

THE ART OF
M&A
VALUATION AND MODELING

A GUIDE TO
CORPORATE VALUATION

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Cracking the Code: What's It Worth?

The White Rabbit put on his spectacles. ‘Where shall I begin, please your Majesty?’ he asked.

‘Begin at the beginning,’ the King said gravely, ‘and go on till you come to the end: then stop.’

—*Lewis Carroll, Alice’s Adventures in Wonderland, 1865*

INTRODUCTION

As the King does for the White Rabbit, we find ourselves in the position of advising about where, and how, to begin a story—in our case, about where and how to begin the process of valuing a business. The valuation discussion does not only come up in the context of buying and selling a business. An owner should understand the worth of his or her business when borrowing money (particularly when a portion must be offered as collateral); when designing buy–sell agreements with employees; when determining the insurable value of selected corporate assets; and when crafting employee stock ownership plans. Likewise, financial managers should understand the valuation process so that they may better anticipate the reactions of investors, banks, and other capital allocators to key business decisions.

For some, the process of valuing a business might start and end with looking up its current stock price. But we should never confuse value and price. Two sages of equal wit each spoke to this point. Renowned author Oscar Wilde once noted, “The cynic knows the price of everything and the value of nothing.” Famed investor Warren Buffett echoed this sentiment when he observed, “Price is what you pay; value is what you get.”¹

As the global economy continues to heal from the financial excesses leading up to the Great Recession of 2008–2009, the distinction between price and value is more critical than ever. After all, price is a subjective reading easily manipulated by asset bubbles, whereas value can be an objective measure established through time-tested methodologies. Yet too often, this concept—how to estimate the value of a business—remains foreign: a seemingly opaque process left to investment bankers and equity research analysts. Nevertheless, how to value a business is a practical problem that should be of specific concern to the managers, shareholders, and regulators who influence the operating policies of America’s corporations. Without a basic grasp of the value of a particular business, the constituencies of that business lack the necessary tools to evaluate and support its success.

This book tackles an all-important question for a business’s owners, investors, or advisors—what’s it worth?—and provides a framework for arriving at an appropriate answer. Some elements of this framework are timeless; for instance, some valuation methodologies, such as those rooted in cash flow, have changed little over the decades. In contrast, other elements change constantly based on the economic and/or regulatory landscapes. Prime examples include valuation methodologies based on trading multiples and the impact of new tax code changes.

Moreover, the value of the asset depends partly on who owns it; that is, some owners may be uniquely positioned to generate revenue enhancements, or harvest cost savings, by combining the business with another within the owners’ portfolios. Accordingly, the answer to that critical question—what’s it worth?—may depend partly on whether the business is being valued as a standalone or as part of a larger transaction.

This book is divided into three parts. Section I explains how to value a business as a standalone. Chapter 1, which follows below, outlines valuation fundamentals, including some background into valuation multiples and discounted cash flow (DCF) analysis. Chapter 2 introduces the concepts of comparable companies and comparable transactions—arguably the most common valuation methodologies, given their ease of use. Finally, Chapter 3 delves further into DCF analysis, the granddaddy of all corporate valuation methodologies. For the most part, Section I of this book transcends mergers and acquisitions (M&A) and is relevant to most any capital allocation or corporate finance/investment decision.

Section II of this book introduces facts-and-circumstances considerations to evaluate in the context of a prospective merger or acquisition. Chapter 4 provides tools to consider if there is a meaningful gap in the perceived value of a business between a would-be seller and a prospective buyer. Chapter 5 considers whether there are ways to create value through tax structure. Finally, Chapter 6 illustrates how a business's worth might change if the analysis shifts from a standalone valuation to a transaction model.

With the above perspective in mind, Section III of this book (available exclusively online at the website www.ARTofMA.com) provides sample models that illustrate—using real-world examples—the concepts outlined throughout this book. Lastly, do not overlook the legal case summaries and glossary at the end of this text. Each entry contributes to a full appreciation of the “Art of M&A Valuation.”

VALUATION FUNDAMENTALS

Are “valuation” and “price” interchangeable?

Value is the intrinsic worth of an asset, whereas price is what a buyer has actually paid for it. Recall the words of Warren Buffett above: “Price is what you pay; value is what you get.” Prices change daily; value is more stable.

The key point is that the price paid for an asset, or a company for that matter, does not always reflect its underlying value—but rather the zone of agreement between a buyer and a seller at a given point in time. Confusing “valuation” and “price” is an easy trap to fall into—we inadvertently do it ourselves more often than we care to admit. However, it is important to at least keep in mind how the two are differentiated.

What exactly is a valuation multiple?

A *valuation multiple* is simply a means of expressing a firm's market value relative to one or more key financial metrics that presumably relate to that value. To be useful, those metrics—whether earnings, cash flow, or some other measure—must bear a logical relationship to the market value observed. That is, the financial metric should comprise a key driver of that market value.

Consider an example outside of the M&A context: real estate. How would a prospective buyer ascribe a value to a particular apartment in the Center City West section of Philadelphia? The first step might be to ask, how are other apartments in the area valued, and what are they worth? Some initial research would likely show that the value of an apartment in Philadelphia is typically related to its size, with the price per square foot representing the most common valuation multiple. According to the website Zillow.com, the average price per square foot for an apartment in Center City West is approximately \$460.² However, is valuation as mechanical as applying a multiple to some financial metric? Is every 1,000-square-foot apartment in Center City West worth \$460,000? The answer, of course, is no. Other factors will influence whether a buyer should pay \$750 per square foot: How close is it to a desirable location such as Rittenhouse Square? How many bathrooms does the apartment have? Does the building have a doorman? Accordingly, the valuation multiple must be considered in the context of other datapoints.

Moreover, the type of valuation multiple used for one type of real estate investment might be completely irrelevant for another parcel. What if the opportunity were a 100-acre farm in rural Pennsylvania rather than an apartment in Philadelphia? How does this change the analysis? The first step is the same; the initial question is still, how are other farms in the area valued, and what are they worth? Moreover, the valuation might still be linked to the size of the parcel. For instance, the average value per acre for farm real estate in Pennsylvania is approximately \$5,300, according to a recent survey by the United States Department of Agriculture (USDA).³ So, does that mean that the 100-acre parcel is worth \$530,000? Well, that depends.

A deeper dive into the USDA's data shows that the value drivers for Pennsylvania farmland are much different from the factors that matter in Philadelphia. For example, is the parcel cropland (worth, on average, \$5,700 per acre, according to the USDA's survey) or pasture (worth, on average, \$2,700 per acre)? If it is cropland, is it irrigated or nonirrigated? Are there buildings on the property? If so, how many, for what use, and in what condition?

In each case, multiples can provide a helpful starting point for analysis. But in these real-world terms, it becomes clearer why the

appraiser must choose the appropriate sample set and still leave at least some room for interpretation.

What about valuation rules of thumb?

We've all heard them. A few years ago, supposedly knowledgeable people said, "Any good tech-based company is worth at least three times its annual sales." Or, "Never pay more than 80 percent of net worth."

These rules of thumb are tempting, but they can be treacherous. These statements are often wrong because they are based on past numbers and transitory trends of only a few deals on a local or industry basis. (As such, they frequently do not reflect the fact that similar companies in different parts of the country or even slightly different end markets can have very different levels of profitability. Consider construction equipment rental companies: a business in the fast-growing Atlanta market, which also benefits from near year-round good construction weather, will likely use its equipment fleet substantially more than a similarly sized business in a slower-growing, more seasonal market such as Detroit.)

Even worse, history is plentiful with valuation rules of thumb that really made no business sense. Here are just three examples:

- *Biotech*. In the 1980s, capital rushed into biotech concerns, the valuations of which were often based on a multiple of the number of PhDs who worked there. This rule of thumb eventually proved untrue, as the values of many of these companies fell, never to recover.
- *Telecommunications*. The Telecommunications Act of 1996 drew massive investment into competitive local exchange carriers (CLECs). One often-used valuation measure was the number of equipment switches these companies owned. Meanwhile, the manufacturers of such equipment were increasingly financing the sales of switches to the CLECs. In effect, a CLEC could borrow money from a manufacturer to buy a switch, which in turn increased the CLEC's perceived enterprise value by a multiple of the equipment purchased. It was circular thinking that never got out of the loop.

- *Websites*. During the “dot com” bubble of the late 1990s and early 2000s, many acquirers aggressively bought Internet websites at \$100 per monthly unique user—the logic being that, once the buyer crafted a sustainable revenue model, each user had an annuity value analogous to a per-subscriber valuation for cable companies. This optimistic projection proved to be unsustainable.

In all three of these cases, the valuation rules of thumb emerged due to lack of current profitability and low visibility into future profitability. And in all three cases, reliance on the rule of thumb proved unwise.

What is discounting?

Discounting is the process of determining the present value of cash to be received in the future. Assuming interest rates and/or inflation rates above zero, cash today is worth more than it will be tomorrow. Discounting quantifies this premium.

In the sixth or seventh grade, your teacher probably taught you that a \$1 investment, when *compounded* at 6% interest, will have a *future value* of \$2 in 12.4 years, as that original \$1 has earned an additional \$1 in interest. What the teacher probably did not teach you was the reciprocal corollary: that \$2 to be paid out 12.4 years from now, when *discounted* at 6%, has a *present value* of only \$1 today. Most M&A investments revolve around projecting how much an investment will yield over some preset time horizon and factoring the uncertainties into the discount rate. The business of estimating *M&A investment risk* involves building into the discount rate the certainties and uncertainties of receiving a future stream of earnings or cash flows from your M&A investment. The lower the certainty, the higher the discount rate; the higher the certainty, the lower the discount rate.

What are hurdle rates?

A *hurdle rate* is the discount rate, usually set by the board of directors or other governance of a corporation, that must be applied to a projected earnings stream to determine whether the investment is likely to generate at

least a minimally acceptable return. If the expected return does not exceed the hurdle rate, the investment is unlikely to be approved. Most companies set the hurdle rate as equivalent to their own cost of capital. Special situations then call for documented reasons to add points to the discount rate—for inexperience in the field, for high deviation rates on historical earnings for the target or its industry, or for other risk-related reasons.

For example, executives may develop different hurdle rates for entries into different industries that coincide with the comfort level of the board's personal "feelings" about the industry, which, upon investigation, may turn out to coincide with their familiarity with the industry. This approach appears rational but is an inappropriate proxy for risk, because those assessing the risk are not necessarily the ones who will be managing the acquisition.

What about time horizons?

Any analysis requires the selection of a *time horizon*, also known as the *forecast period*. The time horizon is the period—usually measured in years—over which the analysis will evaluate the company's expected cash flows. Most companies have standardized this period at 10 years. However, in industries that depend on shorter-lived styles or fads, such as toys or fashion, five to seven years is much more common. Public utilities traditionally spun their forecasts out for 20 years but have lately turned to much shorter time horizons as patterns of energy production, consumption, and conservation have changed. In parts of Eastern Europe and in the Middle East, currently struggling with economic or political uncertainty, traditional planning horizons no longer make sense. Tomorrow is charted on a deal-by-deal basis. This is where a few financial skills can really help a dealmaker. One of the benefits of "sensitivity analysis" is to discover the effects of different time horizons on a target company's net present value (NPV).

Unfortunately, there is a trend toward shortening the time horizon or forecast period under conditions of uncertainty that are not random. This shortening is a poor substitute for factoring in quantifiable risk. In many cases, with a little work, the uncertainties can be converted to probabilities that can be quantified without creating a jumble of forecast periods. You

don't have to be a financial economist yourself to get this work done. Any accredited business school is likely to have a team of them ready, willing, and able to help—at an affordable price, or even pro bono.

COMPARABLE COMPANIES AND TRANSACTIONS

What is the comparable companies and transactions approach?

The *comparables* approach is a two-step valuation process, as explained in the next chapter. First, we compare the value of one company to other standalone companies. Second, we compare one transaction to how companies were valued in other transactions. Both of these comparisons involve a series of questions that involve valuation multiples.

What are the basic types of valuation multiples?

There are two basic types of valuation multiples: multiples that relate to a company's equity value and multiples that relate to a company's enterprise value.

- *Equity multiples* refer to the value of shareholders' ownership and/or claims on the assets and cash flow of a business. An equity multiple therefore expresses the value of this ownership relative to a financial metric that applies to shareholders only. The best example would be a company's net income (sometimes also referred to as its earnings), defining *net income* as the residual income left after interest payments to creditors, minority shareholders, and other nonequity claimants.
- *Enterprise value multiples* refer to the value of the entire enterprise, or the value of all claims on a business—both the equity value and *net debt* (gross debt less cash on hand), as well as other nonequity claimants. An enterprise value multiple therefore calculates the value relative to a financial metric that relates to the entire enterprise; prime examples are sales and earnings before interest, taxes, depreciation, and amortization (EBITDA).

Why would someone want to use valuation multiples to ascribe a value to a business?

There are three key reasons to use valuation multiples in the context of M&A analysis:

1. *Objectivity.* Valuation is partly a subjective process. Multiples can provide a useful framework for introducing a level of objectivity to the process. That is, multiples provide helpful information about relative value when used properly. At a minimum, valuation multiples can serve as the proverbial rule of thumb to double-check other valuation measures. For example, if a DCF analysis were to peg the value of a business at \$100 million, the analyst could calculate earnings-based multiples (for example, the price of the company in relation to EBITDA, as in “five times EBITDA,” commonly written as 5x EBITDA) and then ask how those multiples compare with similarly situated companies in the industry.
2. *Ease of use.* The very ease of calculation makes multiples an appealing and user-friendly method of assessing value. Multiples can help the analyst avoid potential misperceptions of other, more “precise” approaches, such as DCF. Valuations such as these can sometimes create a false sense of comfort unless they are triangulated with other valuation analyses.
3. *Relevance.* Valuation multiples focus on key metrics that investors use. Key examples include a business’s revenue, operating income (also commonly known as EBIT, or earnings before interest and taxes), EBITDA, and earnings. Since investors in aggregate make the market—and thus dictate relative value—the most commonly used metrics and multiples will have the most impact.

What about the disadvantages of using valuation multiples? What should I keep in mind?

Despite their advantages, multiples have several disadvantages that one should consider when evaluating the worth of a particular company. Some

of the principal criticisms levied against multiples can be summarized as follows:

- *Overly simplistic.* A valuation multiple is a deceptively complex variable; it seeks to distill a tremendous amount of information—including both known and unknown data—into a single figure or series of numbers. At times, this can be an overambitious objective! By combining many value levers into a single-point estimate, multiples may make it difficult to disaggregate the effect of different drivers. Consider the following real estate example: a 100-acre farm in Pennsylvania arguably is worth \$530,000 based upon the average value per acre for farm real estate of \$5,300. However, this single variable neglects to consider the location, condition, and potential uses of the property. Clearly, these variables can have a tremendous influence on the intrinsic value of the land. The lesson learned, then, is not to rely on just one, or even a handful, of valuation multiples to dictate value. Dig deeper.
- *Static.* A multiple represents a snapshot of a firm's value at a given point in time. However, clearly every business and industry has a lifecycle. Moreover, the economic backdrop is constantly changing, which typically will have a carryover effect on the worth of a particular enterprise. Valuation multiples often fail to capture the ever-changing nature of business and competition. The takeaway: consider how the market valued an asset over an extended period of time, not just on any given day.
- *Potentially misleading.* Multiples are primarily used to make comparisons of relative value. However, comparing multiples is an inexact art, as there are many reasons that multiples can differ. If we were to extend the farm example above, a \$530,000 valuation might be grossly high if the land is, in fact, pasture (which, at \$2,700 per acre, might only be worth \$270,000) or a bit on the low side if the parcel is cropland (which, at \$5,700 per acre, might be valued at \$570,000). There are even more subtle ways in which valuation multiples might differ between two

Figure 1-1 Advantages and Disadvantages of Valuation Multiples

Advantages	Disadvantages
<ul style="list-style-type: none"> • Objectivity: Can be robust tools that filter out subjective assumptions such as future growth rates. Can provide useful information about relative value. • Ease of Use: Are relatively simple to calculate, particularly with widely available data. Their wide use makes them a "common language" for dealmakers. • Relevance: Are based on key metrics that investors use. 	<ul style="list-style-type: none"> • Overly Simplistic: Can combine multiple value drivers into a single point estimate. Difficult to disaggregate the effect of different value drivers. • Static: Only measure value at a single point of time. Do not fully capture the dynamic nature of business and competition. • Potentially Misleading: Can vary for many reasons, not all relating to true differences in value. Can result in misleading "apples-to-oranges" comparisons among companies.

seemingly similar businesses, not all of which relate to true differences in value. For instance, even modest changes in accounting policies can result in diverging multiples for otherwise identically operating businesses. For these reasons, the selection of truly comparable companies is critical. Where there are differences, the analyst may need to make adjustments to the implied multiples. Figure 1-1 summarizes the key advantages and disadvantages of valuation multiples.

How can the disadvantages of valuation comparison be mitigated?

In addition to looking at the company in relation to others at a single point in time, look at the company at present in relation to itself at multiple future points in time. This is the purpose of DCF analysis.

DCF ANALYSIS

Isn't it misleading to base a valuation on unknown future events? Isn't the past record more reliable?

Admittedly, it is tempting to use historical results, rather than future projections when valuing a business; there's more certainty to past financials.

However, when a business changes hands, the new owners are interested in what the company can do in the future, not what it did in the past.

Consider, for instance, a business that is in structural decline. Newspapers would be one example. A valuation that focuses on historical results would likely overvalue a paper's worth, as electronic-based distribution channels are currently eroding its profit margins. By the same token, using historical results might actually *undervalue* a distressed acquisition target, as trailing financial results may fail to account for the often significant operational turnaround that is expected. Indeed, it has been a basic valuation principle for many decades that projected, not trailing, earnings should be considered when a company anticipates significant improvement in the near term.⁴

Accordingly, valuation, particularly when it is cash flow-based, should reflect forward-looking projections, not historical results. To be sure, there is risk to every forecast. In the words of management guru Peter Drucker, "Erroneous assumptions can be disastrous." The forward-looking projections must be constructed diligently. Otherwise, it's garbage in, garbage out.

What exactly is DCF analysis?

DCF analysis is a widely used analytical framework for measuring the present value of multiyear cash flows. In its simplest application in the world of M&A, a DCF analysis estimates the value of a business based on projections of how much cash the business will generate in the future. These cash flows are "discounted" because a dollar earned in the future is worth less than a dollar earned today, given the time value of money. Tweaking the analysis, DCF also enables an acquirer to explore whether a particular target is likely to generate sufficient risk-adjusted returns.

Although this text discusses DCF in the context of M&A, the analysis is not solely limited to that application. Rather, the framework can apply to nearly any financial decision-making process: whether to buy a stock; whether to purchase a new piece of equipment; whether a piece of real estate is attractively priced; and so on. Accordingly, the analyses described throughout are relevant for many other applications.

How is a DCF analysis different from a multiples analysis?

Discounted cash flow looks at *one* company, and it looks into the *future*. It predicts how well the company is expected to do in terms of future free cash flow (money left over after paying necessities). It skips historical analysis in favor of basics: cash is cash, and cash is good!

Multiples analysis looks at *many* companies, and it looks at the *past*. It tells you what kind of ratios have held true for comparable companies in past years. Also, multiples analysis uses a variety of accounting numbers—times sales, times profits, etc.—that may or may not indicate true economic value.

Moreover, as discussed in greater detail in Chapters 2 and 3, DCF has some advantages over static, point-in-time approaches—such as multiples analysis—in that it adds more flexibility and more precision to the investment analysis.

Using all of these approaches in combination can be a helpful cross-check.

How does DCF stack up against other valuation approaches?

In many ways, cash flow–based valuation is the granddaddy of all valuation techniques. This is because, at the end of the day, all valuation measures are directly or indirectly focused on answering the same question: how much cash do I expect this business to generate during the relevant measurement period?

As its name suggests, DCF analysis is a form of analysis that anticipates a company's future net operating cash flow and discounts it to present value. The purist approach counts only “free” cash flow—that is, cash that is available to spend; it is calculated after capital expenditures and dividends are paid during the period.

Many analysts believe that the DCF method is the best way to value a company, but it is not the only way. A thorough valuation can look not only at cash flow but also at assets, earnings, and stock price—as well as a variety of ratios and methodologies based on these fundamentals and of course a discount rate to reflect cost of capital.⁵

CHOOSING A VALUATION APPROACH

How does an acquirer choose a valuation approach?

The kind of financial analysis the acquirer conducts—DCF, multiples from comparable companies or transactions, a combination of these, or another approach entirely—will depend in part on the strategic reason for buying the company. There are many possible reasons one company would want to buy another. Here are some primary ones:

- *Growth.* To lessen economic vulnerability and/or increase latitude for strategic choices by increasing the size of the company and thus potential revenues and/or profits. A growth-oriented acquirer may consider valuation multiples focusing on ratios that involve sales, such as EBITDA to sales.
- *Diversification.* To hedge against risk in current industries by investing in others. A diversification-oriented acquirer may choose DCF as a valuation model because it lends itself to comparability across industries.
- *Progress.* To accomplish strategic goals more quickly and more successfully by buying an operating company that is already doing what is envisioned in the buyer's strategy, or that could provide some missing piece of the buyer's strategic puzzle. A progressive acquirer will rarely value the target company by itself but will value the future combined company—typically with DCF, using postcombination scenarios.
- *Vertical synergy.* To achieve economies of scale or other economic benefits by buying a customer or supplier. An acquirer interested in this kind of financial synergy will recast the financial statements showing a different cost structure postmerger and then create a DCF statement from that.
- *Horizontal synergy.* To increase market share (“market power”) or reduce competition by buying an actual or potential competitor. Since this kind of acquisition involves a company that is similar to the acquirer, both multiples and DCF are relevant modes of valuation.

- *Financial offset.* To smooth financial performance by combining companies with different cash flow cycles, tax profiles, and/or debt capacities. Here, the emphasis is not so much on the amount of cash flow in the future as on its timing, so multiples may be the natural choice.
- *Efficiency.* To realize a return on investment by buying a company with less efficient managers and making them more efficient or replacing them. This is a natural candidate for DCF analysis, because the acquirer is relying on a new and different scenario; current and historical multiples will be meaningless.
- *Bargain hunting.* To take advantage of a price that is low in comparison to current stock prices, or in relation to the cost the buyer would incur if it built the company from scratch. Regarding current stock prices, this is clearly a candidate for multiples (e.g., price/earnings, earnings per share). As for cost to build, this is a cost-based approach unrelated to multiples and DCF. This is not so much valuation as appraisal—a subject in its own right.
- *Control.* To assert control in an underperforming company with dispersed ownership by acting as an agent for the owners. Here any multiple or ratio involving stock price and/or dividends is most relevant, such as total shareholder return (TSR).

With these types of goals in mind, let us now take a deeper look at the two valuation approaches emphasized in this book: comparable companies and transactions and DCF. The next chapter focuses on comparables.