

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*, 5th 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

February 15, 2023

Sherman E. Hitchner, Esq.
Hitchner & Wessinger
4747 Washington Street, Suite 1740
St. Louis, Missouri 12345

Re: Fair Market Value of a 100 Percent Equity Interest in Nova Fastener & Tool, Inc. as of December 1, 2022

Dear Mr. Hitchner:

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 Nova Fastener & Tool, Inc. (Nova 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 December 1, 2022 (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 prepared 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.²

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

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

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

² AICPA SSVS Section .51.

This valuation was prepared 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 Nova is to assist management in internal operational and tax planning. What other purposes are there?

Our analysis and report are in conformance with the 2020–2021 (extended to 2022 and 2023) Uniform Standards of Professional Appraisal Practice (USPAP) promulgated by the Appraisal Standards Board of the Appraisal Foundation,³ the ethics and standards of the American Society of Appraisers (ASA), IRS business valuation development and reporting guidelines, and the National Association of Certified Valuators and Analysts (NACVA).

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

- a. True
- b. False

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.

³ The 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 3 and 54–55, respectively. SSVS uses the terms *valuation engagement* and *detailed report*, which are defined in Sections .21, .48, .51, and .82, respectively. USPAP also uses the term *appraiser* while SSVS uses the term *valuation analyst*. We use these terms interchangeably in this report.

EXERCISE 5 Revenue Ruling 59-60 is only applicable to estate, gift, and income tax valuations.

- a. True
- b. False

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.⁴

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.⁵

Furthermore, fair market value assumes that the price is transacted in cash or cash equivalents. Revenue Ruling 59-60, although used in tax valuations, is also used in many nontax valuations.

Fair market value is also defined in a similar way in the SSVS⁶ 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 6 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

⁴Revenue Ruling 59-60, 1959-1 CB 237-IRC Sec. 2031 Reg § 20.2031-2, Section 2.02.

⁵Ibid.

⁶AICPA Statements on Standards for Valuation Services VS Section 100, page 44, Appendix B, 2001 *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). Note: The 2022 *International Valuation Glossary-Business Valuation*, defines fair market value in a very similar manner.

The premise of value is going concern. The 2001 *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.⁷

The 2022 *International Valuation Glossary–Business Valuation* defines going concern the same way and defines going concern value as

a **Premise of Value** that assumes the business is an ongoing commercial enterprise with a reasonable expectation of future earning power.⁸

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.

In our conclusion of value, we considered the following relevant factors, which are specified in Revenue Ruling 59-60:⁹

- 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 previously mentioned factors.

EXERCISE 7 These are the only eight tenets of value in Revenue Ruling 59-60 that need to be considered.

- a. True
- b. False

⁷ *International Glossary of Business Valuation Terms*, Statements on Standards for Valuation Services, VS Section 100, Valuation of a Business, Business Ownership Interest, Security, or Intangible Asset, American Institute of Certified Public Accountants, June 2007, Appendix B, *International Glossary of Business Valuation Terms*, Section .81.

⁸ *International Valuation Glossary–Business Valuation*, November 2021, updated February 24, 2022, jointly published by the ASA, CBV Institute, RICS, and TAQEEM.

⁹ Revenue Ruling 59-60, 1959-1 CB 237–IRC Sec. 2031 Reg § 20.2031-2, Section 2.02.

EXERCISE 8 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

1.2.1 Understanding with the Client and Scope of Work

Per AICPA VS Section 100 (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.¹⁰

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 (paragraphs .52(*m*), .68(*e*), and .71(*n*)).¹¹

We have established an understanding with the client to perform a valuation engagement and have complied with the requirements of AICPA VS Section 100 (SSVS) as stated previously. There were no scope restrictions or limitations on the work or the data available for analysis.

In accordance with the business valuation standards promulgated by the American Society of Appraisers and the Appraisal Foundation (USPAP), we have prepared an appraisal.

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.¹²

¹⁰ AICPA VS Section 100 (SSVS), Section .17.

¹¹ AICPA VS Section 100 (SSVS), Section .19.

¹² ASA Business Valuation Standards, BVS-1 General Requirements for Developing a Business Valuation, copyright 2022 American Society of Appraisers.

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.”¹³

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

1. Identify the problem to be solved.
2. Determine and perform the scope of work necessary to develop credible assignment results.
3. Disclose the scope of work in the report.¹⁴

To gain an understanding of the operations of Nova, we reviewed Company financial information as provided by management and interviewed Company management. To understand the environment in which Nova 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 Nova and the industry. To understand the Company’s financial condition, we analyzed its financial statements as available.

We considered all three valuation approaches and relevant 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 attached 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
 - Appendix F—Additional Information from Mercer Capital’s National Economic Review

¹³ Ibid.

¹⁴ USPAP 2020–2021 (extended to 2022 and 2023), p. 13.

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

- Audited financial statements for Nova for the fiscal years ended December 31, 2017, through December 31, 2021
- Internal interim financial statements for Nova for the 11 months ending December 1, 2022, and December 1, 2021
- One-month December financials for all years 2017 to 2021.
- Tax returns for the Company for the fiscal years ended December 31, 2017, through 2021.
- Information regarding the management and shareholders of Nova
- Information regarding the Company's history and current operations
- Nova's Articles of Incorporation and Bylaws
- Data from the Kroll *Cost of Capital Navigator*
- 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 Nova included such steps as we considered necessary, including (but not limited to) the following:

- An analysis of Nova's financial statements
- An analysis of Nova management's future expectations as of late 2022 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 December 1, 2022, of a 100 percent equity interest in Nova Fastener & Tool, Inc. on a control, marketable basis is \$33,000,000.

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 9 This valuation is being done on a marketable, control interest basis. It is also on a control stand-alone 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 December 1, 2022. This letter and accompanying report are not to be used, circulated, quoted, or otherwise referred to in whole or in part for any other purpose, nor to be provided 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 auditing standards (GAAS), 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 (GAAP). 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/CFE, ASA, CVA, at (800) 000-1234.

Very truly yours,
XYZ Appraisal Associates LLC

1.2.2 Executive Summary

Purpose of Valuation	To assist you in the determination of the fair market value for internal operational and tax planning purposes of a 100 percent equity interest in Nova Fastener & Tool, Inc. as of December 1, 2022
Standard of Value	Fair market value
Premise of Value	Going concern
Conclusion	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 December 1, 2022, of a 100 percent equity interest in Nova Fastener & Tool, Inc. on a control, marketable basis is \$33,000,000.

1.3 HISTORY AND NATURE OF BUSINESS¹⁵

1.3.1 Overview

Nova Fastener & Tool, Inc. began its history as a manufacturer of brake lining and harness rivets in 1920, under the name Nova Specialty Co. By 1925, the Company built its first rivet-setting machine and in 1927, incorporated under the laws of the State of Missouri and changed its name to its current form. Nova's influence in the industry continued to grow, and during World War II it received formal recognition from the United States government for its efforts as a vital governmental supplier for fasteners used in aircraft wings and other various munitions of the U.S. military.

By 1964, Nova expanded its operations to manufacturing fasteners, screw parts, and metal assembly equipment. Three years later, A&B Tool Company was acquired by Nova. A&B Tool Company is based in Monroe, Illinois, and manufactures rivets, gears, spring studs, tube nuts, splines, and knurls through cold-forming technology and precision turning, as well as hand and machine tools. Nova later expanded its manufacture of gears to include other power transmission parts. In 2010 Nova purchased a small manufacturer of metal returnable packaging products, primarily racks and tote bins.

As of the valuation date, Nova operates in three segments: fasteners and parts, tools and assembly equipment, and returnable packaging. The fastener and parts segment consists of the manufacture and sale of rivets, cold-formed fasteners and parts, screw machine products, gears, and other power transmission parts. The assembly equipment segment consists of the manufacture of automatic rivet-setting machines, automatic assembly equipment, parts and tools for such machines, and various other hand and machine tools, such as measuring and cutting tools. The returnable packaging segment consists of the manufacture of metal racks and tote bins. Almost all of the revenues for the fiscal year ended December 31, 2021 (over 80 percent of consolidated revenues) was generated by the fasteners segment. The Company is structured as a C corporation for tax reporting.

EXERCISE 10 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 are three models that have been used in valuing S corporations?

1. _____
2. _____
3. _____

¹⁵The text of this section is largely drawn from interviews with management, the Company's website (www.nova.com), and other available information. Language has, in places, been extracted wholly or largely verbatim and/or substantially paraphrased.

1.3.2 Market Area and Customers

The principal market for the Company's products is the North American automotive industry. Sales are solicited 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. Although Nova sells primarily to automotive markets, it also sells in smaller quantities to truck, off-road, aerospace, marine, and rail applications. The level of business activity for the Company is closely related to the overall level of industrial activity in the United States.

Nova serves a variety of customers; however, sales to three major companies accounted for approximately 36 percent (13 percent, 12 percent, and 11 percent) of revenues during 2021. Recently, the Company signed a manufacturing contract with a new customer, which is expected to generate significant revenue growth in the near future.

The Company has no foreign operations. Sales to foreign customers represent approximately 16 percent of the Company's total sales in 2021, and the proportion of sales to foreign customers is expected to grow.

1.3.3 Competition

The fastener, tools and assembly equipment, and returnable packaging markets are characterized by active and significant competition. No single company in particular dominates. The 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, Nova's primary competitors in various segments include Midwest Fasteners Corp.; National Fastening Systems; Haven Fastener, Inc.; The Eastern Co.; Twin Disc, Inc.; and The L.S. Starrett Co.

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. Nova's competition now includes suppliers in other parts of the world that enjoy economic advantages, such as lower labor costs, lower healthcare costs, and fewer regulatory burdens. However, the recent COVID pandemic has shown the risks of global supply chains, which management believes may benefit Nova with U.S. customers.

1.3.4 Suppliers

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.

1.3.5 Employees

As of December 2021, the Company had 201 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 noncompete agreements.

1.3.6 Management and Key Persons

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

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

A key person situation exists at the Company in that the business relies heavily on Mr. Atkins, with no formal succession plan in place.

1.3.7 Facilities

The corporate headquarters of Nova is located in St. Louis, Missouri. There is also warehouse space at this location. The Company operates manufacturing facilities in Reading, Ohio, which is used for both fasteners and tools and assembly equipment operations, and in Ames, Iowa, which is also used for the tools and assembly equipment segment, as well as for returnable packaging. Nova also owns the warehouse and manufacturing facility used by A&B Tool Company, Inc. in Monroe, Illinois. The Company also maintains a small sales and engineering office in Boston, Massachusetts, in a leased office. Management indicates that the Company's facilities are adequate but not excessive for its needs. On August 12, 2022, the Company entered into a Purchase and Sale Agreement (the PSA) with Big Arch Properties LLC (the Purchaser) pursuant to which the Company agreed, subject to the terms and conditions of the PSA, to sell its facility in St. Louis, in which the Company headquarters and warehouse space are located, to the Purchaser. On September 27, 2022, the Company's sale of the facility to the Purchaser was completed. The net gain on the transaction was \$4,738,394. A portion of the net proceeds was invested in U.S. Treasury bills and included in cash and cash equivalents on the Company's balance sheet.

Concurrently with the completion of the sale of the St. Louis facility, the Company and the Purchaser entered into a lease agreement pursuant to which the Company will lease much of the facility from the Purchaser.

1.3.8 Intangibles

The Company has intangible assets such as relationships with customers, its proprietary trademark, and assembled workforce.

1.3.9 Stock and Stockholders

Nova 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 11 We are valuing a 100 percent controlling interest in Nova. 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 Nova. The value of a 55 percent interest in Nova would be calculated as 55 percent of the 100 percent control value in Nova.

a. True
b. False

No independent valuations or appraisals of Nova have been performed recently. Based on discussions with management, there have been no serious offers or expressions of interest in purchasing the Company, and there have been no transactions in the Company’s stock within the past five years. Prior transactions included minority common share gifts from Mr. Atkins to his son, Anthony, and daughters, Louise and Veronica, as detailed previously.

The Company has strong dividend-paying capacity. However, the Company has generally retained earnings to support capital investment requirements and internal growth, while minimizing debt.

1.3.10 Outlook

In the upcoming year, management plans to continue making significant investments in its equipment and facilities. A modest expansion of the Monroe plant is planned for the fourth quarter of 2023 to increase capacity and improve production efficiency. Investments aimed at supplying parts for electric vehicles (EVs) are also planned. Continuing efforts to foster new customer relationships and build on existing ones in all markets served are also a primary focus.

1.4 GENERAL ECONOMIC AND INDUSTRY OUTLOOK

The financial success of investments in Nova as of the valuation date is dependent on 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 paraphrased based on them.

1.4.1 General Economic Overview¹⁶

1.4.1.1 TagniFi¹⁷

1.4.1.1.1 Summary In the 3rd quarter of 2022, inflation continued to be the focal point of the U.S. economic picture. The Federal Reserve's hawkish interest rate hikes and quantitative tightening plans have thus far underperformed expectations to temper blazing inflation. Further, volatile energy costs are no longer at the forefront of price increases; while inflation among all items fades slightly, "core" inflation, which sets aside traditionally volatile categories, is accelerating. Meanwhile, elevated interest rates have taken a heavy toll on capital markets and slowed the housing industry's seemingly unstoppable momentum.

The Federal Reserve has repeatedly declared their intent to continue aggressive counterinflationary policies, particularly interest rate raises, despite the constraints such policies are placing on the U.S. economy. In the view of the Fed, the need to contain inflation exceeds the need to keep the economy from the grips of recession.

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

Concerns of recession abated slightly with the first positive real GDP reading of 2022; however, the major factor behind the boosted production numbers, a narrowing trade deficit, is expected to be short-lived. The labor market continued to be a bright spot in the 3rd quarter of 2022, with the unemployment rate finally reaching its pre-pandemic level and the labor force participation rate continuing to slowly recover as well.

Recorded COVID-19 cases waned throughout the 3rd quarter of 2022. With widely available at-home tests and relaxed testing policies in public and private spaces across the U.S., official COVID case rates likely no longer give an accurate picture of the virus's reach.

Vaccines have been established as a reliable way to limit serious illness and death from COVID-19; 4.29 million people were newly vaccinated in the U.S. during the 3rd quarter. Additionally, 1.1 million booster doses were distributed,

¹⁶ We have reviewed two sources for economic data: TagniFi's *Quarterly Economic Update* and Mercer Capital's *National Economic Review*.

¹⁷ All the contents of this section of this valuation report are quoted largely or wholly verbatim from the *Quarterly Economic Update* third quarter of 2022, published by TagniFi, reprinted with permission, <https://about.tagnifi.com/q3-2022-quarterly-economic-update/>.

including bivalent vaccines authorized for use as booster doses on August 31, 2022. While speculation continues as to when COVID-19 will reach an endemic phase in the U.S., a combination of vaccination and prior infection has allowed many aspects of life and commerce to return closer to normal, a situation reflected by increased spending on travel-related services in the 3rd quarter.

A multifactor indicator of economic strength, the Philadelphia Fed's coincident index¹⁸ of economic activity in the U.S. rose 0.4% in September 2022 and 1.0% during the 3rd quarter. For the quarter, coincident indexes increased in 44 states, decreased in 3 states, and were unchanged in 3 states. Coincident indexes reflect unemployment, payroll employment, manufacturing hours, and wages and salaries.

1.4.1.1.2 Q3 Economic Highlights

- The Philadelphia Fed's coincident index of economic activity in the U.S. rose 0.4 percent in September 2022 and 1.0 percent during the third quarter.
- Real GDP for the third quarter of 2022 grew at an annualized rate of 2.6 percent, following a 0.6 percent decrease in the second quarter of 2022.
- The U.S. dollar index rose 5.44 percent during the third quarter of 2022 and 11.3 percent since September 2021.
- The effective federal funds rate rose 1.35 percentage points to 2.56 percent during the third quarter, continuing the climb from near-zero levels in March.
- The 1-year and 2-year annual Treasury yields ended the third quarter at 4.05 percent and 4.22 percent, respectively. The benchmark 10-year Treasury yielded 3.83 percent at the end of the quarter, and the 30-year treasury yielded 3.79 percent.
- Unemployment inched down to 3.5 percent during the third quarter of 2022. Nonfarm payrolls grew by 1.1 million jobs in the third quarter.
- The Consumer Price Index rose 8.2 percent year-over-year in September, down from its 40-year high of 9.0 percent in June. Excluding volatile energy prices, the annual increase was 7.3 percent.
- Crude oil prices ended the quarter at \$79.91 per barrel, 25.8 percent lower than one quarter earlier.
- New home starts fell to 1.44 million in September, down 8.6 percent for the quarter and 7.7 percent for the year.
- The Dow Jones Transportation Average dropped 8.4 percent during the third quarter of 2022, the Dow Jones Composite fell 7.4 percent, and the Dow Jones Industrial decreased 6.7 percent. The S&P 500 was down 5.3 percent.

1.4.1.1.3 Outlook In June 2022, the Federal Open Market Committee (FOMC) revised its near-term inflation and unemployment rate projections slightly upward and real GDP projections sharply downward. Adjustments to longer-run projections for all three indicators were mild yet followed a similar pattern, with inflation and unemployment rising and real GDP declining.

The FOMC revised its projection for real GDP¹⁹ to 0.20 percent growth in 2022, rising to 1.00 percent in 2023, then to 1.70 percent by 2024. They expected Personal

¹⁸ Federal Reserve Bank of Philadelphia, Coincident Economic Activity Index for the United States [USPHCI], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/USPHCI>, Oct. 31, 2022.

¹⁹ Federal Reserve Bank of St. Louis, FOMC Summary of Economic Projections for the Growth Rate of Real Gross Domestic Product [GDPC1CTM], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/GDPC1CTM>, Oct. 31, 2022.

Consumption Expenditures (PCE) inflation²⁰ to grow to 5.50 percent in 2022 but moderate to 3.05 percent by 2023 and 2.35 percent by 2024. They forecast that the unemployment rate²¹ would be 3.85 percent in 2022, rising to 4.30 percent in 2023 and 2024. The board again increased projections of future target rates and maintained their resolve to continue tightening monetary policy against blazing inflation despite expected consequences, including a potential recession (see Table 1.1).

TABLE 1.1 FOMC Summary of Economic Projections

<u>Year</u>	<u>Real GDP (%)</u>	<u>PCE (%)</u>	<u>Unemployment (%)</u>
2022	0.20	5.50	3.85
2023	1.00	3.05	4.30
2024	1.70	2.35	4.30
2025	1.80	2.10	4.25

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

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

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

- International, national, regional, local
- National, regional, local
- Regional, local
- Local only

1.4.1.2 Mercer Capital²²

1.4.1.2.1 Summary and Outlook After declining at an annualized rate of 1.6% in the first quarter of 2022 and 0.6% in the second quarter, U.S. GDP increased in the third quarter at an annualized rate of 2.6%. Inflation continued to weigh on economic growth and activity in the third quarter, as the unadjusted CPI increased

²⁰ Federal Reserve Bank of St. Louis, FOMC Summary of Economic Projections for the Personal Consumption Expenditures Inflation Rate, Central Tendency, Midpoint [PCECT-PICTM], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/PCECTPICTM>, Oct. 31, 2022.

²¹ Federal Reserve Bank of St. Louis, FOMC Summary of Economic Projections for the Civilian Unemployment Rate, Central Tendency, Midpoint [UNRATECTM], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/UNRATECTM>, Oct. 31, 2022.

²² All the contents of this section of this valuation report are quoted largely or wholly verbatim from *The National Economic Review*, third quarter of 2022, published by Mercer Capital, reprinted with permission, www.nationaleconomicreview.net.

0.4% in September 2022 and 8.2% in the twelve months ended September 2022. Core CPI increased 0.6 percent in September 2022 and 6.6% in the twelve months ended September 2022.

The Dow Jones Industrial Average (DJIA), NASDAQ, S&P 500, and broad market Wilshire 5000 all posted quarter-over-quarter losses in the third quarter of 2022, compounding U.S. equity markets' dismal performance through the first nine months of 2022. The Dow dropped 6.7% from its second quarter close, while the S&P shed 5.2%, the NASDAQ fell 4.1%, and the Wilshire 500 was down 4.6% in the third quarter of 2022.

Prior to the disruption caused by the pandemic, the unemployment rate had remained stable for several months in the range of 3.5% to 4.0%, continually nearing all-time lows. The unemployment rate held steady at 3.6% during the second quarter of 2022 and fell to 3.5% in September 2022. Labor force participation has improved but remains low relative to historic levels at 62.3%.

Following the increase in GDP in the third quarter, economists expect GDP growth to stagnate in the next two quarters. A survey of economists conducted by *The Wall Street Journal* reflects an average GDP forecast of 0.4% annualized growth in the fourth quarter of 2022, followed by an annualized decline of 0.2% in the first quarter of 2023. Economists anticipate annualized growth in GDP of 0.2% in 2022, 0.4% in 2023, 1.8% in 2024, and 2.1% in 2025.

For additional detail from Mercer Capital's *National Economic Review*.

1.4.2 Industry Overview

We employed Porter's²³ 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.

1.4.2.1 Fabricated Metal Products Industry In the fasteners industry, globalization remained a fact even as the COVID-19 pandemic illustrated the risks of global supply chains and reduced demand for industrial fasteners.

According to one report,

the global industrial fasteners market size was valued at USD 88.43 billion in 2021 and is expected to expand at a compound annual growth rate (CAGR) of 4.5% from 2022 to 2030. The market is expected to be driven by the growing population, high investments in the construction sector, and rising demand for industrial fasteners in the automotive and aerospace sectors. The COVID-19 outburst in early 2020 negatively impacted the supply channels across the globe as international and domestic trade was interrupted to curb the spread of the virus.²⁴

²³ Michael E. Porter, *Competitive Strategy: Techniques for Analyzing Industries and Competitors* (New York: The Free Press, 1998).

²⁴ "Industrial Fasteners Market Size, Share & Trends Analysis Report by Raw Material (Metal, Plastic), by Product (Externally Threaded, Internally Threaded, Non-threaded), by Application (Aerospace), By Distribution Channel (Direct, Indirect), by Region, and Segment Forecasts, 2022–2030," <https://www.grandviewresearch.com/industry-analysis/industrial-fasteners-market>.

The report notes that the U.S. is “one of the largest fasteners importing countries,” and that due “to the growing demand for lightweight vehicles and aircraft, companies are shifting from standard to customized fasteners, which, in turn, is expected to drive the demand.”²⁵

Metal fasteners accounted for the largest share of fasteners—over 90.0 percent in 2021. However, increasing demand for lightweight products favors the growth of nonmetal alternatives such as plastic fasteners, tapes and adhesives, and so on, as well as innovation in metal fasteners.

The report notes that

the automotive segment accounted for the largest revenue share of over 30.0% in 2021. Automotive OEM is one of the key markets for industrial fasteners. High production volumes of automotive vehicles across Asia Pacific have been driving the industry over the past few years.²⁶

1.4.2.2 Auto Parts Industry According to RSM Global,

automotive suppliers and manufacturers—like most other industries—are watching inflation and the Federal Reserve’s rate actions closely as the industry’s production environments continue to experience labor shortages, supply chain unpredictability and high consumer demand. While inflation is now at its highest level in over 40 years and interest rates are rising, opportunities will continue to abound for many automotive manufacturers and suppliers that align themselves to the electrified future of the industry.²⁷

RSM notes that raw materials, labor, and other costs have made auto parts production more expensive and constrained margin growth, but also that “original equipment manufacturers have benefited from incredible market demand after the earlier phases of the pandemic.”²⁸

Acknowledging that automotive is “one of the most rate-sensitive sectors in the economy,” increased borrowing costs are expected to make R&D and capital expenditures more costly, putting continued pressure on margins. However, the report also notes that on “the demand side, while many might expect increased vehicle financing costs would immediately affect car buyers and slow down demand, the industry is adept in responding to such changes and will likely reinstate incentives when necessary or promote longer financing terms,” and it also notes the material (\$2.5 trillion) excess savings accumulated by Americans during the pandemic, and the strong labor market.²⁹

RSM predicted that North American automotive production would increase from approximately 13 million units in 2021 to over 17 million units in 2026.

This means strong sales demand should continue into the foreseeable future, allowing suppliers’ and manufacturers’ operating cash flows to fund legacy

²⁵ Ibid.

²⁶ Ibid.

²⁷ James Ward, “Automotive Industry Outlook: Fall 2022, Economic Headlines Not Cause for Deceleration Among Automotive Suppliers, Manufacturers,” Aug. 29, 2022, <https://rsmus.com/insights/industries/automotive/automotive-outlook.html>.

²⁸ Ibid.

²⁹ Ibid.

technologies while at the same time allowing for the investment in future-facing EV technology strategies.³⁰

As of the valuation date, the business press had grown somewhat more optimistic about the short-term outlook for automotive. For example, *Forbes* wrote that

supply chain woes will ease a bit, and rising vehicle supply will mean less pressure on the prices of older used cars. New-vehicle markups and used-vehicle wholesale prices have both eased since their peaks this past spring. Falling prices are only just reaching the retail level, but inflation-stretched used car shoppers may find some relief in 2023.³¹

On a related note, *Insider* wrote that “experts from AutoForecast Solutions say that by the end of 2022, the semiconductor shortage won’t be nearly as bad as it was last year. Better yet, 2023 could look even rosier,” noting that although in 2021 “automakers built 3.23 million fewer vehicles than expected in North America because of the chip shortage,” that shortage was expected to be only 1.5 million for 2022, with further improvement expected in 2023.³²

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

1.4.2.4 Threat of Substitute Products The threat of substitute products is moderate and includes both import substitution and competition from innovation in lightweight alternatives such as plastic parts and tapes and adhesives. Though internal combustion engines still account for the vast majority of vehicles on the road, the trend toward EVs also has implications for substitute products among parts manufacturers. To a material degree, however, existing products still compete primarily on price.

1.4.2.5 Threat of New Entrants Foreign companies have been competing significantly in the U.S. market, increasing competition for existing market share. At the same time, some U.S. companies have increased exports. Just-in-time manufacturing, preferring supplier facilities with close proximity to manufacturing facilities, is a check on international competition.

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

1.4.2.7 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.

³⁰ Ibid.

³¹ Alex Kwanten and Sasha Lekach, “Car Market Outlook: What to Expect In 2023,” *Forbes*, December 12, 2022, <https://www.forbes.com/wheels/features/car-market-outlook-2023/>.

Note: Although this article is a few days post-valuation date, this information is presumed knowable as of December 1, 2022.

³² Alexa St. John, “The Chip Shortage Could Be Just About Done Pummeling the Auto Industry, Experts Say—So Cars May Get a Whole Lot Cheaper in 2023,” *Business Insider*, December 5, 2022, <https://www.businessinsider.com/chip-shortage-auto-industry-car-buying-dealerships-consumers-inventory-2022-12?op=1>. *Note:* Although this article is a few days post-valuation date, this information is presumed knowable as of December 1, 2022.

1.4.3 Summary

Based on analysis of the industry and economic outlook, as chip shortages ease, and despite recent higher inflation and interest rates, pent-up demand and the requirement for aging vehicles to be replaced and repaired should eventually support a return to stable growth for the Company, with continuing price pressures from off-shore competition. The Company's recent sales and margins as of the valuation date have been constrained by supply chain issues, labor shortages, and high inflation, but management believes underlying demand remains positive in the near term and closely tied to the overall performance of the economy in the long-term. The median 10-year forecast CPI and real GDP estimates from the *Livingston Survey* imply a combined forecast 10-year nominal GDP of 4.65 percent.³³ Based on the industry and economic data, a long-term perpetuity growth rate of 4.5 percent was assumed for the Company. Additional Company-specific risk was identified in the reliance of the Company on a key executive, Mr. Atkins. The analysis of competitors and suppliers indicated that for the most part, the Company had similar risks to the rest of its industry. However, the Company does generate over a third of its revenue from just three customers. Such heavy customer reliance poses additional Company-specific risk as compared to what was observed about the other participants in the industry.

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

1.5 BOOK VALUE AND FINANCIAL POSITION

Nova's historical comparative income statements are presented in Exhibit 1.3, and comparative balance sheets are presented in Exhibit 1.4. Income statements adjusted to reflect elimination of unusual and/or nonrecurring items are shown in Exhibit 1.5. Certain financial ratios of Nova are computed and presented in Exhibit 1.6. Five years of financial data are presented for the fiscal years from 2017 through 2021 and the trailing 12 months (TTM) ended December 1, 2022.

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

³³ Combined nominal GDP calculated as $(1 + \text{CPI}) * (1 + \text{real GDP}) - 1$. Based on the information from the *Livingston Survey* $(1 + 2.10\%) * (1 + 2.50\%) - 1 = 4.65\%$.

EXHIBIT 1.3 Comparative Income Statement

Nova Fastener & Tool, Inc.
Comparative Income Statement
Valuation Date: December 1, 2022 \$

	Trailing 12 Months November 30, 2022		Years Ended December 31,												Three-Year Average 2019 to 2021		Growth Rates '19-'21 %				
	2021				2020				2019				2018					2017			
	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%		\$	%		
Net Revenues	34,538,367	100.0	33,974,558	100.0	27,590,653	100.0	32,873,002	100.0	37,174,249	100.0	35,764,714	100.0	31,479,404	100.0	31,479,404	100.0	1.7				
Total Costs of Goods Sold	28,848,313	83.5	27,509,466	81.0	22,675,451	82.2	27,128,472	82.5	29,268,490	78.7	27,850,992	77.9	25,771,130	81.9	25,771,130	81.9	0.7				
Gross Profit	5,690,054	16.5	6,465,092	19.0	4,915,202	17.8	5,744,530	17.5	7,905,759	21.3	7,913,722	22.1	5,708,275	18.1	5,708,275	18.1	6.1				
Total Selling, General, and Administrative Expenses	4,979,152	14.4	5,106,177	15.0	4,998,216	18.1	5,252,946	16.0	5,503,111	14.8	5,548,541	15.5	5,119,113	16.3	5,119,113	16.3	-1.4				
Net Operating Profit (Loss)	710,902	2.1	1,358,915	4.0	(83,014)	-0.3	491,584	1.5	2,402,648	6.5	2,365,181	6.6	589,162	1.9	589,162	1.9	66.3				
Other Expense (Income)	(11,059)	0.0	(19,797)	-0.1	(94,956)	-0.3	(144,730)	-0.4	(120,141)	-0.3	(75,926)	-0.2	(86,494)	-0.3	(86,494)	-0.3	-63.0				
Interest expense	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	N/M				
(Gain) / loss on asset sale or disposal	(4,738,394)	-13.7	21,564	0.1	0	0.0	228	0.0	13,086	0.0	(1,700)	0.0	7,264	0.0	7,264	0.0	872.5				
Other (income) / expense	(36,100)	-0.1	(57,324)	-0.2	(53,508)	-0.2	(47,228)	-0.1	(46,482)	-0.1	(23,275)	-0.1	(52,687)	-0.2	(52,687)	-0.2	10.2				
Total Other Expense (Income)	(4,785,553)	-13.9	(55,557)	-0.2	(148,464)	-0.5	(191,730)	-0.6	(153,537)	-0.4	(100,901)	-0.3	(131,917)	-0.4	(131,917)	-0.4	-46.2				
Income (Loss) Before Income Taxes	5,496,455	15.9	1,414,472	4.2	65,450	0.2	683,314	2.1	2,556,185	6.9	2,466,082	6.9	721,079	2.3	721,079	2.3	43.9				
Income Tax Provision (Benefit)	1,235,000	3.6	301,000	0.9	15,000	0.1	145,000	0.4	555,000	1.5	387,000	1.1	153,667	0.5	153,667	0.5	44.1				
Net Income (Loss)	4,261,455	12.3	1,113,472	3.3	50,450	0.2	538,314	1.6	2,001,185	5.4	2,079,082	5.8	567,412	1.8	567,412	1.8	43.8				
Net Income to Invested Capital	4,261,455	12.3	1,113,472	3.3	50,450	0.2	538,314	1.6	2,001,185	5.4	2,079,082	5.8	567,412	1.8	567,412	1.8	43.8				
Earnings Before Interest & Taxes (EBIT)	5,496,455	15.9	1,414,472	4.2	65,450	0.2	683,314	2.1	2,556,185	6.9	2,466,082	6.9	721,079	2.3	721,079	2.3	43.9				
Earnings Before Int., Taxes, Depr. & Amort. (EBITDA)	6,784,165	19.6	2,733,026	8.0	1,412,755	5.1	2,065,549	6.3	3,864,633	10.4	3,697,628	10.3	2,070,443	6.6	2,070,443	6.6	15.0				
Depreciation & Amortization	1,287,710	3.7	1,318,554	3.9	1,347,305	4.9	1,382,235	4.2	1,308,448	3.5	1,231,546	3.4	1,349,365	4.3	1,349,365	4.3	-2.3				
Capital Expenditures	779,356	2.3	670,898	2.0	824,136	3.0	1,802,914	5.5	1,998,347	5.4	1,333,988	3.7	1,099,316	3.5	1,099,316	3.5	-39.0				
Effective Tax Rate	22.5%		21.3%		22.9%		21.2%		21.7%		15.7%		21.3%		21.3%						
Dividends	850,196	2.5	850,196	2.5	502,388	1.8	1,140,036	3.5	1,101,391	3.0	1,111,052	3.1	830,873	2.6	830,873	2.6	-13.6				

Note:

(1) Source: Audited financial statements for the years ended December 31, 2017 through 2021, internal financial statements for the eleven months ended November 30, 2022 and 2021.

EXHIBIT 1.4 Comparative Balance Sheet

Nova Fastener & Tool, Inc.

Comparative Balance Sheet

Valuation Date: December 1, 2022 \$

ASSETS	At November 30, 2022				At December 31,				2017				Three-Year Average 2019 to 2021				Growth Rates '19-'21	
	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	%	%
Current Assets																		
Cash and cash equivalents	5,328,732	14.7	2,036,954	6.4	2,567,731	8.2	1,429,454	4.5	706,873	2.1	1,152,569	3.6	2,011,380	6.4	19.4			
Certificates of deposit	2,741,000	7.6	2,741,000	8.6	4,733,000	15.2	6,574,000	20.7	7,063,000	21.2	7,810,000	24.5	4,682,667	14.8	-35.4			
Accounts receivable, net	6,578,114	18.1	5,647,984	17.8	5,163,450	16.5	4,609,314	14.5	5,329,307	16.6	5,326,630	16.7	5,140,249	16.3	10.7			
Inventories	9,921,472	27.3	8,519,780	26.8	5,153,294	16.5	4,951,177	15.6	6,100,391	18.3	4,528,100	14.2	6,208,084	19.7	31.2			
Prepaid income taxes	0	0.0	440	0.0	85,940	0.3	58,186	0.2	150,686	0.5	84,112	0.3	48,189	0.2	-91.3			
Other current assets	422,002	1.2	346,236	1.1	383,772	1.2	427,192	1.3	438,222	1.3	357,918	1.1	385,733	1.2	-10.0			
Total Current Assets	24,991,320	68.8	19,292,394	60.7	18,087,187	57.9	18,049,323	56.9	19,988,479	60.1	19,259,349	60.5	18,476,301	58.5	3.4			
Fixed Assets																		
Land and improvements	1,310,513	3.6	1,778,819	5.6	1,636,749	5.2	1,636,749	5.2	1,632,299	4.9	1,571,552	4.9	1,684,106	5.3	4.2			
Buildings and improvements	6,545,058	18.0	8,456,983	26.6	8,534,317	27.3	8,331,804	26.3	8,292,749	24.9	8,039,831	25.3	8,441,035	26.7	0.7			
Production equipment and other	36,933,750	101.7	36,679,114	115.5	36,239,971	116.0	36,408,746	114.8	35,568,876	107.0	34,571,389	108.7	36,442,610	115.4	0.4			
Gross Fixed Assets	44,789,321	123.4	46,914,916	147.7	46,411,037	148.6	46,377,299	146.2	45,493,924	136.8	44,182,772	138.9	46,567,751	147.5	0.6			
Accumulated depreciation and amortization	(33,481,667)	-92.2	(34,441,052)	-108.4	(33,260,153)	-106.5	(32,703,246)	-103.1	(32,235,778)	-97.0	(31,625,819)	-99.4	(33,468,150)	-106.0	2.6			
Net Fixed Assets	11,307,654	31.2	12,473,864	39.3	13,150,884	42.1	13,674,053	43.1	13,258,146	39.9	12,556,953	39.5	13,099,600	41.5	-4.5			
Total Assets	36,298,974	100.0	31,766,258	100.0	31,238,071	100.0	31,723,376	100.0	33,246,625	100.0	31,816,302	100.0	31,573,902	100.0	0.1			
LIABILITIES & STOCKHOLDERS' EQUITY																		
Current Liabilities																		
Accounts payable	897,430	2.5	692,635	2.2	466,424	1.5	490,580	1.5	1,060,231	3.2	737,040	2.3	549,880	1.7	18.8			
Accrued wages and salaries	838,030	2.3	509,332	1.6	482,008	1.5	629,972	2.0	701,434	2.1	674,316	2.1	540,437	1.7	-10.1			
Other accrued expenses	411,519	1.1	366,418	1.2	322,968	1.0	349,069	1.1	475,973	1.4	495,132	1.6	346,152	1.1	2.5			
Unearned revenue and customer deposits	175,330	0.5	302,424	1.0	249,498	0.8	152,644	0.5	328,154	1.0	312,775	1.0	234,855	0.7	40.8			
Current 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			
Federal and state income taxes	1,164,586	3.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	N/M			
Total Current Liabilities	3,486,895	9.6	1,870,809	5.9	1,520,898	4.9	1,622,265	5.1	2,565,792	7.7	2,219,263	7.0	1,671,324	5.3	7.4			
Interest-bearing debt, less current maturities	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	N/M			
Deferred income taxes, net	900,084	2.5	926,084	2.9	1,011,084	3.2	943,084	3.0	921,084	2.8	737,084	2.3	960,084	3.0	-0.9			
Total Liabilities	4,386,979	12.1	2,796,893	8.8	2,531,982	8.1	2,565,349	8.1	3,486,876	10.5	2,956,347	9.3	2,631,408	8.3	4.4			

Stockholders' Equity													
Common stock	1,138,096	3.1	1,138,096	3.6	1,138,096	3.6	1,138,096	3.4	1,138,096	3.6	1,138,096	3.6	0.0
Additional paid-in capital	447,134	1.2	447,134	1.4	447,134	1.4	447,134	1.3	447,134	1.4	447,134	1.4	0.0
Retained earnings	34,248,863	94.4	31,306,233	98.6	31,042,957	99.4	31,494,895	96.5	31,196,823	98.1	31,281,362	99.1	-0.3
Less: Treasury stock, 171,964 shares at cost	(3,922,098)	-10.8	(3,922,098)	-12.3	(3,922,098)	-12.6	(3,922,098)	-11.8	(3,922,098)	-12.3	(3,922,098)	-12.4	0.0
Total Stockholders' Equity	31,911,995	87.9	28,969,365	91.2	28,706,089	91.9	29,158,027	89.5	28,859,955	90.7	28,944,494	91.7	-0.3
Total Liabilities & Stockholders' Equity	36,298,974	100.0	31,766,258	100.0	31,238,071	100.0	31,723,376	100.0	31,816,302	100.0	31,575,902	100.0	0.1
Net Working Capital													
Net Working Capital excluding Cash & CDs	21,504,425	59.2	17,421,585	54.8	16,566,289	53.0	16,427,058	51.8	17,422,687	52.4	17,040,086	53.6	3.0
Debt-Free Net Working Capital	13,434,693	37.0	12,643,631	39.8	9,265,558	29.7	8,423,604	26.6	9,652,814	29.0	8,077,517	25.4	22.5
Debt-Free Cash-Free Net Working Capital excluding Cash & CDs	21,504,425	59.2	17,421,585	54.8	16,566,289	53.0	16,427,058	51.8	17,422,687	52.4	17,040,086	53.6	3.0
Total Interest-Bearing Debt	13,434,693	37.0	12,643,631	39.8	9,265,558	29.7	8,423,604	26.6	9,652,814	29.0	8,077,517	25.4	22.5
	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	N/M

Note:

(1) Source: Audited financial statements for the years ended December 31, 2017 through 2021, internal financial statements for the eleven months ended November 30, 2022 and 2021.

EXHIBIT 1.5 Adjusted Comparative Income Statement

Nova Fastener & Tool, Inc.
Adjusted Comparative Income Statement
Valuation Date: December 1, 2022

	Trailing 12 Months November 30,		Years Ended December 31,												Three-Year Average 2019 to 2021	Growth Rates '19-'21 %
	November 30,		2021		2020		2019		2018		2017		2016			
	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%		
Net Revenues	34,538,367	100.0	33,974,558	100.0	27,590,653	100.0	32,873,002	100.0	37,174,249	100.0	35,764,714	100.0	31,479,404	100.0	1.7	
Total Cost of Goods Sold (except D&A)	(1) 27,560,603	79.8	26,190,912	77.1	21,328,146	77.3	25,746,237	78.3	27,960,042	75.2	26,619,446	74.4	24,421,765	77.6	0.9	
Depreciation & Amortization	1,287,710	3.7	1,318,554	3.9	1,347,305	4.9	1,382,235	4.2	1,308,448	3.5	1,231,546	3.4	1,349,365	4.3	-2.3	
Total Operating Expenses	4,979,152	14.4	5,106,177	15.0	4,998,216	18.1	5,252,946	16.0	5,503,111	14.8	5,548,541	15.5	5,119,113	16.3	-1.4	
Net Operating Profit (Loss)	710,902	2.1	1,358,915	4.0	(83,014)	-0.3	491,584	1.5	2,402,648	6.5	2,365,181	6.6	589,162	1.9	66.3	
Total Other Expense (Income)	(4,785,553)	-13.9	(55,557)	-0.2	(148,464)	-0.5	(191,730)	-0.6	(153,537)	-0.4	(100,901)	-0.3	(131,917)	-0.4	-46.2	
Income (Loss) Before Income Taxes	5,496,455	15.9	1,414,472	4.2	65,450	0.2	683,314	2.1	2,556,185	6.9	2,466,082	6.9	721,079	2.3	43.9	
Adjustments:																
(Gain) / Loss on sale of equipment, facilities	(2) (4,738,394)	-13.7	21,564	0.1	0	0.0	228	0.0	13,086	0.0	(1,700)	0.0	7,264	0.0	872.5	
Interest income	(3) (10,537)	0.0	(15,877)	0.0	(71,926)	-0.3	(59,275)	-0.2	(39,475)	-0.1	(23,163)	-0.1	(49,026)	-0.2	-48.2	
Total Adjustments	(4,748,931)	-13.7	5,687	0.0	(71,926)	-0.3	(59,047)	-0.2	(26,389)	-0.1	(24,863)	-0.1	(41,762)	-0.1	N/M	
Adjusted Income Before Taxes	747,524	2.2	1,420,159	4.2	(6,476)	0.0	624,267	1.9	2,529,796	6.8	2,441,219	6.8	679,317	2.2	50.8	
Estimated Income Tax	(4) 167,961	0.5	302,210	0.9	(1,484)	0.0	132,470	0.4	549,270	1.5	537,068	1.5	144,399	0.5	51.0	
Adjusted Net Income	579,562	1.7	1,117,949	3.3	(4,991)	0.0	491,797	1.5	1,980,525	5.3	1,904,151	5.3	534,918	1.7	50.8	
Adjusted Debt-Free Net Income	579,562	1.7	1,117,949	3.3	(4,991)	0.0	491,797	1.5	1,980,525	5.3	1,904,151	5.3	534,918	1.7	50.8	
Adj Earnings Before Interest & Taxes (Adj. EBIT)	747,524	2.2	1,420,159	4.2	(6,476)	0.0	624,267	1.9	2,529,796	6.8	2,441,219	6.8	679,317	2.2	50.8	
Adj Earn Bef Int, Taxes, Depr & Amort (Adj. EBITDA)	2,035,234	5.9	2,738,713	8.1	1,340,829	4.9	2,006,502	6.1	3,838,244	10.3	3,672,765	10.3	2,028,682	6.4	16.8	
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	
Depreciation & Amortization	1,287,710	3.7	1,318,554	3.9	1,347,305	4.9	1,382,235	4.2	1,308,448	3.5	1,231,546	3.4	1,349,365	4.3	-2.3	
Estimated Tax Rate	(4) 22.5%		21.3%		22.9%		21.2%		21.7%		22.0%		21.3%			

Notes:

- (1) Excludes depreciation and amortization expense.
- (2) Sales of equipment used in the fastener segment and, in the trailing twelve months, of a company warehouse.
- (3) Interest income has been adjusted downward due to the presence of excess debt-free working capital, which is added back as a non-operating asset. As shown on Exhibit 1.9, the estimated normal level of debt-free working capital is 40.0% of revenue. This figure is used to estimate the normal amount of debt-free working capital each year, which is then subtracted from actual to estimate the excess. To calculate the interest income adjustments, these excess working capital amounts are multiplied by each year's implicit effective rate of interest income earned on the Company's combined balance of cash and certificates of deposit.
- | | | | | | | |
|---|------------|------------|------------|------------|------------|------------|
| Effective rate of interest income earned | 0.14% | 0.41% | 1.30% | 1.81% | 1.55% | 0.85% |
| Ending actual debt-free working capital | 21,504,425 | 17,421,585 | 16,566,289 | 16,427,058 | 17,422,687 | 17,040,086 |
| Normalized debt-free working capital | 13,815,347 | 13,589,823 | 11,036,261 | 13,149,201 | 14,869,700 | 14,305,886 |
| Excess debt-free working capital estimate | 7,689,078 | 3,831,762 | 5,530,028 | 3,277,857 | 2,552,987 | 2,734,200 |
| Estimated interest adjustment | 10,537 | 15,877 | 71,926 | 59,275 | 39,475 | 23,163 |
- (4) The Company's actual historical tax rates have been imputed to adjusted income before tax as long as they fall between 20.0% and 30.0%. Outside this range, an effective combined tax rate of 22.0% is used, per management's estimate.

EXHIBIT 1.6 Adjusted Ratio Analysis

Nova Fastener & Tool, Inc.
Adjusted Ratio Analysis Valuation
Date: December 1, 2022

	AT November 30, 2022	Years Ended December 31,					Average 2019 to 2021
		2021	2020	2019	2018	2017	
Liquidity Ratios (3)							
Current Ratio	7.17	10.31	11.89	11.13	7.79	8.68	11.11
Debt-Free Current Ratio	7.17	10.31	11.89	11.13	7.79	8.68	11.11
Quick Ratio	3.41	4.11	5.08	3.72	2.43	2.92	4.30
Debt-Free Quick Ratio	3.41	4.11	5.08	3.72	2.43	2.92	4.30
Leverage Ratios							
Debt (1) to Assets	0.00	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	0.00
Debt (1) to Total Capital (2)	0.0%	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%	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	65.94	57.28	63.76	55.52	52.57	53.60	58.85
Working Capital Turnover	1.61	1.95	1.67	2.00	2.13	2.10	1.87
Debt-Free Working Capital Turnover	1.61	1.95	1.67	2.00	2.13	2.10	1.87
Inventory Turnover	3.27	4.02	4.49	4.91	5.51	6.14	4.47
Fixed Asset Turnover	2.88	2.65	2.06	2.44	2.88	2.86	2.38
Total Asset Turnover	1.00	1.08	0.88	1.01	1.14	1.14	0.99
Accum Depr to Gross Fixed Assets	74.8%	73.4%	71.7%	70.5%	70.9%	71.6%	71.9%

Notes:

(1) Debt defined as Total Interest-Bearing Debt

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

Profitability Ratios						
Gross Profit Margin	16.5%	19.0%	17.8%	17.5%	21.3%	22.1%
EBITDA Profit Margin	5.9%	8.1%	4.9%	6.1%	10.3%	10.3%
EBIT Profit Margin	2.2%	4.2%	0.0%	1.9%	6.8%	6.8%
Net Profit Margin	1.7%	3.3%	0.0%	1.5%	5.3%	5.3%
Return on Equity	1.9%	3.9%	0.0%	1.7%	6.8%	6.7%
Return on Assets	1.7%	3.5%	0.0%	1.5%	6.1%	6.0%
CAGR						
Growth Rates (Year-to-Year and Compound Annual)						
Revenues		23.1%	-16.1%	-11.6%	3.9%	1.7%
Gross Profit		31.5%	-14.4%	-27.3%	-0.1%	6.1%
Earnings Before Int., Taxes, Depr & Amort		104.3%	-33.2%	-47.7%	4.5%	16.8%
Earnings Before Interest & Taxes		N/M	-101.0%	-75.3%	3.6%	50.8%
Net Income		N/M	-101.0%	-75.2%	4.0%	50.8%
Total Assets		1.7%	-1.5%	-4.6%	4.5%	0.1%
Debt-Free Net Working Capital		5.2%	0.8%	-5.7%	2.2%	3.0%
Total Interest-Bearing Debt		N/M	N/M	N/M	N/M	N/M
Total Stockholders' Equity		0.9%	-1.5%	-2.0%	3.1%	-0.3%

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.

1.5.1 Summary

- Revenues and margins were highest in the first two years shown on Exhibit 1.3: 2017 and 2018.
- Management notes that in earlier years (not shown) margins were higher still.
- The Company's results for 2019 reflect the beginning of a cyclical downturn for the Company's products. Declining North American light vehicle production lowered 2019 demand by automotive customers, and the Company also saw sales to nonautomotive customers decline. Management indicates that the sales decline was the primary reason the Company's gross margin declined in 2019.
- In early 2020 the worldwide pandemic caused a further sharp reduction in revenue and held margins down.
- In late 2020 and early 2021 underlying demand drove some recovery in vehicle and other sales, and therefore in the Company's performance, but supply chain issues (e.g., computer chip shortages) and rising inflation limited unit growth in the second half of 2021 and into 2022. Gross margin thus recovered only partially in 2021, before declining again in the trailing 12 months due to these factors, and also to staffing shortages, resulting in less efficient production. There is thus no recent period that reflects only "normal," cyclical business conditions.
- Because management indicates that more recent data is most pertinent for Nova's business as of the valuation date, averages and rates of compound annual growth (CAGR) are presented for the latest three fiscal years, from December 31, 2019 to 2021.
- However, management also believes that a return to higher revenue and margin levels over time is expected and has projected such a return, as discussed later in this report.

1.5.2 Income Statement Analysis³⁴

1.5.2.1 Net Revenues Net revenues for the fiscal year ended December 31, 2021, were \$34.0 million, 23.1 percent higher than the prior year. Revenue increased at a CAGR of only 1.7 percent, however, from fiscal 2019 to 2021. Revenue decreased at a CAGR of 1.3 percent from 2017 to 2021, reflecting the cyclical downturn and decline in auto production underway at the time the pandemic began. For the TTM ended December 1, 2022, net revenues increased to \$34.5 million.

1.5.2.2 Gross Profit The Company's gross profit margin declined from 22.1 percent of revenues in 2017 to 17.5 percent in 2019, before rebounding partially to 19.0

³⁴ This discussion is based on unadjusted income statement data. Adjustments are discussed later in this section of the report.

percent in 2021. The initial decline and partial recovery in gross margin were primarily the result of sales volume, but as the country began to emerge from the pandemic in 2021, supply chain disruptions, labor market shortages, and historically high inflation resulted in much higher costs. Pricing of raw material remains volatile and difficult to forecast.

Gross margin averaged 18.1 percent during the most recent three fiscal years and decreased to 16.5 percent for the TTM ended December 1, 2022. This compares to 22.1 percent and 21.3 percent in the first two years of the period studied. Gross profit increased at a CAGR of 6.1 percent from fiscal 2019 to 2021, to \$6.5 million, though over the five-year period gross profit declined, and was \$5.7 million for the TTM preceding December 1, 2022.

1.5.2.3 Selling, General, and Administrative Expenses Selling, general, and administrative (SG&A) expenses increased as a percentage of revenues in 2019 and 2020, when they were 18.1 percent on depressed revenues, from a 2017 and 2018 level of about 15 percent. In 2021 operating expenses decreased to 15.0 percent of revenues, and for the TTM ended December 1, 2022, they were 15.1 percent. SG&A expenses averaged 16.3 percent of revenues in the most recent three fiscal years and declined at a -1.4 percent compound annual growth rate from fiscal 2019 to 2021.

1.5.2.4 Other Income and Expense Other income and expense fluctuated between -0.2 percent of revenue and -0.6 percent of revenue during 2017 to 2021, and in most years included primarily interest income on certificates of deposit and gains on the sales of equipment. In the trailing 12 months, however, other income was 13.9 percent of revenue, due to the September 2022 sale of the office and warehouse facility in St. Louis, which produced a one-time gain on sale of \$4.7 million.

1.5.2.5 Adjustments As shown in Exhibit 1.5, adjustments were made to eliminate nonrecurring income and expense items from Nova's reported income before tax.

Adjustments included the following:

- The gains and losses on the sale of tooling equipment and for the sale of the Company's St. Louis facilities.
- Excess working capital was identified at Nova 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.

1.5.2.6 Adjusted Income Before Taxes Adjusted income before taxes for the year ended December 31, 2021, was \$1.4 million or 4.2 percent of revenue, up considerably from the loss before tax of \$6 thousand (0.0 percent of revenue) in the prior fiscal year. For the TTM ended December 1, 2022, adjusted income before taxes was \$748 thousand or 2.2 percent of revenue.

1.5.2.7 Adjusted Net Income Adjusted net income decreased from \$1.9 million in 2017 to \$1.1 million in 2021. However, over the most recent three years it increased at a 50.8 percent compound rate of growth, from \$492 thousand in 2019. For the TTM ended December 1, 2022, adjusted net income decreased to \$580 thousand. The

Company's effective tax rate remained relatively flat over most periods analyzed, except for 2017, when it was 15.7 percent. In all other periods it ranged from 21.2 percent (in 2019) to 22.9 percent (in 2020). It was 22.5 percent for the trailing 12 months ending December 1, 2022.

1.5.3 Balance Sheet Analysis

1.5.3.1 Working Capital Nova held current assets of \$25.0 million as of December 1, 2022, composed primarily of inventory, accounts receivable, cash, and certificates of deposit. The increase from the December 31, 2021, level was primarily attributable to cash realized from the gain on sale of the Company's St. Louis facility.

Current assets grew from \$18.0 million at December 31, 2019, to \$19.3 million at December 31, 2021, increasing at a CAGR of 3.4 percent. This increase was due primarily to a decline in the Company's combined cash and certificate of deposit balances, from \$8.0 million to \$4.8 million, that was more than offset by increases in inventories and accounts receivable. Going back to 2017, there has been no growth in current assets through 2021, but during the fiscal years 2017 to 2021, the percent of total assets accounted for by certificates of deposit decreased from almost 25 percent to less than 9 percent, and that accounted for by inventory rose from just over 14 percent to almost 27 percent.

The Company's historically conservative position with respect to cash and investments helped it weather the pandemic. The Company did not require or obtain a PPP loan.

To meet customer requirements, the Company retains a significant level of inventory on hand. The amount of inventory has increased substantially over the last few years, from \$5.0 million at December 31, 2019, to \$8.5 million at December 31, 2021, a 31.2 percent CAGR. As of December 1, 2022, inventory stood at \$9.9 million. Management indicates that the increase in inventory is due to higher prices for raw materials, accelerated purchases in anticipation of yet more price increases, and efforts to mitigate continuing shortages and difficulties caused by supply chain disruptions.

Accounts receivable terms are fairly long. Payments for raw materials are generally due on receipt of goods. As such, the Company maintains cash and the certificates of deposit to support working capital requirements.

Current liabilities (in most periods composed primarily of accounts payable and accrued wages and salaries) increased from December 31, 2019, to December 31, 2021, from \$1.6 million to \$1.9 million, a CAGR of 7.4 percent. As of December 1, 2022, current liabilities were \$3.5 million, with the bulk of the increase attributable to accrued federal and state income taxes of \$1.2 million.

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.

1.5.3.2 Total Assets Total assets were flat during the fiscal years studied, standing at \$31.8 million at December 31, 2017, and \$31.8 million at December 31, 2021. Total assets were \$36.3 million at December 1, 2022. The increase was primarily due to the cash arising from the gain on sale of the Company's St. Louis facility.

1.5.3.3 Interest-Bearing Debt During the periods analyzed, Nova maintained no interest-bearing debt on its balance sheet, instead relying on working capital and internal cash to fund operations.

1.5.3.4 Total Liabilities Total liabilities as of December 31, 2021, were \$2.8 million, consisting of \$1.9 million of current liabilities and \$0.9 million of deferred income taxes. The level of total liabilities had increased slightly from the prior year, but decreased over the prior five years from \$3.0 million at December 31, 2017. Total liabilities were \$4.4 million as of December 1, 2022, with the bulk of the increase again attributable to accrued federal and state income taxes of \$1.2 million.

1.5.3.5 Stockholders' Equity The book value of stockholders' equity at December 31, 2021, was \$29.0 million, or 91.2 percent of total assets, and was down slightly from \$29.2 million as of December 31, 2019. On December 1, 2022, stockholders' equity was \$31.9 million, and represented 87.9 percent of total assets.

1.6 PROJECTIONS

Management provided projections for the Company for the month ending December 31, 2022, and the years ending December 31, 2023, 2024, 2025, and 2026, which are presented in Exhibit 1.7.

- Management expects labor market shortages and supply chain disruptions, including the shortage of computer chips that limited auto production in 2021 and 2022, to ease in late 2023 but to limit growth in December 2022 and the first two or three quarters of 2023.
- Management's projections reflect higher revenue growth beginning in late 2023 and continuing into 2026, due to the expected easing of supply chain and labor issues and 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, but management assumed that cost of sales before depreciation and amortization expense will trend downward over the next several years as a percent of sales, from its record high of almost 80 percent as of the TTM ended December 1, 2022.
- Management assumed that operating expenses would grow to support future operations, but that due to the projected increase in sales volume operating expenses will decline slightly as a percentage 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.

EXHIBIT 1.7 Management's Projections

Nova Fastener & Tool, Inc.
Comparative Income Statement
Valuation Date: December 1, 2022

Management's Assumptions for Projections				
Year	Revenue Growth, Annual	% of Revenue		
		Cost of Goods (Excluding Depr. & Amort.)	SG&A*	EBITDA Margin
2022	2.0%	79.8%	14.3%	5.9%
2023	3.5%	78.4%	14.2%	7.4%
2024	12.0%	77.0%	14.1%	8.9%
2025	10.0%	75.6%	14.0%	10.4%
2026	8.0%	74.2%	13.9%	11.9%
2027	4.5%	72.8%	13.7%	13.5%

* SG&A is net of interest income and other income and expense
Capital expenditures as % of revenue: 3.5%

	December 2022 One-Month Budget		2023		2024		2025		2026	
	2,887,837	100.0	35,866,941	100.0	40,170,974	100.0	44,188,071	100.0	47,723,117	100.0
Revenue										
<i>Growth</i>										
Cost of Goods (excluding D&A)	2,304,494	79.8	28,119,682	78.4	30,931,650	77.0	33,406,182	75.6	35,410,553	74.2
Gross Profit	583,343	20.2	7,747,259	21.6	9,239,324	23.0	10,781,889	24.4	12,312,564	25.8
Operating Expenses	412,961	14.3	5,093,106	14.2	5,664,107	14.1	6,186,330	14.0	6,633,513	13.9
EBITDA	170,382	5.9	2,654,154	7.4	3,575,217	8.9	4,595,559	10.4	5,679,051	11.9
Adjustments:										
(Gain) loss on sale of assets	-	-	-	-	-	-	-	-	-	-
Interest income adjustment	-	-	-	-	-	-	-	-	-	-
EBITDA	170,382	5.9	2,654,154	7.4	3,575,217	8.9	4,595,559	10.4	5,679,051	11.9
Capital Expenditures	101,074	3.5	1,255,343	3.5	1,405,984	3.5	1,546,582	3.5	1,670,309	3.5
Depreciation, Tax	78,733	2.7	1,653,837	4.6	1,599,911	4.0	1,547,308	3.5	1,185,438	2.5

1.7 APPROACHES TO VALUE

Three approaches can be used to value an interest in an operating business such as Nova: the income approach, the market approach, and the cost or asset approach.³⁵

1.7.1 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. (2001)

Income Approach—a general manner of estimating the value of an asset, business, or investment using one or more methods that convert expected Economic Income into a present amount. (2022)

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.

1.7.2 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. (2001)

Market Approach—a general manner of estimating a value of an asset, business, or investment by using one or more Valuation Methods that compare the valuation subject to other assets, businesses, or investments that have been sold or for which price and other information is available. (2022)

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.

1.7.3 Asset or Cost 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. (2001)

Asset Approach—a general manner of estimating the value of a business using one or more methods based on a summation of the value of the assets, net of liabilities, where each has been valued using either the market,

³⁵ Definitions for the income, market, and asset/cost approaches are taken from the 2001 *International Glossary of Business Valuation Terms* and the 2022 *International Valuation Glossary—Business Valuation*.

income, or cost approach. Also known as asset-based approach. See also Cost Approach. (2022)

Cost Approach—a general way of determining a value indication of an individual asset by quantifying the amount of money required to replace the future service capability of that asset. (2001)

Cost Approach—a general manner of estimating the value of an asset, investment, or (in limited circumstances) a business using one or more methods that reflect the economic principle that a buyer will generally pay no more for an asset than the cost to obtain another asset of equal utility, whether by purchase or by construction. The approach considers the current replacement or reproduction cost and the physical deterioration and all other relevant forms of obsolescence. See also Asset Approach. (2022)

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 inherently included, in aggregate, in the market and income approaches to value.

EXERCISE 19 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 20 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

1.7.4 Summary of the Valuation Approaches and Methods

In our valuation of Nova, we considered all three approaches to value. Under the income approach, we used the discounted cash flow method. We also considered, but rejected, the capitalized cash flow method (which is still presented herein for 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 Nova, 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. Nova is worth more as a going concern than in liquidation, whether orderly or forced. It is important to note that the expected cash flows of the business do not fully support all intangible assets and goodwill. We believe this is due to economic obsolescence, that is, the Company barely supports the value of the net tangible assets.

EXERCISE 21 All three approaches to value must be applied in all valuations.

- a. True
- b. False

1.8 INCOME APPROACH

The income approach estimates the fair market value of the Company based on the earnings, cash flow, and dividend-paying capacity of the Company. The approach evaluates the present worth of the future economic benefits that accrue to the investors in a business. These benefits are discounted to present value at a rate of return that is commensurate with the Company's risk. This present value determines the fair market value of a business.

We first analyzed the fair market value of the common equity of Nova as of December 1, 2022, and attempted to apply the capitalized cash flow method on an invested capital basis (i.e., by capitalizing after-tax cash flows prior to principal payments and interest expense). In the case of Nova, the resulting value is both an invested capital and equity value because there is no interest-bearing debt on its balance sheet as of the valuation date. We applied this method using data provided by management, economic and industry data, analysis of historical and anticipated trends, and discussion of the Company's future expectations with management. Because of the anticipated intermediate-term, higher growth rate of the Company, the application of this method undervalued the Company and was rejected (and is presented for learning illustration only).

We also prepared a discounted cash flow analysis relying on management's projections. A discussion of each of these methods is included in this report.

1.8.1 Capitalized Cash Flow Method (Learning Illustration Only)

The capitalized cash flow method values a business based on its ability to generate future cash flows. The method considers measures of normalized historical cash flow as indicators of expected future normal cash flow, along with future growth expectations. The capitalized cash flow to invested capital method as applied to Nova is summarized in Exhibit 1.8.

EXERCISE 22 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 23 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 24 List the two main bases when using the capitalized cash flow (CCF) or discounted cash flow (DCF) methods of the income approach.

1. _____
2. _____

1.8.1.1 Cash Flow to Invested Capital Adjustments We considered whether adjustments were necessary to arrive at the normalized cash flow to invested capital of the Company. These adjustments fell into the following categories.

EXERCISE 25 Under the direct equity basis, what are the components of net cash flow?

EXERCISE 26 For the invested capital basis of the income approach, list the components of net cash flow.

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

Nova Fastener & Tool, Inc.

Capitalized Cash Flow to Invested Capital Method

Valuation Date: December 1, 2022 \$

Assumptions:

(1) WACC	13.0%
(2) Debt-Free Working Capital as a % of Revenues	40.0%
(3) Perpetuity Growth Rate	4.5%
(4) Capital Expenditures as % Revenue	3.5%
(4) Normal Tax Depreciation % of Capital Expenditures	100.0%

	Trailing Twelve Months	Most Recent Fiscal Year	Three-Year Average
Net Revenues	34,538,367	33,974,558	31,479,404
Growth Rate	1.045	1.045	1.045
Following Year's Net Revenues	36,092,594	35,503,413	32,895,978
Incremental Net Revenues	1,554,227	1,528,855	1,416,573
(2) Debt-Free Working Capital as a % of Revenues	40.00%	40.00%	40.00%
(2) Estimated Incremental Working Capital	621,691	611,542	566,629
Adjusted Income before Taxes	747,524	1,420,159	679,317
Add: Actual Book Depreciation	1,287,710	1,318,554	1,349,365
(4) Less: Normal Tax Depreciation	(1,208,843)	(1,189,110)	(1,101,779)
Adjusted Income before Taxes, w/Normal Tax Depreciation	826,391	1,549,604	926,902
Add: Interest Expense	-	-	-
Adjusted Income to Invested Capital Before Taxes	826,391	1,549,604	926,902
Less: Taxes @ 22.0%	(181,806)	(340,913)	(203,919)
Adjusted Net Income to Invested Capital	644,585	1,208,691	722,984
Growth @ 4.5%	1.045	1.045	1.045
Following Year's Net Income to Invested Capital	673,591	1,263,082	755,518
(4) Plus: Following Year's Normal Tax Depreciation	1,263,241	1,242,619	1,151,359
(4) Less: Following Year's Capital Expenditures	(1,263,241)	(1,242,619)	(1,151,359)
Less: Incremental Working Capital	(621,691)	(611,542)	(566,629)
Following Year's Normalized Cash Flow to Invested Capital	51,901	651,540	188,889
Capitalization Rate	8.50%	8.50%	8.50%
Indicated Value of 100% of the Business Enterprise	610,595	7,665,178	2,222,223
Adjustment for Mid-Year Convention	1.063	1.063	1.063
Indicated Value of 100% of the Business Enterprise	649,071	8,148,196	2,362,255
Less: Interest-Bearing Debt	-	-	-
Indicated Value of 100% of the Equity	649,071	8,148,196	2,362,255
Indicated Value of 100% of the Equity, Rounded	600,000	8,100,000	2,400,000
Preliminary Value of the Operating Equity		8,100,000	
(5) Working Capital Excess / (Deficit)		7,689,078	
Indicated Value of 100% of the Equity, Rounded		<u>\$ 15,800,000</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 1.9 for details.
- (3) Long-term growth assumption based on analysis of industry and other factors, including inflation and GDP growth.
- (4) Normal tax depreciation is assumed to be 100.0% of normal capital expenditures into perpetuity. This is a simplifying assumption, since depreciation is in historical dollars and capital expenditures are in current dollars. The actual relationship will be influenced by the level of in fixed assets' tax depreciation categories, and other factors. Normal capital expenditures were estimated by management at 3.5% of revenue.
- (5) Based on the working capital assumption, the Company had excess working capital as of the valuation date:

Ending Debt-Free Working Capital at November 30, 2022	21,504,425
Normalized DFWC Based on Analysis (40.0% of Revenue)	(13,815,347)
Excess DFWC	7,689,078

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

Nova Fastener & Tool, Inc.
Debt-Free Working Capital (DFWC) Statistics
Benchmark Data Analysis (1)

	NAICS # 332722			
	Bolt, Nut, Screw, Rivet, and Washer Manufacturing		4/1/21 - 3/31/22	
As a % of Total Assets	4/1/19 - 3/31/20	4/1/20 - 3/31/21	All	4/1/21 - 3/31/22 Sales > 25 MM
Current Assets	65.3%	64.4%	69.1%	64.9%
Less: Current Liabilities	27.7%	27.5%	26.2%	18.1%
Working Capital	37.6%	36.9%	42.9%	46.8%
Working Capital	37.6%	36.9%	42.9%	46.8%
Plus: Notes Payable - Short-Term	9.5%	8.0%	6.1%	5.1%
Plus: Current Mat. - Long-Term Debt	2.3%	2.3%	2.6%	0.7%
Debt-Free Working Capital (DFWC)	49.4%	47.2%	51.6%	52.6%
Debt-Free Working Capital	49.4%	47.2%	51.6%	52.6%
Times: Total Assets - \$000	\$ 1,599,109	\$ 1,580,760	\$ 1,189,956	\$ 970,689
Debt-Free Working Capital - \$000	\$ 789,960	\$ 746,119	\$ 614,017	\$ 510,582
Debt-Free Working Capital - \$000	\$ 789,960	\$ 746,119	\$ 614,017	\$ 510,582
Divided by: Total Sales - \$000	\$ 2,394,832	\$ 1,979,537	\$ 1,553,946	\$ 1,246,587
DFWC As a % of Sales	33.0%	37.7%	39.5%	41.0%

NAICS # 336390

	Other Motor Vehicle Parts Manufacturing		
	4/1/19 - 3/31/20	4/1/20 - 3/31/21	4/1/21 - 3/31/22
As a % of Total Assets	All	All	All
Current Assets	59.7%	59.8%	61.7%
Less: Current Liabilities	39.4%	39.3%	42.9%
Working Capital	20.3%	20.5%	18.8%
Working Capital	20.3%	20.5%	18.8%
Plus: Notes Payable - Short-Term	8.5%	8.8%	7.2%
Plus: Current Mat. - Long-Term Debt	4.0%	2.9%	4.1%
Debt-Free Working Capital (DFWC)	32.8%	32.2%	30.1%
Debt-Free Working Capital	32.8%	32.2%	30.1%
Times: Total Assets - \$000	\$ 7,901,996	\$ 5,529,225	\$ 4,656,823
Debt-Free Working Capital - \$000	\$ 2,591,855	\$ 1,780,410	\$ 1,401,704
Debt-Free Working Capital - \$000	\$ 2,591,855	\$ 1,780,410	\$ 1,401,704
Divided by: Total Sales - \$000	\$ 13,735,300	\$ 8,687,157	\$ 6,696,087
DFWC As a % of Sales	18.9%	20.5%	20.9%

Nova Fastener & Tool, Inc.
Debt-Free Working Capital (DFWC) Statistics
Benchmark Data Analysis

	Subject Company DFWC Turns	DFWC as a % of Revenues	Guideline Public Company DFWC as a % of Revenues (1)
Three-Year Average	1.87	53.4%	39.0%
Most Recent Fiscal Year	1.95	51.3%	38.8%
Trailing Twelve Months	1.61	62.3%	38.4%
Concluded Debt-Free Working Capital Requirements		40.0%	

Notes:

- (1) Source: Benchmark data publication.
(2) See Exhibit 1.10 for more information.

EXERCISE 27 What is the difference between minority cash flows and control cash flows?

EXERCISE 28 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 29 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?

1.8.1.2 Adjustments for Nonoperating Assets

EXERCISE 30 List some of the nonoperating/excess assets that are sometimes encountered in a business valuation.

EXERCISE 31 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 32 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

If any cash flows related to nonoperating assets are included in projected cash flows, they may need to be removed. This adjustment is necessary when the value of nonoperating assets (such as nonoperating real property or securities) is calculated separately in the determination of business enterprise value. In these instances, the potential for double counting exists if an adjustment is not made to projected operating cash flows. Based on an analysis of the industry, guideline companies, and discussions with management, Nova has excess working capital as of the valuation date. This excess working capital is considered a nonoperating asset.

Industry data indicates that normal debt-free working capital requirements for Nova are 40.0 percent of revenue. See Exhibits 1.9 and 1.10 for an analysis of working capital requirements. This assumption was corroborated by management of the Company, which has traditionally maintained excess liquidity and avoided the use of debt. Based on this requirement, as of December 1, 2022, the Company held \$7,689,078 in excess working capital as calculated on Exhibit 1.12.

Excess working capital was added to the operating value of Nova when computing the value of the equity under the capitalized cash flow method (Exhibit 1.8) and the discounted cash flow method (Exhibit 1.11).

For consistency, historical income was adjusted to exclude interest income in excess of (i) each year's effective interest rate times (ii) excess debt-free working capital in order to avoid double counting the value of the excess working capital (Exhibit 1.5).

Note:
(1) Underlying financial data for computing working capital and debt-free working capital as percentages of revenue can be found in Exhibit 1.21.
Source: Guideline Public Company Analysis

EXHIBIT 1.11 Discounted Cash Flow to Invested Capital Method

Nova Fastener & Tool, Inc.

Discounted Cash Flow to Invested Capital Method (1)

Valuation Date: December 1, 2022

Assumptions

WACC (2)	13.0%	Perpetuity Growth Rate (3)	4.5%	Capitalization Rate (5)	8.5%
DFWC as a % of Revenue (4)	40.0%	Tax Rate (6)	22.0%		

(\$ in thousands)

Years Ended December 31,

	Projected										Terminal Year	
	2021		2022		2023		2024		2025		2026	
	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%
Revenues	33,974,558	100.0	2,887,837	100.0	35,866,941	100.0	40,170,974	100.0	44,188,071	100.0	47,723,117	100.0
Net Revenues						3.5%		12.0%		10.0%		4.5%
<i>Growth Rate (Year Over Year)</i>												
Earnings Before Interest and Tax, Depreciation and Amortization	2,738,713	8.1	170,382	5.9	2,654,154	7.4	3,575,217	8.9	4,595,559	10.4	5,679,051	11.9
Less: Tax Depreciation and Amortization			(78,733)	(2.7)	(1,653,837)	(4.6)	(1,599,911)	(4.0)	(1,547,308)	(3.5)	(1,185,438)	(2.5)
Earnings to Invested Capital Before Tax / EBIT	91,649	3.2	1,000,316	2.8	1,000,316	2.8	1,975,305	4.9	3,048,251	6.9	4,493,613	9.4
Estimated Income Tax	20,163	0.7	220,070	0.6	220,070	0.6	434,567	1.1	670,615	1.5	988,595	2.1
Adjusted Net Income to Invested Capital	71,486	2.5	780,247	2.2	780,247	2.2	1,540,738	3.8	2,377,636	5.4	3,505,018	7.3
Less: Incremental Debt-Free Working Capital	(46,273)	(1.6)	(485,157)	(1.4)	(485,157)	(1.4)	(1,721,613)	(4.3)	(1,606,839)	(3.6)	(1,414,018)	(3.0)
Plus: Tax Depreciation and Amortization	78,733	2.7	1,653,837	4.6	1,653,837	4.6	1,599,911	4.0	1,547,308	3.5	1,185,438	2.5
Less: Capital Expenditures	(101,074)	(3.5)	(1,255,343)	(3.5)	(1,255,343)	(3.5)	(1,405,984)	(3.5)	(1,546,582)	(3.5)	(1,670,309)	(3.5)
Cash Flow to Invested Capital	2,872	0.1	693,584	1.9	693,584	1.9	13,052	0.0	771,523	1.7	1,606,129	3.4
Terminal Value												35,657,590
Cash Flow to Invested Capital Period	2,872.5		693,584.4		693,584.4		13,052.2		771,522.7		1,606,128.7	
	0.04		0.58		0.58		1.58		2.58		3.58	

(continued)

EXHIBIT 1.11 (continued)

	Years Ended December 31,			
	Projected			Terminal Year
(\$ in thousands)				
Discount Factors	0.9950	0.9313	0.8242	0.7294
Present Value of Cash Flows to				
Invested Capital	2,858.1	645,947.9	10,757.3	562,717.0
Present Value Through 2026	2,258,957			
Terminal Value	23,015,204			
Present Value of Invested Capital	25,274,160			
(9) Plus: Excess Debt-Free Working Capital	7,689,078			
(10) Plus: Present Value of Depreciation Overhang	(362,052)			
Less: Interest-Bearing Debt	-			
Indicated Value of 100% of the Equity	<u>32,601,187</u>			
SAY	<u>32,600,000</u>			
				0.6455
				1,036,676.3
				23,015,203.7

Notes:

- (1) Projections provided by management. Projection for 2022 is for month of December only. See Exhibit 1.7 for additional detail.
- (2) See Exhibit 1.18 for calculation of the weighted average cost of capital.
- (3) The long-term growth rate reflects industry and other factors, including expected inflation and GDP growth.
- (4) Debt-free working capital (DFWC) requirements are based on analysis of historical requirements and analysis of the industry. See Exhibit 1.9 for normalized DFWC requirements, and Exhibit 1.12 for calculation of the incremental DFWC amounts used in this 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 is set equal to capital expenditures in the long term as a simplifying assumption. The actual long-term relationship between depreciation and capital expenditures will be influenced by the level of inflation and the mix of the class lives of the Company's fixed assets for tax purposes.
- (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 DFWC.
- (10) In the terminal year tax depreciation is set equal to an estimated long-term level of 100% of capital expenditures. The overhang adjustment represents the tax benefit or cost anticipated from projected differences in this long-term level of depreciation, which must be used in the terminal value calculation, and the actual projected tax depreciation from the terminal year forward over the next few years following it. The occurrence of a negative depreciation "overhang" is due in part to the sunset of 100% bonus depreciation. See Exhibit 1.13 for calculation and additional information.

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

Nova Fastener & Tool, Inc. Discounted Cash Flow Method Calculation of Incremental Debt-Free Working Capital (DFWC) Valuation Date: December 1, 2022						
	12 Months Ended 11/30/2022	Running Rate December 2022	Years Ended December 31,			
			2023	2024	2025	2026
Revenue	34,538,367	34,654,049	35,866,941	40,170,974	44,188,071	47,723,117
<i>Growth</i>			3.5%	12.0%	10.0%	8.0%
Normal DFWC as % of Net Revenues	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Normal DFWC	13,815,347	13,861,620	14,346,776	16,068,390	17,675,228	19,089,247
Incremental DFWC		46,273	485,157	1,721,613	1,606,839	1,414,018
Actual DFWC at 11/30/2022	21,504,425					
Less: Normal DFWC at 11/30/2022	13,815,347					
Excess (Deficient) DFWC at 11/30/2022	7,689,078					
						Terminal Year
						49,870,657
						4.5%
						40.0%
						19,948,263
						859,016

EXHIBIT 1.13 Discounted Cash Flow Method: Calculation of Depreciation Overhang

Nova Fastener & Tool, Inc.
Discounted Cash Flow Method
Calculation of Depreciation Overhang
Valuation Date: December 1, 2022
000s \$

	Years Ending December 31,					
	2027	2028	2029	2030	2031	2032
Projected Depreciation, Tax (1)	823,872	1,090,931	1,305,704	1,485,998	1,639,967	1,771,346
Depreciation Embedded in Terminal Year Calculation	<u>1,745,473</u>	<u>1,824,019</u>	<u>1,906,100</u>	<u>1,991,875</u>	<u>2,081,509</u>	<u>2,175,177</u>
Projected Depreciation Less Embedded Depreciation	(921,601)	(733,089)	(600,396)	(505,877)	(441,542)	(403,831)
Tax Benefit (Cost) @ Tax Rate of 22.0%	(202,752)	(161,280)	(132,087)	(111,293)	(97,139)	(88,843)
PV Period	4.58	5.58	6.58	7.58	8.58	9.58
PV Factor	0.5712	0.5055	0.4473	0.3959	0.3503	0.3100
Present Value of Tax Benefit (Cost)	(115,811)	(81,524)	(59,086)	(44,057)	(34,030)	(27,543)
Sum of PV of Depreciation Overhang	(362,052)					

Notes:

- (1) From management's projections.
- (2) The occurrence of a negative depreciation overhang is due in part to the sunset of 100% bonus depreciation. The existence and sunset of bonus depreciation will create a period during which capital expenditures must be capitalized but there are few existing assets with tax basis to depreciate.

1.8.1.3 Adjustments for Financial (Invested Capital) Cash Flow Financial cash flows include the sources and uses of cash related to interest-bearing debt. To accurately calculate the value of operating cash flows (or the business independent of its financing policies), financial cash flows must be removed from the projections. Because there is no interest-bearing debt on the balance sheet as of the valuation date, there was no need to exclude interest expense from each year's projected results.

1.8.1.4 Adjustments for Incremental Investment in Working Capital As the revenues of a business increase, its working capital typically grows. Because the increase in working capital represents additional investment that is not incorporated into the income statement, an adjustment is necessary to reflect its impact on cash flow. Likewise, if sales are projected to decline, an adjustment is necessary to reflect the decreased investment in working capital. Based on an analysis of the historical working capital requirements of the Company, discussions with management, and an analysis of industry benchmark data, we calculated incremental debt-free working capital requirements assuming a working capital requirement of 40.0 percent of revenues (incremental working capital requirements were calculated on a debt-free basis).

This estimate of normal required working capital was also used to estimate the amount of excess working capital present on the Company's balance sheet as of December 1, 2022.

1.8.1.5 Adjustments for Growth A long-term perpetuity growth rate of 4.5 percent was applied to Nova. This reflects the Company's anticipated long-term growth considering

the nominal (inflation and real GDP) growth of the United States economy, industry data, the Company's performance and outlook, and discussions with management.

1.8.1.6 Adjustments for Capital Expenditures and Depreciation To accurately reflect investment in operations, the effect of future expansion and upkeep of the facility should be included in expected cash flows. Also, any noncash reduction in cash flows such as depreciation and/or amortization should be added back to operating cash flows. In order to determine operating cash flows, we have subtracted capital expenditures from net income (before interest and after tax) and added back total depreciation. We have assumed that expectations regarding these items are offsetting at their historical levels, as they have been relatively stable historically. This is a simplifying assumption because there may be some difference between capital expenditures, which are purchased in current dollars, and depreciation, which is in historical dollars. Again, the Company's historical performance supports this assumption of offsetting capital expenditures and depreciation.

1.8.1.7 The Gordon Growth Model We used the widely accepted Gordon Growth Model to determine the value of the continuing operations of Nova into perpetuity.

The Gordon growth or perpetuity model can be defined as follows:³⁶

$$\text{Terminal Value} = \frac{\text{Free Cash Flow}}{(\text{Cost of Capital} - \text{Growth Rate})}$$

Free Cash Flow = The normalized level of free cash flow in the first year after the explicit projected period

We applied the Gordon Growth Model on an invested capital basis. Issues that were addressed in this calculation included the proper growth rate in light of economic, industry, and company expectations and the reserve for replacement and depreciation.

1.8.1.8 Conclusion We considered indications of value based on Nova's trailing 12 months, most recent, and three-year average cash flow to invested capital, capitalized at an 8.5 percent capitalization rate. This capitalization rate is equal to the cost of capital of 13.0 percent (discussed in Section 1.9) less the long-term growth rate of 4.5 percent.

EXERCISE 33 In the valuation of Nova, 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

³⁶ In the DCF method it is referred to as the terminal year value. In the CCF method it is the expected value as of the valuation date.

EXERCISE 34 Analysts will generally use a straight historical average where the earnings and cash flows are more volatile.

- a. True
- b. False

We adjusted the resulting preliminary indications of the value of the Company's invested capital for estimated excess debt-free working capital. See Exhibit 1.8.

Based on the capitalized cash flow method, the indicated value of 100 percent of the equity of Nova as of December 1, 2022, was \$15,800,000. See Exhibit 1.8.

EXERCISE 35 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 36 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.

EXERCISE 37 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

1.8.2 Discounted Cash Flow Method

EXERCISE 38 When is it more appropriate to use a discounted cash flow method instead of a capitalized cash flow method?

Management provided projections for the Company for the month ending December 31, 2022, and the years ending December 31, 2023, through 2026, as presented in Exhibit 1.7. These projections reflect expected revenue growth and margin improvement associated with the anticipated easing of supply chain issues and labor shortages, new investments, and a recently executed manufacturing contract with a new customer. With planned capital investments, production capacity and efficiency are such that the facilities can support such growth in production.

The discounted cash flow analysis relying on management's projections is presented in Exhibit 1.11. The analysis relied on a WACC of 13 percent and perpetuity growth rate of 4.5 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 22 percent. Nova uses a variety of strategies to minimize its tax burden and expects to be able to continue to do so in the future.

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 requirements (see Exhibit 1.12 for calculation) and capital expenditures and adding back depreciation and amortization. We used a mid-year convention to reflect the fact that earnings 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 be below capital expenditures for several years beyond the discrete projection period. The deficiency of actual projected depreciation expense as compared to the level of normalized depreciation expense embedded in the terminal year will result in extra tax costs for a few years beyond the discrete projection period, which are not captured in the terminal value. Instead of a depreciation "overhang," there is a depreciation "underhang." This previously unusual situation is a result of the pending sunset of the 100 percent bonus depreciation provided for in the Tax Cuts and Jobs Act. This sunset will create a period during which capital expenditures must be capitalized, but there are few existing assets with tax basis to depreciate.

The value of the negative depreciation overhang was captured by calculating the present value of the additional tax costs for the years beyond the discrete projection, as illustrated in Exhibit 1.13. The calculation relies on the same WACC used in the discounted cash flow analysis. Based on the calculation, the present value is (\$362,052), which is adjusted from the operating value of the Company in the discounted cash flow analysis.

EXERCISE 39 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 excess debt-free working capital of \$7,689,078 is also added to the operating value of the Company.

The concluded value of the Company based on the discounted cash flow method is \$32,600,000. See Exhibit 1.11 for the discounted cash flow analysis.

1.9 COST OF CAPITAL

The formula for determining the weighted average cost of capital (WACC) 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 40 When using the direct equity basis instead of the invested capital basis, assumptions of capital structure can be avoided.

- a. True
- b. False

EXERCISE 41 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

1.9.1 Cost of Equity

As shown in Exhibit 1.14, we used two widely accepted methods to estimate the cost of equity applicable to Nova: the build-up model and the modified capital asset pricing model (modified CAPM or MCAPM). The concluded cost of equity is 18.00 percent as of December 1, 2022.³⁷

1.9.1.1 Modified CAPM 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)

1.9.1.2 Build-Up Model 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)

EXERCISE 42 Name the two methods most often used to derive a cost of equity in the income approach.

1. _____

2. _____

EXERCISE 43 Should the build-up method and MCAPM rates of return be applied to income or cash flow?

³⁷Notation system based on Shannon P. Pratt and Roger J. Grabowski, *Cost of Capital Applications and Examples*, 5th ed. (John Wiley & Sons, 2014).

EXHIBIT 1.14 Cost of Equity

Nova Fastener & Tool, Inc.

Cost of Equity

Valuation Date: December 1, 2022

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)	3.85%	3.85%
(2) Market Premium (RP_m)	7.46%	6.22%
(3) Size Premium (RP_s)	4.80%	4.80%
(4) Industry Risk Premium (RP_i)	0.00%	0.00%
(5) Company-Specific Risk Premium (RP_c)	2.00%	2.00%
$K_e =$	<u>18.11%</u>	<u>16.87%</u>

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)	3.85%	3.85%
(6) Beta (β)	1.14	1.14
(2) Equity Risk Premium (RP_m)	7.46%	6.22%
(3) Size Premium (RP_s)	4.80%	4.80%
(5) Company-Specific Risk Premium (RP_c)	2.00%	2.00%
$K_e =$	<u>19.15%</u>	<u>17.74%</u>

Build-Up Method, Based on Kroll, LLC *Cost of Capital Navigator* Data, Size-Specific Equity Risk Premium

(1) Risk-Free Rate (R_f)	3.85%
Equity Risk Premium (RP_m)	N/A
(7) Size-Specific Equity Risk Premium ($RP_m + RP_s$)	14.00%
(4) Industry Risk Premium (RP_i)	0.00%
(5) Company-Specific Risk Premium (RP_c)	2.00%
$K_e =$	<u>19.85%</u>

MCAPM Method, Based on Kroll, LLC *Cost of Capital Navigator* Data

(1) Risk-Free Rate (R_f)	3.85%
(6) Beta (β)	1.14
(8) Equity Risk Premium (RP_m)	6.03%
(9) Size-Specific Equity Risk Premium over CAPM	5.00%
(5) Company-Specific Risk Premium (RP_c)	2.00%
$K_e =$	<u>17.72%</u>

Build-Up Method, Based on Kroll, LLC *Cost of Capital Navigator* Data, Based on Risk Characteristics

(1) Risk-Free Rate (R_f)	3.85%
(10) Risk-Specific Equity Risk Premium	13.00%
(4) Industry Risk Premium (RP_i)	0.00%
(5) Company-Specific Risk Premium (RP_c)	2.00%
$K_e =$	<u>18.85%</u>

Range of $K_e = 16.87\%$ to 19.85%

Concluded Cost of Equity = 18.00%

(continued)

EXHIBIT 1.14 (continued)**Notes:**

- (1) 20-Year Treasury Bond as of December 1, 2022.
- (2) Kroll, LLC, *Cost of Capital Navigator*, 2021 Data.
- (3) Kroll, LLC, *Cost of Capital Navigator*, 2021 Data. Size premium for the 10th decile (market capitalization between \$10.588 million and \$289.007 million).
- (4) No usable data. The Kroll IRP for GICS 201060, Machinery (which includes related parts) was 1.64%, which includes three of the selected guideline public companies but also includes dozens of additional companies not used in our analysis.
- (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 the calculation of beta. Note that the Kroll Vasicek-adjusted beta for GICS 201060, Machinery (which includes related parts) was 1.22, which includes the three of the selected guideline public companies but also includes dozens of additional companies not used in our analysis.
- (7) Size-specific equity risk premiums are based on comparison of the Company to risk premium groups presented in the Kroll, LLC, *Cost of Capital Navigator*, 2021 Data.
- (8) Market premium embedded in Kroll, LLC, *Cost of Capital Navigator*, 2021 Data.
- (9) Size-specific equity risk premiums over CAPM are based on comparison of the Company to risk premium groups presented in the Kroll, LLC, *Cost of Capital Navigator*, 2021 Data.
- (10) Risk-specific equity risk premiums are based on comparison of the Company to risk premium groups presented in the Kroll, LLC, *Cost of Capital Navigator*, 2021 Data.

Certain parameters used in one or both cost of equity methods are discussed next.

1.9.1.3 Risk-Free Return (R_f) The rate of return on a risk-free security was found by looking at the yields of United States Treasury securities. Ideally, the duration of the security used as an indication of the risk-free rate should match the horizon of the projected cash flows that are being discounted (which is assumed to be into perpetuity). We used a 20-year Treasury rate that was equal to 3.85 percent as of December 1, 2022.

EXERCISE 44 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?

1.9.1.4 Equity Risk Premium (RP_m) The risk premiums, which are widely used, for the equity market are drawn from the *Cost of Capital Navigator* online database application published by Kroll, LLC.³⁸ The risk premium for the market can be calculated by subtracting the mean income return for long-term government bonds from the mean return for large-company stocks. According to the *Cost of Capital Navigator*, the unconditional (raw data) equity risk premium based on analysis of the historical period from 1926 to 2021 was 7.46 percent and the unconditional equity risk

³⁸ <https://www.kroll.com/en/cost-of-capital>. This application and/or the data it provides were formerly published by others, including Kroll, Morningstar, and Ibbotson Associates.

premium based on the long-term supply-side market equity premium was 6.22 percent. These data are referred to as the CRSP³⁹ equity risk premiums.

1.9.1.5 Size Premium (RP_s) Various studies and analyses have shown an inverse relationship between company size and rates of returns, that is, the smaller the size of a company, the higher the rate of return. See the following chart for the past four years:

Cost of Capital Benchmark Data—December 31, 2019, 2020, 2021, and 2022

	2019	2020	2021	2022
U.S. 30-day Treasury bill ¹	1.52%	0.08%	0.04%	3.72%
U.S. 5-year Treasury note ²	1.69%	0.36%	1.26%	3.99%
U.S. 20-year Treasury bond ³	2.25%	1.45%	1.94%	4.14%
Aaa corporate bond ⁵	3.04%	2.23%	2.71%	4.70%
30-year conventional mortgage ⁶	3.74%	2.67%	3.11%	6.42%
Baa corporate bond ⁷	3.90%	3.11%	3.37%	5.87%
Prime Rate ⁴	4.75%	3.25%	3.25%	7.50%
Large-cap stock (\$29 billion–\$2 trillion) ⁸	11.04%	11.25%	11.39%	11.54%
Micro-cap stock (\$2.2 million–\$452 million) ⁸	17.67%	17.73%	17.92%	17.93%
Small-cap stock (\$2.2 million–\$190 million) ⁸	19.80%	19.90%	20.04%	20.04%
Subdecile category 10b (\$2.2 million–\$95 million) ⁸	22.67%	22.73%	22.98%	22.95%
D&P size category 25 (\$9 million–\$385 million) ⁹	23.35%	22.98%	23.09%	23.37%
Subdecile category 10z (\$2.2 million–\$47 million) ⁸	24.97%	25.02%	25.55%	25.62%
VS Bridge/IPO ¹⁰		20%–35%		
VC second stage/expansion ¹⁰		30%–50%		
VC first stage/early development ¹⁰		40%–60%		

Notes:

¹ <https://fred.stlouisfed.org/series/TB4WK>

² <https://fred.stlouisfed.org/series/DGS5>

³ <https://fred.stlouisfed.org/series/DGS20>

⁴ <https://fred.stlouisfed.org/series/DPRIME>

⁵ <https://fred.stlouisfed.org/series/DAAA>

⁶ <https://fred.stlouisfed.org/series/MORTGAGE30US>

⁷ <https://fred.stlouisfed.org/series/DBAA>

⁸ Kroll 2023 *Cost of Capital Navigator*, CRSP Deciles Size Study- Supplementary Data Exhibits, all data from 1926 to 2022, large cap is decile 1, micro-cap is deciles 9 and 10, small cap is decile 10.

⁹ Kroll 2023 *Cost of Capital Navigator*, CRSP Deciles Size Study and Risk Premium Report Study- Supplementary Data Exhibits, Resource Library, all data from 1963 to 2022.

¹⁰ *Valuation of Privately-Held-Company Equity Securities Issued as Compensation, Accounting & Valuation Guide*, 2013, American Institute of Certified Public Accountants, p. 148. (2019, 2020, 2021, 2022, 2023)

The size premium (over the risk premium for the market) can be calculated by subtracting the estimated (i.e., CAPM predicted) return in excess of the riskless rate from the realized return in excess of the riskless rate. In the case of Nova, we applied the size-premium return in excess of CAPM of companies in the 10th decile (i.e., in the smallest decile) from Kroll.

³⁹ Because they are prepared using securities prices provided by the Center for Research in Securities Prices (CRSP).

The source of these data was the Center for Research in Security Prices at the University of Chicago. For 2021, this decile includes companies with less than approximately \$289.0 million in market value of equity. The indicated size premium (RP_s) was 4.80 percent.

Note: Although there have been some criticisms of the size premium, the vast majority of professional valuation analysts consider the size premium and its application when preparing a business valuation.

1.9.1.6 Combined Market and Size Premium (RP_{m+s}) In addition to the CRSP data, which is based on the market value of equity, Kroll publishes a separately computed set of equity risk premium data in the *Cost of Capital Navigator* called the “Risk Premium Report” data. These data 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 allows for comparative analysis between the subject company and market data for various portfolios of public companies that are grouped using several different provided measures of size to capture the impact of size differences on risk based on these various measures of size. The Risk Premium Report data go back to 1963 (as opposed to the CRSP data, which go back to 1926), and exclude speculative start-ups, distressed companies, high-financial-risk companies, and financial services companies. The Risk Premium Report data 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 revenue and earnings, and number of employees.

We compared the parameters of the Company to the criteria presented in the *Cost of Capital Navigator*’s Risk Premium Report data to identify into which portfolios 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 is refined based on an iterative process. Based on this analysis, we concluded to the combined market and size premium of 14.00 percent and the smoothed premium over CAPM of 5.00 percent. The historical market equity risk premium embedded in the *Cost of Capital Navigator*’s Risk Premium Report data over the 1963 to 2021 time period, which is used in calculating all of the Risk Premium Report risk premia for that period, is 6.03 percent. See Exhibit 1.15 for comparison of the subject company to the portfolios in the Risk Premium Report data.

We also compared the parameters of the Company to additional combined market and size risk premiums provided in the *Cost of Capital Navigator*, which are based on the Company’s operating margin, coefficient of variation in operating margin, and coefficient of variation in return on equity. The combined risk premium based on this data was 13.00 percent. See Exhibit 1.16.

EXERCISE 45 What benchmark is the Kroll 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 Historical Equity Risk Premiums by Characteristic

Nova Fastener & Tool, Inc.

Comparison to Historical Equity Risk Premiums by Characteristic

Based on Kroll, LLC, *Cost of Capital Navigator*, 2021 Data

Valuation Date: December 1, 2022

\$

Characteristic	Subject Co.	Implied Category	Smoothed Average Premium Over the Risk-Free (RP _{m+s})	Smoothed Premium over CAPM (RP _s)
(1) Market Value of Equity	\$ 33,000,000	25	13.96%	5.84%
(2) Book Value of Equity	\$ 31,911,995	25	12.62%	4.52%
(3) 3-Year Avg. Adj. Net Income	\$ 534,918	25	13.78%	5.47%
(4) Market Value of Invested Capital	\$ 33,000,000	25	13.94%	5.63%
(2) Total Assets	\$ 36,298,974	25	13.55%	5.22%
(3) 3-Year Avg. Adj. EBITDA	\$ 2,028,682	25	13.60%	5.33%
(5) Sales	\$ 34,538,367	25	13.28%	5.35%
(6) Number of Employees	207	25	13.43%	5.88%
		Minimum	12.62%	4.52%
		Maximum	13.96%	5.88%
		Mean	13.52%	5.41%
		Median	13.58%	5.41%
		Selected	14.00%	5.00%

Notes:

- (1) See Exhibit 1.25. Implied category assumption is based on an iterative process.
- (2) As of November 30, 2022.
- (3) Three-Year Average, 2019 to 2021.
- (4) Market value of equity, plus interest-bearing debt as of November 30, 2022. Implied category assumption is based on an iterative process.
- (5) Twelve months ended November 30, 2022.
- (6) As of November 15, 2022, per company management.

1.9.1.7 Beta 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 computed using 60 monthly returns based on the companies' split and dividend adjusted prices, and on 60 monthly market returns based on the S&P 500 Total Return index. Based on these data we concluded to an unlevered beta of 0.81 (see Exhibit 1.17). The identified unlevered beta was then levered at the estimated long-term capital structure of Nova. Management is in the process of obtaining financing for the Company's operations at an estimated level of approximately one-third 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 approximates the level of debt employed by three of the five guideline companies. It is reasonable considering analysis of industry levels of debt financing.

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

Nova Fastener & Tool, Inc.

Comparison to Historical Equity Risk Premiums Ranked by Risk Measures

Based on the Kroll, LLC, *Cost of Capital Navigator*, 2021 Data

Valuation Date: December 1, 2022

\$

Coefficient of Variation of Operating Margin

	2021	2020	2019	2018	2017
(1) Net Sales	33,974,558	27,590,653	32,873,002	37,174,249	35,764,714
(1) Adjusted Operating Income	1,358,915	(83,014)	491,584	2,402,648	2,365,181
Adjusted Operating Margin	4.0%	-0.3%	1.5%	6.5%	6.6%
Standard Deviation of Operating Margin					
Average Operating Margin	3.0%				
Coefficient of Variation	83.3%				

Coefficient of Variation of Return on Book Value of Equity

	2021	2020	2019	2018	2017
(1) Book Value	28,969,365	28,706,089	29,158,027	29,759,749	28,859,955
(1) Adjusted Net Income	1,117,949	(4,991)	491,797	1,980,525	1,904,151
Return on Book Equity	3.9%	0.0%	1.7%	6.7%	6.6%
Standard Deviation of ROE	3.0%				
Average ROE	3.8%				
Coefficient of Variation	78.8%				

Characteristic	Subject Co.	Implied Category	Smoothed Ave. Premium
Operating Margin	3.7%	24	13.97%
CV of Operating Margin	83.3%	2	12.99%
CV of Return on Book Equity	78.8%	7	11.41%
		Mean	12.79%
		Median	12.99%
		Selected	13.00%

Note:

(1) See Exhibits 1.14 and 1.15.

EXHIBIT 1.17 Industry Beta Analysis

Nova Fastener & Tool, Inc.

Industry Beta Analysis

Valuation Date: December 1, 2022

Ticker	Guideline Companies	Levered Beta (1)	Interest-Bearing Debt 000s	%	Market Value of Equity 000s	Total Invested Capital 000s	Tax Rate	Unlevered Beta
EML	The Eastern Company	0.96	74,744	34.3%	142,948	217,692	26.0%	0.69
PFIN	P&F Industries, Inc.	0.44	8,087	32.7%	16,612	24,699	26.0%	0.33
SCX	The L.S. Starrett Company	0.55	29,391	33.7%	57,804	87,195	26.0%	0.40
TWIN	Twin Disc, Incorporated	1.11	41,955	21.5%	153,589	195,544	26.0%	0.93
VC	Visteon Corporation	1.79	34,900	7.7%	416,907	451,807	21.2%	1.68
			Median	32.7%				0.69
			Mean	26.0%				0.81
							Selected Unlevered Beta:	0.81
							Estimated Company Levered Beta:	<u>1.14</u>

Assumptions:

- (2) Estimated Company Capital Structure
 % of Debt to Invested Capital 34.0%
 % of Equity to Invested Capital 66.0%
- (3) Estimated Effective Tax Rate 22.0%
 Subject Company Levered Beta = Unlevered Beta × [1 + [(Debt/Equity) × (1 – Tax Rate)]]

Notes:

- (1) Calculated using 60 month-end returns, using the companies' split and dividend adjusted prices and the S&P 500 Total Return index.
- (2) Based on analysis of the industry and discussions with management regarding plans to finance the Company's operations.
- (3) Based on projected combined state and federal tax rate per management.

Based on an assumption of 34.0 percent debt and 66.0 percent equity as percentages of invested capital, the calculated levered beta was 1.14.

EXERCISE 46 When using the 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 releveled beta using the Hamada formula.

- a. Average beta of guideline public companies = .66

Tax rate = 33 percent

Market value capital structure = 10 percent debt, 90 percent 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 Nova has a capital structure of 20 percent debt and 80 percent equity, what would be the beta?

The formula to relever the beta is:

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

1.9.1.8 Industry Risk Premium (RP) A risk premium for the industry is also provided in the Kroll *Cost of Capital Navigator*. Kroll estimates a risk index for each industry, which compares the risk level of the industry with the market as a whole. The industry risk premium is calculated by multiplying the risk index (beta) for the specific industry by the long-horizon expected equity risk premium, and then subtracting from this product the long-horizon expected equity risk premium.

For Nova, we considered Kroll's industry risk premium for Global Industry Classification Standard (GICS) 201060, Machinery (which includes related parts). We did not rely on the data because this broad category is not representative of the risk of the subject company.⁴⁰ We determined that the Kroll industry risk premium for GICS 201060 included three of our selected guideline public companies,

⁴⁰ In 2020 Duff & Phelps, which provided the *Cost of Capital Navigator* prior to its acquisition by Kroll, replaced the previously used SIC code system for the computation of industry risk premia with GICS. GICS is more modern but much less granular than the SIC system.

but they also included dozens of additional companies that we did not deem sufficiently comparable to Nova.

1.9.1.9 Risk Premium Attributable to the Specific Company (RP_c) The risk premium for unsystematic risk attributable to the specific company is designed to account for additional risk factors specific to the Company. In the case of Nova, an additional risk premium of 2.00 percent was applied to reflect risk associated with meeting projected levels of revenue growth and margin improvement, customer concentration, and reliance on key executive leadership without a formal succession plan.

EXERCISE 47 A list of risk factors was previously presented for Nova to calculate the specific risk premium. Discuss the different methods for determining what the actual company-specific risk premium should be.

EXERCISE 48 Company-specific risk premiums can be determined from Kroll data.

- a. True
- b. False

EXERCISE 49 Which of these rates of return are derived using Kroll data?

- a. Minority rates of return
- b. Control rates of return
- c. Majority rates of return
- d. Neutral

1.9.1.10 Cost of Equity Conclusion The cost of equity implied by the build-up method, using CRSP data, was 18.11 percent using the historical market equity premium and 16.87 percent using the supply-side premium. The cost of equity implied by the MCAPM method was 19.15 percent using the historical market equity premium, and 17.74 percent using the supply-side premium. The indicated cost of equity using the Kroll combined equity risk premium and size premium was 19.85 percent. The MCAPM cost of equity with Kroll's risk premiums based on size characteristics was 17.72 percent.

We also calculated the equity risk premium using Kroll data through 2021 based on certain risk characteristics of the Company, including operating margin,

coefficient of variation of operating margin, and coefficient of variation of return on equity. Based on these data, the indicated cost of equity was 18.85 percent. Further, we also calculated the cost of equity capital using the historical embedded Risk Premium Report equity risk premium of 6.03 percent and the previously concluded smoothed premium over CAPM of 5.00 percent in a build-up model along with Kroll's normalized risk-free rate of 2.50 percent and Kroll's recommended equity risk premium of 5.50 percent. This resulted in a cost of equity within a reasonable range of our other calculations.

EXERCISE 50 Assume that the Kroll historical CRSP equity risk premium is 7.46 percent and the 10th-decile size premium is 4.8 percent. Assume that the relevered beta of the guideline companies is 1.14 under MCAPM and that the industry risk premium is not relied on in the build-up model (BUM). Calculate the cost of equity for Nova under the MCAPM and BUM methods.

EXERCISE 51 Assume that the Kroll supply-side CRSP equity risk premium is 6.22 percent and the 10th-decile size premium is 4.8 percent. Assume that the relevered beta of the guideline companies is 1.14 under MCAPM and that the industry risk premium is not relied on in the BUM. Calculate the cost of equity for Nova under the MCAPM and BUM methods.

EXERCISE 52 Assume that the Kroll 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 Nova.

EXERCISE 53 Assume that the Kroll combined equity risk premium and size premium for the 25th-size category is 14.0 percent. Calculate the cost of equity for Nova.

EXERCISE 54 In addition to equity risk premium based on eight alternative measures of size, Kroll 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 55 Assume that the analysis using the three alternative measures of risk from Kroll results in a cost of equity of 18.85 percent. What is the range of the seven costs of equity for Nova and what is the conclusion for the cost of equity? Explain your reasons and support.

Range of costs of equity: _____ percent to _____ percent

Concluded cost of equity _____ percent

Supporting reasons:

We concluded to a cost of equity of 18.00 percent for the Company. See Exhibit 1.14.

1.9.2 Cost of Debt

The discount rate for debt in the capital structure is usually defined as the marginal borrowing rate of the subject company net of tax benefit associated with the deductibility of interest expense. The marginal borrowing rate of Nova was estimated by analyzing its financial statements and discussions with management and was estimated to be approximately 6.00 percent before tax. After reflecting the tax deductibility of interest expense, the after-tax cost of debt for Nova, using a 22.0 percent tax rate, was estimated to be 4.68 percent. See Exhibit 1.18.

EXERCISE 56 Which of these factors causes the cost of debt to be tax-affected?

- a. Debt principal is tax deductible.
- b. Interest expense is tax deductible.
- c. It should not be tax-affected because equity is not tax-affected.
- d. Debt and interest are tax deductible.

EXERCISE 57 Using the information in the text, calculate the weighted average cost of capital for Nova.

EXHIBIT 1.18 Weighted Average Cost of Capital

Nova Fastener & Tool, Inc.
Weighted Average Cost of Capital
Valuation Date: December 1, 2022

(1) Cost of Equity			$k_e = 18.00\%$
<u>After Tax Cost of Debt: $k_d = K_b(1 - t)$</u>			
(2) Borrowing Rate (K_b)			6.00%
(3) Estimated Tax Rate (t)			22.0%
Cost of Debt			$k_d = 4.68\%$
<u>Weighted Average Cost of Capital (WACC)</u>			
	<u>Capital Structure</u>	<u>Cost</u>	<u>Weighted Cost</u>
(4) Debt	34.0%	4.68%	1.59%
(4) Common Equity	66.0%	18.00%	11.88%
		WACC =	13.47%
		Rounded =	<u>13.00%</u>

- Notes:**
- (1) See Exhibit 1.14.
 - (2) Based on analysis of the Company, the prime rate as of December 1, 2022 (7.00%), Moody’s Aaa and Baa bond rates as of December 1, 2022 (4.43% and 5.62%, respectively), and other data.
 - (3) Based on projected combined state and federal tax rate per management.
 - (4) Based on analysis of industry and discussions with management regarding plans to finance the operations.

EXERCISE 58 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 59 Explain the iterative process for determining the weights in the weighted average cost of capital.

EXERCISE 60 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 61 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?

1.9.3 Capital Structure

Based on analysis of Nova's financial statements, the guideline companies, and statements by Nova's management that they would be adding financing (already bank approved) in the future, a normalized capital structure of 34.0 percent debt and 66.0 percent equity was assumed for Nova as of December 1, 2022.

1.9.4 Weighted Average Cost of Capital Conclusion

The indicated weighted average cost of capital for Nova as of December 1, 2022, was as follows:

$$\begin{aligned}\text{WACC} &= (4.68 \text{ percent} \times 34.0 \text{ percent}) + (18.00 \text{ percent} \times 66.0 \text{ percent}) \\ &= 1.59 \text{ percent} + 11.88 \text{ percent} \\ &= 13.47 \text{ percent}\end{aligned}$$

or 13.00 percent, rounded. Refer to Exhibit 1.18 for the calculation of the weighted average cost of capital.

EXERCISE 62 Calculate the capitalization rate from the information in the text and calculate the value based on the trailing 12 months cash flow.

EXERCISE 63 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

1.10 MARKET APPROACH

Under the market approach, the guideline public company method and guideline company transactions method were considered. As discussed elsewhere in this report, we did not rely on the guideline company transactions method as a primary method but considered it as a general check on our primary valuation methods due to the relative quantity and quality of available data.

1.11 GUIDELINE PUBLIC COMPANY METHOD

The valuation of a business merits a comparative analysis of the subject company with guideline publicly traded companies in the same or similar industries or lines of business. Although no two companies are completely alike, it is possible to find publicly traded companies that are engaged in the same or similar lines of business. In theory, investors could view investments in appropriately selected guideline companies as alternative investments to an investment in Nova. The guideline companies and the subject company should be similarly affected by similar economic and industry factors.

1.11.1 Selection of Guideline Companies

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 3452 (Bolts, Nuts, Screws, Rivets, and Washers), and 3714 (Motor Vehicle Parts and Accessories), and the broader classifications 3540x (Metalworking Machinery and Equipment) and 342x (Cutlery, Handtools & General Hardware)
- A search for “fastener” in company descriptions, and also for “rivet”
- 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 five guideline public companies were similar enough to include in our analysis.

These companies are discussed briefly next.⁴¹

The Eastern Co. (NASDAQ: EML)—The Eastern Company manages industrial businesses that design, manufacture, and sell unique engineered solutions to industrial markets. Eastern pursues organic growth strategies as well as attractive external growth and acquisition opportunities. Eastern's businesses design, manufacture, and market a diverse product line of custom and standard vehicular and industrial hardware, including turnkey returnable packaging solutions, access and security hardware, mirrors, and mirror-cameras. Eastern's TTM revenues as of October 1, 2022, were \$269.8 million.

P&F Industries, Inc. (NASDAQ: PFIN)—Imports, manufactures, and markets pneumatic hand tools of its own design, primarily to the retail, industrial, automotive, and aerospace markets. P&F also designs, manufactures, and markets industrial tools, systems, gearing, accessories, and a wide variety of replacement parts under various brands, including products sold directly to original equipment manufacturers (OEMs) and industrial branded products sold through a broad network of specialized industrial distributors. P&F's TTM revenues as of September 30, 2022, were \$59.4 million.

The L.S. Starrett Co. (NYSE: SCX)—Manufactures various measuring and cutting products throughout the world, including North America, 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 various types of saw blades. TTM revenues as of September 30, 2022, were \$252.6 million.

Twin Disc, Inc. (NASDAQ: TWIN)—Designs, manufactures, and sells marine and heavy-duty off-highway power transmission equipment. Products offered include marine transmissions, azimuth drives, surface drives, 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 September 30, 2022, were \$251.1 million.

Visteon Corp. (NYSE: VC)—A global automotive technology company that designs and manufactures innovative automotive electronics and connected car products for various original equipment vehicle manufacturers, including Ford, BMW, Mazda, Volkswagen, Renault, Nissan, Daimler, General Motors, Stellantis, and Jaguar/Land Rover. Visteon's products include digital instrument clusters, information displays, audio and infotainment systems, various domain controllers, advanced driver assistance systems, and battery management systems.

Visteon also has a rivet division. Its TTM revenues as of September 30, 2022, were \$347.8 million.

⁴¹ Descriptions of the guideline companies are largely drawn from SEC filings. Language has, in places, been extracted wholly or largely verbatim and/or substantially paraphrased.

EXERCISE 64 Size is often a consideration in selecting guideline public companies. The general criterion for using size as a selection parameter is:

- a. 2 times
- b. 5 times
- c. 10 times
- d. None of the above

EXERCISE 65 In the valuation of Nova, 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 Nova. Given that fact, which option would probably result in the best presentation of the GPCM in the valuation of Nova?

- 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 66 Guideline public company methods are not applicable to smaller businesses such as Nova.

- a. True
- b. False

EXERCISE 67 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

1.11.2 Analysis of Guideline Companies

Using the most recently filed 10-Ks and 10-Qs of the guideline companies, we calculated their historical financial ratios. 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

Nova Fastener & Tool, Inc.
 Guideline Public Company Method
 Ranking of Market Multiples

	Most Recent 12 Months			
	Price to Earnings	Invested Capital to		
		Net Revenues	EBIT	EBITDA
The Eastern Company	11.1	0.8	11.2	8.1
P&F Industries, Inc.		0.4		24.5
The L.S. Starrett Company	3.8	0.3	3.9	3.0
Twin Disc, Incorporated	31.7	0.8	22.4	11.0
Visteon Corporation	27.4	1.3	22.0	14.6
Mean	18.5	0.7	14.9	12.2
Median	19.2	0.8	16.6	11.0
Coefficient of Variation	71.7%	52.2%	60.2%	65.8%

	Most Recent Fiscal Year			
	Price to Earnings	Invested Capital to		
		Net Revenues	EBIT	EBITDA
The Eastern Company	10.8	0.9	11.1	8.1
P&F Industries, Inc.		0.5		132.1
The L.S. Starrett Company	3.6	0.3	3.8	2.9
Twin Disc, Incorporated	31.1	0.8	22.2	10.7
Visteon Corporation	59.3	1.6	43.0	21.2
Mean	26.2	0.8	20.0	35.0
Median	21.0	0.8	16.7	10.7
Coefficient of Variation	95.3%	61.1%	85.4%	156.2%

	Three-Year Average			
	Price to Earnings	Invested Capital to		
		Net Revenues	EBIT	EBITDA
The Eastern Company	10.7	0.9	10.9	8.1
P&F Industries, Inc.		0.5		
The L.S. Starrett Company	5.2	0.4	5.5	3.8
Twin Disc, Incorporated		0.8		27.1
Visteon Corporation	63.5	1.6	45.2	22.1
Mean	26.5	0.9	20.5	15.3
Median	10.7	0.8	10.9	15.1
Coefficient of Variation	121.6%	58.7%	105.0%	72.4%

Note:

(1) Multiples are summarized from Exhibit 1.21. Multiples which are not meaningful are shown as blanks above.

EXHIBIT 1.20 Guideline Public Company Method: Comparative Financial Analysis

Nova Fastener & Tool, Inc.
 Guideline Public Company Method
 Comparative Financial Analysis
 (000s \$, all companies)

	Subject	Mean	Median	EML	PFIN	SCX	TWIN	VC
Comparative Size								
Total Revenues	34,538	236,142	252,648	269,816	59,381	252,648	251,065	347,800
Total Assets	36,299	206,520	232,600	275,946	60,074	194,429	269,551	232,600
Total Market Capitalization	NA	195,388	195,544	217,692	24,699	87,195	195,544	451,807
Asset Management Ratios								
Debt-Free Working Cap Turnover	1.6	3.0	2.6	2.7	2.0	2.6	2.0	5.6
Asset Turnover	1.0	1.2	1.0	1.0	1.0	1.3	0.9	1.6
Liquidity Ratios								
Debt-Free Current Ratio	7.2	3.4	3.5	3.5	5.3	3.9	2.5	1.6
Debt-Free Quick Ratio	3.4	1.2	1.4	1.4	1.4	1.5	0.7	1.1
Leverage Ratios								
Debt to Equity (Book)	0.0%	39.1%	33.6%	60.3%	19.0%	28.9%	33.6%	53.8%
Debt to Capital (Book)	0.0%	27.2%	25.2%	37.6%	16.0%	22.4%	25.2%	35.0%
Times Interest Earned	N/M	8.2	10.0	10.0	-6.0	15.7	4.0	17.1
Profitability								
Net Profit Margin	1.7%	3.0%	4.4%	4.8%	-2.3%	6.1%	1.9%	4.4%
EBIT Margin	2.2%	4.5%	5.9%	7.2%	-2.7%	8.8%	3.5%	5.9%
EBITDA Margin	5.9%	7.8%	8.9%	10.0%	1.7%	11.4%	7.1%	8.9%
Return on Assets	1.7%	4.3%	5.1%	5.1%	-2.1%	8.6%	2.4%	7.4%
Return on Common Equity (Book)	1.9%	11.0%	10.9%	10.9%	-3.3%	16.6%	3.8%	26.6%
Profitability (3-Year Averages)								
Net Profit Margin	1.6%	1.3%	2.4%	5.8%	-4.2%	4.7%	-1.9%	2.4%
EBIT Margin	2.0%	2.4%	3.6%	8.6%	-5.5%	6.9%	-1.7%	3.6%
EBITDA Margin	6.3%	6.3%	7.4%	11.6%	-0.5%	9.9%	3.0%	7.4%
3-Year Historical Annual Growth								
Net Revenues	1.7%	0.6%	-1.0%	-1.0%	-4.5%	12.2%	-0.8%	-3.0%
Net Income	50.8%	41.3%	30.5%	-6.9%	68.0%	113.1%	N/M	-9.1%
Earnings Before Interest & Taxes	50.8%	43.2%	40.3%	-6.6%	87.1%	99.9%	N/M	-7.6%
Earnings Bef Int., Taxes, Depr & Amort.	16.8%	26.9%	-2.3%	-3.6%	-67.8%	51.5%	156.6%	-2.3%

EXHIBIT 1.21 Guideline Public Company Method: Detail by Company

THE EASTERN COMPANY					
EML					
FINANCIAL STATEMENT DATA (\$)	TTM Ended	Fiscal Year Ended			'19-'21
	(10/1/2022) 2022/09	(1/1/2022) 2021/12	(1/2/2021) 2020/12	(12/28/2019) 2019/12	Growth Rate
Net Revenues	269,816,341	246,522,823	197,614,590	251,742,619	-1.0%
Depreciation & Amortization	7,441,604	7,241,073	6,815,783	6,454,881	5.9%
Interest Expense	1,943,105	1,747,723	2,058,600	1,857,961	-3.0%
Earnings Before Taxes (1)	17,609,516	19,070,560	13,216,810	16,205,971	8.5%
Net Income (1)	14,796,242	16,182,343	11,034,919	13,266,142	10.4%
Net Profit Margin	5.5%	6.6%	5.6%	5.3%	
Effective Tax Rate	16.0%	15.1%	16.5%	18.1%	
Cash, Equiv., Mkt. Sec. & Accts Rec.	56,129,995	49,319,804	47,124,983	55,972,710	-6.1%
Total Current Assets	137,821,314	123,674,861	111,735,772	115,938,483	3.3%
Total Current Liabilities	47,254,828	49,563,726	40,665,962	34,896,915	19.2%
Net Working Capital	90,566,486	74,111,135	71,069,810	81,041,568	-4.4%
Short-Term Interest-Bearing Debt	8,125,000	7,500,000	6,437,689	5,187,689	20.2%
Debt-Free Net Working Capital	98,691,486	81,611,135	77,507,499	86,229,257	-2.7%
Total Assets	275,946,214	266,328,935	275,528,354	280,662,976	-2.6%
<i>Average Total Assets</i>	281,624,513	270,928,645	278,095,665		
Long-Term Interest-Bearing Debt	66,619,231	63,813,522	82,255,803	93,577,544	-17.4%
Common Equity	123,988,410	114,602,264	104,306,458	105,437,257	4.3%
<i>Average Common Equity</i>	118,189,171	109,454,361	104,871,858		
Interest-Bearing Debt to Invested Capital	37.6%	38.4%	46.0%	48.4%	
ADJUSTED EARNINGS (\$)					
Earnings Before Taxes (as reported)	17,609,516	19,070,560	13,216,810	16,205,971	8.5%
Goodwill impairment	0	0	(972,823)	0	
Gain on sale of assets	355,000	1,841,000	0	0	
Factory relocation and start-up costs	(215,000)	(604,000)	(679,000)	0	
Restructuring costs	0	0	(665,861)	(2,664,651)	
Transaction expenses	0	0	(300,000)	(1,699,862)	
Total Adjustments	(140,000)	(1,237,000)	2,617,684	4,364,513	
Adjusted Earnings Before Taxes	17,469,516	17,833,560	15,834,494	20,570,484	-6.9%
Estimated Income Tax Rate	26.0%	26.0%	26.0%	26.0%	
Adjusted Net Income	12,927,442	13,196,834	11,717,526	15,222,158	-6.9%
Adjusted Net Profit Margin	4.8%	5.4%	5.9%	6.0%	
Adjusted Debt-Free Net Income	14,365,340	14,490,149	13,240,890	16,597,049	-6.6%
Adj. Earnings Before Interest & Taxes	19,412,621	19,581,283	17,893,094	22,428,445	-6.6%
Adjusted EBIT Margin	7.2%	7.9%	9.1%	8.9%	
Adj. Earnings Before Int., Taxes, Depr. & Amort.	26,854,225	26,822,356	24,708,877	28,883,326	-3.6%
Adjusted EBITDA Margin	10.0%	10.9%	12.5%	11.5%	

Note:

(1) From continuing operations, in the trailing twelve months and fiscal 2021 and 2020.

**THE EASTERN COMPANY
EML**

MARKET	At	
CAPITALIZATION (\$)	2022/09	
Short-Term Interest-Bearing Debt	8,125,000	
Long-Term Interest-Bearing Debt	66,619,231	
Total Interest-Bearing Debt	74,744,231	
Preferred Equity (Book)	0	
Common Equity	142,947,829	
Total Equity	142,947,829	
Total Invested Capital	217,692,060	
Shares Outstanding at Valuation Date	6,215,123	Shares Outstanding as of October 1, 2022, per 10-Q for period ending 10/1/22
Price at 12/1/2022	\$23.00	

FINANCIAL RATIOS	Most Recent	3-Year Average
Debt-Free Working Capital Turnover	2.7	2.8
Asset Turnover	1.0	
Debt-Free Current Ratio	3.5	3.4
Debt-Free Quick Ratio	1.4	1.5
Debt to Equity (Book)	60.3%	80.3%
Debt to Capital (Book)	37.6%	44.2%
Times Interest Earned	10.0	10.7
Net Profit Margin	4.8%	5.8%
EBIT Margin	7.2%	8.6%
EBITDA Margin	10.0%	11.6%
Return on Average Assets	5.1%	
Return on Average Common Equity (Book)	10.9%	

MARKET MULTIPLES	Most Recent 12 Months		Most Recent Fiscal Year		3-Year Average	
	Parameter	Multiple	Parameter	Multiple	Parameter	Multiple
Price/Earnings	12,927,442	11.1	13,196,834	10.8	13,378,839	10.7
Price/Book (Common Equity)	123,988,410	1.2	114,602,264	1.2	N/M	N/M
Invested Capital/Revenues	269,816,341	0.8	246,522,823	0.9	231,960,011	0.9
Invested Capital/EBIT	19,412,621	11.2	19,581,283	11.1	19,967,607	10.9
Invested Capital/EBITDA	26,854,225	8.1	26,822,356	8.1	26,804,853	8.1

(continued)

P&F INDUSTRIES, INC.

PFIN

FINANCIAL STATEMENT DATA (\$)	12 Months Ended 2022/09	Fiscal Year Ended			'19-'21 Growth Rate
		2021/12	2020/12	2019/12	
Net Revenues	59,381,000	53,554,000	49,136,000	58,674,000	-4.5%
Depreciation & Amortization	2,619,000	2,696,000	2,740,000	2,524,000	3.4%
Interest Expense	268,000	45,000	140,000	198,000	-52.3%
Earnings Before Taxes	167,000	2,288,000	(6,855,000)	6,708,000	-41.6%
Net Income	31,000	2,290,000	(4,954,000)	4,911,000	-31.7%
Net Profit Margin	0.1%	4.3%	-10.1%	8.4%	
Effective Tax Rate	81.4%	0.0%	0.0%	26.8%	
Cash, Equiv., Mkt. Sec. & Accts Rec.	9,868,000	8,089,000	8,372,000	9,693,000	-8.6%
Total Current Assets	37,199,000	36,676,000	29,540,000	34,072,000	3.8%
Total Current Liabilities	15,074,000	12,078,000	8,282,000	11,957,000	0.5%
Net Working Capital	22,125,000	24,598,000	21,258,000	22,115,000	5.5%
Short-Term Interest-Bearing Debt	8,087,000	5,765,000	3,357,000	5,648,000	1.0%
Debt-Free Net Working Capital	30,212,000	30,363,000	24,615,000	27,763,000	4.6%
Total Assets	60,074,000	58,190,000	53,367,000	61,743,000	-2.9%
<i>Average Total Assets</i>	57,811,500	55,778,500	57,555,000		
Long-Term Interest-Bearing Debt	0	0	946,000	0	N/M
Common Equity	42,525,000	43,840,000	41,538,000	46,506,000	-2.9%
<i>Average Common Equity</i>	42,721,500	42,689,000	44,022,000		
Interest-Bearing Debt to Invested Capital	16.0%	11.6%	9.4%	10.8%	
<u>ADJUSTED EARNINGS (\$)</u>					
Earnings Before Taxes (as reported)	167,000	2,288,000	(6,855,000)	6,708,000	-41.6%
Gain (loss) on sale of fixed assets	45,000	(27,000)	(35,000)	7,817,000	
Impairments of goodwill, and of other assets	(48,000)	(88,000)	(1,612,000)	(194,000)	
PPP forgiveness, other gains on settlement of obligations	19,000	2,929,000	136,000	0	
Employee retention credit	2,028,000	2,028,000	0	0	
Total Adjustments	(2,044,000)	(4,842,000)	1,511,000	(7,623,000)	
Adjusted Earnings Before Taxes	(1,877,000)	(2,554,000)	(5,344,000)	(915,000)	67.1%
Estimated Income Tax Rate	26.0%	26.0%	26.0%	26.8%	
Adjusted Net Income	(1,388,980)	(1,889,960)	(3,954,560)	(669,881)	68.0%
Adjusted Net Profit Margin	-2.3%	-3.5%	-8.0%	-1.1%	
Adjusted Debt-Free Net Income	(1,190,660)	(1,856,660)	(3,850,960)	(524,924)	88.1%
Adj. Earnings Before Interest & Taxes	(1,609,000)	(2,509,000)	(5,204,000)	(717,000)	87.1%
Adjusted EBIT Margin	-2.7%	-4.7%	-10.6%	-1.2%	
Adj. Earnings Before Int., Taxes, Depr. & Amort.	1,010,000	187,000	(2,464,000)	1,807,000	-67.8%
Adjusted EBITDA Margin	1.7%	0.3%	-5.0%	3.1%	

P&F INDUSTRIES, INC.

PFIN

MARKET	At	
CAPITALIZATION (\$)	2022/09	
Short-Term Interest-Bearing Debt	8,087,000	
Long-Term Interest-Bearing Debt	0	
Total Interest-Bearing Debt	8,087,000	
Preferred Equity (Book)	0	
Common Equity	16,612,435	
Total Equity	16,612,435	
Total Invested Capital	24,699,435	
Shares Outstanding at Valuation Date	3,194,699	Shares Outstanding as of November 7, 2022, per 10-Q for period ending 9/30/22
Price at 12/1/2022	\$5.20	

FINANCIAL RATIOS	Most Recent	3-Year @ Average
Debt-Free Working Capital Turnover	2.0	2.0
Asset Turnover	1.0	
Debt-Free Current Ratio	5.3	5.7
Debt-Free Quick Ratio	1.4	1.5
Debt to Equity (Book)	19.0%	11.9%
Debt to Capital (Book)	16.0%	10.6%
Times Interest Earned	-6.0	-32.2
Net Profit Margin	-2.3%	-4.2%
EBIT Margin	-2.7%	-5.5%
EBITDA Margin	1.7%	-0.5%
Return on Average Assets	-2.1%	
Return on Average Common Equity (Book)	-3.3%	

MARKET MULTIPLES	Most Recent 12 Months		Most Recent Fiscal Year		3-Year Average	
	Parameter	Multiple	Parameter	Multiple	Parameter	Multiple
Price/Earnings	(1,388,980)	N/M	(1,889,960)	N/M	(2,171,467)	N/M
Price/Book (Common Equity)	42,525,000	0.4	43,840,000	0.4	N/M	N/M
Invested Capital/Revenues	59,381,000	0.4	53,554,000	0.5	53,788,000	0.5
Invested Capital/EBIT	(1,609,000)	N/M	(2,509,000)	N/M	(2,810,000)	N/M
Invested Capital/EBITDA	1,010,000	24.5	187,000	132.1	(156,667)	N/M

(continued)

THE L.S. STARRETT COMPANY
SCX

FINANCIAL STATEMENT DATA (Tho. \$)	12 Months	Fiscal Year Ended			'20-'22
	Ended 2022/09	2022/6	2021/6	2020/6	Growth Rate
Net Revenues	252,648	253,701	219,644	201,451	12.2%
Depreciation & Amortization	6,684	6,630	6,292	7,196	-4.0%
Interest Expense	1,415	1,265	999	975	13.9%
Earnings Before Taxes	20,200	21,519	17,426	(19,997)	N/M
Net Income	13,702	14,878	15,533	(21,839)	N/M
Net Profit Margin	5.4%	5.9%	7.1%	-10.8%	
Effective Tax Rate	32.2%	30.9%	10.9%	-9.2%	
Cash, Equiv., Mkt. Sec. & Accts Rec.	49,964	57,484	44,181	42,470	16.3%
Total Current Assets	130,191	133,053	119,220	104,098	13.1%
Total Current Liabilities	38,514	41,180	51,689	27,834	21.6%
Net Working Capital	91,677	91,873	67,531	76,264	9.8%
Short-Term Interest-Bearing Debt	5,384	6,547	15,959	4,532	20.2%
Debt-Free Net Working Capital	97,061	98,420	83,490	80,796	10.4%
Total Assets	194,429	199,554	184,486	172,683	7.5%
<i>Average Total Assets</i>	192,013	192,020	178,585		
Long-Term Interest-Bearing Debt	24,007	24,905	6,010	26,341	-2.8%
Common Equity	101,833	102,429	83,535	45,983	49.2%
<i>Average Common Equity</i>	92,541	92,982	64,759		
Interest-Bearing Debt to Invested Capital	22.4%	23.5%	20.8%	40.2%	
ADJUSTED EARNINGS (Tho. \$)					
Earnings Before Taxes (as reported)	20,200	21,519	17,426	(19,997)	N/M
Restructuring charges	(621)	(431)	(3,664)	(1,580)	
Goodwill and intangible asset impairments	0	0	0	(6,496)	
Gain on sale of real estate	0	0	3,204	0	
Pension liability charge, marked to market methodology	0	0	0	(16,753)	
Total Adjustments	621	431	460	24,829	
Adjusted Earnings Before Taxes	20,821	21,950	17,886	4,832	113.1%
Estimated Income Tax Rate	26.0%	26.0%	26.0%	26.0%	
Adjusted Net Income	15,408	16,243	13,236	3,576	113.1%
Adjusted Net Profit Margin	6.1%	6.4%	6.0%	1.8%	
Adjusted Debt-Free Net Income	16,455	17,179	13,975	4,297	99.9%
Adj. Earnings Before Interest & Taxes	22,236	23,215	18,885	5,807	99.9%
Adjusted EBIT Margin	8.8%	9.2%	8.6%	2.9%	
Adj. Earnings Before Int., Taxes, Depr. & Amort.	28,920	29,845	25,177	13,003	51.5%
Adjusted EBITDA Margin	11.4%	11.8%	11.5%	6.5%	

THE L.S. STARRETT COMPANY
SCX

MARKET	At	
CAPITALIZATION (Tho. \$)	2022/09	
Short-Term Interest-Bearing Debt	5,384	
Long-Term Interest-Bearing Debt	24,007	
Total Interest-Bearing Debt	29,391	
Preferred Equity (Book)	0	
Common Equity	57,804	
Total Equity	57,804	
Total Invested Capital	87,195	
Shares Outstanding at Valuation Date (000s)	7,382	<i>Shares Outstanding as of October 26, 2022, per 10-Q for period ending 9/30/22</i>
Price at 12/1/2022	\$7.83	

FINANCIAL RATIOS	Most Recent	3-Year Average
Debt-Free Working Capital Turnover	2.6	2.6
Asset Turnover	1.3	
Debt-Free Current Ratio	3.9	3.9
Debt-Free Quick Ratio	1.5	1.6
Debt to Equity (Book)	28.9%	41.4%
Debt to Capital (Book)	22.4%	28.2%
Times Interest Earned	15.7	14.4
Net Profit Margin	6.1%	4.7%
EBIT Margin	8.8%	6.9%
EBITDA Margin	11.4%	9.9%
Return on Average Assets	8.6%	
Return on Average Common Equity (Book)	16.6%	

	Most Recent 12 Months		Most Recent Fiscal Year		3-Year Average	
MARKET MULTIPLES	Parameter	Multiple	Parameter	Multiple	Parameter	Multiple
Price/Earnings	15,408	3.8	16,243	3.6	11,018	5.2
Price/Book (Common Equity)	101,833	0.6	102,429	0.6	N/M	N/M
Invested Capital/Revenues	252,648	0.3	253,701	0.3	224,932	0.4
Invested Capital/EBIT	22,236	3.9	23,215	3.8	15,969	5.5
Invested Capital/EBITDA	28,920	3.0	29,845	2.9	22,675	3.8

(continued)

TWIN DISC, INCORPORATED
TWIN

FINANCIAL STATEMENT DATA (Tho. \$)	12 Months	Fiscal Year Ended			'19-'21
	Ended 2022/09	2022/06	2021/06	2020/06	Growth Rate
Net Revenues	251,065	242,913	218,581	246,838	-0.8%
Depreciation & Amortization	9,137	9,547	11,243	11,925	-10.5%
Interest Expense	2,164	2,128	2,358	1,860	7.0%
Earnings Before Taxes (1)	5,248	10,229	(9,839)	(43,740)	N/M
Net Income (1)	4,495	8,406	(29,519)	(39,571)	N/M
Net Profit Margin	1.8%	3.5%	-13.5%	-16.0%	
Effective Tax Rate	14.3%	17.8%	-200.0%	0.0%	
Cash, Equiv., Mkt. Sec. & Accts Rec.	53,221	57,973	51,831	41,370	18.4%
Total Current Assets	201,818	204,452	191,967	173,985	8.4%
Total Current Liabilities	81,864	81,078	78,560	66,734	10.2%
Net Working Capital	119,954	123,374	113,407	107,251	7.3%
Short-Term Interest-Bearing Debt (1)	2,607	2,576	2,541	4,924	-27.7%
Debt-Free Net Working Capital	122,561	125,950	115,948	112,175	6.0%
Total Assets	269,551	276,523	275,413	294,127	-3.0%
<i>Average Total Assets</i>	272,899	275,968	284,770		
Long-Term Interest-Bearing Debt (1)	39,348	38,983	34,921	38,653	0.4%
Common Equity	124,768	131,188	130,660	139,958	-3.2%
<i>Average Common Equity</i>	128,196	130,924	135,309		
Interest-Bearing Debt to Invested Capital	25.2%	24.1%	22.3%	23.7%	
ADJUSTED EARNINGS (Tho. \$)					
Earnings Before Taxes (as reported)	5,248	10,229	(9,839)	(43,740)	N/M
Restructuring expenses	(936)	(973)	(7,377)	(5,138)	
PPP loan forgiveness	0	0	8,200	0	
Covid relief (U.S. and Netherlands programs)	(600)	1,400	2,400	0	
Impairments of goodwill and other assets	0	0	0	(27,603)	
Gain on sale of assets	229	3,126	0	0	
Total Adjustments	1,307	(3,553)	(3,223)	32,741	
Adjusted Earnings Before Taxes	6,555	6,676	(13,062)	(10,999)	N/M
Estimated Income Tax Rate	26.0%	26.0%	26.0%	26.0%	
Adjusted Net Income	4,851	4,940	(9,666)	(8,139)	N/M
Adjusted Net Profit Margin	1.9%	2.0%	-4.4%	-3.3%	
Adjusted Debt-Free Net Income	6,452	6,515	(7,921)	(6,763)	N/M
Adj. Earnings Before Interest & Taxes	8,719	8,804	(10,704)	(9,139)	N/M
Adjusted EBIT Margin	3.5%	3.6%	-4.9%	-3.7%	
Adj. Earnings Before Int., Taxes, Depr. & Amort.	17,856	18,351	539	2,786	156.6%
Adjusted EBITDA Margin	7.1%	7.6%	0.2%	1.1%	

Note:

(1) Income before tax and net income include non-controlling interest. Interest-bearing debt amounts include finance leases.

TWIN DISC, INCORPORATED
TWIN

MARKET	At	
CAPITALIZATION (Tho. \$)	2022/09	
Short-Term Interest-Bearing Debt	2,607	
Long-Term Interest-Bearing Debt	39,348	
Total Interest-Bearing Debt	41,955	
Preferred Equity (Book)	0	
Common Equity	153,589	
Total Equity	153,589	
Total Invested Capital	195,544	
Shares Outstanding at Valuation Date (000s)	13,787	Shares Outstanding as of October 24, 2022, per 10-Q for period ending 9/30/22
Price at 12/1/2022	\$11.14	

FINANCIAL RATIOS	Most Recent Year	3-Year Average
Debt-Free Working Capital Turnover	2.0	2.0
Asset Turnover	0.9	
Debt-Free Current Ratio	2.5	2.6
Debt-Free Quick Ratio	0.7	0.7
Debt to Equity (Book)	33.6%	30.5%
Debt to Capital (Book)	25.2%	23.4%
Times Interest Earned	4.0	-1.8
Net Profit Margin	1.9%	-1.9%
EBIT Margin	3.5%	-1.7%
EBITDA Margin	7.1%	3.0%
Return on Average Assets	2.4%	
Return on Average Common Equity (Book)	3.8%	

MARKET MULTIPLES	Most Recent 12 Months		Most Recent Fiscal Year		3-Year Average	
	Parameter	Multiple	Parameter	Multiple	Parameter	Multiple
Price/Earnings	4,851	31.7	4,940	31.1	(4,288)	N/M
Price/Book (Common Equity)	124,768	1.2	131,188	1.2	N/M	N/M
Invested Capital/Revenues	251,065	0.8	242,913	0.8	236,111	0.8
Invested Capital/EBIT	8,719	22.4	8,804	22.2	(3,680)	N/M
Invested Capital/EBITDA	17,856	11.0	18,351	10.7	7,225	27.1

(continued)

VISTEON CORPORATION

VC

FINANCIAL STATEMENT DATA (Tho. \$)	12 Months	Fiscal Year Ended			'19-'21
	Ended 2022/09	2021/12	2020/12	2019/12	Growth Rate
Net Revenues	347,800	277,300	254,800	294,500	-3.0%
Depreciation & Amortization	10,500	10,800	10,400	10,000	3.9%
Interest Expense	1,200	1,000	1,600	1,300	-12.3%
Earnings Before Taxes (1)	16,500	8,100	(2,000)	10,600	-12.6%
Net Income (1)	13,000	5,000	(4,800)	8,200	-21.9%
Net Profit Margin	3.7%	1.8%	-1.9%	2.8%	
Effective Tax Rate	21.2%	38.3%	-140.0%	22.6%	
Cash, Equiv., Mkt. Sec. & Accts Rec.	109,800	100,400	98,400	98,300	1.1%
Total Current Assets	159,400	142,400	134,100	134,500	2.9%
Total Current Liabilities	98,000	85,200	82,400	79,800	3.3%
Net Working Capital	61,400	57,200	51,700	54,700	2.3%
Short-Term Interest-Bearing Debt	900	400	0	3,700	-67.1%
Debt-Free Net Working Capital	62,300	57,600	51,700	58,400	-0.7%
Total Assets	232,600	223,400	227,100	227,100	-0.8%
<i>Average Total Assets</i>	219,300	225,250	227,100		
Long-Term Interest-Bearing Debt	34,000	34,900	34,900	34,800	0.1%
Common Equity	64,900	61,600	51,000	59,500	1.7%
<i>Average Common Equity</i>	57,100	56,300	55,250		
Interest-Bearing Debt to Invested Capital	35.0%	36.4%	40.6%	39.3%	
ADJUSTED EARNINGS (Tho. \$)					
Earnings Before Taxes (as reported)	16,500	8,100	(2,000)	10,600	-12.6%
Restructuring and impairment expense	(2,800)	(1,400)	(7,600)	(400)	
Total Adjustments	2,800	1,400	7,600	400	
Adjusted Earnings Before Taxes	19,300	9,500	5,600	11,000	-7.1%
Estimated Income Tax Rate	21.2%	26.0%	26.0%	22.6%	
Adjusted Net Income	15,206	7,030	4,144	8,509	-9.1%
Adjusted Net Profit Margin	4.4%	2.5%	1.6%	2.9%	
Adjusted Debt-Free Net Income	16,152	7,770	5,328	9,515	-9.6%
Adj. Earnings Before Interest & Taxes	20,500	10,500	7,200	12,300	-7.6%
Adjusted EBIT Margin	5.9%	3.8%	2.8%	4.2%	
Adj. Earnings Before Int., Taxes, Depr. & Amort.	31,000	21,300	17,600	22,300	-2.3%
Adjusted EBITDA Margin	8.9%	7.7%	6.9%	7.6%	

Note:

(1) From continuing operations; includes non-controlling interest.

VISTEON CORPORATION VC

MARKET	At	
CAPITALIZATION (Tho. \$)	2022/09	
Short-Term Interest-Bearing Debt	900	
Long-Term Interest-Bearing Debt	34,000	
Total Interest-Bearing Debt	34,900	
Preferred Equity (Book)	0	
Common Equity	416,907	
Total Equity	416,907	
Total Invested Capital	451,807	
Shares Outstanding at Valuation Date (000s)	2,814	Shares Outstanding as of October 21, 2022, per 10-Q for period ending 9/30/22
Price at 12/1/2022	\$148.14	

FINANCIAL RATIOS	Most Recent Year	3-Year Average
Debt-Free Working Capital Turnover	5.6	4.9
Asset Turnover	1.6	
Debt-Free Current Ratio	1.6	1.7
Debt-Free Quick Ratio	1.1	1.2
Debt to Equity (Book)	53.8%	63.5%
Debt to Capital (Book)	35.0%	38.8%
Times Interest Earned	17.1	8.2
Net Profit Margin	4.4%	2.4%
EBIT Margin	5.9%	3.6%
EBITDA Margin	8.9%	7.4%
Return on Average Assets	7.4%	
Return on Average Common Equity (Book)	26.6%	

MARKET MULTIPLES	Most Recent 12 Months		Most Recent Fiscal Year		3-Year Average	
	Parameter	Multiple	Parameter	Multiple	Parameter	Multiple
Price/Earnings	15,206	27.4	7,030	59.3	6,561	63.5
Price/Book (Common Equity)	64,900	6.4	61,600	6.8	N/M	N/M
Invested Capital/Revenues	347,800	1.3	277,300	1.6	275,533	1.6
Invested Capital/EBIT	20,500	22.0	10,500	43.0	10,000	45.2
Invested Capital/EBITDA	31,000	14.6	21,300	21.2	20,400	22.1

EXERCISE 68 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 69 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. 6-month average
- d. 3-year average

EXERCISE 70 What type of value is the result of the application of the guideline public company method?

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

Based on this analysis, we established a relative basis for comparison between the guideline public companies and the Company. We calculated selected market multiples based on stock prices for each of the guideline companies as of the valuation date. Using the relative basis for comparison developed via financial ratios, growth rates, company outlook, and so on, appropriate multiples were selected to estimate the value of Nova.

1.11.3 Guideline Company Ratio Analysis

We performed a quantitative analysis of the guideline companies' financial performance in relation to Nova. The comparison was based primarily on size, leverage, profitability, and growth. The following is a summary of this comparative analysis of the Company and the guideline companies.

Based on its net revenues of \$34.5 million for the TTM ended November 30, 2022, and its total assets of \$36.3 million at November 30, 2022, Nova was smaller in size than all the guideline companies. The TTM revenues of the guideline

companies ranged from \$59.4 million to \$347.8 million, and total assets of the guideline companies ranged from \$60.1 million to \$275.9 million.

Nova had a book debt-to-equity ratio of 0.0 percent at November 30, 2022, which was lower than the mean and median of the guideline companies. The mean and median debt-to-equity ratio of the six guideline companies was 39.1 percent and 33.6 percent, respectively.

Nova's debt-free working capital turnover ratio was 1.6 at November 30, 2022, which was lower than the mean and the median of the guideline companies, which were 3.0 and 2.6, respectively. These statistics do not reflect adjustments for excess cash.

The mean and median net profit margins of the guideline companies were 3.0 percent and 4.4 percent, respectively, in a range of -2.3 to 6.1 percent. Nova's net profit margin was 1.7 percent for the TTM ended November 30, 2022. Nova's EBITDA margin of 5.9 percent more closely approached the mean and median EBITDA margins of the guidelines in the most recent TTM, which were 7.8 percent and 8.9 percent, respectively. On a three-year average basis, Nova's EBITDA margin of 6.3 percent was close to the 6.3 percent mean and 7.4 percent median of the guidelines.

Analyzing the prior three fiscal years, the mean and median compound annual revenue growth rates for the guideline companies were 0.6 percent and negative 1.0 percent, respectively. Nova's compound annual revenue growth during this time was 1.7 percent, which was higher than the performance of the guideline companies as a group. Four of the five guideline companies saw a revenue decline during the prior three years and only Starrett had a revenue growth rate higher than Nova.

Nova's net income, EBIT, and EBITDA growth were greater than its revenue growth, reflecting improved profitability over the prior three years. These growth rates were generally higher than the rates of the guideline public companies, except for The L.S. Starrett Co.⁴²

1.11.4 Selection of Multiples

Nova is smaller in size and less leveraged than the public guideline set and generally less profitable than the guidelines in the most recent period and similarly profitable on a three-year average basis. The three-year revenue growth rate of Nova has been higher than the guideline companies. Considering these and other factors outlined previously, we applied the median guideline company market multiples less a 5 percent fundamental discount for the periods analyzed to the parameters of the Company. See Exhibits 1.19 and 1.22.

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. We note that the result is consonant with the values indicated by the revenue multiples. We added the estimated excess debt-free working capital to the indicated operating value of the Company.

⁴² Note that the positive number for P&F's EBIT growth reflects the deepening of losses at the EBIT line, and the apparently strong EBITDA growth for Twin Disc is off of a relatively low initial base level of profitability.

EXHIBIT 11.22 Guideline Public Company Method: Summary

Nova Fastener & Tool, Inc.

Guideline Public Company Method
Summary

\$	Earnings Parameter	Selected Multiple (1)	Invested Capital	Less: Interest- Bearing Debt	Equity Value
Most Recent Twelve Months					
Equity Multiples					
Price/Earnings					
Business Enterprise Multiples					
	\$579,562	18.2			\$10,548,035
Invested Capital/Net Revenues					
	34,538,367	0.8	27,630,694	0	27,630,694
Invested Capital/Earnings Bef Int & Taxes					
	747,524	15.8	11,810,874	0	11,810,874
Invested Capital/EBITDA					
	\$2,035,234	10.5	21,369,953	0	21,369,953
Most Recent Fiscal Year					
Equity Multiples					
Price/Earnings					
	\$1,117,949	20.0			\$22,358,983
Business Enterprise Multiples					
Invested Capital/Net Revenues					
	33,974,558	0.8	27,179,646	0	27,179,646
Invested Capital/Earnings Bef Int & Taxes					
	1,420,159	15.9	22,580,535	0	22,580,535
Invested Capital/EBITDA					
	2,738,713	10.2	27,934,877	0	27,934,877
Three-Year Averages					
Equity Multiples					
Price/Earnings					
	\$534,918	10.2			\$5,456,166
Business Enterprise Multiples					
Invested Capital/Net Revenues					
	31,479,404	0.8	25,183,523	0	25,183,523
Invested Capital/Earnings Bef Int & Taxes					
	679,317	10.4	7,064,897	0	7,064,897
Invested Capital/EBITDA					
	\$2,028,682	14.3	29,010,148	0	29,010,148
Selected Value of 100% of Equity					
Plus: Excess Debt-Free Working Capital (2)					
Indicated Value of 100% of Equity, Rounded					
					<u>\$26,100,000</u>
					<u>7,689,078</u>
					<u>\$33,800,000</u>

Notes:

(1) Selected multiples equal the median multiples less a 5% fundamental discount for various factors including size, rounded. Calculations may not reconcile exactly due to rounding in presentation.

(2) See Exhibit 11.12 for calculation of excess DFWC.

Based on the application of the guideline public company method, the indicated value of 100 percent of the equity of Nova as of December 1, 2022, was \$33,800,000 million (operating value of \$26,100,000 million plus \$7,689,078 in excess working capital, rounded). See Exhibit 1.22.

EXERCISE 71 In selecting multiples from guideline public companies for application to a subject company such as Nova, what options do analysts typically have?

- a. Mean or harmonic 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 72 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

1.12 GUIDELINE COMPANY TRANSACTIONS METHOD

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

- The target company must be similar to the company being valued in at least some respects.
- 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 73 Which of these are general transaction databases considered by analysts in valuing companies?

- a. *DealStats*
- b. *RMA*
- c. *Bizcomps*
- d. *Mergerstat Review*

EXERCISE 74 What is one of the most significant problems when attempting to use transaction data?

We searched the *DealStats* transaction database for transactions that occurred between November 30, 2017, and November 30, 2022, in SIC codes 3452 (Bolts, Nuts, Screws, Rivets, and Washers), and 3714 (Motor Vehicle Parts and Accessories).⁴³ We also searched NAICS codes 332722 (Bolt, Nut, Screw, Rivet, and Washer Manufacturing) and 336390 (Other Motor Vehicle Parts Manufacturing), and for companies that included “fastener” or “rivet” in their company descriptions.

We excluded transactions in which the target company’s operations were not similar to Nova and/or in which the target company’s revenues were not between \$3.0 million and \$350.0 million. Three transactions in *DealStats* involved targets within these search criteria, and these transactions are included in our analysis. One of those three transactions had a public acquirer, and therefore additional financial and other information was available through a form 8-K filed with the SEC in connection with this transaction. We also searched for and reviewed the forms 8-K filed by the guideline public companies included in our analysis for the five years preceding the December 1, 2022, valuation date. This produced usable information regarding one additional transaction, which is also included in our analysis.

Exhibit 1.23 provides a summary of the valuation multiples considered.

We considered multiples of invested capital (IC) to revenue; IC to earnings before interest and taxes (EBIT); and IC 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 close to the range of the transaction multiples. We did not rely on the guideline company transactions method as a primary method (discounted cash flow and guideline public company methods) but did use it as a check for reasonableness of the conclusions of the other valuation methods. See Exhibit 1.24 for application of the adjusted transaction multiples to Nova.

1.13 RECONCILIATION OF VALUATION METHODS

The selected guideline public companies are somewhat comparable to Nova and provide valuable market data for purposes of valuation analysis. However, none are

⁴³ We also searched *DealStats* for transactions in the broader classifications 3540x (Metal-working Machinery and Equipment) and 342x (Cutlery, Handtools, & General Hardware), but found the business descriptions inadequate to determine whether the resulting transactions were comparable to the tools produced by Nova in its relatively small tools segment.

EXHIBIT 1.23 Guideline Company Transactions Method: Detail

Nova Fastener & Tool, Inc.											
Market Approach: Guideline Company Transactions Method (1)											
Valuation Date: December 1, 2022											
Date	Primary SIC	Primary NAICS	Acquirer	Target	Description	TIC \$	Revenues \$	EBITDA \$	Deprec. \$	EBIT \$	TIC/Rev. EBITDA EBIT
04/01/2022	003452	332722	Simpson Manufacturing Co., Inc. (2)	ETANCO Group	Designer, Manufacturer and Distributor of Fixing and Fastening Solutions for the Building Construction Market	\$824,405,000	\$305,115,000	\$71,098,874	\$16,544,874	\$54,554,000	11.60 15.11
12/09/2021	003452	332722	NA (7)	NA	Manufacturer of Threaded Metal Screw Products Primarily for Aerospace, Military Applications and Commercial Applications	\$52,000,000	\$15,908,965	\$5,132,726	\$69,466	\$4,988,581	10.13 10.42
08/30/2019			The Eastern Co. (3)	Big 3 Precision	Manufacturer of Custom Returnable Packaging and Blow Mold Tools for truck, automotive and other markets	\$81,531,000	\$69,351,742	\$11,586,814	\$2,052,335	\$9,534,479	7.04 8.55
05/23/2022	003429	332722	NA (6)	Bay Standard	Fastener Manufacturing and Distribution	\$15,000,000	\$32,164,559	\$3,501,191	\$0	\$11,623,620	4.28 1.29
Mean											
Median											
Minimum											
Maximum											
Coefficient of Variation											
Implied Subject Company Multiples											
Guideline Public Company Method—Conclusion (Multiples Calculated Excluding Excess DFWC)											
Discounted Cash Flow Method—Conclusion (Multiples Calculated Excluding Excess DFWC)											
TTM											
0.76 12.82 34.92											
0.73 12.33 33.58											

(continued)

EXHIBIT 1.23 (continued)**Notes:**

- (1) Data from *DealStats* and from SEC filings.
- (2) *DealStats* does not consider trailing twelve-month income statement data, and the three transactions from it (all but Big 3) closed between 235 and 366 days after the dates of the income statement data *DealStats* used. Therefore TTM multiples could be different. For two of the three transactions there is no further information. For ETANCO, because Simpson Manufacturing Co., Inc. is public, additional target financial information is available in a 6/17/2022 8-K/A. TTM figures reported there are used above (most are from the 8-K's Ex. 99.3; depreciation and amortization is computed from information given in euros in Exs. 99.1 and 99.2, and translated to dollars at the 1.1938 rate given in Ex. 99.3; figures are before transaction accounting adjustments). As reported by *DealStats*, the ETANCO transaction data was:

04/01/2022	003452	332722	Simpson Manufacturing Group	ETANCO Group	Designer, Manufacturer and Distributor of Fixing and Fastening Solutions for the Building Construction Market	\$824,405,000	\$257,168,000	\$56,767,000	\$12,145,000	\$44,622,000	3.21	14.52	18.48
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- (3) One of the guideline public companies, The Eastern Company, acquired Big 3 Precision during 2019. Big 3's audited financials and pro forma combined information, with adjustments, were published as attachments (99.5 and 99.6, respectively) to The Eastern Company's 10-Q for the quarter ended 9/30/2019. Unaudited information through 6/30/2019 was also provided (as attachment 99.7) but did not include income statement information for the six months ended 6/30/2018. Therefore, we used income statement information through 12/31/2018. EBITDA reflects adjustments for management fees, acquisition costs, and non-recurring tax consulting fees and insurance proceeds.
- (4) Eastern also sold certain divisions and subsidiaries in 2020 and 2021, and acquired the assets of Hallink, RSB in August 2020. Insufficient information was available to use these transactions in the transaction method.
- (5) Another guideline public company, P&F Industries, acquired small gear manufacturers in late 2019 and early 2022. Very limited information was provided. A P&F 8-K dated 10/25/2019 and P&F's 10-K for the year ended 12/31/2019 together indicate that P&F paid a multiple of approximately 1.0x revenue for its acquisitions of Blaz-Man Gear, Inc. and Gear Products & Manufacturing, Inc., combined. An 8-K dated 1/14/2022 and P&F's 10-Q for the quarter ending 9/30/2022 together indicate that P&F paid approximately 0.80x revenue, annualized, for its acquisition of Jackson Gear Company. Insufficient information to calculate EBITDA or EBIT multiples.
- (6) Certain other acquisitions by the guideline public companies, such as Twin Disc's 2018 acquisition of Veth Propulsion, were not considered because the target's product lines were not closely related to products produced by Nova.
- (7) There are apparent irregularities in the financial information reported in *DealStats* for this transaction (EBITDA is reported as much smaller than EBIT; depreciation and amortization are reported as zero).
- (7) EBITDA as indicated by *DealStats*' reported income statement figures is slightly different from EBITDA as reported directly by *DealStats* (\$5,058,047 instead of \$5,132,726).

EXHIBIT 1.24 Guideline Company Transactions Method: Summary

Nova Fastener & Tool, Inc.

Market Approach: Guideline Company Transactions Method Summary

	Earnings Parameter	Selected Multiple	(1)	Invested Capital	Less: Interest- Bearing Debt	Equity Value
Trailing Twelve Months						
Business Enterprise Multiples						
Invested Capital/Net Revenues	34,538,367	2.4		82,892,081	0	82,892,081
Invested Capital/Earnings Bef Int & Taxes	747,524	9.4		7,026,722	0	7,026,722
Invested Capital/EBITDA	2,035,234	9.1		18,520,626	0	18,520,626
Most Recent Fiscal Year						
Business Enterprise Multiples						
Invested Capital/Net Revenues	33,974,558	2.4		81,538,939	0	81,538,939
Invested Capital/Earnings Bef Int & Taxes	1,420,159	9.4		13,349,499	0	13,349,499
Invested Capital/EBITDA	2,738,713	9.1		24,922,292	0	24,922,292
Three-Year Average						
Business Enterprise Multiples						
Invested Capital/Net Revenues	31,479,404	2.4		75,550,570	0	75,550,570
Invested Capital/Earnings Bef Int & Taxes	679,317	9.4		6,385,580	0	6,385,580
Invested Capital/EBITDA	2,028,682	9.1		18,461,003	0	18,461,003
				Selected Value of 100% of the Equity		20,600,000
				Plus: Excess Debt-Free Net Working Capital (2)		7,689,078
				Indicated Value of 100% of the Equity (Rounded)		28,300,000

Notes:

(1) Selected multiples equal the median multiples calculated excluding the Bay Standard acquisition, less a 10% fundamental discount for various factors including potential deal synergies. Calculations may not reconcile exactly due to rounding in presentation.

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

primarily manufacturers of rivets for automotive markets, which is Nova's primary business. 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 Nova, we relied on the value indications under both of these methods, with greater consideration to the discounted cash flow method.

The guideline company transactions provide market data for the purpose of valuation analysis of Nova. 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 in Exhibit 1.25, the indicated value of 100 percent of the equity of Nova based on the market approach is \$33,800,000 and based on the income approach it is \$32,600,000. Giving somewhat greater consideration to the income approach, the concluded fair market value of the Company as of December 1, 2022, was therefore \$33,000,000.

EXHIBIT 1.25 Summary of Findings

Nova Fastener & Tool, Inc. Summary of Findings

Valuation Date: December 1, 2022

\$

	<u>Value Indication</u>
<u>Income Approach</u>	
Capitalized Cash Flow to Invested Capital	\$ 15,800,000
Discounted Cash Flow to Invested Capital	\$ 32,600,000
<u>Market Approach</u>	
Guideline Public Company Method	\$ 33,800,000
Guideline Company Transactions Method	\$ 28,300,000
<u>Asset Approach</u>	
Net Tangible Book Value (Rounded)	\$ 31,900,000
Selected Value of 100% of the Equity	<u>\$ 33,000,000</u>

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 December 1, 2022, of a 100 percent equity interest in Nova Fastener & Tool, Inc. on a control, marketable basis is \$33,000,000.

1.14 CONCLUSION OF VALUE

We have performed a valuation engagement, as that term is defined in the Statement of Standards for Valuation Services VS Section 100 (SSVS) of the American Institute of Certified Public Accountants, of a 100 percent equity interest in Nova Fastener & Tool, Inc. as of December 1, 2022, on a control, marketable basis.

EXERCISE 75 Is a 100 percent controlling interest marketable or non-marketable?

EXERCISE 76 Discounts for lack of marketability/liquidity can be applied to 100 percent control interests in a company such as Nova.

- a. True
- b. False

EXERCISE 77 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. Kroll
- h. Quantitative marketability discount model (QMDM)
- i. Option pricing models

EXERCISE 78 Although a 100 percent control interest is valued in Nova, 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 they begin to liquidate their control interest in the company. A number of studies and cases over the years have attempted to identify this discount.

EXERCISE 79 A discount for lack of marketability/liquidity should be applied to all of the valuation methods used in the valuation of Nova.

- a. True
- b. False

EXERCISE 80 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

This valuation was performed solely to assist in the determination of the value solely for internal operational and tax planning purposes and the resulting estimate of value should not be used for any other purpose, or by any other party for any purpose. The estimate of value that results from a valuation engagement is expressed as a 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 December 1, 2022, of a 100 percent equity interest in Nova Fastener & Tool, Inc. on a control, marketable basis is \$33,000,000. See Exhibit 1.25.

This conclusion is subject to the Statement of Assumptions and Limiting Conditions and to the Valuation Analyst's Representation/Certification found in Appendix A and Appendix B. 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.

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 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 prediscount value is determined by using:

a. P/E ratios from control transactions information (i.e., *DealStats*)

b. P/E ratios from guideline public companies

c. Discounted cash flow (DCF) with a discount rate determined using Kroll information

d. Capitalized cash flow method

e. Asset approach
