

FINDING

THE ESSENTIAL

VALUE

INVESTING TOOLKIT TO

IN

WIN ON WALL STREET

NUMBERS

EHSAN EHSANI

FINDING VALUE IN NUMBERS

HEILBRUNN CENTER FOR GRAHAM &
DODD INVESTING SERIES

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EHSAN EHSANI

FOREWORD BY MARIO GABELLI



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To my wonderful wife and our sweet daughter, with all my love.



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WRITER'S NOTE

This book has two main objectives: First, to convince you of the necessity of having a structured framework for assessing investment opportunities and executing on your convictions. Second, to introduce you to a set of quantitative concepts and methods that can significantly enhance your assessment process.

Quantitative concepts matter. Great investors rarely allocate capital solely based on “gut feeling” or strategic foresight alone.

Behind every successful investment, the ones we often read about in financial websites or mainstream newspapers, there is always a combination of qualitative and quantitative analysis. Even when the quantitative component is small or seemingly simple, it remains a critical factor.

Having quantitative tools at your disposal enables you to validate and make sense of what you intuitively know about an opportunity. The end result is that you'll have higher conviction and confidence in pulling the trigger.

The content of this book is organized in a four-part structure, and the chapters within each part generally give you a primer on a specific topic within “value investing math” that essentially refers to quantitative concepts that align with the principles of value investing.

Don't worry about the math. For the most part, the tools and concepts discussed are straightforward and easy to grasp. Despite their simplicity, these tools can yield powerful insights—especially when applied thoughtfully as part of your investment framework.

My motivation for writing this book was to create a resource that is both practical and enjoyable to read. To achieve this, I consulted with a wide range of seasoned investors, many of whom I had the privilege of meeting through Columbia

Business School, various value investing events, and my trips to Omaha for Berkshire Hathaway annual shareholder meetings.

This book is particularly useful for MBA students from nonfinance backgrounds, early-career investment professionals, novice value investors, or young job seekers trying to break into the financial services industry. My intention is to provide an accessible resource to help readers master the fundamental essentials of investing and build a robust framework for quantitative thinking. If you belong to any of these groups, this book is for you.

That said, this book will not make you “the next Warren Buffett” or elevate your stature in the value investing community as a top-tier financial analyst. However, it will help you lay the foundation for developing your own investment framework. As you apply these methods diligently and learn from your experiences, you’ll refine your approach and get better over time—and trust me, when you put your heart into it, people will notice.

Thank you for considering this book worthy of your time and attention and good luck on your investing journey!

FOREWORD

When I started Gabelli Asset Management in 1977, ten years after starting to work as a sell-side analyst, we didn't have the flood of data and computing power that investors take for granted today. What we had were pencils, thirteen-column ledger paper, microfiche, and a burning need to answer one question: *What is this publicly traded business really worth?* Out of that necessity, and in the bear market of the 1970s, as a way to encourage individuals to invest in the stock market, I unfolded my analysis of PMV with a Catalyst™, the price an informed buyer would pay for the entire publicly traded company if it were to become privately held. It was not just a number; it was a framework for calculating the intrinsic value of a company's revenue independent of market noise and identifying the catalyst to surface that value.

Ehsan Ehsani's *Finding Value in Numbers: The Essential Investing Toolkit to Win on Wall Street* follows that tradition. This is not a book about worshipping spreadsheets or chasing every ratio under the sun. It is about using numbers to sharpen judgment, support conviction, and build a framework that can withstand short-term market challenges. That is the essence of good investing: clarity of thought grounded in disciplined financial analysis.

Ehsan does an excellent job of reviewing the fundamentals of investing, bringing clarity to the spreadsheets and models behind them, without dumbing them down. He takes you inside the valuation process, based on historical and cumulative compound knowledge of a company, not as an academic exercise but as a practical, real-world craft. He draws on a wide range of case studies, showing how rigorous analysis applies in different situations, whether it is an undervalued asset, an operational turnaround, or a special situation where timing and structure matter.

What I like about this book is that it reminds us that numbers alone are not the answer. Context, industry insight, and an understanding of what drives investments are equally important. But without the numbers, you are flying blind. This toolkit gives you a way to test ideas, avoid common traps, and most importantly, see when publicly traded stock prices and intrinsic (and private market) values are out of sync.

Markets change. Technology changes. Accounting rules change. What does not change is the need for a disciplined approach to figuring out what something is worth and why. If you are a young analyst, a portfolio manager, or simply an investor who wants to invest on a long-term basis, *Finding Value in Numbers* will give you the structure and the tools to do just that.

I have always believed that investing is both an art and a science. The book you are holding balances both.

Mario J. Gabelli

Chairman and CEO, GAMCO Investors, Inc

FINDING VALUE IN NUMBERS

BACKGROUND

SETTING THE STAGE

You Need to Have a Framework

“To invest successfully over a lifetime does not require a stratospheric IQ, unusual business insights, or inside information. What’s needed is a sound intellectual framework for making decisions and the ability to keep emotions from corroding that framework.”

Warren Buffett, Preface to *The Intelligent Investor*, by Benjamin Graham, 1986

THE MOST IMPORTANT JOB

In the realm of value investing, the important job of a security analyst or investor is to determine the ratio of price to value (P/V). Since a company’s stock price is usually known or easily accessible, the analyst’s primary challenge becomes figuring out its value.

This statement may sound trivial, but it takes time to fully grasp its significance and act accordingly. At its core, this perspective is common sense: If we can effectively value different securities and businesses and identify situations where the gap between P and V is large, we “potentially” uncover opportunities for satisfactory financial returns. The keyword here is “potentially” because, even with proficiency in the art and science of valuation, satisfactory returns are achieved only when:

- The gap between P and V is significant.
- The gap closes on its own or through external forces.
- This convergence of price and value occurs within a reasonable timeframe.¹

The challenge is that assessing these conditions requires significant time and effort. Given the scarcity of time and the labor-intensive nature of valuation, selectivity is essential. Here's the reality: as of March 2023, the New York Stock Exchange (NYSE) listed 2,385 domestic and international companies, while the Nasdaq listed 3,611. These figures represent just the common stocks on two major exchanges. The total grows substantially when considering other securities such as preferred stocks and bonds.

As an analyst, it is impossible to thoroughly evaluate all these opportunities individually. Even a half-hearted attempt would render insights outdated by the time the analysis is completed. So, we need to have a framework: A system that allows us to quickly filter out less attractive opportunities and focus on those with meaningful potential.² This framework should enable us to think “better and differently” than the average investor and be reasonably accurate in the valuation estimates. A good framework consists of two essential components:

- A strong “mental model” to help us observe and interpret the world, recognize patterns, and identify opportunities.
- A robust process that includes qualitative and quantitative steps for analyzing opportunities and executing investments.

Here, the term “mental model” refers to the way we observe and process the world around us. This is essentially a way of representing reality within our mind.³ In this context, learning occurs when our mental model evolves, allowing us to process more information and make better assessments. When it comes to processes, cognitive tools, or general frameworks for investing, there is no shortage of offline or online resources: There are many books, videos, and lectures—produced by seasoned investors, scholars, and even social media creators—that cover a wide range of investing styles. Some are robust, others less so. Value investing is no exception.

This book emphasizes the process component, particularly quantitative analysis in assessing investment opportunities. The concepts discussed are organized around four key questions, each acting as a filter to decide whether to pursue an investment idea or move on.

- Is the opportunity investible? Here, “investible” refers to scenarios when initial evidence suggests a security is mispriced or there are signs that

the investor is dealing with a good business. Both of these cases represent potential opportunities for satisfactory financial return.

- Is the valuation attractive? If the opportunity seems promising, the next step is valuation—the heart of an analyst’s work and the most time-consuming phase of the investment process.
- Is there a path to profits? To make money, the investment framework needs to give the investor an edge over other market players. Often, the edge lies in a contrarian view about an event (or series of events) that accelerates the price-value convergence. We refer to such events as catalysts. At times, a catalyst is not present, but the investor is dealing with a wonderful business that can generate tremendous value. Independent of the scenario, for an investment to work, the investor needs to have a clear thesis of how the current price represents an opportunity and how the price and value will converge. Having clarity about this path to profit is key.
- Do we have a winning game plan? Identifying a winning opportunity is not enough. We also need a strategy to size positions, monitor the thesis, manage portfolio risk, and decide on when we should exit.

Each part of this book corresponds to one of these questions. Chapters in each part progress from relatively simple concepts to more complex ones, occasionally revisiting earlier topics to refine or adjust their application. Think of this progression as similar to studying physics: Newtonian laws provide a good starting point for understanding motion and mass in everyday situations. However, more complex scenarios—like atomic-scale motion—require different and more advanced theories.

Similarly, this book may introduce a concept using a manufacturing company as an example and later show how it needs to be adapted for a pharmaceutical company using a more complex treatment.

Successful investor Daniel Sundheim, chief investment officer of hedge fund D1 Capital Partners, attributes success in the hedge fund world (and investing) to two key ingredients: process and judgment.⁴ I couldn’t agree more. This is another way of saying, “You need to have a framework.” This framework, however, needs to be yours! In fact, to have a repeatable, continuously improving framework that actually drives your decisions and works for you, you need to come up with your own.

That said, everyone starts somewhere. Feel free to borrow the thinking, tools, and techniques introduced in this book as a starting point.

There are some goodies within the remaining pages. They add value to a fundamental assessment of an opportunity and will serve you well in different situations, whether investing in a software business or buying a convertible bond in a biotechnology company.

KEY TAKEAWAYS

- The primary job of an investor is to determine the price-to-value ratio (P/V).
- Time is scarce, making a systematic framework essential.
- A good framework helps to efficiently filter opportunities and focus on the most promising ones.
- To achieve success in the investment business, you need a repeatable, continuously improving framework tailored to your needs and developed by you.

PART I

IS THE IDEA INVESTIBLE?

CHAPTER 1

WHAT DOES “INVESTIBLE” MEAN?

“We’re looking for a mispriced gamble. That’s what investing is, and you have to know enough to know whether the gamble is mispriced.”

Charlie Munger, Speech at USC Business School, 1994

CONTEXTUAL SETUP: THE HOLY GRAIL

What is the holy grail in value investing? The answer, like beauty, is in the eye of beholder.

In my view, the holy grail in value investing is identifying a public company with the following characteristics:

- A small cap company with revenues of approximately \$100 million per year;
- Durable double-digit topline growth;
- A super-large and growing total addressable market (TAM);
- Return on invested capital (ROIC) of 40 percent;
- A track record of sustainable cash flow generation;
- An asset-light business model;
- Improving unit economics as the company scales;
- A rock-solid moat leading to durable profit streams;¹
- Operating in a market not subject to pricing regulation;
- A strong, honest, and able management team;

- No debt; and
- Trading at a tremendous margin of safety compared with the company's worth, with the market completely missing on the real value of the business.

If you can identify such a company, invest \$10,000 of your savings in its common shares and hold on to those shares, you'll be a millionaire after fourteen years; you'll join the billionaire club after thirty-five years; and if you don't sell your shares for forty years, your profit will be around \$7 billion.

Having invested in such a company, your life will change: if traveling around the world is your dream, you can certainly make it a reality. Alternatively, if you don't like to move around, you can take refuge on a magical island in the Caribbean, enjoy the turquoise waters of a secluded beach, and, provided that there is internet access available on your phone, you can occasionally log into your investment account and watch the beauty of compounding in action!

Here's the catch: Just like the holy grail, such a company is a myth. An opportunity like what was described above doesn't exist. As investors in the public markets, often you'll get a couple or only a few of the desired characteristics mentioned above.² You therefore need to gather data, draw direct and indirect inferences from that data, make few or a lot of assumptions, and at the end have some leap of faith that after making the investment, things will work out as you expect.

Occasionally, you may come across opportunities when understanding the company's earning power or competitive environment isn't crucial. These situations arise when a company trades at a significant discount to its intrinsic value. In such cases, your leap of faith involves the hope that, over time, the price will reflect the company's true worth or some catalyst will close the price-value gap.

If you're certain the gap won't close organically, you might take matters into your own hands as an activist investor, aiming to unlock value. Alternatively, you could rely on other activist investors to make changes to your benefit. But ultimately, regardless of the scenario, your total returns as well as your process productivity highly depend on the quality of your ideas.

INVESTIBLE IDEAS

Value investors often dedicate significant time to researching a company and its industry, identifying key profitability drivers, and understanding the business's capital intensity and unit economics. However, dedicating excessive effort to a

single opportunity that turns out to be unappealing or one that requires many things to go our way, is not worth it.

Therefore, investors should filter the vast pool of opportunities to focus on investible ideas—those with clear signs of satisfactory upside within a reasonable timeframe.

I categorize investible ideas into three broad mispricing scenarios:

- A good business with strong value-creation levers whose value appears underestimated.
- A situation when upside depends on the occurrence of certain events whose likelihood is underestimated.
- A security that is selling cheaply for noneconomic reasons.

Noneconomic cheapness or event-driven upside opportunities are relatively straightforward to identify. Such cases can quickly be added to your investible list for further analysis.

Identifying a good business, however, requires deeper analysis. This often involves examining a range of qualitative and quantitative factors, building a mosaic of findings, and deciding whether the business in question is good enough or whether we have enough conviction in our findings to move forward.

The upcoming chapters in Part I focus on the “good business” scenario. We’ll explore quantitative tools to assess desirable characteristics before conducting a deeper analysis. The other mispricing categories will be revisited in later sections of the book.

KEY TAKEAWAYS

- Any form of investment (including value investing) requires some leap of faith that after making the investment, things will work out as we expect.
- Higher total returns as well as investment process productivity depend on the quality of ideas we use.
- Investible ideas are desirable opportunities in which we can see clear signs of upside in a reasonable timeframe.
- These ideas are generally related to a mispriced good business, incorrect market assumptions about likelihood of a price-moving event, or cheapness due to noneconomic reasons.

CHAPTER 2

RETURN ON INVESTED CAPITAL

“Leaving the question of price aside, the best business to own is one that over an extended period can employ large amounts of incremental capital at very high rates of return.”

Warren Buffett, Berkshire Hathaway Shareholder Letter, 1992

RECLAIMING THE CROWN

“Crown Castle is deploying more capital into fiber than towers, even though the fiber business dilutes the Company’s ROIC and the public market values fiber at a significantly lower multiple. This is a bad formula for the Company, its strategic priorities, and its shareholders.”

In July 2020 activist firm Elliott Investment Management announced that it had built a \$1 billion position in Crown Castle (NYSE: CCI) and released a presentation and a letter on reclaimingthecrown.com recommending changes in the company. Specifically, Elliott was targeting Crown Castle’s capital allocation strategy, after first approaching the company privately with its plan in May 2020.

Crown Castle’s business comprised three verticals that were all instrumental in the rollout of 5G telecommunication technology: towers, fiber, and small cells. At the time, towers contributed 60 percent of revenue, fiber comprised 22 percent, small cells were 9.5 percent, and “site development services” constituted the remaining 8.5 percent. From a profitability perspective, fiber had a higher capital intensity and customer churn rate and a lower return profile relative to towers.

Small cells were relatively profitable and had an attractive return, but they were still small compared with the other two verticals.

At the core of Elliott's push for change was the argument that Crown Castle's stock had underperformed in nearly all time periods for the past ten-plus years, it was trading at a discount compared with peers, and the discount was widening. This underperformance, Elliott argued, was driven by a depressed return on invested capital (ROIC) that was the result of investing in fiber and small cell verticals, which had lower ROIC.

Elliott also pointed out that Crown Castle executives were measured on adjusted earnings before interest, taxes, depreciation, and amortization (adjusted EBITDA) and adjusted funds from operations (AFFO) per share, and neither of these metrics took into account the impact of discretionary capital expenditure decisions. To address the challenges, Elliott's team demanded that Crown Castle team revisit its fiber strategy and incorporate ROIC in its incentive plans to appropriately align capital allocation decisions with compensation.

Crown Castle responded with a press release saying the company was confident in its "ability to generate compelling value for our shareholders," which included growing its dividend by 7 percent to 8 percent per year. The company also noted that its total returns over the past one-, three-, and five-year periods outperformed total returns generated by the S&P 500 Index over the same periods. The press release additionally mentioned that Crown Castle had "distributed \$1.9 billion of cash to common shareholders through dividends in 2019 and more than \$9 billion since initiating a common stock dividend in 2014."

Who had the more convincing argument? Do you think distributing cash to shareholders or beating the index provides any indication of how effectively a company employs the capital in hand?

WHAT IS RETURN ON INVESTED CAPITAL?

A litmus test to identify a successful enterprise is to check whether the level of ROIC for that business meets or exceeds an acceptable level. Similarly, some value investors characterize a good business as one that, among other things, generates an acceptable level of return.

What is a minimum acceptable level? According to Warren Buffett's \$1 test, at the minimum we should observe that "for every dollar retained [or invested]

by the corporation, at least one dollar of market value will be created for owners.” Said differently, ROIC should be at a minimum slightly higher than cost of capital.

Many practitioners use 8 percent or 10 percent as an estimate for cost of capital in their high-level calculations. Throughout this book, we will mostly use the 10 percent figure as it makes the math easier and is also relatively conservative for an average business (more on that later).¹

But what is ROIC and how do we calculate it? For now, we can use the following working definition: “ROIC measures the percentage of operational return we receive from a business compared to the money we have invested in that business.”

CALCULATING RETURN ON INVESTED CAPITAL: THE EASY WAY

There is an easy way to approximate ROIC and a few more elaborate (and more complex) ways to calculate it. We’re going to start with the easy one:

$$ROIC = \frac{NOPAT}{Invested\ Capital} = \frac{EBIT(1 - Tax\ Rate)}{Operating\ Working\ Capital + Net\ PP\ \&\ E}$$

This simple formula is a good approximation for ROIC, especially for quick high-level financial modeling of stable companies that grow organically.

In table 2.1, we have approximated ROIC for the American multinational home improvement retailer Home Depot (NYSE: HD).² Starting with the numerator in the formula, we go to Home Depot’s income statement and calculate NOPAT, which stands for net operating profit after taxes, and its value roughly equals earnings before interest and taxes (EBIT) multiplied by (1 – tax rate).³

Notice that NOPAT for Home Depot has almost doubled in the five-year period (a 90.4 percent increase to be exact). This is good news, but we need to see whether this increase is enough to compensate for the cost of capital. To do that, we need to calculate the denominator for the ROIC formula.

Table 2.1 summarizes the process for calculating invested capital (IC) and ROIC, which at its simplest form is the sum of net property, plant and equipment (PP&E) and the operating working capital (OWC). At the bare minimum, a company like Home Depot needs these two to function.

TABLE 2.1 Calculating Home Depot's NOPAT (numerator for ROIC)

	A	B	C	D	E	F	G
1							
2							
3	Home Depot Inc. (NYSE: HD)						
4	Income statement (\$ millions)						
5	Period date	1/28/2018	2/3/2019	2/2/2020	1/31/2021	1/30/2022	
6							
7	Revenues	100,904.0	108,203.0	110,225.0	132,110.0	151,157.0	
8	Cost of goods sold	66,548.0	71,043.0	72,653.0	87,257.0	100,325.0	
9	Gross profit	34,356.0	37,160.0	37,572.0	44,853.0	50,832.0	
10							
11	Selling general and administrative expenses	17,864.0	19,513.0	19,740.0	22,237.0	25,144.0	
12	Depreciation and amortization	1,811.0	1,870.0	1,989.0	2,128.0	2,386.0	
13	Other operating expenses, total	19,675.0	21,383.0	21,729.0	24,365.0	27,530.0	
14							
15	Operating income	14,681.0	15,777.0	15,843.0	20,488.0	23,302.0	line 15
16							
17	Interest expense	(1,057.0)	(1,051.0)	(1,201.0)	(1,347.0)	(1,347.0)	
18	Interest and investment income	74.0	93.0	73.0	47.0	44.0	
19	Net interest expenses	(983.0)	(958.0)	(1,128.0)	(1,300.0)	(1,303.0)	

(continued)

TABLE 2.1 (continued)

	A	B	C	D	E	F	G
20							
21	Earnings Before Taxes (EBT) including unusual items	13,698.0	14,556.0	14,715.0	16,978.0	21,737.0	line 21
22							
23	Income tax expense	5,068.0	3,435.0	3,473.0	4,112.0	5,304.0	line 23
24	Net income to company	8,630.0	11,121.0	11,242.0	12,866.0	16,433.0	
25							
26	EBIT	14,681.0	15,777.0	15,843.0	20,488.0	23,302.0	= line 15
27	Tax rate	37%	24%	24%	24%	24%	= line 23 / line 21
28							
29	NOPAT	9,249.3	12,053.9	12,103.8	15,525.9	17,616.1	= line 26 * (1 - line 27)
30							
31							
32							
33							
34							

Please note that to calculate OWC, we have simply deducted current liabilities from current assets. This doesn't exactly equate to OWC and it's an approximation. As we'll see later, we need to make a few more adjustments to get a more accurate figure for OWC.

Looking at Home Depot's ROIC over the past five years, we see in table 2.2 that the measure is much higher than our threshold of 10 percent and increasing year after year. This is an indication that Home Depot, at least from the historical ROIC perspective, is a good business as it has consistently provided high returns compared with capital invested in the firm.

GETTING MORE ACCURACY BY ADJUSTING NET OPERATING PROFIT AFTER TAXES

As mentioned, the approach discussed earlier is high-level approximation of ROIC. To get a more accurate estimate, it makes sense to revisit the simplifications we made earlier and to make improvements as needed.

Starting with the numerator, what we really need is the after-tax cash earnings that the company generates if it had no debt or excess cash. To that end, EBIT represents a simplification and needs to be adjusted. The following two items represent the most important changes we need to make (for now):

- We need to add back the amortization of acquired intangibles.
- If applicable, we should also add back the operating lease interest expenses.

Additionally, we need to make a few adjustments to the values for tax rate and invested capital.

Since my goal is to ease you into the topic of ROIC and its necessary adjustments, I won't discuss the details of the calculations for the ROIC numerator here. For now, remember that there are adjustments to be made in the process: In the next examples in the chapter, I'll list the adjustments but will only fill in the final numbers without going into details.

The mechanics of how we arrived at those numbers is something that we'll cover in a later chapter titled "Revisiting ROIC Adjustments."

TABLE 2.2 Calculating Home Depot's ROIC

	A	B	C	D	E	F	G
1							
2							
3	Home Depot Inc. (NYSE: HD)						
4	Balance sheet (\$ millions)						
5	Period date	1/28/2018	2/3/2019	2/2/2020	1/31/2021	1/30/2022	
6							
7	ASSETS						
8	Total cash and Short-Term investments	3,595.0	1,778.0	2,133.0	7,895.0	2,343.0	
9							
10	Total receivables	1,952.0	1,936.0	2,106.0	2,992.0	3,426.0	
11							
12	Inventory	12,748.0	13,925.0	14,531.0	16,627.0	22,068.0	
13	Other current assets	638.0	890.0	1,040.0	963.0	1,218.0	
14	Total current assets	18,933.0	18,529.0	19,810.0	28,477.0	29,055.0	line 14
15							
16	Gross PP&E	41,414.0	42,939.0	50,455.0	54,763.0	57,297.0	
17	Accumulated depreciation	(19,339.0)	(20,564.0)	(22,090.0)	(24,096.0)	(26,130.0)	
18	Net PP&E	22,075.0	22,375.0	28,365.0	30,667.0	31,167.0	line 18
19							
20	Total assets	44,529.0	44,003.0	51,236.0	70,581.0	71,876.0	
21							

22	LIABILITIES							
23	Accounts payable	7,244.0	7,755.0	7,787.0	11,606.0	13,462.0		
24	Accrued expenses	4,330.0	4,773.0	4,776.0	6,300.0	7,165.0		
25	Short-term borrowings	1,559.0	1,339.0	974.0	0.0	1,035.0		
26	Current portion of long-term debt	1,202.0	999.0	1,755.0	1,350.0	2,249.0		
27	Current portion of leases	0.0	57.0	912.0	894.0	1,028.0		
28	Current income taxes payable	54.0	11.0	55.0	193.0	158.0		
29	Unearned revenue, current	1,805.0	1,782.0	2,116.0	2,823.0	3,596.0		
30	Total current liabilities	16,194.0	16,716.0	18,375.0	23,166.0	28,693.0	line 30	
31								
32	Total liabilities	43,075.0	45,881.0	54,352.0	67,282.0	73,572.0		
33								
34	Total equity	1,454.0	(1,878.0)	(3,116.0)	3,299.0	(1,696.0)		
35								
36	OWC	2,739.0	1,813.0	1,435.0	5,311.0	362.0	= line 14 – line 30	
37	Net PP&E	22,075.0	22,375.0	28,365.0	30,667.0	31,167.0	= line 18	
38								
39	IC	24,814.0	24,188.0	29,800.0	35,978.0	31,529.0	= line 36 + line 37	
40								
41	NOPAT	9,249.3	12,053.9	12,103.8	15,525.9	17,616.1	calculated before	
42								
43	ROIC	37.3%	49.8%	40.6%	43.2%	55.9%	= line 41 / line 39	
44								

ADJUSTING INVESTED CAPITAL

Similar to the numerator of ROIC, our calculations of invested capital earlier were simple approximations. Essentially, we assumed IC to be the sum of the following two items:

- Net PP&E
- Working capital (calculated as current assets less current liabilities)

For invested capital, here we focus on the tangible and intangible elements essential for a business to operate. This perspective is referred to as the “operating approach” to calculating IC. Within this view, what we actually need to calculate is OWC. “Operating” here pertains to assets or liabilities involved in the day-to-day operations of the business and differs from traditional working capital in two key ways:

- The liabilities included are exclusively non-interest-bearing.
- Excess cash is excluded from current assets.

What is excess cash? Excess cash represents funds exceeding the amount needed for daily operations (operating cash). Operating cash is the amount necessary for the company’s day-to-day activities. Any surplus beyond this operational need is categorized as excess cash and should be excluded from IC calculations, as it does not contribute directly to day-to-day operations.

The required operating cash typically correlates with revenue: A bigger company has higher operating cash needs. If the company doesn’t mention how much operating cash is needed in its filings or other disclosures, you can use 1 percent of sales as a rule of thumb for more mature and stable companies, 3 percent for a medium-growth scenario, and 5 percent for fast-changing companies with higher or unexpected expenses.

In our example, Home Depot’s minimum operating cash is estimated at 1 percent of sales, reflecting its stability. However, it is important to acknowledge the inherent subjectivity in determining operating cash requirements.

Beyond net PP&E and OWC, IC also includes other operationally essential components such as acquired intangible assets, goodwill, and other assets critical for operations. Incorporating these elements can sometimes result in

TABLE 2.3 Comparing high-level approximation of IC with more detailed adjustments for Home Depot

	A	B	C	D
1				
2	Home Depot Inc. (NYSE: HD)	1/31/2022		1/31/2022
3	Adjusted IC using “operating approach”	Adjusted version	High-level approximation	Old version
4	Current assets (CA)	29,055.0	CA –	29,055.0
5	– non-interest-bearing current liabilities	24,381.0	current liabilities (CL)	28,693.0
6	– excess cash	831.4		
7	OWC	3,842.6	working capital	362.0
8	+ net PP&E	31,167.0	+Net PP&E	31,167.0
9	+ acquired intangibles	3,846.0		
10	+ goodwill	7,449.0		
11	+ noncurrent assets needed to run business	0.0		
12				
13	IC	46,304.6		31,529.0
14				

significant differences between high-level approximations and more refined IC calculations.

In table 2.3, we have recalculated Home Depot’s invested capital incorporating additional adjustments. The resulting difference between the high-level IC approximation and the detailed adjustments is considerable.

As expected, the higher adjusted invested capital compared to our approximation translates into a lower ROIC. Table 2.4 demonstrates this refined calculation.

FINANCING VIEW OF INVESTED CAPITAL

If you ask investors (especially those coming from nonvalue investing backgrounds) how ROIC is calculated, many respond with the following standard response: “NOPAT divided by debt and equity.” We call this view of invested capital as sum of debt and equity the financing view of invested capital.

In theory, both the operating and financing approach to calculating IC are equivalent, and you can always adjust your way into the same final number using either approach. But in practice, often times the final figures are different, and I generally don’t recommend this approach.

TABLE 2.4 ROIC approximation and more detailed version for Home Depot

	A	B
1		
2	Home Depot Inc. (NYSE: HD)	
3	Figures (\$ millions)	
4	Period date	1/30/2022
5	NOPAT approximation	17,616.1
6		
7	Adjusted NOPAT	17,078.9
8	Adjusted EBIT	23,028.6
9	EBIT	23,040.0
10	Acquired intangible amortization	174.0
11	Operating lease interest	162.6
12	Adjusted taxes:	5,949.7
13	Taxes	5,304.0
14	Unusual items	0.0
15	Tax Cuts and Jobs Act (TCJA) adjustment	0.0
16	Deferred tax adjustment	317.0
17	Tax shield adjustment	328.7
18		
19	IC approximation	31,529.0
20	New adjusted IC	46,304.6
21		
22	Old ROIC	55.9%
23	New ROIC	36.9%
24		

Why, you may ask? Here are a few reasons.

To start, using the financing approach, it's easier to miss adjustments or use wrong numbers in calculations. For example:

- The debt in the denominator is actually “net debt,” which accounts for excess cash adjustment. Many investors, however, just sum up debt and equity and forget about the cash.
- In calculating the equity value, we should consider all forms of equity. However, common equity is usually used by many practitioners, and the preferred stock is often forgotten.

TABLE 2.5 ROIC approach and calculation used by Home Depot

(\$ millions)	January 30, 2022	January 31, 2021
Net earnings	\$16,433	\$12,866
Interest and other, net	1,303	1,300
Income taxes	5,304	4,112
Operating income	\$23,040	\$18,278
Income tax adjustments ^a	-5,622	-4,423
Net operating profit after tax	\$17,418	\$13,855
Average debt and equity	\$38,946	\$33,964
Return on invested capital	44.70%	40.80%

Source: Home Depot

Note: Please see the fourth quarter 2021 earnings reconciliation of non-GAAP measures (on the company's investor relations web pages).

^aDefined as operating income multiplied by the effective tax rate for the trailing twelve months.

- Other liabilities such as deferred taxes or leases are also sometimes neglected. In calculating IC using the financing approach, however, we should remember to incorporate all long-term liabilities.

Another challenge in using the financing approach is that it does not provide insight into operational performance. By contrast, the operating approach allows for monitoring the effects of efficiency programs on invested capital and profitability. It also enables simulations to assess how operational value drivers impact ROIC under worst-case or best-case scenarios.

Despite its limitations, the financing approach remains prevalent among many companies and investors. For instance, in calculating ROIC, Home Depot estimates NOPAT as $\text{EBIT} \times (1 - \text{tax rate})$ and invested capital as the sum of debt and equity, without accounting for excess cash. Table 2.5 illustrates Home Depot's ROIC calculation for fiscal years (FY) 2020 and 2021.⁴

While the simplistic approach used by Home Depot is straightforward, estimating ROIC including all major adjustments results in a significantly lower figure, almost 8 percent lower than in Home Depot's estimated ROIC.

The general merchandise retailer Target Corp. (NYSE: TGT) is another example of a company using the financing approach for calculating invested capital. Compared with Home Depot, Target uses a more elaborate approach

and incorporates items like operating lease liabilities in its calculations. It also deducts cash and cash equivalents in the denominator of ROIC formula, which is a more appropriate way to account for debt. Additionally, Target adjusts NOPAT to reflect the effects of operating lease interest (see table 2.6).

OTHER THOUGHTS

ROIC is not a generally accepted accounting principle (GAAP) measure, and there is no universally accepted method for calculating it. As a result, no one can claim a monopoly on its definition, and your interpretation is as valid as mine.

That said, because we generally use this metric to compare the “goodness” of a company’s performance relative to others, it is essential that the way we define ROIC:

- Accounts for differences across industries and types of businesses.
- Is applied consistently across all companies being analyzed

The more elaborate operating approach presented in this chapter meets these criteria and passes this “smell test” for now.

Reflecting on the Home Depot example discussed earlier and using a 10 percent hurdle rate, both the ROIC approximation and its adjusted version demonstrate an attractive ROIC. This outcome is expected: a company with a strong ROIC approximation rarely has a significantly worse adjusted ROIC. However, the differences between approximate and adjusted ROIC can be much more impactful for companies with average returns. For consistency and better comparisons across businesses, applying the adjustments outlined in this chapter is highly recommended.

A good exercise as part of your ROIC analysis would be to build a “ROIC bridge” structure and observe how much the end result changes after each category of adjustments is incorporated. Such an analysis allows the analyst to see where the key drivers and sources of sensitivity are.

We are far from finished with ROIC. In subsequent chapters, we will delve deeper into this metric, introduce complementary measures, and explore unusual situations that may arise.

TABLE 2.6 ROIC calculations for Target Corp.

Numerator	2023				2022				2021				2020				2019			
	Q2	Q1	Q4	Q3	Q2	Q1	Q4	Q3	Q2	Q1	Q4	Q3	Q2	Q1	Q4	Q3	Q2	Q1	Q4	Q3
\$ millions (unaudited)																				
Operating income	\$4,706	\$3,830	\$3,848	\$4,784	\$5,773	\$7,918	\$8,946	\$8,687	\$8,611	\$8,444	\$6,539	\$5,901	\$4,968	\$3,992	\$4,658	\$4,577	\$4,395	\$4,204		
+ Net other income/ (expense)	65	57	48	61	54	55	382	358	346	350	-16	-46	-28	-26	9	45	42	33		
EBIT	\$4,771	\$3,887	\$3,896	\$4,845	\$5,827	\$7,973	\$9,328	\$9,045	\$8,957	\$8,794	\$6,523	\$5,855	\$4,940	\$3,966	\$4,667	\$4,622	\$4,437	\$4,237		
+ Operating lease interest ^a	102	96	93	89	88	87	87	85	84	85	87	87	87	87	86	86	85	84		
Income taxes ^{b,c}	986	770	744	1,059	1,282	1,804	2,073	1,947	1,918	1,864	1,404	1,277	1,076	855	1,045	1,043	937	878		
Net operating profit after taxes	\$3,887	\$3,213	\$3,245	\$3,875	\$4,633	\$6,256	\$7,342	\$7,183	\$7,123	\$7,015	\$5,206	\$4,665	\$3,951	\$3,198	\$3,708	\$3,665	\$3,585	\$3,443		
Denominator	2023				2022				2021				2020				2019			
\$ millions (unaudited)	Q2	Q1	Q4	Q3	Q2	Q1	Q4	Q3	Q2	Q1	Q4	Q3	Q2	Q1	Q4	Q3	Q2	Q1	Q4	Q3
Current portion of long-term debt and other borrowings	\$1,106	\$200	\$130	\$2,207	\$1,649	\$1,089	\$171	\$1,176	\$1,190	\$1,173	\$1,144	\$131	\$109	\$168	\$161	\$1,159	\$1,153	\$1,056		
+ Noncurrent portion of long-term debt	14,926	16,010	16,009	14,237	13,453	13,379	13,549	11,586	11,589	11,509	11,536	12,490	14,188	14,073	11,338	10,513	10,365	11,357		
+ Shareholders' equity	11,990	11,605	11,232	11,019	10,592	10,774	12,827	13,803	14,860	14,959	14,440	13,319	12,578	11,169	11,833	11,545	11,836	11,117		
+ Operating lease liabilities ^c	3,104	2,921	2,934	2,879	2,823	2,854	2,747	2,737	2,695	2,563	2,429	2,400	2,448	2,448	2,475	2,390	2,285	2,231		
Cash and cash equivalents	1,617	1,321	2,229	954	1,117	1,112	5,911	5,753	7,368	7,816	8,511	5,996	7,284	4,566	2,577	969	1,656	1,173		
Invested capital	\$29,509	\$29,415	\$28,076	\$29,388	\$27,400	\$26,984	\$23,383	\$23,549	\$22,966	\$22,388	\$21,038	\$22,344	\$22,039	\$23,292	\$23,230	\$24,638	\$23,983	\$24,588		
Average invested capital ^d	\$28,454	\$28,119	\$25,729	\$26,479	\$25,183	\$24,686	\$22,210	\$22,947	\$22,502	\$22,840	\$22,134	\$23,491	\$23,011	\$23,940	\$23,208	\$24,369	\$23,652	\$24,116		
ROIC	13.70%	11.40%	12.60%	14.60%	18.40%	25.30%	33.10%	31.30%	31.70%	30.7	23.50%	19.90%	17.20%	13.40%	16.00%	15.00%	15.20%	14.3		

Source: Target Corp.

^aRepresents the add-back to operating income to reflect the hypothetical interest expense we would incur if the property under our operating leases were owned or accounted for as finance leases. Calculated using the discount rate for each lease and recorded as a component of rent expense within Selling, General, and Administrative (SG&A) expense.

^bCalculated using the effective tax rate for continuing operations.

^cThe effective tax rate for the trailing twelve months ended November 2, 2019; August 3, 2019; May 4, 2019; and February 2, 2019, includes discrete tax benefits of the Tax Cuts and Jobs Act (Tax Act).

^dTotal short-term and long-term operating lease liabilities included within accrued and other current liabilities and noncurrent operating lease liabilities, respectively.

^eAverage based on the invested capital at the end of the current period and the invested capital at the end of the comparable prior period.

KEY TAKEAWAYS

- A litmus test for identifying a good business is whether its ROIC is satisfactory.
- Warren Buffett asserts that, at a minimum, “for every dollar retained [or invested] by the corporation, at least one dollar of market value should be created for owners.”
- ROIC can be calculated using various methods, from high-level approximations to detailed approaches incorporating various adjustments.
- As a non-GAAP measure, ROIC has no standardized calculation. Its definition should facilitate meaningful comparisons across sectors and offer actionable insights into a company’s operational performance.