,038,553	8.4	6.1		
Adjustments:																	
(3) (Gain) Loss on Sale of Equipment	14,233	0.0	(15,659)	0.0	(114,658)	-0.3	(67,946)	-0.2	(192,544)	-0.6	6,651	0.0	(66,088)	-0.2	N/M		
(4) Interest Income Adjustment	(6,730)	0.0	(4,597)	0.0	(3,150)	0.0	(9,974)	0.0	(17,006)	-0.1	(24,249)	-0.1	(5,907)	0.0	N/M		
Total Adjustments	7,503	0.0	(20,256)	-0.1	(117,808)	-0.3	(77,920)	-0.2	(209,550)	-0.7	(17,598)	-0.1	(71,995)	-0.2	N/M		
Adjusted Income Before Taxes	3,069,650	8.6	2,886,633	7.8	3,508,221	9.5	2,504,821	7.3	1,656,327	5.4	876,427	3.1	2,966,558	8.2	7.4		
Estimated Income Tax	826,353	2.3	948,345	2.6	1,109,735	3.0	811,748	2.4	542,381	1.8	282,331	1.0	956,609	2.6	8.1		
Adjusted Net Income	2,243,297	6.3	1,938,288	5.2	2,398,487	6.5	1,693,073	4.9	1,113,946	3.6	594,096	2.1	2,009,949	5.6	7.0		
Adjusted Net Income to Invested Capital	2,243,297	6.3	1,938,288	5.2	2,398,487	6.5	1,693,073	4.9	1,113,946	3.6	594,096	2.1	2,009,949	5.6	7.0		
Adj Earnings Before Interest & Taxes	3,069,650	8.6	2,886,633	7.8	3,508,221	9.5	2,504,821	7.3	1,656,327	5.4	876,427	3.1	2,966,558	8.2	7.4		
Adj Earnings Before Int., Taxes, Depr. & Amort.	4,344,027	12.1	4,149,358	11.2	4,601,283	12.4	3,498,772	10.2	2,627,823	8.5	1,876,781	6.6	4,083,138	11.3	8.9		
Interest Expense	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0	0	0.0	N/M		
Depreciation & Amortization	1,274,377	3.6	1,262,725	3.4	1,093,062	2.9	993,951	2.9	971,496	3.1	1,000,354	3.5	1,116,579	3.1	12.7		
(5) Estimated Tax Rate	26.9%		32.9%		31.6%		32.4%		32.7%		32.2%		32.3%				

National Fastener & Machine Co.

Adjusted Comparative Income Statement

Notes

- 1) Source: Audited financial statements
- 2) Excludes Depreciation and Amortization expense.
- 3) Sales of equipment used in the fastener segment. Amounts in 20X1 and 20X0 represent the gain/loss on the sale of equipment and property.
- 4) The interest income component of other income has been adjusted for the estimated amount of excess debt-free working capital. To calculate the applicable adjustment, this excess working capital amount is multiplied by each year's implicit effective rate of interest income earned on the combined balance of cash and marketable securities, based on the Company's audited financial statements.

Effective rate of interest income earned	0.38%	0.41%	0.46%	0.64%	0.75%
Normalized DFWC % of Revenues	40.00%	40.00%	40.00%	40.00%	40.00%
Ending Debt-Free Working Capital	16,122,635	15,970,203	15,527,257	15,014,263	14,628,761
Normalized Debt-Free Working Capital	14,341,476	14,854,083	14,847,132	12,366,049	11,408,204
Excess DFWC estimate	1,781,159	1,116,120	680,125	2,648,214	3,220,557
	6,730	4,597	3,150	17,006	24,249

- 5) Per management, projected tax rate for federal and state taxes is estimated at 33.0%.

1.9.1 Income Statements

1.9.1.1 Revenues Revenues are generally the first component to be reviewed by financial analysts. All other things equal, trends in revenues will translate into trends in profit margins, as well as the Company's ultimate fate. Increases in revenues, all things equal, should lead to higher profitability as the Company's fixed costs are spread over a wider revenue base, leading to lower fixed costs per dollar of revenue. Table 1.1 represents the actual revenues of the Company for each year and the growth trend associated with each year.

TABLE 1.1 Actual Revenues and Growth Trend

	<u>Dec-X0</u>	<u>Dec-X1</u>	<u>Dec-X2</u>	<u>Dec-X3</u>	<u>Dec-X4</u>
Revenues	\$28,520,510	\$30,915,122	\$34,223,772	\$37,117,830	\$37,135,207
% Change		8.4%	10.7%	8.5%	0.0%

As illustrated, the Company's revenues increased from fiscal 20X0 to 20X3, but growth leveled off in 20X4. Revenues for the 12 months trailing August 31, 20X5 were lower than for the fiscal year ended December 31, 20X4. Over the three-year period from 20X2 to 20X4, the compound growth rate in revenues was approximately 4 percent. Lower revenues in 20X0 and 20X1 were the result of the overall economy of the United States, which was in the process of recovering from the contraction that occurred in the prior two years. Revenues leveled off in 20X4, but capital expenditure investments made in 20X3 will improve production capacity and efficiency such that the facilities can support future growth in production.

1.9.1.2 Cost of Goods Sold As presented in Table 1.2, the Company's cost of goods sold as a percentage of revenues improved with the recovery of revenues in 20X2 and stabilized. Cost of goods sold was 77.7 percent of revenues for fiscal year 20X4, approximately the same as the 77.1 percent three-year average for the years ended 20X2 through 20X4. Cost of goods sold grew at the same compound annual growth rate as revenues of approximately 4 percent over the three-year period from 20X2 to 20X4.

TABLE 1.2 Cost of Goods Sold and Percentage of Revenues

	<u>Dec-X0</u>	<u>Dec-X1</u>	<u>Dec-X2</u>	<u>Dec-X3</u>	<u>Dec-X4</u>
Cost of Goods Sold	\$22,886,772	\$24,265,598	\$26,572,370	\$28,254,775	\$28,845,702
% of Revenues	80.2%	78.5%	77.6%	76.1%	77.7%

1.9.1.3 Selling, General, and Administrative Expense As presented in Table 1.3, the Company's selling, general, and administrative expense as a percentage of sales was 14.6 percent in 20X4, approximately the same as the three-year average such expense of 14.8 percent for the fiscal years ended 20X2 through 20X4.

TABLE 1.3 Selling, General, and Administrative Expense and Percentage of Revenues

	<u>Dec-X0</u>	<u>Dec-X1</u>	<u>Dec-X2</u>	<u>Dec-X3</u>	<u>Dec-X4</u>
SG&A	\$4,801,641	\$5,033,451	\$5,186,760	\$5,397,861	\$5,439,555
% of Revenues	16.8%	16.3%	15.2%	14.5%	14.6%

1.9.1.4 Adjusted Earnings before Interest, Taxes, Depreciation, and Amortization (EBITDA)

Adjustments were made to the historical financial data to eliminate nonrecurring income and expense items from National Fastener's reported income before tax.

Adjustments included:

- The gains and losses on the sale of tooling equipment used in the fastener segment. No adjustment accounted for more than 0.6 percent of revenues for the year the gain or loss was recorded.
- Excess working capital was identified at National Fastener as of the valuation date. The value of excess working capital is added separately to the operating value of the equity of the Company. To avoid double-counting the value of this working capital, we have reduced interest income in each year by an amount equal to each year's effective interest rate earned times the amount of working capital in excess of the estimated normal working capital requirement.

Depreciation and amortization were added to the adjusted income before taxes to calculate adjusted earnings before interest, taxes, depreciation, and amortization (EBITDA).

To compare the Company to the industry, we used guideline public company data. The mean and median EBITDA as a percentage of sales for the guideline public companies in this industry were 9.6 percent and 9.9 percent, respectively. As presented in Table 1.4, the Company's EBITDA as a percentage of sales was approximately 11.2 percent in 20X4.

TABLE 1.4 Adjusted EBITDA and Percentage of Revenues

	<u>Dec-X0</u>	<u>Dec-X1</u>	<u>Dec-X2</u>	<u>Dec-X3</u>	<u>Dec-X4</u>
Adjusted EBITDA	\$1,876,781	\$2,627,823	\$3,498,772	\$4,601,283	\$4,149,358
% of Revenues	6.6%	8.5%	10.2%	12.4%	11.2%

1.9.2 Balance Sheets

1.9.2.1 Current Assets Current assets usually consist of cash and cash equivalents, accounts receivable, inventory, and other current assets, which usually consist of prepaid expenses.

1.9.2.2 Asset Mix Over the period, the majority of the Company's assets has been in certificates of deposit, accounts receivable, inventory, and fixed assets. Table 1.5 illustrates the Company's asset mix as a percentage of total assets.

TABLE 1.5 Asset Mix Percentages

	<u>Dec-X0</u>	<u>Dec-X1</u>	<u>Dec-X2</u>	<u>Dec-X3</u>	<u>Dec-X4</u>
Cash and Equivalents	3.1%	2.8%	1.5%	1.6%	0.8%
Certificates of Deposit	27.0%	23.7%	27.4%	22.0%	20.9%
Accounts Receivable	17.0%	17.7%	17.7%	19.6%	19.6%
Inventories	18.2%	21.0%	19.1%	17.3%	17.8%
Deferred Income Taxes	1.7%	1.7%	1.6%	1.5%	1.5%
Prepaid Income Taxes	0.0%	0.0%	0.0%	0.0%	0.6%
Other Current Assets	1.5%	1.4%	1.6%	1.0%	1.2%
Net Fixed Assets	31.6%	31.8%	31.2%	37.0%	37.6%

The Company's asset mix was stable for the most part. Inventory was a slightly higher-than-normal percent of assets at December 31, 20X0, and 20X1 in the years following the recession. The working capital requirements of the Company are high, so cash is held in short-term certificates of deposit to be available to fund operations.

1.9.2.3 Liabilities The majority of the liabilities consisted of accounts payable and deferred income taxes. Total current liabilities as a percent of total liabilities and stockholders' equity increased from 6.6 percent at December 31, 20X0, to 7.3 percent at December 31, 20X4. Historically, the Company has not relied on interest-bearing debt. Table 1.6 illustrates the Company's liabilities mix as a percentage of total liabilities and stockholders' equity.

TABLE 1.6 Liability Mix Percentages

	<u>Dec-X0</u>	<u>Dec-X1</u>	<u>Dec-X2</u>	<u>Dec-X3</u>	<u>Dec-X4</u>
Accounts Payable	3.2%	3.9%	3.9%	3.3%	3.2%
Accrued Wages and Salaries	1.7%	1.5%	1.6%	2.0%	2.1%
Other Accrued Expenses	1.3%	1.8%	1.8%	2.2%	1.8%
Unearned Revenue and Customer Deposits	0.4%	0.6%	0.3%	0.4%	0.2%
Deferred Income Taxes	3.2%	3.2%	3.7%	3.8%	3.8%
Equity	90.3%	89.0%	88.8%	88.3%	88.9%

The liability section of the balance sheet was also stable.

1.9.2.4 Equity Stockholders' equity refers to the difference between the book value of a company's assets and its liabilities. The stockholders' equity as a percent of total liabilities and stockholders' equity declined from fiscal year 20X0 to 20X4, but on a dollar basis grew during this period.

1.9.3 Financial Ratio Analysis

Ratios for the 12-month period ending September 1, 20X5, are not presented. See Exhibit 1.6 for the adjusted ratio analysis of the Company.

EXHIBIT 1.6 Adjusted Ratio AnalysisNational Fastener & Machine Co.
Adjusted Ratio Analysis

	12 Months Ended 8/31/20X5	Years Ended December 31,					Average 20X2 to 20X4
		20X4	20X3	20X2	20X1	20X0	
Liquidity Ratios							
Current Ratio	7.14	8.54	7.99	9.11	8.71	10.43	8.54
Debt-Free Current Ratio	7.14	8.54	7.99	9.11	8.71	10.43	8.54
Quick Ratio	4.89	5.64	5.48	6.16	5.64	7.17	5.76
Debt-Free Quick Ratio	4.89	5.64	5.48	6.16	5.64	7.17	5.76
Leverage Ratios							
Debt (1) to Assets	0.00	0.00	0.00	0.00	0.00	0.00	-
Debt (1) to Equity	0.00	0.00	0.00	0.00	0.00	0.00	-
Debt (1) to Total Capital (2)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-
Preferred Stock to Total Capital	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-
Stockholders' Equity to Total Capital (2)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Interest Coverage	N/M	N/M	N/M	N/M	N/M	N/M	N/M
Asset Management Ratios							
Average Collection Period	60.13	54.95	49.60	47.87	49.68	51.41	50.81
Working Capital Turnover	2.22	2.36	2.36	2.22	2.09	1.95	2.31
Debt-Free Working Capital Turnover	2.22	2.36	2.36	2.22	2.09	1.95	2.31
Inventory Turnover	5.22	5.49	5.53	5.04	4.89	5.08	5.36
Fixed Asset Turnover	3.22	3.49	4.02	4.29	4.02	3.81	3.93
Total Asset Turnover	1.20	1.30	1.37	1.35	1.27	1.21	1.34
Accum. Depr. to Gross Fixed Assets	73.3%	73.4%	73.6%	78.2%	78.2%	79.0%	75.1%

Notes

(1) Debt defined as Total Interest-Bearing Debt.

(2) Capital defined as Total Interest-Bearing Debt + Total Stockholders' Equity + Total Preferred Stock.

(Continued)

EXHIBIT 11.6 (Continued)

	12 Months Ended 8/31/20X5	Years Ended December 31,					Average 20X2 to 20X4
		20X4	20X3	20X2	20X1	20X0	
Profitability Ratios							
Gross Profit Margin	23.5%	22.3%	23.9%	22.4%	21.5%	19.8%	22.9%
EBITDA Profit Margin	12.1%	11.2%	12.4%	10.2%	8.5%	6.6%	11.3%
EBIT Profit Margin	8.6%	7.8%	9.5%	7.3%	5.4%	3.1%	8.2%
Net Profit Margin	6.3%	5.2%	6.5%	4.9%	3.6%	2.1%	5.5%
Return on Equity	8.6%	7.7%	10.0%	7.5%	5.1%	2.8%	8.4%
Return on Assets	7.5%	6.8%	8.9%	6.7%	4.6%	2.5%	7.4%
Growth Rates (Year-to-Year and Compound Annual)							
Revenues		0.0%	8.5%	10.7%	8.4%	N/A	4.2%
Gross Profit		-6.5%	15.8%	15.1%	18.0%	N/A	4.1%
Earnings Before Int., Taxes, Depr. & Amort.		-9.8%	31.5%	33.1%	40.0%	N/A	8.9%
Earnings Before Interest & Taxes		-17.7%	40.1%	51.2%	89.0%	N/A	7.4%
Net Income		-19.2%	41.7%	52.0%	87.5%	N/A	7.0%
Total Assets		2.9%	8.7%	4.2%	5.1%	N/A	5.7%
Debt-Free Net Working Capital		2.9%	-2.2%	5.7%	2.6%	N/A	0.3%
Total Interest-Bearing Debt		N/M	N/M	N/M	N/M	N/A	N/M
Total Stockholders' Equity		3.5%	8.1%	4.0%	3.6%	N/A	5.8%

EXERCISE 18 The main drawbacks of publicly available benchmark financial ratios are:

- a. There are very few SIC codes.
- b. They calculate the ratios incorrectly.
- c. The companies that make up the data cannot be used to determine pricing ratios or capitalization rates.
- d. The information is from public companies.

The industry statistics used in the ratio analysis were taken from benchmark data and guideline public company data. The median statistics are for businesses whose primary North American Industry Classification System (NAICS) Code is 332722, Bolt, Nut, Screw, Rivet, and Washer Manufacturing.

Ratios are divided into four groups, each representing an important aspect of the Company's financial position. The groups are liquidity, activity, leverage, and profitability.

1.9.4 Liquidity Ratios

Liquidity analysis assesses the risk level and ability of a company to meet its current obligations. It represents the availability of cash and the company's ability to eventually convert its liquidity into cash.

1.9.4.1 Current Ratio The current ratio compares current assets to current liabilities. It measures the margin of safety a company has for paying short-term debts in the event of a reduction in current assets. It also gives an idea of a company's ability to meet day-to-day payment obligations. Generally, a higher ratio is better.

The Company's current ratio and debt-free current ratio were consistently above the industry average over the period and the guideline public companies, as shown in Table 1.7. The Company's ratios were higher than the industry because of its high level of cash, cash equivalents, and certificates of deposit and lower level of current liabilities.

TABLE 1.7 Current Ratios

	<u>Dec-X2</u>	<u>Dec-X3</u>	<u>Dec-X4</u>
Company	9.11	7.99	8.54
Industry	2.65	2.59	3.10
Guideline Public Companies			
	Mean	Median	
Latest Twelve Months	4.63	4.41	

1.9.4.2 Quick Ratio The quick ratio adds accounts receivables to cash and short-term investments and compares the sum to current liabilities. The resulting ratio measures a company's ability to cover its current liabilities without having to convert inventory to cash. Generally, a higher ratio is better.

As shown in Table 1.8, the Company's ratios fluctuated over the period. The basic difference between the current and quick ratio is that the quick ratio includes only cash and receivables as the numerator. Thus, inventory is not included. The Company's debt-free quick ratio was significantly higher than the industry average. The collection period for the Company's receivables is longer than its peers. The Company has been very liquid and could easily cover its current maturities.

TABLE 1.8 Debt-Free Quick Ratios

	<u>Dec-X2</u>	<u>Dec-X3</u>	<u>Dec-X4</u>
Company	6.16	5.48	5.64
Industry	0.70	0.60	0.60
Guideline Public Companies			
	Mean	Median	
Latest Twelve Months	2.27	2.24	

1.9.4.2.1 Conclusion of Liquidity Ratios The Company appears to have lower risk than that of the industry. The current ratio and the quick ratio are above the industry average for the most part. Thus, the Company would have little difficulty covering its obligations when compared to other companies within the industry.

1.9.4.3 Activity Ratios Activity ratios, also known as *efficiency ratios*, describe the relationship between the Company's level of operations and the assets needed to sustain the activity. The higher the ratio, the more efficient the Company's operations, as relatively fewer assets are required to maintain a given level of operations. Although these ratios do not measure profitability or liquidity directly, they are ultimately important factors affecting those performance indicators.

1.9.4.3.1 Collection Period Ratio The collection period ratio, also known as the *day's sales in receivables*, multiplies accounts receivable at the year end by 365, then divides the result by net sales for the year. This ratio measures how much control a company has over its accounts receivable, and indicates how many days, on the average, it takes that company to convert accounts receivable to cash. Generally, the smaller the number of days, the better.

The Company's average collection period has increased slightly from 20X0 to 20X4. Compared to the industry, the Company was worse at collecting receivables. For the years represented in Table 1.9, the Company converted its accounts receivable to cash more slowly than the other companies within the industry.

TABLE 1.9 Collection Period Ratios

	<u>Dec-X2</u>	<u>Dec-X3</u>	<u>Dec-X4</u>
Company	47.87	49.60	54.95
Industry	45.63	43.45	47.40

1.9.4.3.2 Fixed Assets Turnover Ratio The fixed assets turnover ratio compares net sales to fixed assets. It indicates a company's ability to generate net sales from the use

of its fixed assets. Largely depreciated fixed assets or a labor-intensive operation may cause a distortion of this ratio. Generally, a higher ratio is better.

The Company appears worse than the industry average during the period, as demonstrated in Table 1.10. The Company appears to have not used its fixed assets in generating revenues as effectively as the industry. However, the Company owns all of its equipment and machinery, as opposed to renting. Thus, the higher amount of fixed assets causes the ratio to be low as opposed to the industry figures. Most companies of this nature do not own all of their equipment. The industry averages most likely represent companies that both rent and own their respective equipment and machinery.

TABLE 1.10 Fixed Assets Turnover Ratios

	<u>Dec-X2</u>	<u>Dec-X3</u>	<u>Dec-X4</u>
Company	4.29	4.02	3.49
Industry	8.90	8.30	8.70

1.9.4.4 Asset Turnover Ratio The asset turnover ratio compares net sales to total assets. It measures a company's ability to generate sales volume using its assets. It is useful in comparing companies within specific industry groups on their effective employment of assets. Generally, a higher ratio is better.

The Company's average improved slightly during the period analyzed. The Company's trend (as shown in Table 1.11) was approximately the same as the industry.

TABLE 1.11 Asset Turnover Ratios

	<u>Dec-X2</u>	<u>Dec-X3</u>	<u>Dec-X4</u>
Company	1.35	1.37	1.30
Industry	1.31	1.42	1.38
Guideline Public Companies			
	Mean	Median	
Latest Twelve Months	1.40	1.20	

1.9.4.4.1 Conclusion of Activity Ratios The Company seems to be doing better than the industry in this category. The Company does collect its receivables more quickly than other companies within the industry, for the most part. However, the Company is not as effective as other companies within the industry with fixed assets, but this may be affected by the high level of fixed assets it owns.

1.9.4.5 Leverage Ratios Leverage ratios measure the relative exposure of the creditors versus the shareholders of a business. Leveraged companies accrue excess returns to their shareholders as long as the rate of return on the investments financed by debt is greater than the cost of debt. However, financial leverage brings additional risks, primarily in the form of fixed costs that would adversely affect profitability if revenues decline. Additionally, the priority of interest and debt can have a severe negative impact on a company when adversity strikes. The inability to meet these obligations may lead to default and possibly bankruptcy.

Historically, the Company has not relied on interest-bearing debt to finance operations, so leverage ratios for the Company are basically 0 percent. The mean and median debt-to-capital (book) of the guideline public companies were 14 percent and 10.7 percent, respectively. The Company should have little trouble supporting the purchase of fixed assets with retained earnings. The Company also has the capacity to take on some long-term debt if necessary. Management has indicated that the Company will obtain some debt financing in the near future.

1.9.4.6 Profitability Ratios Profitability ratios measure the ability of a company to generate returns for its stockholders.

1.9.4.6.1 Return on Equity The return on equity ratio compares pre-tax income to equity. It measures a company's ability to generate a profit on the owner's investment. Generally, a higher ratio is better.

The Company's return on equity ratio improved during the period under analysis. It is approximately the same as the median ratio of the guideline public companies of 8.8 percent, but lower than the average of 10.4 percent, as presented in Table 1.12.

TABLE 1.12 Return on Equity Ratios

	<u>Dec-X2</u>	<u>Dec-X3</u>	<u>Dec-X4</u>
Company	7.5%	10.0%	7.7%
Industry	11.5%	15.0%	11.0%
Guideline Public Companies			
	Mean	Median	
Latest Twelve Months	10.4%	8.8%	

1.9.4.6.2 Return on Assets Ratio The return on assets ratio is calculated by dividing pre-tax income by total assets. This ratio expresses the pre-tax return on total assets and measures the effectiveness of management in employing available resources. Generally, a higher ratio is better.

Table 1.13 shows the Company's ratio was better than the industry average based on the guideline public company data.

TABLE 1.13 Return on Assets Ratios

	<u>Dec-X2</u>	<u>Dec-X3</u>	<u>Dec-X4</u>
Company	6.7%	8.9%	6.8%
Industry	8.1%	10.1%	8.9%
Guideline Public Companies			
	Mean	Median	
Latest Twelve Months	6.1%	5.5%	

1.9.4.6.3 Conclusion of Profitability Ratios The Company is profitable and appears to be outperforming the industry.

EXERCISE 19 Indicate whether you believe that National Fastener is a better or worse performer based on the financial ratios and trends previously presented.

1.10 PROJECTIONS

Management provided projections for the Company for the years ending December 31, 20X5, 20X6, 20X7, and 20X8, which are presented in Exhibit 1.7. Management's projections reflect higher revenue growth in the next few years (relative to 20X2 to 20X4) due to the recent execution of a manufacturing agreement with a new customer. Cost of sales is difficult for management to project because of volatility in raw material pricing. Management assumed that cost of sales before depreciation and amortization expense will remain the same as a percent of sales throughout the projected period. Management assumed that operating expenses would grow to support future operations, but due to the increase in sales volume operating expenses decline as a percent of revenues throughout the projected period.

Future capital expenditures to maintain the operating facilities were assumed to be approximately 3.5 percent of revenues. Management provided projected tax depreciation associated with existing assets and future purchases.

1.11 APPRAISAL OF FAIR MARKET VALUE

1.11.1 Valuation Approaches and Methods

Three traditional approaches can be used to value an interest in an operating business such as National Fastener: the income approach, the market approach, and the asset approach.¹⁹

1.11.1.1 Income Approach “Income (Income-Based) Approach—a general way of determining a value indication of a business, business ownership interest, security, or intangible asset using one or more methods that convert anticipated economic benefits into a present single amount.”

The application of the income approach establishes value by methods that discount or capitalize earnings and/or cash flow, by a discount or capitalization rate that reflects market rate of return expectations, market conditions, and the relative risk of the investment. Generally, this can be accomplished by the capitalization of earnings or cash flow method and/or the discounted cash flow method.

EXHIBIT 1.7 Management's Projections

National Fastener & Machine Co.
 Management's Projections
 Valuation Date: September 1, 20X5

Assumptions for Projections:

Revenue Growth, Annual	8%
20X5	8%
20X6	10%
20X7	8%
20X8	5%
Capital Expenditures	
% of Revenues	3.5%

	Budget	8 Months	Implied	Projected Years Ended December 31,						
	Calendar Year 20X5	Ended 8/31/20X5	September- December 20X5	20X6	20X7	20X8				
Revenues	\$40,106,024	100.0	\$24,653,287	100.0	\$44,116,626	100.0	\$47,645,956	100.0	\$50,028,254	100.0
<i>Growth</i>	8.0%			10.0%	8.0%	5.0%				
Cost of Sales (excluding D&A)	28,836,231	71.9	17,674,439	71.7	31,719,854	71.9	34,257,442	71.9	35,970,314	71.9
Gross Profit	11,269,793	28.1	6,978,848	28.3	12,396,772	28.1	13,388,514	28.1	14,057,939	28.1
Operating Expenses	5,975,798	14.9	3,708,705	15.0	6,214,829	14.1	6,463,423	13.6	6,721,959	13.4
EBITDA	5,293,995	13.2	3,270,143	13.3	6,181,942	14.0	6,925,091	14.5	7,335,980	14.7
Adjustments:										
(Gain) loss on sale of equipment	-	-	-	-	-	-	-	-	-	-
Interest income adjustment	-	-	-	-	-	-	-	-	-	-
EBITDA	5,293,995	13.2	3,270,143	13.3	6,181,942	14.0	6,925,091	14.5	7,335,980	14.7
Capital Expenditures	1,403,711	3.5	1,158,140	4.7	1,544,082	3.5	1,667,608	3.5	1,750,989	3.5
Depreciation, Tax	1,194,947	3.0	734,537	3.0	1,570,118	3.6	1,871,816	3.9	2,114,139	4.2

1.11.1.2 Market Approach “Market (Market-Based) Approach—a general way of determining a value indication of a business, business ownership interest, security, or intangible asset by using one or more methods that compare the subject to similar businesses, business ownership interests, securities, or intangible assets that have been sold.”

Generally, this can be accomplished by a comparison to publicly traded guideline companies or by an analysis of actual transactions of similar businesses sold. It may also include an analysis of prior transactions in the company’s stock, if any.

1.11.1.3 Asset Approach “Asset (Asset-Based) Approach—a general way of determining a value indication of a business, business ownership interest, or security, using one or more methods based on the value of the assets net of liabilities.”

This approach can include the value of both tangible and intangible assets. However, this approach is often unnecessary in the valuation of a profitable operating company as a going concern, as the tangible and intangible assets are automatically included, in aggregate, in the market and income approaches to value.

1.11.2 Summary of the Valuation Approaches and Methods

In our valuation of National Fastener, we considered all three approaches to value. Under the income approach, we utilized the discounted cash flow method. We also considered, but rejected, the capitalized cash flow method [Learning Illustration Only]. Under the market approach, we prepared an analysis using the guideline public company method and the guideline company transactions method. We did not rely on the underlying asset approach for the valuation of National Fastener, as the business enterprise value exceeds the value of the underlying tangible and financial assets and captures the value of all intangible assets and goodwill. National Fastener is worth more as a going concern than in liquidation, whether orderly or forced.

EXERCISE 20 All three approaches to value must be applied in all valuations.

- a. True
- b. False

1.11.3 Asset Approach

1.11.3.1 Adjusted Book Value Method The adjusted book value method consists of determining the fair market value of a company’s assets and subtracting the fair market value of its liabilities to arrive at the fair market value of the equity. Both tangible and intangible assets are valued. Appraisals are used to value certain assets, and the remaining assets and liabilities are often included at book value, which is sometimes assumed to approximate fair market value. This method does not provide a strong measure of value for goodwill or other intangible assets, which are more reasonably supported through the Company’s income stream. In this case, the

value under the adjusted book-value method (net tangible assets) was less than the values calculated under the income and market approaches. Thus, this method was not utilized in the determination of a conclusion of value for the Company.

1.11.3.2 Excess Cash Flow Method The excess cash flow method, which is sometimes referred to as the excess earnings or formula method, is based on the excess cash flow or earnings available after a percentage return on the net tangible assets used in a business has been subtracted. This residual amount of cash flow is capitalized at a percentage return for intangible assets of the business to derive the intangible asset value. This method is often used for very small businesses and in marital dissolution proceedings. The Internal Revenue Service's position on this method is that it should only be used when no better method exists.²⁰ It was not used in the valuation of National Fastener since more appropriate methods were available.

EXERCISE 21 In what type of valuation setting is the excess cash flow method most often used?

- a. ESOPs (employee stock ownership plans)
- b. Estate tax
- c. Dissenting rights
- d. Marital dissolution

EXERCISE 22 On which Revenue Ruling is the excess cash flow method based?

- a. Revenue Ruling 59-60
- b. Revenue Ruling 83-120
- c. Revenue Ruling 68-609
- d. Revenue Ruling 77-287

1.11.4 Income Approach

1.11.4.1 Capitalized Cash Flow Method (Invested Capital Basis) For illustration purposes only; the DCF method is the proper method to be used in this example. Most valuation views presented here also apply to the DCF method. The capitalized cash flow method determines the value of a company as the present value of all of the future cash flows that the business can generate to infinity. An appropriate cash flow is determined, then divided by a risk-adjusted capitalization rate, which here is the weighted average cost of capital. In this instance, control cash flows were used. This method was used to determine the Company's indicated value. The value is stated on a marketable, control interest basis. See Exhibit 1.8 for the capitalized cash flow to invested capital method.

EXHIBIT 1.8 Capitalized Cash Flow to Invested Capital Method (Illustration Only)

National Fastener & Machine Co.
 Capitalized Cash Flow to Invested Capital Method
 Valuation Date: September 1, 20X5

Assumptions:			
(1) WACC		13.00%	
(2) Debt-Free Working Capital as a % of Revenues		40.00%	
(3) Perpetuity Growth Rate		4.00%	

	<u>Trailing 12 Months</u>	<u>Most Recent Fiscal Year</u>	<u>Three-Year Average</u>
Net Revenues	\$35,853,691	\$37,135,207	\$36,158,936
Growth Rate	1.04	1.04	1.04
Following Year's Net Revenues	37,287,839	38,620,615	37,605,294
Incremental Net Revenues	1,434,148	1,485,408	1,446,357
Debt-Free Working Capital as a % of Revenues	40.00%	40.00%	40.00%
Estimated Incremental Working Capital	573,659	594,163	578,543
Adjusted Net Income to Invested Capital	2,243,297	1,938,288	2,009,949
Growth Rate	1.04	1.04	1.04
Following Year's Net Income to Invested Capital	2,333,029	2,015,819	2,090,347
(4) Plus: Depreciation			
(4) Less: Capital Expenditures			
Less: Incremental Working Capital	<u>(573,659)</u>	<u>(594,163)</u>	<u>(578,543)</u>
Normalized Cash Flow to Invested Capital	1,759,370	1,421,656	1,511,804
Capitalization Rate	9.00%	9.00%	9.00%
Indicated Value of 100% of the Business Enterprise	19,548,552	15,796,176	16,797,823
(5) Plus: Excess Debt-Free Net Working Capital	<u>1,781,159</u>	<u>1,781,159</u>	<u>1,781,159</u>
Indicated Value of 100% of the Business Enterprise	21,329,711	17,577,335	18,578,981
Less: Interest-Bearing Debt	<u>-</u>	<u>-</u>	<u>-</u>
Indicated Value of 100% of the Equity	21,329,711	17,577,335	18,578,981
Rounded	21,300,000	17,600,000	18,600,000
Indicated Value of 100% of the Equity		<u><u>20,000,000</u></u>	

Notes

- (1) See Exhibit 1.18 for details.
- (2) DFWC as % of revenues based on analysis of historical requirements of the Company and data for the industry. See Exhibit 11.9.
- (3) Long-term growth assumption based on analysis of the industry and inflationary and GDP growth.
- (4) Depreciation and Capital Expenditures were assumed to be equal and offsetting into perpetuity. This is a simplifying assumption.
- (5) Based on the working capital assumption, the Company had excess working capital as of the valuation date:

Ending Debt-Free Working Capital	16,122,635
Normalized DFWC Based on Analysis (40.00% of revenue)	<u>14,341,476</u>
Excess DFWC	1,781,159

EXERCISE 23 Which method(s) is(are) considered valid under the income approach?

- a. Guideline public company method
- b. Discounted cash flow method
- c. Capitalized cash flow method
- d. Excess cash flow method

EXERCISE 24 In which situation(s) would a capitalized cash flow method be more applicable?

- a. When a company's future performance is anticipated to change from its prior performance
- b. In litigation settings
- c. When a single historical or pro forma amount of cash flow is anticipated to be earned with a constant growth in the future
- d. When valuing very small businesses

EXERCISE 25 List the two main bases when using the capitalized cash flow (CCF) or discounted cash flow (DCF) methods of the income approach.

1. _____
2. _____

1.11.4.1.1 Determination of Appropriate Control Cash Flow Under the capitalized cash flow method, we used an invested capital basis for our calculation. This is due, in part, to the fact that the interest being valued is on a control interest basis. This control interest can influence the amount of debt held by the Company. We began our analysis with the adjusted pre-tax earnings at the date of valuation and for the five years prior to the date of valuation. We then made adjustments for interest expense, nonrecurring items, and items that are not reflective of operations to the pre-tax earnings.

EXERCISE 26 Under the direct equity basis, what are the components of net cash flow?

EXERCISE 27 For the invested capital basis of the income approach, list the components of net cash flow.

EXERCISE 28 What is the difference between minority cash flows and control cash flows?

EXERCISE 29 Which adjustment(s) are made when valuing both minority and control cash flows?

- a. Nonrecurring items
- b. Nonoperating assets
- c. Excess compensation
- d. Perquisites
- e. Taxes

EXERCISE 30 Assume the company does not have any control adjustments and the company is run to the benefit of all shareholders without any shareholders taking out cash flow over or above what they are entitled. Is this value control or minority?

The next adjustment was to add back the depreciation expense. This is a non-cash expense and should be added back to arrive at an appropriate cash flow. The adjustment for the gains and losses on the sale of tooling equipment used in the fastener segment was made because such events are nonrecurring in nature.

All income and expenses related to excess/nonoperating assets are taken out of the income stream, because the total value of these assets is unrelated to the indicated value of operations. Excess working capital was identified at National Fastener as of the valuation date. The value of excess working capital is added separately to the operating value of the equity of the Company. To avoid double-counting the value of this working capital, we have reduced interest income in each year by an amount equal to each year's effective interest rate earned times the amount of working capital in excess of the estimated normal working capital requirement. See Exhibit 1.9 for an analysis of working capital requirements based on industry data. See Exhibit 1.10 for an analysis of working capital requirements based on guideline public company data.

EXERCISE 31 List some of the nonoperating/excess assets that are sometimes encountered in a business valuation.

EXERCISE 32 In valuing a controlling interest in a corporation, most analysts agree that the nonoperating and/or excess assets of the business must be removed from the cash flows and valuation of the operating business, and then be added back at fair market value.

- a. True
- b. False

EXERCISE 33 In valuing a minority interest of a company, most analysts agree that the nonoperating and/or excess assets of the business must be removed from the cash flows and valuation of the operating business, and then be added back at fair market value.

- a. True
- b. False

EXHIBIT 1.9 Debt-Free Working Capital (DFWC)—Benchmark Data Analysis

National Fastener & Machine Co.
Debt-Free Working Capital (DFWC) Statistics
Benchmark Data Analysis (1)

	NAICS Code 332722 Bolt, Nut, Screw, Rivet, and Washer Manufacturing			
	4/1/X1-3/31/X2	All	4/1/X3-3/31/X4	4/1/X3-3/31/X4 25MM < Sales
As a % of Total Assets				
Current Assets	57.0%	58.3%	59.2%	54.3%
Less: Current Liabilities	32.0%	31.9%	31.9%	29.7%
Working Capital	25.0%	26.4%	27.3%	24.6%
Working Capital	25.0%	26.4%	27.3%	24.6%
Plus: Notes Payable—Short-Term	6.7%	5.9%	9.4%	11.6%
Plus: Current Mat.—L.T.D.	3.8%	3.5%	3.4%	3.5%
Debt-Free Working Capital (DFWC)	35.5%	35.8%	40.1%	39.7%
Debt-Free Working Capital	35.5%	35.8%	40.1%	39.7%
Times: Total Assets—\$000	\$1,843,636	\$2,973,434	\$2,790,432	\$2,943,433
Debt-Free Working Capital—\$000	\$654,491	\$1,064,489	\$1,118,963	\$1,168,543
Debt-Free Working Capital—\$000	\$654,491	\$1,064,489	\$1,118,963	\$1,168,543
Divided by: Total Sales—\$000	\$2,352,643	\$3,425,214	\$3,963,452	\$3,954,324
DFWC as a % of Sales	27.8%	31.1%	28.2%	29.6%
	NAICS Code 336310 Motor Vehicle Gasoline Engine and Engine Parts Manufacturing			
	4/1/X1-3/31/X2	All	4/1/X3-3/31/X4	4/1/X3-3/31/X4 25MM > Sales

Note

(1) Source: Benchmark data publication.

(Continued)

EXHIBIT 1.9 *(Continued)*

National Fastener & Machine Co.
Debt-Free Working Capital (DFWC) Statistics
Benchmark Data Analysis (1)

	Subject Company DFWC Turns	DFWC as a % of Revenues	Guideline Public Company DFWC Turns Median	Guideline Public Company DFWC as a % of Revenues
Three Year Average ('X2 to 'X4)	2.31	43.2%	2.55	39.2%
Most Recent Fiscal Year	2.36	42.4%	2.49	40.2%
Trailing Twelve Months	2.22	45.0%	2.49	40.2%
Concluded Debt-Free Working Capital Requirements		40.0%		

EXHIBIT 1.10 Debt-Free Working Capital (DFWC)—Guideline Public Company Analysis

National Fastener & Machine Co.
 Debt-Free Working Capital (DFWC) Statistics
 Guideline Public Company Analysis (1)
 (As % of Revenue)

TTM	National Fastener	EML	PFIN	STS	SCX	TWIN	VC	Guideline Companies	
								Average	Median
Working Capital	45.0%	40.4%	20.6%	19.2%	45.5%	42.4%	36.0%	34.0%	38.2%
DFWC	45.0%	41.2%	39.2%	19.4%	46.1%	43.8%	36.3%	37.7%	40.2%
<i>FYE 20X4</i>	<i>National Fastener</i>	<i>EML</i>	<i>PFIN</i>	<i>STS</i>	<i>SCX</i>	<i>TWIN</i>	<i>VC</i>	<i>Average</i>	<i>Median</i>
Working Capital	43.0%	41.1%	18.6%	18.8%	45.5%	42.4%	17.3%	30.6%	29.9%
DFWC	43.0%	41.8%	38.5%	19.1%	46.1%	43.8%	19.2%	34.8%	40.2%
<i>FYE 20X3</i>	<i>National Fastener</i>	<i>EML</i>	<i>PFIN</i>	<i>STS</i>	<i>SCX</i>	<i>TWIN</i>	<i>VC</i>	<i>Average</i>	<i>Median</i>
Working Capital	41.8%	40.3%	35.2%	15.2%	45.0%	46.7%	30.6%	35.5%	37.7%
DFWC	41.8%	41.5%	36.3%	15.5%	49.3%	48.0%	32.3%	37.1%	38.9%
<i>FYE 20X2</i>	<i>National Fastener</i>	<i>EML</i>	<i>PFIN</i>	<i>STS</i>	<i>SCX</i>	<i>TWIN</i>	<i>VC</i>	<i>Average</i>	<i>Median</i>
Working Capital	46.4%	36.1%	34.6%	16.2%	45.1%	43.8%	19.4%	32.5%	35.4%
DFWC	46.4%	37.0%	40.0%	16.2%	45.8%	45.1%	21.1%	34.2%	38.5%
<i>3-Year Avg</i>	<i>National Fastener</i>	<i>EML</i>	<i>PFIN</i>	<i>STS</i>	<i>SCX</i>	<i>TWIN</i>	<i>VC</i>	<i>Average</i>	<i>Median</i>
Working Capital	43.7%	39.2%	29.4%	16.7%	45.2%	44.3%	22.5%	32.9%	34.3%
DFWC	43.7%	40.1%	38.3%	16.9%	47.0%	45.6%	24.2%	35.4%	39.2%

Note

(1) Underlying financial data for computing working capital and debt-free working capital as percentages of revenue can be found in Exhibits 1.21 a through f.

The capitalized cash flow method was calculated using adjusted net income data for the latest trailing 12 months, the most recent fiscal year, and the average of the most recent three years. We believe a straight average is appropriate due to the cyclical nature of the Company.

EXERCISE 34 In the valuation of National Fastener, one of the periods that the analyst decided to use was a straight average of the adjusted income before income taxes for three historical years. Besides a straight average, what other method(s) can be used to determine the appropriate cash flow to be capitalized into perpetuity?

- a. Weighted average
- b. Most recent fiscal year
- c. Most recent trailing 12 months
- d. Trend line analysis/next year's budget
- e. DCF average of next three years

EXERCISE 35 Analysts will generally use a straight historical average where the earnings and cash flows are more volatile.

- a. True
- b. False

The adjusted net income reflected deduction for ongoing depreciation and application of state and federal taxes at rates estimated per management. The amount that resulted was adjusted income pre-debt and after-tax.

EXERCISE 36

Which situation is most appropriate when adjusting cash flows for depreciation and capital expenditures?

- a. Capital expenditures should be similar to or exceed depreciation.
- b. Depreciation should exceed capital expenditures.
- c. The actual unadjusted amounts should be capitalized.

EXERCISE 37 Assuming taxes are to be deducted, what two choices may be made in making the tax adjustments?

- a. Tax each year historically, then calculate an average.
- b. Taxes should never be deducted in the value of an S corporation.
- c. Make all adjustments in the historical period pre-tax, determine the average, then deduct for taxes.

Three further adjustments are made to the after-tax income to invested capital. The ongoing depreciation deducted to calculate taxes is added back because it is not a cash expense. The estimated future capital expenditures are then deducted. In this case, it was estimated that depreciation and future capital expenditures would be equal and offsetting into perpetuity, a simplifying adjustment. [Note: Many analysts present ongoing annual capital expenditures as exceeding depreciation due to inflation and cost increases. See Chapter 5 of *Financial Valuation Applications and Models*, 4th edition.] The final adjustment was a working capital adjustment. The formula for this adjustment is based on industry data, as shown in Table 1.14. These final three adjustments resulted in a calculation of after-tax cash flow to invested capital for each of the three time periods: trailing 12 months, most recent fiscal year, and three-year average. The cash flow was then divided by a risk-adjusted capitalization rate using weighted average cost of capital, which is discussed next, to derive a value of the operations.

TABLE 1.14 Working Capital Adjustment Formula

Current Year Revenue	×	Expected Growth Rate	=	Projected Revenue
Projected Revenue	–	Current Year Revenue	=	Change in Revenue
Change in Revenue	÷	Sales to Working Capital Ratio	=	Working Capital Adjustment

EXERCISE 38 Which economic benefit stream(s) can be used for cash flow in a capitalized cash flow method?

- a. After-tax income
- b. Pre-tax income
- c. Net cash flow
- d. EBITDA (earnings before interest, taxes, depreciation, and amortization)
- e. Revenues
- f. Debt-free net income
- g. Debt-free cash flow

1.11.4.1.2 Capitalized Cash Flow Method Conclusion of Value on a Marketable, Control Interest Basis Dividing the cash flows for the three time periods under analysis resulted in indications of invested capital value of the business enterprise before adjustment for nonoperating/excess assets or subtraction of debt, if any. The Company had excess working capital of \$1,781,159 at the Valuation Date and no debt. As a result, the application of the capitalization of cash flow method to the three different time periods of Company cash flows indicated a range of values for invested capital and 100 percent equity (since Company had no debt) from \$17,600,000 to \$21,300,000. The concluded value was \$20,000,000 on a marketable, control interest basis, as shown in Table 1.15.

TABLE 1.15 Income Approach—Capitalized Cash Flow Method

	Trailing 12 Months	Most Recent Fiscal Year	Three-Year Values
Invested Capital	\$19,548,552	\$15,796,176	\$16,797,823
Add: Excess Working Capital	\$ 1,781,159	\$ 1,781,159	\$ 1,781,159
Less: Interest-Bearing Debt	\$ —	\$ —	\$ —
Value on a Marketable, Control Interest Basis	<u>\$21,329,711</u>	<u>\$17,577,335</u>	<u>\$18,578,981</u>
Indicated Value of 100% of the Equity		<u>\$20,000,000</u>	

1.11.4.2 Discounted Cash Flow Method

EXERCISE 39 When is it more appropriate to use a discounted cash flow method instead of a capitalized cash flow method?

The discounted cash flow method is a multiple period valuation model that converts a future series of cash flow into value by reducing it to present worth at a rate of return (discount rate) that reflects the risk inherent therein. The “cash flow” might be pre-tax, after-tax, debt-free, free cash flow, or some other measure deemed appropriate and adjusted by the analyst. Future income or cash flow is determined through projections provided by the Company.

Management provided projections for the Company for the years ending December 31, 20X5, through 20X8. See Exhibit 1.11 for the discounted cash flow method. These projections reflect expected revenue growth and margin improvement associated with a recently executed manufacturing contract with a new customer. Capital expenditure investments made in 20X3 improved production capacity and efficiency such that the facilities can support such growth in production.

The discounted cash flow analysis relied on a WACC of 13 percent and perpetuity growth rate of 4.0 percent. Incremental and excess debt-free working capital were calculated based on a requirement of debt-free working capital as a percent of revenues of 40 percent. Management estimated their tax rate to be 33 percent.

See Exhibit 1.12 for the discounted cash flow method: calculation of incremental working capital.

Adjusted cash flow to invested capital was calculated for each year of the projections and for the terminal year based on subtracting the incremental debt-free working capital requirement and capital expenditures and adding back depreciation and amortization. We used a midyear convention to reflect the fact that earnings

EXHIBIT 1.11 Discounted Cash Flow Method

National Fastener & Machine Co.

Discounted Cash Flow Method (1)

Valuation Date: September 1, 20X5

Assumptions	
WACC (2)	13.0%
Perpetuity Growth Rate (3)	4.0%
DFWC as a % of Revenue (4)	40.0%
Capitalization Rate (5)	9.0%
Tax Rate (6)	33.0%

	FYE		Years Ended December 31,			Terminal Year
	20X4	20X5	20X6	20X7	20X8	
Net Revenues	\$ 37,135,207	\$ 40,106,024	\$ 44,116,626	\$ 47,645,956	\$ 50,028,254	\$ 52,029,384
<i>Growth Rate (Year Over Year)</i>		8.0%	10.0%	8.0%	5.0%	4.0%
Cost of Sales (excluding Depreciation)	28,845,702	28,836,231	31,719,854	34,257,442	35,970,314	37,409,127
Gross Profit	8,289,505	11,269,793	12,396,772	13,388,514	14,057,939	14,620,257
Operating Expenses	5,439,555	5,975,798	6,214,829	6,463,423	6,721,959	6,990,838
EBITDA, Adjusted	2,849,950	5,293,995	6,181,942	6,925,091	7,335,980	7,629,419
Less: Tax Depreciation	(460,410)	(460,410)	(1,570,118)	(1,871,816)	(2,114,139)	(1,821,028)
Earnings to Invested Capital Before Tax	1,567,022	1,567,022	4,611,824	5,053,275	5,221,841	5,808,391
(6) Estimated Income Tax	517,117	3.3	1,521,902	1,667,581	1,723,207	1,916,769
Adjusted Net Income to Invested Capital	1,049,905	6.8	3,089,922	3,385,694	3,498,633	3,891,622
(4) Less: Incremental Debt-Free Working Capital	(1,700,933)	(11.0)	(1,604,241)	(1,411,732)	(3.0)	(952,919)
(7) Plus: Depreciation and Amortization	460,410	3.0	1,570,118	1,871,816	3.9	2,114,139
(7) Less: Capital Expenditures	(245,571)	(1.6)	(1,544,082)	(1,667,608)	(3.5)	(1,821,028)
Cash Flow to Invested Capital	(436,189)	(2.8)	1,511,718	2,178,170	4.6	2,908,864
(8) Terminal Value						34,346,329
Cash Flow to Invested Capital	(436,189)		1,511,718	2,178,170		34,346,329
Period	0.17		0.83	1.83		2.83
Discount Factors	0.9798		0.9032	0.7993		0.7073
PV of Cash Flows to Invested Capital	(427,394)		1,365,333	1,740,930		24,293,574
Present Value Through 20X8						
Terminal Value		4,736,344				
Present Value of Invested Capital		24,293,574				
(9) Plus: Excess DFNWC		29,029,917				
(10) Plus: PV of Depr. / Amort. Overhang		1,781,159				
Indicated Value of Invested Capital		630,532				
Less: Interest-Bearing Debt		31,441,608				
Indicated Value of 100% of the Equity		-				
SAY		31,441,608				
		<u>31,400,000</u>				

(Continued)

Notes:

- (1) Projections provided by management.
- (2) See Exhibit 1.18 for calculation of the weighted average cost of capital.
- (3) The long-term growth rate reflects industry growth expectations and projected long-term inflation.
- (4) Debt-free working capital requirements based on an analysis of historical requirements and an analysis of the industry. See Exhibit 1.9 for normalized DFNWC requirements; Exhibit 1.12 for calculation of incremental DFNWC in discounted cash flow analysis.
- (5) The capitalization rate equals the discount rate less the long-term growth rate.
- (6) Based on projected combined state and federal tax rate per management.
- (7) Depreciation expense and capital expenditures are per client projections. See Exhibit 1.7 for detail. Depreciation and capital expenditures are expected to be equal in the terminal year.
- (8) To compute the terminal value, the terminal year cash flow is divided by the capitalization rate.
- (9) See Exhibit 1.12 for calculation of excess DFNWC.
- (10) Terminal year assumption is that depreciation will equal to capital expenditures for simplification of calculation. Projected depreciation is expected to exceed capital expenditures for several years beyond the projection period. See Exhibit 1.13.

EXHIBIT 1.12 Discounted Cash Flow Method: Calculation of Incremental Working Capital

National Fastener & Machine Co.
Discounted Cash Flow Method
Calculation of Incremental Working Capital
Valuation Date: September 1, 20X5

	12 Months Ended 8/31/20X5	Budget 20X5	Years Ended December 31,			Terminal Year
			20X6	20X7	20X8	
Revenues	\$35,853,691	\$40,106,024	\$44,116,626	\$47,645,956	\$50,028,254	\$52,029,384
<i>Growth</i>		12%	10%	8%	5%	4%
Normal DFNWC as % of Net Revenues	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Normal DFNWC	14,341,476	16,042,409	17,646,650	19,058,382	20,011,302	20,811,754
Incremental DFNWC		1,700,933	1,604,241	1,411,732	952,919	800,452
The Company's Actual DFNWC at the Valuation Date	16,122,635					
Less Normal DFNWC at the Valuation Date	14,341,476					
Excess (Deficient) DFNWC at the Valuation Date	1,781,159					

and cash flow come in throughout the year. In the terminal year, depreciation and amortization were set equal to capital expenditures. Based on management's projected tax depreciation, tax depreciation will actually exceed capital expenditures for several years beyond the discrete projection period. The excess depreciation expense above the terminal year normalized expense will result in tax savings for a few years beyond the discrete projection period. See Exhibit 1.13 for the calculation of the depreciation overhang.

EXHIBIT 1.13 Discounted Cash Flow Method: Calculation of Depreciation Overhang

National Fastener & Machine Co.
Discounted Cash Flow Method
Calculation of Depreciation Overhang
Valuation Date: September 1, 20X5

	Years Ended December 31,					
	20X9	20X0	20X1	20X2	20X3	20X4
Depreciation, Tax	\$2,313,793	\$2,506,005	\$2,694,596	\$2,832,887	\$2,916,528	\$2,997,555
Capital Expenditure	1,821,028	1,893,870	1,969,624	2,048,409	2,130,346	2,215,560
Depreciation in Excess of Capex	492,764	612,135	724,972	784,478	786,183	781,996
Tax Benefit	162,612	202,005	239,241	258,878	259,440	258,059
PV Period	3.83	4.83	5.83	6.83	7.83	8.83
PV Factor	0.6259	0.5539	0.4902	0.4338	0.3839	0.3397
Present Value of Tax Benefit	101,786	111,896	117,276	112,303	99,599	87,672
Sum of PV of Depreciation Overhang	630,532					

EXERCISE 40 In the terminal year of a discounted cash flow analysis, analysts often use the simplifying assumption that depreciation equals capital expenditures.

- a. True
- b. False

The value of the depreciation "overhang" was captured by calculating the present value of the tax benefit for the years beyond the discrete projection, as illustrated in Exhibit 1.13. The calculation relies on the same WACC as used in the discounted cash flow analysis. Based on the calculation, the present value of the depreciation overhang—the tax benefit from estimated tax depreciation above capital expenditures—is \$630,532, which is added back to the operating value of the Company in the discounted cash flow analysis.

As discussed in the capitalized cash flow method, the excess debt-free working capital of \$1,781,159 was added to the operating value of the Company.

The concluded value of the Company based on the discounted cash flow method is \$31,400,000. See Table 1.16 for a summary conclusion of value under the discounted cash flow method.

TABLE 1.16 Income Approach—Discounted Cash Flow Method

	<u>Calculated Value</u>
Invested Capital	\$29,029,917
Add: Excess Working Capital	\$ 1,781,159
Add: Present Value Depreciation Overhang	\$ 630,532
Less: Interest-Bearing Debt	\$ —
Value on a Marketable, Control Interest Basis	<u>\$31,441,608</u>
Indicated Value of 100% of the Equity (Rounded)	<u>\$31,400,000</u>

1.11.4.3 Determination of Weighted Average Cost of Capital A number of steps are involved in calculating the weighted average cost of capital (WACC). These steps involve calculating the cost of equity, the cost of debt, and the determination of an optimal capital structure for the Company using industry averages. The WACC formula is:

$$\text{WACC} = (k_e \times W_e) + (k_p \times W_p) + (k_{d/(pt)}[1 - t] \times W_d)$$

Where:

WACC = Weighted average cost of capital

k_e = Cost of common equity capital

W_e = Percentage of common equity in the capital structure, at market value

k_p = Cost of preferred equity

W_p = Percentage of preferred equity in the capital structure, at market value

$k_{d/(pt)}$ = Cost of debt (pre-tax)

t = Tax rate

W_d = Percentage of debt in the capital structure, at market value

EXERCISE 41 When using the direct equity basis instead of the invested capital basis, assumptions of capital structure can be avoided.

- a. True
- b. False

EXERCISE 42 When using the invested capital basis to determine a control value, the analyst should always use an optimal capital structure in the weighted average cost of capital.

- a. True
- b. False

1.11.4.3.1 Cost of Equity We used two widely accepted methods to estimate the cost of equity applicable to National Fastener: the modified capital asset pricing model (modified CAPM or MCAPM) and the build-up model.

The modified CAPM can be summarized as follows:

$$E(R_i) = R_f + \beta \times (RP_m) + RP_s \pm RP_c$$

Where:

- $E(R_i)$ = Expected rate of return on the security i
- R_f = Rate of return available on a risk-free security as of the valuation date
- β = Beta
- RP_m = Equity risk premium (market risk)
- RP_s = Risk premium for small size
- RP_c = Risk premium attributable to other company risk factors (company-specific risk)

We also applied an alternative method of calculating the cost of equity, called the build-up method. The build-up method can be summarized as follows:

$$E(R_i) = R_f + RP_m + RP_s \pm RP_i \pm RP_c$$

Where:

- $E(R_i)$ = Expected rate of return on security i
- R_f = Rate of return available on a risk-free security as of the valuation date
- RP_m = Equity risk premium (market risk)
- RP_s = Risk premium for small size
- RP_i = Industry risk premium
- RP_c = Risk premium attributable to other company risk factors (company-specific risk)

See Exhibit 1.14 for the calculation of the cost of equity.

EXERCISE 43 Name the two methods most often used to derive a cost of equity in the income approach.

1. _____
2. _____

EXERCISE 44 Should the build-up method and MCAPM rates of return be applied to income or cash flow?

EXHIBIT 1.14 Cost of Equity

National Fastener & Machine Co.

Cost of Equity

Valuation Date: September 1, 20X5

Build-Up Method, Cost of Equity: $K_e = R_f + RP_m + RP_s + RP_i + RP_c$

	<u>Historical</u>	<u>Supply Side</u>
(1) Risk-Free Rate (R_f)	2.62%	2.62%
(2) Equity Risk Premium (RP_m)	7.00%	6.21%
(3) Size Premium (RP_s)	5.78%	5.78%
(4) Industry Risk Premium (RP_i)	0.00%	0.00%
(5) Company-Specific Risk Premium (RP_c)	<u>2.00%</u>	<u>2.00%</u>
$k_e =$	17.40%	16.61%

MCAPM Method, Cost of Equity: $K_e = R_f + (\beta \times RP_m) + RP_s + RP_c$

	<u>Historical</u>	<u>Supply Side</u>
(1) Risk-Free Rate (R_f)	2.62%	2.62%
(6) Beta (β)	0.71	0.71
(2) Equity Risk Premium (RP_m)	7.00%	6.21%
(3) Size Premium (RP_s)	5.78%	5.78%
(5) Company-Specific Risk Premium (RP_c)	<u>2.00%</u>	<u>2.00%</u>
$k_e =$	15.39%	14.83%

Build-Up Method, Based on Duff & Phelps Data, Size-Specific Equity Risk Premium

(1) Risk-Free Rate (R_f)	2.62%
Equity Risk Premium (RP_m)	N/A
(7) Size-Specific Equity Risk Premium ($RP_m + RP_s$)	13.10%
(4) Industry Risk Premium (RP_i)	0.00%
(5) Company-Specific Risk Premium (RP_c)	<u>2.00%</u>
$k_e =$	17.72%

MCAPM Method, Based on Duff & Phelps Data

(1) Risk-Free Rate (R_f)	2.62%
(6) Beta (β)	0.71
(8) Equity Risk Premium (RP_m)	5.05%
(9) Size Premium over CAPM	6.10%
(5) Company-Specific Risk Premium (RP_c)	<u>2.00%</u>
$k_e =$	14.32%

Build-Up Method, Based on Duff & Phelps Data, Based on Risk Characteristics

(1) Risk-Free Rate (R_f)	2.62%
(10) Risk-Specific Equity Risk Premium	11.00%
(4) Industry Risk Premium (RP_i)	0.00%
(5) Company-Specific Risk Premium (RP_c)	<u>2.00%</u>
$k_e =$	15.62%
	Range of $k_e =$ 14.32% to 17.72%
Concluded Cost of Equity =	16.00%

Notes

(1) 20-Year Treasury Bond as of September 1, 20X5.

(2) Duff & Phelps LLC 20X5 *Valuation Handbook—Guide to Cost of Capital*.(3) Duff & Phelps LLC 20X5 *Valuation Handbook—Guide to Cost of Capital*. Size premium for the 10th Decile (market cap. between \$3.037 and \$300.725 million).(4) Considered data from Duff & Phelps LLC 20X5 *Valuation Handbook—Guide to Cost of Capital*, but did not rely on the data because these broad SIC categories are not representative of the risk of the subject company.

EXHIBIT 1.14 (continued)

SIC Code	Companies	Industry Risk Premium for	
		Historical ERP (7.00%)	Supply Side ERP (6.21%)
SIC 34 (Fabricated Metal Products, Except Machinery, and Transportation Equipment)	81	3.18%	2.83%
SIC 371 (Motor Vehicles and Motor Vehicle Equipment)	61	3.62%	3.21%
SIC 3711 (Motor Vehicles and Passenger Car Bodies)	10	1.34%	1.19%
SIC 3714 (Motor Vehicle Parts and Accessories)	47	4.59%	4.07%

(5) Based on analysis of company and industry and on the financial and economic environment as of the valuation date.

(6) See Exhibit 1.17 for calculation of beta.

(7) Size-specific equity risk premiums are based on comparison of the Company to risk premium groups presented in Appendix 4 of the Duff and Phelps *20X5 Valuation Handbook—Guide to Cost of Capital* (Smoothed Average Equity Risk Premium) Exhibit A.

(8) Market Premium, Duff and Phelps *20X5 Valuation Handbook—Guide to Cost of Capital*.

(9) Size-specific equity risk premiums are based on comparison of the Company to risk premium groups presented in Appendix 4 of the Duff and Phelps *20X5 Valuation Handbook—Guide to Cost of Capital* (Smoothed Average Premium over CAPM) Exhibit B.

(10) Risk-specific equity risk premiums are based on comparison of the Company to risk premium groups presented in Appendix 4 of the Duff and Phelps *20X5 Valuation Handbook—Guide to Cost of Capital* (Smoothed Average Equity Risk Premium) Exhibit D.

The first step was to begin with the risk-free rate of return, represented by the yield on long-term (20-year) constant maturity U.S. Treasury coupon bonds of 2.62 percent, as reported in the Federal Reserve Bulletin at the date of valuation.

EXERCISE 45 Why are long-term 20-year U.S. Treasury coupon bonds most often used for the risk-free rate of return in both the build-up method and the MCAPM?

The second and third steps are to add the common stock equity risk premium and the size risk premium, both calculated using the Duff & Phelps LLC *20X5 Valuation Handbook—Guide to Cost of Capital*. According to the *D&P Valuation Handbook*, the unconditional equity risk premium based on analysis of the historical period from 1926 to 20X4 was 7.00 percent and the unconditional equity risk premium based on the long-term supply-side market equity premium was 6.21 percent. These data are referred to as the CRSP equity risk premiums.

In the case of National Fastener, we applied the size-premium return in excess of CAPM of companies in the 10th decile (i.e., in the smallest decile) from Duff & Phelps. The source of these data was the Center for Research in Security Prices (CRSP) at the University of Chicago. This includes companies with less than approximately \$300.7 million in market value of equity. We relied on the data reported in the *20X5 Valuation Handbook—Guide to Cost of Capital*. The indicated size premium (RP_s) was 5.78 percent.

In the *Valuation Handbook*, Duff & Phelps publishes Risk Premium Reports that provide two different types of premia: combined market and size risk premia (“risk premium over the risk-free rate”) and beta-adjusted size premia (“risk premia over CAPM”). The data allow for comparative analysis between the subject company and the market data to capture the impact of size differences on risk based on provided measures of size. The Risk Premium Report, which relies on data from 1963 (as opposed to the CRSP data that go back to 1926), excludes speculative startups, distressed companies, high-financial-risk companies, and financial services companies. The Risk Premium Report presents eight measures of size in 25 different size portfolios, with Portfolio 1 including the largest companies and Portfolio 25 including the smallest companies. The size characteristics include market value of invested capital, book and market value of equity, historical earnings, and number of employees.

We compared the parameters of the Company to the criteria presented in the *Valuation Handbook* Risk Premium Reports to identify in which portfolio the Company would fall. The assumption of category for the factors of Market Value of Equity and Market Value of Invested Capital is based preliminarily on an estimate of the likely category and refined based on an iterative process. Based on this analysis, we concluded to the combined market and size premium of 13.10 percent and the smoothed premium over CAPM of 6.10 percent. The historical market risk premium for use with the smoothed premium over CAPM in the *20X5 Valuation Handbook*’s Risk Premium Report exhibits based on data from 1963 to 20X4 was 5.05 percent. See Exhibit 1.15 for comparison of the subject company to the portfolios in the Risk Premium Report.

We also compared the parameters of the Company to the combined market and size premiums, reflecting risk of the Company based on sales, operating income, and operating margin. The combined risk premium was 11.00 percent based on data in the *Valuation Handbook*. See Exhibit 1.16.

EXERCISE 46 What benchmark is the Duff & Phelps common stock equity risk premium return most often based on?

- a. S&P 500
- b. New York Stock Exchange
- c. Dow Jones Industrial Average
- d. Russell 5000

EXHIBIT 1.15 Comparison to the Historical Equity Risk Premiums by Characteristic

National Fastener & Machine Co.

Comparison to Historical Equity Risk Premiums by Characteristic

Based on the Duff & Phelps LLC 20X5 *Valuation Handbook—Guide to Cost of Capital*

Valuation Date: September 1, 20X5

Characteristic	Subject Co.	Implied Category	Valuation Handbook	
			Exhibits A Smoothed Ave. Premium over the Risk-Free Rate (RP_{m+s})	Exhibits B Smoothed Premium over CAPM (RP_s)
(1) Market Value of Equity	\$30,100,000	25	13.92%	7.03%
(2) Book Value of Equity	\$26,185,016	25	12.49%	5.57%
(3) 3-Year Ave. Net Income	\$2,009,949	25	13.53%	6.49%
(4) Market Value of Invested Capital	\$30,100,000	25	13.81%	6.76%
(2) Total Assets	\$29,880,047	25	13.02%	6.01%
(3) 3-Year Ave. EBITDA	\$4,083,138	25	13.24%	6.23%
(5) Sales	\$35,853,691	25	12.40%	5.74%
(6) Number of Employees	236	25	12.40%	6.05%
		Min	12.40%	5.57%
		Max	13.92%	7.03%
		Mean	13.10%	6.24%
		Median	13.13%	6.14%
		Selected	13.10%	6.10%

Notes:

(1) See Exhibit 1.25. Implied category assumption is based on reiterative process.

(2) As of September 1, 20X5.

(3) Three-Year Average, 20X2 to 20X4.

(4) Market Value of the Equity plus Interest-Bearing Debt as of September 1, 20X5. Implied category assumption is based on reiterative process.

(5) Twelve months ended September 1, 20X5.

(6) As of December 31, 20X4, per management.

EXERCISE 47 In applying a Duff & Phelps CRSP size risk premium, what are some of the choices available to analysts?

- a. 10th-decile annual beta
- b. 10th-decile monthly OLS beta
- c. 10th-decile monthly sum beta
- d. 10A monthly OLS beta
- e. 10B monthly OLS beta
- f. Micro-cap annual beta
- g. Micro-cap monthly OLS beta
- h. Micro-cap sum beta
- i. 10W monthly OLS beta
- j. 10X monthly OLS beta
- k. 10Y monthly OLS beta
- l. 10Z monthly OLS beta
- m. All of the above

EXHIBIT 1.16 Comparison to Historical Equity Risk Premiums Ranked by Risk Measures

National Fastener & Machine Co.

Comparison to Historical Equity Risk Premiums Ranked by Risk Measures

Based on the Duff & Phelps LLC 20X5 *Valuation Handbook—Guide to Cost of Capital*

Valuation Date: September 1, 20X5

Coefficient of Variation of Operating Margin

	20X4	20X3	20X2	20X1	20X0
(1) Net Sales	37,135,207	37,117,830	34,223,772	30,915,122	28,520,510
(1) Operating Income	2,849,950	3,465,194	2,464,642	1,616,073	832,097
Operating Margin	7.7%	9.3%	7.2%	5.2%	2.9%
Standard Deviation of Operating Margin	2.5%				
Average Operating Margin	6.5%				
Coefficient of Variation	38.1%				

Coefficient of Variation of Return on Book Value of Equity

	20X4	20X3	20X2	20X1	20X0
(1) Book Value	25,740,923	24,871,102	23,000,736	22,124,513	21,362,364
(1) Adjusted Net Income	1,938,288	2,398,487	1,693,073	1,113,946	594,096
Return on Book Equity	7.5%	9.6%	7.4%	5.0%	2.8%
Standard Deviation of ROE	2.6%				
Average ROE	6.5%				
Coefficient of Variation	40.6%				

Characteristic	Subject Co.	Valuation Handbook Exhibit D	
		Implied Category	Smoothed Ave. Premium
Operating Margin	6.5%	20	11.67%
CV of Operating Margin	38.1%	6	11.29%
CV of Return on Book Equity	40.6%	13	9.81%
		Mean	10.92%
		Median	11.29%
		Selected	11.00%

Note:

(1) See Exhibits 1.3 and 1.4.

EXERCISE 48 Which of these rates of return are derived using Duff & Phelps data?

- Minority rates of return
- Control rates of return
- Majority rates of return
- Neutral

Beta is a measure of the systematic risk of a particular investment relative to the market for all investment assets. Betas for each of the guideline companies were

obtained from a third-party licensed database. Based on these data (see Exhibit 1.17), we concluded to an unlevered beta of 0.61. The identified unlevered beta was then levered at the estimated long-term capital structure of National Fastener. Management is in the process of obtaining financing for the Company's operations at an estimated level of 20 percent of the invested capital of the business. This level of financing is within the range of the debt to invested capital of the guideline companies and just slightly above the median level of debt. It is also reasonable considering analysis of industry levels of debt financing.

EXHIBIT 1.17 Industry Beta Analysis

National Fastener & Machine Co.

Industry Beta Analysis

Valuation Date: September 1, 20X5

Ticker	Guideline Companies	Levered Beta (1)	Interest-Bearing Debt		Market Value of Equity		Total Invested Capital (\$000s)	Tax Rate	Unlevered Beta
			(\$000s)	%	(\$000s)	%			
EML	The Eastern Co.	0.39	3,571	3.4%	101,295	96.6%	104,866	32.0%	0.38
PFIN	P & F Industries, Inc.	0.27	21,660	38.4%	34,703	61.6%	56,363	38.0%	0.19
STS	Supreme Industries, Inc.	0.64	8,667	6.5%	125,046	93.5%	133,713	31.8%	0.61
SCX	The L.S. Starrett Co.	1.21	20,104	17.4%	95,705	82.6%	115,809	38.0%	1.07
TWIN	Twin Disc, Inc.	nmf	13,802	8.3%	153,092	91.7%	166,894	28.4%	nmf
VC	Visteon Corp.	1.73	18,900	8.6%	200,164	91.4%	219,064	35.8%	1.63
			Median	8.4%		91.6%			0.61
			Mean	13.8%		86.2%			0.78
								Selected Beta:	0.61
								Estimated Company Levered Beta:	<u>0.71</u>

Assumptions:

(2) Estimated Company Capital Structure

% of Debt to Invested Capital 20.0%

% of Equity to Invested Capital 80.0%

(3) Estimated Effective Tax Rate 33.0%

Subject Company Levered Beta = Unlevered Beta × [1 + [(Debt/Equity) × (1 – Tax Rate)]]

Notes

(1) As reported in third-party licensed database.

(2) Based on analysis of the industry and discussions with management regarding plans to finance the operations.

(3) Based on projected combined state and federal tax rate per management.

Based on an assumption of 20 percent debt and 80 percent equity as a percent of invested capital, the calculated levered beta was 0.71.

EXERCISE 49 When using the modified capital asset pricing model (MCAPM) to derive an equity cost of capital for a control interest, it is sometimes necessary to adjust beta for differences between the capital structure of the public companies and the capital structure of the subject company being valued. This is not necessary if the capital structure is assumed to be the same. Given

the following information, calculate the unlevered and levered beta using the Hamada formula.

- a. Average beta of guideline public companies = 1.4

Tax rate = 40%

Market value capital structure = 35% debt, 65% equity

The formula for unlevered beta is:

$$B_u = B_l / (1 + (1 - t) (W_d / W_e))$$

Where:

B_u = Beta unlevered

B_l = Beta levered

t = Tax rate for the company

W_d = Percentage of debt in the capital structure (at market value)

W_e = Percentage of equity in the capital structure (at market value)

- b. Assuming that National Fastener has a capital structure of 25 percent debt and 75 percent equity, what would be the beta?

The formula to relever the beta is:

$$B_l = B_u (1 + (1 - t) (W_d / W_e))$$

For National Fastener, we considered industry risk premium for SIC codes 34, Fabricated Metal Products, Except Machinery and Transportation Equipment; 371, Motor Vehicles and Motor Vehicle Equipment; 3711, Motor Vehicles and Passenger Car Bodies; and 3714, Motor Vehicle Parts and Accessories. We did not rely on the data because these broad SIC categories are not representative of the risk of the subject company. While we did not rely on the industry risk premium in the BUM, we did not change the RP_c for the model but relied on the same RP_c as used in the other cost of capital models. Furthermore, industry risk premium is not appropriate for use in the Duff & Phelps Risk Premium Report's combined market and size risk premia data and the risk premium based on sales, operating income, and operating margin.

The final step is to add a company-specific premium that takes into account additional risks specific to the Company. These additional risks include:

- *Company's depth of management.* The Company relies on key executive leadership without a formal succession plan.
- *The growth potential in the Company's market.* The Company is projected to grow in the next few years through the acquisition of a new customer.
- *The stability of the Company's earnings and gross profits.* The Company has a consistent history of generating profits.
- *The financial structure of the Company.* The Company is financially sound.
- *The geographic location of the Company.* The Company is located in Anycity, Anystate. (See earlier discussion on the local economy.)

- *The Company's order backlogs.* The Company has a sufficient amount of contract backlogs.
- *The diversification of the Company's customer base.* The majority of the Company's revenue is generated from only a few customers. The Company could be negatively impacted should any of these customers be lost.

After considering the financial ratio analysis and these risk factors, plus the size of the Company as compared to the Duff & Phelps companies, it is our opinion that a company-specific premium of 2 percent is appropriate for the Company.

EXERCISE 50 A list of risk factors was previously presented for National Fastener to calculate the specific risk premium. Discuss the different methods for determining what the actual company-specific risk premium should be.

EXERCISE 51 Company specific risk premiums can be determined from Duff & Phelps data.

- a. True
- b. False

EXERCISE 52 Assume that the Duff & Phelps historical CRSP equity risk premium is 7 percent and the 10th-decile size premium is 5.78 percent. Assume that the relevered beta of the guideline companies is 0.71 under MCAPM and that the industry risk premium is not relied upon in the BUM. Calculate the cost of equity for National Fastener under the MCAPM and BUM methods.

EXERCISE 53 Assume that the Duff & Phelps supply side CRSP equity risk premium is 6.21 percent and the 10th-decile size premium is 5.78 percent. Assume that the relevered beta of the guideline companies is 0.71 under MCAPM and that the industry risk premium is not relied upon in the BUM. Calculate the cost of equity for National Fastener under the MCAPM and BUM methods.

EXERCISE 54 Assume that the Duff & Phelps historical market risk premium for use with the smoothed premium over CAPM is 5.05 percent and the 25th-size category premium is 6.10 percent. Calculate the cost of equity for National Fastener.

EXERCISE 55 Assume that the Duff & Phelps combined equity risk premium and size premium for the 25th-size category is 13.10 percent. Calculate the cost of equity for National Fastener.

EXERCISE 56 In addition to equity risk premium based on eight alternative measures of size, Duff & Phelps presents risk premium data based on three measures of risk that are not based initially on size. Name those three measures of risk.

1. _____
2. _____
3. _____

EXERCISE 57 Assume that the analysis using the three alternative measures of risk from Duff & Phelps results in a cost of equity of 15.62 percent. What is the range of the seven costs of equity for National Fastener and what is the conclusion for the cost of equity? Explain your reasons and support.

Range of costs of equity: _____% to _____%

Concluded cost of equity _____%

Supporting reasons:

Given the range of costs of equity, we selected 16 percent (rounded) for National Fastener.

1.11.4.3.2 Cost of Debt Next, we determined the cost of debt. The Company has not historically relied on debt financing but intends to do so in the future. Based on the financial strength of the Company and discussions with management regarding expected lending rates, the Company's cost of debt was assumed to be 4.15 percent based on the Moody's Aaa rate as of September 1, 20X5. From this rate, which is called the debt rate, a 33 percent tax rate is deducted. The result is the after-tax cost of debt of 2.78 percent.

EXERCISE 58 Which of these factors causes the cost of debt to be tax-affected?

- Debt principal is tax deductible.
- Interest expense is tax deductible.
- It should not be tax-affected since equity is not tax-affected.
- Debt and interest are tax deductible.

1.11.4.3.3 Weighted Average Cost of Capital Finally, we determined the WACC using the debt and equity rates that were already calculated. The equity discount rate is multiplied by an equity percentage, and the debt discount rate is multiplied by a debt percentage as determined based on average capital structure for a company in this industry. Based on analysis of National Fastener's financial statements, the guideline companies, and statements by National Fastener's management that they would be adding financing (already bank approved) in the future, a normalized capital structure of 20.0 percent debt and 80.0 percent equity was assumed for National Fastener as of September 1, 20X5. The percentages were then multiplied by the equity and after-tax debt discount rates calculated earlier (16 percent and 2.78 percent) and then summed to arrive at the WACC discount rate. This rate was calculated to be 13 percent. See Exhibit 1.18.

EXHIBIT 1.18 Weighted Average Cost of Capital

National Fastener & Machine Co.
Weighted Average Cost of Capital
Valuation Date: September 1, 20X5

(1) Cost of Equity $k_e = 16.00\%$

After-Tax Cost of Debt: $k_d = K_b(1 - t)$

(2) Borrowing Rate (K_b) 4.15%

(3) Estimated Tax Rate (t) 33.0%

Cost of Debt $k_d = 2.78\%$

Weighted Average Cost of Capital (WACC)

	Capital Structure	Cost	Weighted Cost
(4) Debt	20.0%	2.78%	0.56%
(4) Common Equity	80.0%	16.00%	12.80%
		WACC =	13.36%
		Rounded =	<u>13.00%</u>

Notes:

(1) See Exhibit 1.14.

(2) Based on Moody's Aaa rate as of September 1, 20X5.

(3) Based on projected combined state and federal tax rate per management.

(4) Based on analysis of the industry and discussions with management regarding plans to finance the operations.

EXERCISE 59 Using the information in the text, calculate the weighted average cost of capital for National Fastener.

EXERCISE 60 Which methods can be used to determine the weights in the weighted average cost of capital?

- a. Iterative process
- b. Guideline public companies
- c. Aggregated public industry data
- d. Risk Management Associates
- e. Book values
- f. Anticipated capital structure

EXERCISE 61 Explain the iterative process for determining the weights in the weighted average cost of capital.

EXERCISE 62 Changing the amount of debt in the capital structure of the company has no effect on the return on equity.

- a. True
- b. False

EXERCISE 63 When valuing a controlling interest in a company, should you use the optimal capital structure based on public data or the capital structure anticipated to be employed by the owner of the company?

From this amount, a 4 percent growth factor is deducted to arrive at a net cash flow capitalization rate for the next year. The 4 percent growth factor is a long-term growth component reflecting inflationary and other growth used to adjust the capitalization rate. It was also based on management's projection of growth.

Under the capitalization of cash flow method, the indicated amount of cash flow, estimated three different ways (trailing 12 months, most recent fiscal year, and straight historical average of normalized earnings for past three years), was grown by the anticipated long-term average growth rate of 4 percent; then capitalized at the capitalization rate, here 9 percent. The same methodology was used to capitalize cash flow in the terminal year of the discounted cash flow method.

EXERCISE 64 Calculate the capitalization rate from the information in the text and calculate the value based on the trailing 12 months cash flow.

EXERCISE 65 Items used to support growth rates in the capitalized cash flow method of the income approach include:

- a. Inflation
- b. Nominal gross domestic product
- c. Industry growth rate
- d. Actual historical company growth rate
- e. All of the above

1.11.5 Market Approach

1.11.5.1 Guideline Public Company Method A market approach using guideline public companies requires estimates of a multiple derived from publicly traded guideline companies and ongoing earnings (or a variation thereof, such as EBITDA) for the subject entity.

1.11.5.1.1 Search for Guideline Public Companies Guideline public companies can provide a reasonable basis for comparison to the relevant investment characteristics of the company being valued. They are most often publicly traded companies in the same or similar business as the valuation subject. Guideline companies are used as a basis to develop valuation conclusions with respect to a subject company under the presumption that a similar market may exist for the subject company as exists for the guideline companies.

Ideal guideline companies are in the same or similar business as the company being valued. However, if there is insufficient evidence in the same or similar business, an option may be to consider companies with an underlying similarity of relevant investment characteristics such as markets, products, growth, cyclical variability, and

other salient factors. [Note: The selection of businesses in a completely different area may be difficult to support.]

We performed an independent search for guideline companies using a database of public companies. Some of the criteria were as follows:

- Companies listed under SIC codes 3451 (Screw Machine Products), 3452 (Bolts, Nuts, Screws, Rivets, and Washers), and 3714 (Motor Vehicle Parts and Accessories)
- A general search for “fastener” in company descriptions
- Confirmation that adequate financial data were available for the company
- Confirmation that the company’s stock was actively traded on an exchange or in the over-the-counter market with price data available on a daily basis

We also considered a list of competitors and other companies provided by management. After discussing the prospective guideline companies with management, we concluded that six guideline public companies were similar enough to include in our analysis. These companies are discussed briefly below.²⁵

The Eastern Co. (NASDAQ: EML)—Designs, manufactures, and markets industrial and vehicular hardware throughout North America; manufactures electronic and mechanical locking devices, both keyed and keyless, for the computer, electronics, vending, and gaming industries; produces expansion shells for use in supporting the roofs of underground mines; and manufactures specialty malleable and ductile iron castings. Eastern’s TTM revenues as of July 4, 20X5, were \$144.1 million.

P&F Industries, Inc. (NASDAQ: PFIN)—Imports, manufactures, and sells pneumatic hand tools primarily to the retail, industrial, and automotive markets. P&F also manufactures and distributes its own line of industrial pneumatic tools and parts to refineries, chemical plants, power generation facilities, heavy construction enterprises, and oil and mining companies. In addition, P&F is a developer, importer, and manufacturer of hardware for fencing, patio products, and door and window accessories. Its TTM revenues as of August 31, 20X5, were \$83.2 million.

Supreme Industries, Inc. (NYSE: STS)—Manufactures specialized commercial vehicles, including truck bodies, trolleys, and specialty vehicles that are attached to a truck chassis. Some examples of specialized commercial vehicles are dump bodies, utility bodies, and garbage packers. As of June 27, 20X5, Supreme’s TTM revenues were \$257.3 million.

The L.S. Starrett Co. (NYSE: SCX)—Manufactures various measuring and cutting products throughout the world, including North America, the United Kingdom, Brazil, and China. Some of its products include precision tools, electronic gauges, optical vision and laser measuring equipment, custom engineered granite solutions, tape measures, levels, and band saw blades. TTM revenues as of August 31, 20X5, were \$241.6 million.

Twin Disc, Inc. (NASDAQ: TWIN)—Designs, manufactures, and sells marine and heavy-duty off-highway power transmission equipment. Products offered include marine transmissions, surface drivers, propellers, and boat management systems as well as power-shift transmissions, hydraulic torque converters, power take-offs, industrial clutches, and controls systems. Its TTM revenues as of August 31, 20X5, were \$265.8 million.

²⁵Descriptions of the guideline companies are largely drawn from SEC filings. Language has, in places, been extracted wholly or largely verbatim and/or substantially paraphrased.

Visteon Corp. (NYSE: VC)—Designs, engineers, and manufactures products for a wide range of original equipment vehicle manufacturers, including BMW, Ford, General Motors, Hyundai, Renault, and Toyota. Visteon's products include vehicle cockpit electronics, such as infotainment systems, audio systems, climate controls, and electronic control modules, and thermal energy management products, which include climate air handling modules, powertrain cooling modules, and engine induction systems. Its TTM revenues as of August 31, 20X5, were \$406.7 million.

EXERCISE 66 Size is often a consideration in selecting guideline public companies. The general criterion for using size as a selection parameter is:

- a. Two times
- b. Five times
- c. Ten times
- d. None of the above

EXERCISE 67 In the valuation of National Fastener, only one company, P&F Industries, Inc., was comparable in size, but all the guideline companies operate in the same industry and were not considered too big to provide growth, margin, and multiple data for National Fastener. Given that fact, which option would probably result in the best presentation of the GPCM in the valuation of National Fastener?

- a. Only use P&F Industries.
- b. Use all guideline public companies.
- c. Reject the guideline public company method.
- d. Use the guideline public company method but only as a reasonableness test for the other approaches.

EXERCISE 68 Guideline public company methods are not applicable to smaller businesses such as National Fastener.

- a. True
- b. False

EXERCISE 69 Which initial selection criteria are generally used by analysts in choosing guideline public companies?

- a. Size
- b. Return on equity
- c. Profit margin
- d. Industry similarity
- e. Similar products and services
- f. Growth rates
- g. Investors' similarities

We have chosen to use four multiples to value the Company: price to earnings and MVIC to earnings before interest, taxes, depreciation and amortization (EBITDA), to earnings before interest and taxes (EBIT), and to revenues. We also believe that the earnings, EBITDA, EBIT, and revenue multiples are appropriate because the Company has a strong income statement and is profitable. We have calculated trailing 12 months, most recent fiscal year, and three-year multiples because of the cyclical nature of the industry. Adjustments have been made to the financial statements of the guideline companies to reflect nonrecurring items. A summary of guideline company multiples is presented in Exhibit 1.19. A comparative financial analysis of guideline companies is presented in Exhibit 1.20. A summary of historical financial data, margins, and ratios for each of the guideline companies is presented in Exhibits 1.21 a through f.

EXHIBIT 1.19 Guideline Public Company Method: Ranking of Market Multiples

National Fastener & Machine Co.
Guideline Public Company Method
Ranking of Market Multiples

	Most Recent 12 Months			
	Price to Earnings	Invested Capital to		
		Net Revenues	EBIT	EBITDA
The Eastern Co.	17.1	0.73	11.72	8.28
P & F Industries, Inc.	10.4	0.68	9.21	6.17
Supreme Industries, Inc.	12.2	0.52	8.54	6.94
The L.S. Starrett Co.	15.5	0.48	10.88	5.98
Twin Disc, Inc.	11.0	0.63	8.34	5.53
Visteon Corp.	10.1	0.54	6.74	4.78
Mean	12.7	0.60	9.24	6.28
Median	11.6	0.58	8.88	6.08
Coefficient of Variation	22.7%	16.4%	19.6%	19.3%
	Most Recent Fiscal Year			
	Price to Earnings	Invested Capital to		
		Net Revenues	EBIT	EBITDA
The Eastern Co.	13.1	0.74	8.82	6.82
P & F Industries, Inc.	15.1	0.75	13.29	8.53
Supreme Industries, Inc.	14.6	0.57	10.16	7.91
The L.S. Starrett Co.	15.5	0.48	10.88	5.98
Twin Disc, Inc.	11.0	0.63	8.34	5.53
Visteon Corp.	10.0	0.58	6.44	4.61
Mean	13.2	0.63	9.66	6.56
Median	13.8	0.61	9.49	6.40
Coefficient of Variation	17.1%	17.0%	24.4%	22.6%
	Three-Year Averages			
	Price to Earnings	Invested Capital to		
		Net Revenues	EBIT	EBITDA
The Eastern Co.	12.9	0.71	8.67	6.83
P & F Industries, Inc.	13.7	0.80	12.83	8.56
Supreme Industries, Inc.	13.8	0.56	9.22	7.39
The L.S. Starrett Co.	20.3	0.47	13.71	6.55
Twin Disc, Inc.	17.2	0.61	11.62	6.70
Visteon Corp.	12.5	0.67	8.03	5.42
Mean	15.1	0.64	10.68	6.91
Median	13.8	0.64	10.42	6.77
Coefficient of Variation	20.0%	18.2%	22.1%	15.0%

EXHIBIT 1.20 Guideline Public Company Method: Comparative Financial Analysis

National Fastener & Machine Co. Guideline Public Company Method Comparative Financial Analysis		Subject	Mean	Median	EML	PFIN	STS	SCX	TWIN	VC
Comparative Size (\$000s)										
Total Revenues	35,854	233,104	249,402	144,111	83,221	257,254	241,550	265,790	406,700	
Total Assets	29,880	170,255	166,305	120,337	75,567	116,593	212,272	249,862	246,900	
Total Market Capitalization	30,100	132,785	124,761	104,866	56,363	133,713	115,809	166,894	219,064	
Asset Management Ratios										
Debt-Free Working Cap Turnover	2.2	2.9	2.5	2.4	2.6	5.2	2.2	2.2	2.3	2.8
Asset Turnover	1.2	1.4	1.2	1.2	1.2	2.2	1.1	1.0	1.0	1.5
Liquidity Ratios										
Debt-Free Current Ratio	7.1	4.63	4.41	6.0	4.8	3.8	6.1	3.2	4.0	
Debt-Free Quick Ratio	4.9	2.27	2.24	2.8	1.5	1.8	2.7	1.2	3.5	
Leverage Ratios										
Debt to Equity (Book)	0.0%	17.9%	12.0%	4.8%	51.2%	10.0%	17.6%	9.9%	14.1%	
Debt to Capital (Book)	0.0%	14.0%	10.7%	4.5%	33.9%	9.1%	14.9%	9.0%	12.3%	
Times Interest Earned	N/M	23.3	21.7	40.3	8.1	24.3	14.9	33.0	19.1	
Profitability										
Net Profit Margin	6.3%	4.1%	4.1%	4.1%	4.0%	4.0%	2.6%	5.2%	4.9%	
EBIT Margin	8.6%	6.6%	6.8%	6.2%	7.4%	6.1%	4.4%	7.5%	8.0%	
EBITDA Margin	12.1%	9.6%	9.9%	8.8%	11.0%	7.5%	8.0%	11.3%	11.3%	
Return on Assets	7.5%	6.1%	5.5%	5.2%	5.5%	9.3%	3.0%	5.5%	7.9%	
Return on Common Equity (Book)	8.6%	10.4%	8.8%	7.5%	8.0%	12.4%	4.9%	9.5%	19.8%	
Profitability (3-Year Averages)										
Net Profit Margin	5.5%	3.8%	3.7%	5.3%	3.6%	3.8%	1.9%	3.3%	4.9%	
EBIT Margin	8.2%	6.3%	6.1%	8.2%	6.3%	6.0%	3.5%	5.3%	8.3%	
EBITDA Margin	11.3%	9.4%	9.3%	10.4%	9.4%	7.5%	7.2%	9.2%	12.4%	
3-Year Historical Annual Growth										
Net Revenues	4.2%	2.8%	-0.5%	-5.4%	11.9%	-0.6%	-0.5%	-3.5%	14.6%	
Net Income	7.0%	54.2%	14.4%	-5.8%	5.1%	6.7%	258.5%	38.7%	22.2%	
Earnings Before Interest & Taxes	7.4%	32.3%	14.1%	-7.0%	4.6%	0.9%	147.3%	23.7%	24.3%	
Earnings Before Int., Taxes, Depr. & Amort.	8.9%	9.8%	7.8%	-5.4%	3.3%	2.0%	30.2%	12.3%	16.6%	

EXHIBIT 1.21 Guideline Public Company Method: Detail by Company

The Eastern Co. EML					
FINANCIAL STATEMENT DATA (Tho. \$)	12 Months Ended	Fiscal Year Ended			'X2-'X4 Growth Rate
	20X5/06	20X4/12	20X3/12	20X2/12	
Net Revenues	144,111	140,825	142,458	157,509	-5.4%
Depreciation & Amortization	3,722	3,486	2,825	3,440	0.7%
Interest Expense	222	255	323	369	-17.0%
Earnings Before Taxes	8,707	11,529	10,114	13,225	-6.6%
Net Income	5,924	7,661	6,902	8,626	-5.8%
Net Profit Margin	4.1%	5.4%	4.8%	5.5%	
Effective Tax Rate	32.0%	33.5%	31.8%	34.8%	
Cash, Equiv., Mkt. Sec. & Accts Rec.	33,266	32,899	36,273	36,851	-5.5%
Total Current Assets	71,251	71,291	70,994	71,824	-0.4%
Total Current Liabilities	12,961	13,446	13,615	14,904	-5.0%
Net Working Capital	58,290	57,845	57,379	56,920	0.8%
Short-Term Interest-Bearing Debt	1,071	1,071	1,786	1,429	-13.4%
Debt-Free Net Working Capital	59,361	58,916	59,165	58,349	0.5%
Total Assets	120,337	121,271	113,858	115,854	2.3%
<i>Average Total Assets</i>	117,677	117,564	114,856		
Long-Term Interest-Bearing Debt	2,500	3,214	4,286	6,071	-27.2%
Common Equity	75,137	74,975	81,505	71,582	2.3%
<i>Average Common Equity</i>	79,400	78,240	76,543		
Interest-Bearing Debt to Invested Capital	4.5%	5.4%	6.9%	9.5%	
ADJUSTED EARNINGS (Tho. \$)					
Earnings Before Taxes (as reported)	8,707	11,529	10,114	13,225	-6.6%
Gain (loss) on sale of equipment and other assets	(2)	(69)	(116)	2	
Provision for doubtful accounts	(13)	(38)	(106)	(147)	
Total Adjustments	15	107	223	146	
Adjusted Earnings Before Taxes	8,722	11,636	10,337	13,370	-6.7%
Estimated Income Tax Rate	32.0%	33.5%	31.8%	34.8%	
Adjusted Net Income	5,934	7,732	7,054	8,721	-5.8%
Adjusted Net Profit Margin	4.1%	5.5%	5.0%	5.5%	
Adjusted Debt-Free Net Income	6,085	7,902	7,274	8,962	-6.1%
Adj. Earnings Before Interest & Taxes	8,944	11,890	10,659	13,740	-7.0%
Adjusted EBIT Margin	6.2%	8.4%	7.5%	8.7%	
Adj. Earnings Before Int., Taxes, Depr. & Amort.	12,666	15,377	13,485	17,179	-5.4%
Adjusted EBITDA Margin	8.8%	10.9%	9.5%	10.9%	

The Eastern Co. EML

MARKET CAPITALIZATION (Tho. \$)	At 20X5/06
Short-Term Interest-Bearing Debt	1,071
Long-Term Interest-Bearing Debt	<u>2,500</u>
Total Interest-Bearing Debt	3,571
Preferred Equity (Book)	0
Common Equity	<u>101,295</u>
Total Equity	<u>101,295</u>
Total Invested Capital	104,866
Shares Outstanding at July 29, 20X5	6,245
Price at September 1, 20X5	\$16.22

FINANCIAL RATIOS	Most Recent Year	3-Year Average
Debt-Free Working Capital Turnover	2.4	2.5
Asset Turnover	1.2	
Debt-Free Current Ratio	6.0	5.7
Debt-Free Quick Ratio	2.8	2.8
Debt to Equity (Book)	4.8%	7.9%
Debt to Capital (Book)	4.5%	7.3%
Times Interest Earned	40.3	39.0
Net Profit Margin	4.1%	5.3%
EBIT Margin	6.2%	8.2%
EBITDA Margin	8.8%	10.4%
Return on Assets	5.2%	
Return on Common Equity (Book)	7.5%	

MARKET MULTIPLES	Most Recent 12 Months		Most Recent Fiscal Year		3-Year Average	
	Parameter	Multiple	Parameter	Multiple	Parameter	Multiple
Price/Earnings	5,934	17.1	7,732	13.1	7,836	12.9
Price/Book (Common Equity)	75,137	1.3	74,975	1.4	N/M	N/M
Invested Capital/Revenues	144,111	0.7	140,825	0.7	146,931	0.7
Invested Capital/EBIT	8,944	11.7	11,890	8.8	12,096	8.7
Invested Capital/EBITDA	12,666	8.3	15,377	6.8	15,347	6.8

P & F Industries, Inc.

FINANCIAL STATEMENT DATA (Tho. \$)	PFIN				'X2-'X4 Growth Rate
	12 Months Ended 20X5/06	Fiscal Year Ended			
		20X4/12	20X3/12	20X2/12	
Net Revenues	83,221	75,035	76,066	59,871	11.9%
Depreciation & Amortization	3,016	2,363	1,912	2,307	1.2%
Interest Expense	756	540	490	526	1.3%
Earnings Before Taxes	5,297	3,777	4,604	3,296	7.0%
Net Income	3,139	2,080	3,225	5,441	-38.2%
Net Profit Margin	3.8%	2.8%	4.2%	9.1%	
Effective Tax Rate	40.7%	44.9%	30.0%	0.0%	
Cash, Equiv., Mkt. Sec. & Accts Rec.	13,369	10,558	9,152	7,370	19.7%
Total Current Assets	41,218	37,553	34,123	33,129	6.5%
Total Current Liabilities	24,049	23,626	7,346	12,428	37.9%
Net Working Capital	17,169	13,927	26,777	20,701	-18.0%
Short-Term Interest-Bearing Debt	15,414	14,984	820	3,253	114.6%
Debt-Free Net Working Capital	32,583	28,911	27,597	23,954	9.9%
Total Assets	75,567	73,076	53,241	55,157	15.1%
<i>Average Total Assets</i>	68,688	63,159	54,199		
Long-Term Interest-Bearing Debt	6,246	6,493	6,903	7,363	-6.1%
Common Equity	42,269	39,991	38,730	35,088	6.8%
<i>Average Common Equity</i>	41,451	39,361	36,909		
Interest-Bearing Debt to Invested Capital	33.9%	34.9%	16.6%	23.2%	
ADJUSTED EARNINGS (Tho. \$)					
Earnings Before Taxes (as reported)	5,297	3,777	4,604	3,296	7.0%
Loss on sale of fixed assets	(18)	(14)	(7)	(2)	
Recovery of (provision for) losses on A/R, net	(47)	90	42	(53)	
Total Adjustments	65	(76)	(35)	55	
Adjusted Earnings Before Taxes	5,362	3,701	4,569	3,351	5.1%
Estimated Income Tax Rate	38.0%	38.0%	30.0%	38.0%	
Adjusted Net Income	3,327	2,296	3,200	2,079	5.1%
Adjusted Net Profit Margin	4.0%	3.1%	4.2%	3.5%	
Adjusted Debt-Free Net Income	3,796	2,631	3,544	2,405	4.6%
Adj. Earnings Before Interest & Taxes	6,118	4,241	5,059	3,877	4.6%
Adjusted EBIT Margin	7.4%	5.7%	6.7%	6.5%	
Adj. Earnings Before Int., Taxes, Depr. & Amort.	9,134	6,604	6,971	6,184	3.3%
Adjusted EBITDA Margin	11.0%	8.8%	9.2%	10.3%	

P & F Industries, Inc.
PFIN

MARKET	At
CAPITALIZATION (Tho. \$)	20X5/06
Short-Term Interest-Bearing Debt	15,414
Long-Term Interest-Bearing Debt	6,246
Total Interest-Bearing Debt	21,660
Preferred Equity (Book)	0
Common Equity	34,703
Total Equity	34,703
Total Invested Capital	56,363
Shares Outstanding at August 12, 20X5	3,615
Price at September 1, 20X5	\$9.60

FINANCIAL RATIOS	Most Recent Year	3-Year Average
Debt-Free Working Capital Turnover	2.6	2.6
Asset Turnover	1.2	
Debt-Free Current Ratio	4.8	4.4
Debt-Free Quick Ratio	1.5	1.1
Debt to Equity (Book)	51.2%	34.6%
Debt to Capital (Book)	33.9%	24.9%
Times Interest Earned	8.1	8.5
Net Profit Margin	4.0%	3.6%
EBIT Margin	7.4%	6.3%
EBITDA Margin	11.0%	9.4%
Return on Assets	5.5%	
Return on Common Equity (Book)	8.0%	

MARKET MULTIPLES	Most Recent 12 Months		Most Recent Fiscal Year		3-Year Average	
	Parameter	Multiple	Parameter	Multiple	Parameter	Multiple
Price/Earnings	3,327	10.4	2,296	15.1	2,525	13.7
Price/Book (Common Equity)	42,269	0.8	39,991	0.9	N/M	N/M
Invested Capital/Revenues	83,221	0.7	75,035	0.8	70,324	0.8
Invested Capital/EBIT	6,118	9.2	4,241	13.3	4,392	12.8
Invested Capital/EBITDA	9,134	6.2	6,604	8.5	6,586	8.6

Supreme Industries, Inc. STS

FINANCIAL STATEMENT DATA (Tho. \$)	12 Months	Fiscal Year Ended			'X2-'X4 Growth Rate
	Ended 20X5/06	20X4/12	20X3/12	20X2/12	
Net Revenues	257,254	236,309	246,806	239,111	-0.6%
Depreciation & Amortization	3,626	3,746	3,695	3,314	6.3%
Interest Expense	644	526	505	783	-18.1%
Earnings Before Taxes	15,057	12,471	17,122	12,474	0.0%
Net Income	10,270	8,470	11,198	12,409	-17.4%
Net Profit Margin	4.0%	3.6%	4.5%	5.2%	
Effective Tax Rate	31.8%	32.1%	34.6%	0.5%	
Cash, Equiv., Mkt. Sec. & Accts Rec.	32,307	33,469	28,383	21,728	24.1%
Total Current Assets	67,924	63,101	65,923	61,007	1.7%
Total Current Liabilities	18,652	18,653	28,343	22,363	-8.7%
Net Working Capital	49,272	44,449	37,580	38,644	7.2%
Short-Term Interest-Bearing Debt	667	667	667	17	527.4%
Debt-Free Net Working Capital	49,938	45,116	38,247	38,661	8.0%
Total Assets	116,593	110,942	113,531	105,088	2.7%
<i>Average Total Assets</i>	114,467	112,236	109,309		
Long-Term Interest-Bearing Debt	8,000	8,333	9,000	14,089	-23.1%
Common Equity	87,049	81,032	74,080	67,163	9.8%
<i>Average Common Equity</i>	82,320	77,556	70,622		
Interest-Bearing Debt to Invested Capital	9.1%	10.0%	11.5%	17.4%	
ADJUSTED EARNINGS (Tho. \$)					
Earnings Before Taxes (as reported)	15,057	12,471	17,122	12,474	0.0%
Provision for doubtful accounts	(7)	(7)	(63)	(30)	
Gain (loss) on sale of PP&E, net	60	(153)	290	353	
Total Adjustments	(53)	160	(227)	(323)	
Adjusted Earnings Before Taxes	15,004	12,631	16,895	12,151	2.0%
Estimated Income Tax Rate	31.8%	32.1%	34.6%	38.0%	
Adjusted Net Income	10,234	8,579	11,050	7,539	6.7%
Adjusted Net Profit Margin	4.0%	3.6%	4.5%	3.2%	
Adjusted Debt-Free Net Income	10,674	8,936	11,380	8,024	5.5%
Adj. Earnings Before Interest & Taxes	15,648	13,157	17,399	12,934	0.9%
Adjusted EBIT Margin	6.1%	5.6%	7.0%	5.4%	
Adj. Earnings Before Int., Taxes, Depr. & Amort.	19,274	16,903	21,094	16,248	2.0%
Adjusted EBITDA Margin	7.5%	7.2%	8.5%	6.8%	

Supreme Industries, Inc.
STS

MARKET CAPITALIZATION (Tho. \$)	At 20X5/06
Short-Term Interest-Bearing Debt	667
Long-Term Interest-Bearing Debt	8,000
Total Interest-Bearing Debt	8,667
Preferred Equity (Book)	0
Common Equity	125,046
Total Equity	125,046
Total Invested Capital	133,713
Shares Outstanding at July 23, 20X5	14,940
Price at September 1, 20X5	\$8.37

FINANCIAL RATIOS	Most Recent Year	3-Year Average
Debt-Free Working Capital Turnover	5.2	6.0
Asset Turnover	2.2	
Debt-Free Current Ratio	3.8	2.9
Debt-Free Quick Ratio	1.8	1.3
Debt to Equity (Book)	10.0%	15.1%
Debt to Capital (Book)	9.1%	13.0%
Times Interest Earned	24.3	25.3
Net Profit Margin	4.0%	3.8%
EBIT Margin	6.1%	6.0%
EBITDA Margin	7.5%	7.5%
Return on Assets	9.3%	
Return on Common Equity (Book)	12.4%	

MARKET MULTIPLES	Most Recent 12 Months		Most Recent Fiscal Year		3-Year Average	
	Parameter	Multiple	Parameter	Multiple	Parameter	Multiple
Price/Earnings	10,234	12.2	8,579	14.6	9,056	13.8
Price/Book (Common Equity)	87,049	1.4	81,032	1.5	N/M	N/M
Invested Capital/Revenues	257,254	0.5	236,309	0.6	240,742	0.6
Invested Capital/EBIT	15,648	8.5	13,157	10.2	14,497	9.2
Invested Capital/EBITDA	19,274	6.9	16,903	7.9	18,082	7.4

The L.S. Starrett Co.

SCX

FINANCIAL STATEMENT DATA (Tho. \$)	12 Months Ended	Fiscal Year Ended			'X3-'X5 Growth Rate
	20X5/06	20X5/06	20X4/6	20X3/6	
Net Revenues	241,550	241,550	247,134	243,797	-0.5%
Depreciation & Amortization	8,717	8,717	9,358	9,675	-5.1%
Interest Expense	713	713	800	968	-14.2%
Earnings Before Taxes	9,942	9,942	12,057	796	253.4%
Net Income	5,244	5,244	6,712	(162)	N/M
Net Profit Margin	2.2%	2.2%	2.7%	-0.1%	
Effective Tax Rate	47.3%	47.3%	44.3%	120.4%	
Cash, Equiv., Mkt. Sec. & Accts Rec.	59,274	59,274	68,668	65,287	-4.7%
Total Current Assets	133,413	133,413	146,902	133,948	-0.2%
Total Current Liabilities	23,599	23,599	35,686	23,945	-0.7%
Net Working Capital	109,814	109,814	111,216	110,003	-0.1%
Short-Term Interest-Bearing Debt	1,552	1,552	10,548	1,557	-0.2%
Debt-Free Net Working Capital	111,366	111,366	121,764	111,560	-0.1%
Total Assets	212,272	212,272	231,443	230,794	-4.1%
<i>Average Total Assets</i>	221,858	221,858	231,119		
Long-Term Interest-Bearing Debt	18,552	18,552	10,804	24,252	-12.5%
Common Equity	114,430	114,430	136,314	126,742	-5.0%
<i>Average Common Equity</i>	125,372	125,372	131,528		
Interest-Bearing Debt to Invested Capital	14.9%	14.9%	13.5%	16.9%	
ADJUSTED EARNINGS (Tho. \$)					
Earnings Before Taxes (as reported)	9,942	9,942	12,057	796	253.4%
Unrealized transaction gains	6	6	4	23	
Loss on disposal of building	0	0	(89)	0	
Total Adjustments	(6)	(6)	85	(23)	
Adjusted Earnings Before Taxes	9,936	9,936	12,142	773	258.5%
Estimated Income Tax Rate	38.0%	38.0%	38.0%	38.0%	
Adjusted Net Income	6,164	6,164	7,533	480	258.5%
Adjusted Net Profit Margin	2.6%	2.6%	3.0%	0.2%	
Adjusted Debt-Free Net Income	6,607	6,607	8,029	1,080	147.3%
Adj. Earnings Before Interest & Taxes	10,649	10,649	12,942	1,741	147.3%
Adjusted EBIT Margin	4.4%	4.4%	5.2%	0.7%	
Adj. Earnings Before Int., Taxes, Depr. & Amort.	19,366	19,366	22,300	11,416	30.2%
Adjusted EBITDA Margin	8.0%	8.0%	9.0%	4.7%	

**The L.S. Starrett Co.
SCX**

MARKET CAPITALIZATION (Tho. \$)	At 20X5/06
Short-Term Interest-Bearing Debt	1,552
Long-Term Interest-Bearing Debt	18,552
Total Interest-Bearing Debt	20,104
Preferred Equity (Book)	0
Common Equity	95,705
Total Equity	95,705
Total Invested Capital	115,809
Shares Outstanding at August 24, 20X5	6,231
Price at September 1, 20X5	\$15.36

FINANCIAL RATIOS	Most Recent Year	3-Year Average
Debt-Free Working Capital Turnover	2.2	2.1
Asset Turnover	1.1	
Debt-Free Current Ratio	6.1	6.0
Debt-Free Quick Ratio	2.7	2.8
Debt to Equity (Book)	17.6%	17.9%
Debt to Capital (Book)	14.9%	15.1%
Times Interest Earned	14.9	11.0
Net Profit Margin	2.6%	1.9%
EBIT Margin	4.4%	3.5%
EBITDA Margin	8.0%	7.2%
Return on Assets	3.0%	
Return on Common Equity (Book)	4.9%	

MARKET MULTIPLES	Most Recent 12 Months		Most Recent Fiscal Year		3-Year Average	
	Parameter	Multiple	Parameter	Multiple	Parameter	Multiple
Price/Earnings	6,164	15.5	6,164	15.5	4,726	20.3
Price/Book (Common Equity)	114,430	0.8	114,430	0.8	N/M	N/M
Invested Capital/Revenues	241,550	0.5	241,550	0.5	244,160	0.5
Invested Capital/EBIT	10,649	10.9	10,649	10.9	8,444	13.7
Invested Capital/EBITDA	19,366	6.0	19,366	6.0	17,694	6.5

Twin Disc, Inc.

FINANCIAL STATEMENT DATA (Tho. \$)	TWIN				'X3-'X5 Growth Rate
	12 Months Ended 20X5/06	Fiscal Year Ended			
	20X5/06	20X5/06	20X4/06	20X3/06	
Net Revenues	265,790	265,790	263,909	285,282	-3.5%
Depreciation & Amortization	10,161	10,161	10,667	10,838	-3.2%
Interest Expense	606	606	936	1,435	-35.0%
Earnings Before Taxes	15,900	15,900	8,096	9,237	31.2%
Net Income	11,385	11,385	3,870	4,251	63.7%
Net Profit Margin	4.3%	4.3%	1.5%	1.5%	
Effective Tax Rate	28.4%	28.4%	52.2%	54.0%	
Cash, Equiv., Mkt. Sec. & Accts Rec.	66,819	66,819	64,976	67,055	-0.2%
Total Current Assets	169,830	169,830	180,097	188,472	-5.1%
Total Current Liabilities	57,054	57,054	56,980	63,503	-5.2%
Net Working Capital	112,776	112,776	123,117	124,969	-5.0%
Short-Term Interest-Bearing Debt	3,571	3,571	3,604	3,681	-1.5%
Debt-Free Net Working Capital	116,347	116,347	126,721	128,650	-4.9%
Total Assets	249,862	249,862	266,985	285,458	-6.4%
<i>Average Total Assets</i>	258,424	258,424	276,222		
Long-Term Interest-Bearing Debt	10,231	10,231	14,800	23,472	-34.0%
Common Equity	139,528	139,528	151,584	142,504	-1.0%
<i>Average Common Equity</i>	145,556	145,556	147,044		
Interest-Bearing Debt to Invested Capital	9.0%	9.0%	10.8%	16.0%	
ADJUSTED EARNINGS (Tho. \$)					
Earnings Before Taxes (as reported)	15,900	15,900	8,096	9,237	31.2%
Restructuring of operations	(3,282)	(3,282)	(961)	(708)	
Impairment charge	0	0	0	(1,405)	
Loss on sale of plant assets	(215)	(215)	(26)	(287)	
Total Adjustments	3,497	3,497	987	2,400	
Adjusted Earnings Before Taxes	19,397	19,397	9,083	11,637	29.1%
Estimated Income Tax Rate	28.4%	28.4%	38.0%	38.0%	
Adjusted Net Income	13,889	13,889	5,635	7,220	38.7%
Adjusted Net Profit Margin	5.2%	5.2%	2.1%	2.5%	
Adjusted Debt-Free Net Income	14,323	14,323	6,216	8,110	32.9%
Adj. Earnings Before Interest & Taxes	20,003	20,003	10,019	13,072	23.7%
Adjusted EBIT Margin	7.5%	7.5%	3.8%	4.6%	
Adj. Earnings Before Int., Taxes, Depr. & Amort.	30,164	30,164	20,686	23,910	12.3%
Adjusted EBITDA Margin	11.3%	11.3%	7.8%	8.4%	

Twin Disc, Inc.
TWIN

MARKET CAPITALIZATION (Tho. \$)	At 20X5/06
Short-Term Interest-Bearing Debt	3,571
Long-Term Interest-Bearing Debt	10,231
Total Interest-Bearing Debt	13,802
Preferred Equity (Book)	0
Common Equity	153,092
Total Equity	153,092
Total Invested Capital	166,894
Shares Outstanding at August 19, 20X5	11,323
Price at September 1, 20X5	\$13.52

FINANCIAL RATIOS	Most Recent Year	3-Year Average
Debt-Free Working Capital Turnover	2.3	2.2
Asset Turnover	1.0	
Debt-Free Current Ratio	3.2	3.2
Debt-Free Quick Ratio	1.2	1.2
Debt to Equity (Book)	9.9%	13.7%
Debt to Capital (Book)	9.0%	11.9%
Times Interest Earned	33.0	17.6
Net Profit Margin	5.2%	3.3%
EBIT Margin	7.5%	5.3%
EBITDA Margin	11.3%	9.2%
Return on Assets	5.5%	
Return on Common Equity (Book)	9.5%	

MARKET MULTIPLES	Most Recent 12 Months		Most Recent Fiscal Year		3-Year Average	
	Parameter	Multiple	Parameter	Multiple	Parameter	Multiple
Price/Earnings	13,889	11.0	13,889	11.0	8,915	17.2
Price/Book (Common Equity)	139,528	1.1	139,528	1.1	N/M	N/M
Invested Capital/Revenues	265,790	0.6	265,790	0.6	271,660	0.6
Invested Capital/EBIT	20,003	8.3	20,003	8.3	14,365	11.6
Invested Capital/EBITDA	30,164	5.5	30,164	5.5	24,920	6.7

Visteon Corp.
VC

FINANCIAL STATEMENT DATA (Tho. \$)	12 Months	Fiscal Year Ended			'X2-'X4 Growth Rate
	Ended 20X5/06	20X4/12	20X3/12	20X2/12	
Net Revenues	406,700	375,450	318,550	285,750	14.6%
Depreciation & Amortization	13,350	13,500	13,100	12,950	2.1%
Interest Expense	1,700	1,850	2,300	2,400	-12.2%
Earnings Before Taxes	20,400	13,050	45,100	16,800	-11.9%
Net Income	13,100	6,850	39,250	11,450	-22.7%
Net Profit Margin	3.2%	1.8%	12.3%	4.0%	
Effective Tax Rate	35.8%	47.5%	13.0%	31.8%	
Cash, Equiv., Mkt. Sec. & Accts Rec.	171,000	109,100	146,450	100,350	4.3%
Total Current Assets	196,350	156,700	187,650	133,150	8.5%
Total Current Liabilities	50,050	91,600	90,100	77,600	8.6%
Net Working Capital	146,300	65,100	97,550	55,550	8.3%
Short-Term Interest-Bearing Debt	1,450	7,100	5,300	4,800	21.6%
Debt-Free Net Working Capital	147,750	72,200	102,850	60,350	9.4%
Total Assets	246,900	266,150	301,350	257,800	1.6%
<i>Average Total Assets</i>	264,675	283,750	279,575		
Long-Term Interest-Bearing Debt	17,450	41,950	31,200	23,650	33.2%
Common Equity	134,400	43,250	96,000	69,250	-21.0%
<i>Average Common Equity</i>	99,975	69,625	82,625		
Interest-Bearing Debt to Invested Capital	12.3%	53.1%	27.5%	29.1%	
ADJUSTED EARNINGS (Tho. \$)					
Earnings Before Taxes (as reported)	20,400	13,050	45,100	16,800	-11.9%
Restructuring expense	(2,850)	(2,800)	(1,800)	(2,250)	
Loss on debt extinguishment	(250)	(1,150)	(100)	(300)	
Asset impairment and losses on divestitures	(8,450)	(16,300)	0	(1,200)	
Pension settlement gain	1,150	1,150	0	0	
Gain on asset sales and business divestitures	0	0	23,500	950	
Total Adjustments	10,400	19,100	(21,600)	2,800	
Adjusted Earnings Before Taxes	30,800	32,150	23,500	19,600	28.1%
Estimated Income Tax Rate	35.8%	38.0%	38.0%	31.8%	
Adjusted Net Income	19,778	19,946	14,579	13,358	22.2%
Adjusted Net Profit Margin	4.9%	5.3%	4.6%	4.7%	
Adjusted Debt-Free Net Income	20,870	21,094	16,006	14,994	18.6%
Adj. Earnings Before Interest & Taxes	32,500	34,000	25,800	22,000	24.3%
Adjusted EBIT Margin	8.0%	9.1%	8.1%	7.7%	
Adj. Earnings Before Int., Taxes, Depr. & Amort.	45,850	47,500	38,900	34,950	16.6%
Adjusted EBITDA Margin	11.3%	12.7%	12.2%	12.2%	

Visteon Corp.
VC

MARKET	At
CAPITALIZATION (Tho. \$)	20X5/06
Short-Term Interest-Bearing Debt	1,450
Long-Term Interest-Bearing Debt	<u>17,450</u>
Total Interest-Bearing Debt	18,900
Preferred Equity (Book)	0
Common Equity	<u>200,164</u>
Total Equity	<u>200,164</u>
Total Invested Capital	219,064
Shares Outstanding at July 31, 20X5	2,021
Price at September 1, 20X5	\$99.02

FINANCIAL RATIOS	Most Recent Year	3-Year Average
Debt-Free Working Capital Turnover	2.8	4.3
Asset Turnover	1.5	
Debt-Free Current Ratio	4.0	2.0
Debt-Free Quick Ratio	3.5	1.5
Debt to Equity (Book)	14.1%	64.2%
Debt to Capital (Book)	12.3%	36.6%
Times Interest Earned	19.1	12.9
Net Profit Margin	4.9%	4.9%
EBIT Margin	8.0%	8.3%
EBITDA Margin	11.3%	12.4%
Return on Assets	7.9%	
Return on Common Equity (Book)	19.8%	

MARKET MULTIPLES	Most Recent 12 Months		Most Recent Fiscal Year		3-Year Average	
	Parameter	Multiple	Parameter	Multiple	Parameter	Multiple
Price/Earnings	19,778	10.1	19,946	10.0	15,961	12.5
Price/Book (Common Equity)	134,400	1.5	43,250	4.6	N/M	N/M
Invested Capital/Revenues	406,700	0.5	375,450	0.6	326,583	0.7
Invested Capital/EBIT	32,500	6.7	34,000	6.4	27,267	8.0
Invested Capital/EBITDA	45,850	4.8	47,500	4.6	40,450	5.4

EXERCISE 70 Which of these are commonly used guideline public company valuation multiples?

- a. Price/earnings
- b. Invested capital/revenues
- c. Price/gross profits
- d. Invested capital/book value of equity
- e. Invested capital/EBITDA
- f. Invested capital/EBIT
- g. Price/assets
- h. Invested capital/debt-free net income
- i. Invested capital/debt-free cash flow

EXERCISE 71 When using the guideline public company method, at what point in time are the prices of the public companies' stock valued?

- a. 30-day average
- b. As of valuation date
- c. Six-month average
- d. Three-year average

EXERCISE 72 What type of value is the result of the application of the guideline public company method?

- a. Control
- b. Minority
- c. Neutral

1.11.5.1.2 Guideline Public Company Method Conclusion of Value on a Marketable, Control Interest Basis National Fastener is smaller in size and less leveraged than the public guideline set, but generally more profitable than the guidelines. The three-year revenue growth rate of National Fastener has been higher than the guideline companies. Considering these and other factors outlined above, we applied the median guideline company market multiples for the periods analyzed to the parameters of the Company, as shown in Table 1.17.

TABLE 1.17 Total Selected Values—Guideline Public Company Method

	<u>Calculated Value</u>
Invested Capital	\$27,000,000
Add: Excess Working Capital	\$ 1,781,159
Less: Interest-Bearing Debt	\$ —
Value on a Marketable, Control Interest Basis	<u>\$28,781,159</u>
Indicated Value of 100% of the Equity (Rounded)	<u>\$28,800,000</u>

The following multiples were applied to the subject company parameters: equity to net earnings and of invested capital to revenue, EBIT, and EBITDA. In concluding to the value of the Company, we relied primarily on the indications of value derived from the EBITDA multiples for the most recent trailing 12 months and three-year average. We added the estimated excess debt-free working capital to the indicated operating value of the Company. See Exhibit 1.22 for a summary of the guideline public company method.

EXHIBIT 1.22 Guideline Public Company Method: Summary

**National Fastener & Machine Co.
Guideline Public Company Method
Summary**

	Earnings Parameter	Selected Multiple (1)	Invested Capital	Less: Interest- Bearing Debt	Equity Value
Most Recent 12 Months					
Equity Multiples					
Price/Earnings	\$2,243,297	11.62			\$26,068,151
Business Enterprise Multiples					
Invested Capital/Net Revenues	35,853,691	0.58	20,912,673	0	20,912,673
Invested Capital/Earnings Before Int. & Taxes	3,069,650	8.88	27,254,651	0	27,254,651
Invested Capital/EBITDA	4,344,027	6.08	26,391,382	0	26,391,382
Most Recent Fiscal Year					
Equity Multiples					
Price/Earnings	\$1,938,288	13.84			\$26,822,249
Business Enterprise Multiples					
Invested Capital/Net Revenues	37,135,207	0.61	22,492,589	0	22,492,589
Invested Capital/Earnings Before Int. & Taxes	2,886,633	9.49	27,398,034	0	27,398,034
Invested Capital/EBITDA	4,149,358	6.40	26,555,648	0	26,555,648
Three-Year Averages					
Equity Multiples					
Price/Earnings	\$2,009,949	13.78			\$27,688,333
Business Enterprise Multiples					
Invested Capital/Net Revenues	36,158,936	0.64	23,234,376	0	23,234,376
Invested Capital/Earnings Before Int. & Taxes	2,966,558	10.42	30,914,545	0	30,914,545
Invested Capital/EBITDA	4,083,138	6.77	27,622,913	0	27,622,913
	Selected Value of 100% of Equity				\$27,000,000
	Plus: Excess Debt-Free Working Capital				1,781,159
	Indicated Value of 100% of Equity, Rounded (2)				\$28,800,000

Notes

- (1) Selected multiples equal median multiples less a 0.0% fundamental discount.
(2) See Exhibit 1.12 for calculation of excess DFNWC.

Based on the application of the guideline public company method, the indicated value of 100 percent of the equity of National Fastener as of September 1, 20X5, was \$28.8 million (operating value of \$27.0 million plus \$1.8 million in excess working capital).

EXERCISE 73 In selecting multiples from guideline public companies for application to a subject company such as National Fastener, what options do analysts typically have?

- a. Mean average of the multiples
- b. Median average of the multiples
- c. Individual guideline company multiples
- d. Average multiples with a fundamental discount
- e. All of the above

EXERCISE 74 Which of these time periods can be used to derive valuation multiples from publicly traded companies?

- a. Most recent four quarters
- b. Most recent fiscal year-end
- c. Three-year average
- d. Five-year average
- e. One-year projected
- f. Three-year future average

1.11.5.2 Guideline Company Transactions Method It is possible to develop an indication of value of a company based upon the price multiples indicated by merger and acquisition transactions of companies in the same or a similar industry in recent years. In order to use merger and acquisition (M&A) information in a valuation engagement, the following two conditions must be met:

1. The target company must be similar to the company being valued in at least some respects.
2. One must be able to obtain details of the merger or acquisition transaction. If at least one of the parties in the M&A transaction (either the purchaser or the seller) is a public company, relevant information is often available.

EXERCISE 75 Which of these are general transaction databases considered by analysts in valuing companies?

- a. Pratt's Stats
- b. RMA

- c. Institute of Business Appraisers
- d. DoneDeals
- e. Bizcomps
- f. *Mergerstat Review*

EXERCISE 76 What is one of the most significant problems when attempting to use transaction data?

1.11.5.2.1 Pratt's Stats Database The Pratt's Stats database provides a list of transactions of companies in various industry sectors. We searched for transactions in SIC codes 3451 (Screw Machine Products), 3452 (Bolts, Nuts, Screws, Rivets, and Washers), and 3714 (Motor Vehicle Parts and Accessories), as well as NAICS codes 332722 (Bolt, Nut, Screw, Rivet, and Washer Manufacturing) and 336310 (Motor Vehicle Gasoline Engine and Engine Parts Manufacturing), that occurred between September 1, 20X0, and September 1, 20X5. We excluded transactions in which the target company's operations were not similar to National Fastener and/or in which the target company's revenues were not between \$3.0 million and \$300.0 million. Seven transactions in Pratt's Stats involved targets within our search criteria, and these transactions are included in our analysis. Using this database, we calculated multiples based on market value of total invested capital (TIC) to gross revenues, EBITDA, and EBIT.

1.11.5.2.2 Public Stats Database The Public Stats database provides a list of transactions of companies in various industry sectors. Using the same criteria as used to search Pratt's Stats, a search of the Public Stats database yielded no results.

1.11.5.2.3 Database Conclusion of Value on a Marketable, Control Interest Basis We considered multiples of invested capital (TIC) to revenue, TIC to earnings before interest and taxes (EBIT), and TIC to earnings before interest, taxes, depreciation, and amortization (EBITDA). The implied multiples of revenue, EBITDA, and EBIT for the Company based on the conclusion of value under the guideline public company method and the discounted cash flow method were within the range of the transaction multiples. We did not rely on the guideline company transactions method, but did use it as a check for reasonableness of the conclusions of the other valuation methods.

See Exhibit 1.23 for the analysis of the multiples of the transactions in Pratt's Stats and comparison to the implied subject company multiples from the conclusions of the guideline public company method and discounted cash flow method.

The selected multiples were applied to the revenue, EBIT, and EBITDA parameters of the Company for the most recent 12 months, most recent fiscal year, and three-year average, 20X2 to 20X4. Based on the analysis, the concluded selected value of 100 percent of the equity of the Company was \$29,700,000 before adjustment for excess debt-free working capital. The concluded value of the equity of the Company under the transaction method was \$31,500,000, as shown on Exhibit 1.24.

EXERCISE 77 Is a 100 percent controlling interest marketable or nonmarketable?

1.12 LACK OF MARKETABILITY DISCOUNT

EXERCISE 78 Discounts for lack of marketability/liquidity can be applied to 100 percent control interests in a company such as National Fastener.

- a. True
- b. False

EXERCISE 79 Which discounts for lack of marketability studies and/or data are available in determining discounts?

- a. *Mergerstat Review*
- b. Restricted stock studies
- c. IPO studies
- d. Court cases
- e. Flotation costs
- f. CAPM
- g. Ibbotson Associates
- h. Quantitative Marketability Discount Model (QMDM)
- i. Option pricing models

EXHIBIT 1.23 Guideline Company Transactions Method: Detail

Date	SIC Code	Acquirer	Target	Description	TTC	Revenues	EBITDA	Depreciation	EBIT	Interest Expense	EBT	TTC/Rev.	TTC/EBITDA	TTC/EBIT
2/4/20X5	3714	N/A	N/A	Manufacturing/Mfg.—Boats	\$6,390,000	6,453,863	801,175	12,212	788,963	12,250	776,713	0.99	7.98	8.10
8/29/20X4	3714	NN, Inc.	Autocam Corporation, Inc.	Manufactures precision-machine components for OEMs and Tier 1 automotive suppliers worldwide	\$320,769,000	233,484,000	33,773,000	16,663,000	19,112,000	2,741,000	16,371,000	1.37	8.97	16.78
5/1/20X4	3714	CLARCOR Inc.	Diesel Fuel Filtration Business of Stamadyne Corporation	Design, manufacture, and supply of original equipment diesel fuel filtration products	\$327,569,000	107,798,000	39,862,000	3,309,000	36,553,000	7,522,000	29,031,000	3.04	8.22	8.96
12/19/20X3	3714	Universal Truckload Services, Inc.	Westport Axle Corporation	Assembles and sells heavy-duty truck axles and other forged machine components	\$126,442,000	58,387,000	8,179,000	2,069,000	6,110,000	668,000	5,442,000	2.17	15.46	20.69
2/19/20X3	3429	Hillman Companies, Inc.	H. Paulin & Co., Limited	Manufactures and distributes bolts, nuts, screws, industrial fasteners, fluid system components, metal stampings, automotive parts, and screw machine components	\$103,416,000	145,985,000	6,060,000	976,000	5,084,000	252,000	4,832,000	0.71	17.07	20.34
12/27/20X2	3714	N/A	N/A	Manufacturer of custom accessories for ATVs, UTVs, side x sides, golf carts, low-speed vehicles (LSV), and recreational vehicles	\$12,500,000	8,338,322	1,683,277	32,989	1,650,288	-	1,650,288	1.50	7.43	7.57
3/23/20X2	3714	Park Ohio Industries, Inc.	Fluid Routing Solutions, Inc.	A leading manufacturer of industrial hose products and fuel filler and hydraulic fluid assemblies	\$97,500,000	179,383,233	12,608,397	4,160,938	8,447,459	831,038	7,616,421	0.54	7.73	11.54
							Mean					1.47	10.41	13.43
							Median					1.37	8.22	11.54
							Min					0.54	7.43	7.57
							Max					3.04	17.07	20.69
							Coefficient of Variation					0.60	0.39	0.43
							Implied Subject Company Multiples					LTM	LTM	LTM
							Guideline Public Company Method—Conclusion					0.80	6.63	9.38
							Discounted Cash Flow Method—Conclusion					0.88	7.23	10.23

(1) Data from Pratt's Stats.

EXHIBIT 1.24 Guideline Company Transactions Method: SummaryNational Fastener & Machine Co.
Guideline Transactions Method
Summary

	Earnings Parameter	Selected Multiple (1)	Invested Capital	Less: Interest- Bearing Debt	Equity Value
Most Recent 12 Months					
Business Enterprise Multiples					
Invested Capital/Net Revenues	35,853,691	1.2	41,868,564	0	41,868,564
Invested Capital/Earnings Before Interest & Taxes	3,069,650	9.8	30,115,240	0	30,115,240
Invested Capital/EBITDA	4,344,027	7.0	30,342,766	0	30,342,766
Most Recent Fiscal Year					
Business Enterprise Multiples					
Invested Capital/Net Revenues	37,135,207	1.2	43,365,069	0	43,365,069
Invested Capital/Earnings Before Interest & Taxes	2,886,633	9.8	28,319,724	0	28,319,724
Invested Capital/EBITDA	4,149,358	7.0	28,983,013	0	28,983,013
Three-Year Average, 20X2 to 20X4					
Business Enterprise Multiples					
Invested Capital/Net Revenues	36,158,936	1.2	42,225,017	0	42,225,017
Invested Capital/Earnings Before Interest & Taxes	2,966,558	9.8	29,103,844	0	29,103,844
Invested Capital/EBITDA	4,083,138	7.0	28,520,469	0	28,520,469
			Selected Value of 100% of Equity		\$29,700,000
				Plus: Excess Debt-Free Working Capital (2)	1,781,159
					<u>\$31,500,000</u>

Notes:

(1) Selected multiples equal the median multiples less a 15% fundamental discount.

(2) See notes to Exhibit 1.12 and text for additional information.

EXERCISE 80 Although a 100 percent control interest is valued in National Fastener, numerous other levels of ownership interests can exist in a closely held company. Provide some examples of other levels of ownership.

A marketability/liquidity discount is intended, among other things, to account for the issues a controlling owner must face as he begins to liquidate his control interest in the company. A number of studies and cases over the years have attempted to identify this discount.

EXERCISE 81 A discount for lack of marketability/liquidity should be applied to all of the valuation methods used in the valuation of National Fastener.

- a. True
- b. False

1.13 RECONCILIATION OF VALUES

The selected guideline public companies are fairly comparable to National Fastener and provide valuable market data for purposes of valuation analysis. The discounted cash flow method represents an analysis of management's expectations for the growth and profitability of the business in the future. In concluding to a value for National Fastener, we relied on the value indications under both of these methods.

The guideline company transactions provide market data for purposes of valuation analysis of National Fastener. However, as is often the case with this method, we lack full details on the transactions, and we therefore rely on the transaction method as a corroborating method to check the reasonableness of the multiples implied from the guideline public company method and discounted cash flow method.

As shown on Exhibit 1.25, the indicated value of 100 percent of the equity of National Fastener based on the guideline public company method of the market approach is \$28,800,000 and based on the income approach is \$31,400,000. The concluded fair market value of the Company as of September 1, 20X5, was \$30,100,000.

EXHIBIT 1.25 Summary of Findings

National Fastener & Machine Co.
 Summary of Findings
 Valuation Date: September 1, 20X5

	<u>Value Indication</u>
<u>Asset Approach</u>	
Net Assets	\$26,185,016
<u>Income Approach</u>	
Capitalized Cash Flows to Invested Capital	\$20,000,000
Discounted Cash Flows to Invested Capital	\$31,400,000
<u>Market Approach</u>	
Guideline Public Company Method	\$28,800,000
Guideline Company Transactions Method	\$31,500,000
Selected Value of 100% of the Equity	<u>\$30,100,000</u>

EXERCISE 82 Which method can be used to correlate and reconcile value?

- a. Straight average of the indications of value
- b. Numerical weights assigned to each of the value indications
- c. Qualitative judgment in selection of value
- d. All of the above

1.14 ADDENDUM: DISCOUNT CASE STUDY EXERCISES

1.14.1 Exercise A

Assume that we are determining the fair market value of a minority nonmarketable interest in a company for gift tax purposes. The minority marketable value derived by various methods is \$100 per share. We are in a state where you need over 50 percent for full control. What is the relative discount for lack of marketability (DLOM) in these situations?

- a. Value of a 10 percent interest with one 90 percent owner

b. Value of a 10 percent interest with nine other 10 percent owners

c. Value of a 50 percent interest with one other 50 percent owner

d. Value of a 33.33 percent interest with two other 33.33 percent owners

e. Value of a 2 percent interest with two 49 percent owners

1.14.2 Exercise B

Again, assume we are determining the fair market value of a company for gift tax purposes. In this case study, we are valuing a 100 percent controlling interest on a stand-alone basis in a closely held company. What is the discount for lack of marketability/liquidity in these situations where the pre-discount value is determined by using:

a. P/E ratios from control transactions information (i.e., Pratt's Stats)

b. P/E ratios from guideline public companies

c. Discounted cash flow (DCF) with a discount rate determined using Duff & Phelps information

d. Capitalized cash flow method

e. Asset approach

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