5

OVERVIEW OF THE VALUATION PROCESS

Up to this point, the concepts of firm value and capital structure have been discussed without worrying about how they are derived. The ever-present Boxco behaves like so much Silly Putty: its asset value box expands and then shrinks, and then the boxes on the other side (debt and equity) are stretched or chopped down to conform. This is a conceptually sound construct because, as a general proposition, capital structure must, in the long run, bear some relation to asset value. The dependence or causality is from asset value to capital structure, not vice versa.

In Chapter 3, this construct was used to depict the concept of financial distress and how it will often force a restructuring of the capital structure: the asset box shrinks, so the liability and equity boxes must be chopped down to conform (review Figure 3-8). As was discussed in Chapter 4, whether this restructuring is done through a voluntary agreement among the creditors or under the auspices of a bankruptcy proceeding, the basic notion of matching the capital structure to the asset value is the same.[1] But for this exercise to have practical relevance to the distressed debt investor, it must advance from concept to concrete. Bonds trade at prices. To assess whether a bond should be bought or sold at any given price requires the development of techniques to estimate the size of the asset box and, having derived that, decide if the size of the debt box implied by a given price is appropriate or workable.

In this chapter, the basic concepts of firm valuation are reviewed. Chapter 6 develops various principles for what a firm's "value" implies about its capital structure. The discussion is not intended to be comprehensive, and you may want to supplement your understanding by reviewing more specialized texts.[2] The treatment here, though more basic, should be helpful, however, in that it

approaches the topics from the perspective of the distressed debt investor. Specifically, it employs a "bottom-up" approach that starts with determining asset value and then looking at the appropriateness of the capital structure. First, the basic concept of value as derived from expected cash flow generation is reviewed. Then, the rationale behind and limitations of the most widely used proxy for cash flow — earnings before interest, taxes, depreciation, and amortization (EBITDA) — are discussed. Next, "multiple"-based valuation and comparable company analysis are reviewed. Finally, the chapter concludes with an overview of the most common alternatives to multiple-based analysis.

THE BASICS OF CASH-FLOW-BASED VALUATION

It is a fairly universally held principle that the value of a firm is the sum of all discounted future dividends or cash flows.[3] Valuations based on this principle, typically called discounted cash flow (DCF) analysis, however, are complicated and time consuming. Furthermore, since they are based on projections of the future, their accuracy is inherently constrained by forecasting uncertainty.

In practice, most distressed debt investors use a simplified approach to valuing firms: the cash flow multiple methodology using EBITDA as a proxy for cash flow. This is generally referred to as the EBITDA multiple approach. For example, if a firm generated $10 in annual EBITDA and was valued using a multiple of 5 (how the appropriate multiple is chosen is discussed below), it would be worth $50. Because of their widespread use in practice, EBITDA multiples will be used as the general valuation metric in this book. An example of how to develop a DCF valuation based on a detailed cash flow projection is available for download at www.jrosspub.com.

Using EBITDA as a Measurement of Cash Flow

Although EBITDA is a fairly common term or concept, it is worth reviewing the basics of how it is derived. Table 5-1 shows a sample income statement and the related calculation of EBITDA.

Note that this calculation did not use the precise order of the acronym (the reverse order, in which the items typically are presented on an income statement, was used), which has been adopted as convention for ease of pronunciation, but this does not affect the result. Although most people involved in finance on a daily basis simply accept EBITDA as a reasonable measure of cash flow, it may not be intuitively obvious why it is used more readily than net income (or earnings), which is the accounting number most frequently used to judge a firm's performance and the most common basis for equity valuations.

Table 5-1. Derivation of EBITDA

Income Statement		EBITDA Calculation	
Sales	200	Net Income (Loss)	(8)
Cost of Goods Sold	120		
Gross Margin	80	Taxes	3
Sales, General, and Administrative Expense	40		
Depreciation and Amortization Expense	30	Interest Expense	15
Interest Expense	15		
Pretax Income (Loss)	(5)	Depreciation and Amortization Expense	30
Taxes	3		
Net Income (Loss)	(8)	EBITDA	40

The basic reason for the broad use of EBITDA is to improve the comparability among firms. Anyone reasonably familiar with investing in stocks has probably heard stocks compared to each other based on the price as a multiple of earnings, or P/E ratio. The common-sense notion is that if two firms, A and B, in the same industry (hence comparable competitive risks, cycles, etc.) earn $1 per share but A's stock sells for $15 per share (P/E = 15) while B's sells for $12 per share (P/E = 12), the P/E ratio may be an indication of relative value. Perhaps B is cheap or A is overpriced, but it seems odd to pay a different price for the "same" $1 of earnings. While much could be criticized about this simplistic approach, one can find this type of analysis in virtually any stock research report.

Table 5-2 illustrates that making an investment decision on the basis of simple P/E comparisons can be very difficult. Which of the three firms in the table, all of which are in the same industry, is the better value?

The reader, of course, will likely presume there is a "trick." Each firm's stock sells for $12 a share. The firms are obviously of different scale based on the significant difference in sales levels. It is also fairly easy to deduce that the debt levels are proportionately different given that A has lower revenues than B but higher interest expense. Since C has no interest expense, it apparently has no debt. Beyond these observations, however, most readers likely will be reaching for their calculators (or, heaven forbid, exercising their brains) to attempt some additional analysis, which is exactly the point: net income and P/E ratios provide only limited information about these firms.

Understanding and Adjusting EDITDA

The next step is to examine each firm on an EBITDA basis. But before jumping straight to the numbers, it is worth spending a moment on the rationale behind

Table 5-2. Limitations of P/E-Based Investment Analysis

	Firms		
	A	B	C
Income Statement			
Sales	1000.0	3000.0	2000.0
Cost of Goods Sold	560.0	1740.0	1200.0
Gross Margin	440.0	1260.0	800.0
Sales, General, and Administrative Expense	270.0	870.0	520.0
Depreciation and Amortization Expense	80.0	125.0	50.0
Interest Expense	71.9	54.3	0.0
Total Expense	421.9	1049.3	570.0
Pretax Income	18.1	210.8	230.0
Taxes	(6.3)	(73.8)	(80.5)
Net Income	11.7	137.0	149.5
Earnings per Share	0.84	0.72	1.00
Share Price	$12.00	$12.00	$12.00
P/E	**14.3x**	**16.6x**	**12.0x**

the use of EBITDA, because in any particular case adjustments to the basic formula may be required, and without some sense of the rationale behind or goal of EBITDA, it will be difficult to determine such adjustments.

The goal of an EBITDA-based valuation analysis is to estimate the result of a future cash flow projection. Each component of the formula should be viewed from that perspective. The first component is net income, the standard accounting measure of a firm's performance. If the operating results being reviewed include items that are not representative of expected future performance, an adjustment may be needed. The most common, nonformula adjustments that need to be considered arise if earnings include charges for restructuring operations (such as the cost of severance associated with reducing the scale of operations) or to discontinue operations.[4] These will usually be easily identifiable line items. However, there occasionally will be less obvious adjustments buried within regular line items such as charges to write off obsolete inventory within cost of goods sold. To identify when these may be present, it can be helpful to review operations on a percentage of revenue basis and look for sudden deviations from historical norms. Usually the occurrence of such "one-time" events will be discussed in the "Management's Discussion and Analysis of Operations" section of Securities and Exchange Commission (SEC) filings, but they may not be, in which case the investor may have to contact the company to see if it will explain the abnormality.[5] When it is decided that an adjustment to EBITDA should be made because of such items, the amount

of the adjustment is added to or subtracted from the previously calculated EBITDA to derive an adjusted EBITDA. It may not be appropriate to make adjustments for everything that management chooses to characterize as one-time in nature. In making these judgments, investors may want to consider management's track record in taking such charges and operating trends at comparable companies.

The rationale for adjusting earnings for interest expense is that such expense reflects a decision to use debt in the capital structure, and the firm's value is independent of capital structure. This goes back to our basic observation that the size of the asset box is independent of the historical liabilities and equity. In the example above, based on the interest expense line, it can be deduced that Firm C has no debt, whereas Firm A has significant leverage. Thus, to make the results of firms with varying amounts of debt comparable, one must adjust for interest expense. Another adjustment that is frequently made to reflect differences in capital structure decisions is to adjust for rent expense. Consider two fast-food restaurant chains, FF-O and FF-R, each with 100 restaurants or stores. FF-O owns all its stores and financed the development and/or purchase cost with a $100 million, 10% bond issue. FF-R rents all of its locations at an average annual rate of $90,000 per store, or $9 million in total. The rent expense will normally be included in sales, general, and administrative expense. All other things being equal, FF-O will appear to generate more EBITDA and have a better operating margin. To reduce this distortion, analysts often will adjust for the rent by "capitalizing" the obligation. There are two aspects to this adjustment: EBITDA and long-term liabilities. On the EBITDA side, annual rent expense is added back to (i.e., increasing it similar to adding back interest expense) the standard EBITDA calculation. This is usually referred to as EBITDAR. On the long-term liability side, the amount of on-balance-sheet debt will be increased by an estimate of the capitalized value of the operating leases, which is the financial equivalent to using future rent expense to calculate the present value of an annuity. A precise estimate of this value requires a projection of rent expense and the derivation of the appropriate discount rate;[6] in practice, analysts who are in a hurry will usually just multiply the annual rent by a cap factor of from 7x to 11x depending on the firm's unsecured cost of capital. Thus using a midpoint of 9x, FF-R's debt would be increased by $81 million (9 × $9 million annual rent).

The general rationale for adjusting earnings for depreciation and amortization is that both these expenses are "noncash" accounting entries; therefore, including them understates cash flow. This is literally true, but in the case of depreciation[7] the stronger rationale is that firms should be compared independent of historical capital investment decisions. For example, what if Firm B had

an old plant that, because of the then existing technology, required lots of equipment for different processes that needed to be upgraded to keep up with the evolution of the final product? Firm B's plant also happens to have been built domestically in a region with relatively high wage rates, high energy costs, and strict environmental standards. In comparison, Firm A built its plant with the newest technology (which, although more expensive per machine, greatly reduced the number of processes) in a third-world country with lower wages and environmental standards.[8] The depreciation expense of Firms A and B could be very different. Both firms' depreciation charges are noncash and distort cash flow, and thus adjustments should be made if trying to measure cash flow. But the larger point is that historical decisions on capital investment are fairly irrelevant in determining the value of Firm A or B. In our example, Firm B has a larger investment in property, plant, and equipment, but Firm A's plant could have much more cash-generating potential.

The same is true of many of the sources of amortization charges. Until recently, the biggest distortion to comparability caused by amortization charges was the result of differences in the accounting treatment of acquisitions. As was briefly discussed in Chapter 3, if an acquisition was accounted for as a "purchase" and the price exceeded the fair market value of the assets acquired, an entry called "goodwill" was recorded and amortized over time.[9] Amortization is also used to expense the historical cost of intangible assets, which often is irrelevant to the current value of a firm. Finally, amortization can also arise from the expensing of deferred financing costs associated with debt.[10] Since these once again relate to decisions pertaining to capital structure composition, they are irrelevant to current firm value.

The final adjustment relates to taxes. Taxes, unfortunately, generally do require cash payments and thus affect cash flows. However, for two identical firms (putting aside the issue of different tax jurisdictions), the tax load will be equal. The problem is that taxes are based on pretax income, which reflects the impact of interest expense and depreciation and amortization.[11] Since the goal is to establish comparability independent of historical capital investment and capital structure, taxes should be added back. It is not uncommon for firms experiencing financial distress to also report negative earnings and thus possibly qualify for refunds of taxes previously paid. Such refunds can represent important sources of cash flow. Furthermore, operating losses can have substantial value by "shielding" future tax payments; these are often referred to as *net operating loss (NOL) carryforwards.* When there is a significant likelihood of future earnings and the magnitude and timing of the "tax savings" from NOL carryforwards can be reasonably estimated, a deferred tax asset will be recognized under Generally Accepted Accounting Principles (GAAP).[12] Such tax assets can have significant value, but, as will be discussed in Chapter 11, this

Table 5-3. Use of EBITDA in Analysis of Firms' Valuation

	A	B	C
Balance Sheet			
Current Assets	40.0	150.0	120.0
Property, Plant, and Equipment	800.0	2000.0	1000.0
Total Assets	840.0	2150.0	1120.0
Current Liabilities	25.0	125.0	35.0
Debt	685.0	775.0	0.0
Equity	130.0	1250.0	1085.0
Total Liabilities and Equity	840.0	2150.0	1120.0
Shares	14.0	190.0	150.0
EBITDA Calculation			
Net Income	11.7	137.0	149.5
+ Taxes	6.3	73.8	80.5
+ Interest Expense	71.9	54.3	0.0
+ Depreciation and Amortization	80.0	125.0	50.0
EBITDA	170.0	390.0	280.0
Selected Data			
EBITDA/Revenue %	17.0%	13.0%	14.0%
Debt/EBITDA	**4.0x**	**2.0x**	**0.0x**
EBITDA/Share	**12.14**	**2.05**	**1.87**
Interest Rate	10.5%	7.0%	5.0%
Tax Rate	35.0%	35.0%	35.0%
Revenue/Assets	119.0%	140.0%	179.0%
Prior Data — Summary			
Revenue	1000.0	3000.0	2000.0
Net Income	11.7	137.0	149.5
Earnings per Share	0.84	0.72	1.00
Share Price	$12.00	$12.00	$12.00
P/E	14.3x	16.6x	12.0x

value can be negatively impacted if the ownership of the firm changes significantly. Accordingly, it is recommended that recognition or weighting of this value should be done outside the context of the EBITDA multiple valuation discussed here. In other words, develop a firm valuation using a normal valuation process and then decide whether to adjust that value to reflect specific tax attributes.

Now that the "why" behind the EBITDA metric has been explained, it is time to return to the analysis of the relative values of Firms A, B, and C. In Table 5-3, the analysis of these firms is expanded to add basic balance sheet information, together with a calculation of EBITDA and certain other performance metrics.

Reviewing the data in Table 5-3 adds significant, although certainly not dispositive, information to aid in comparing the three firms. Among the more important points to notice are:

- Firm A has relatively more debt, as measured by debt/EBITDA.
- Firm A is the most efficient in generating EBITDA from sales, as illustrated by the EBITDA/revenue margin.
- Firm A generates significantly more EBITDA per share.

Again, the point behind using EBITDA is not that it is a magical, "one-number-tells-all" figure, but rather that it enhances comparability by removing the influence of historical capital investment, capital structure, and taxes (which are impacted by capital structure among other things). There are many other things to consider before declaring one firm the "best value," but the data in Table 5-3 should illustrate that whereas Firm C clearly is the "least expensive" on a P/E basis, it may not be the obvious choice when the valuation is more closely tied to cash flow.

Limitations of EBITDA

While EBITDA is a useful and widely used metric for cash flow generation, it has a number of significant limitations and must be used cautiously and adjusted frequently.[13] Some of the more significant limitations of EBITDA as a measurement of cash flow are as follows:[14]

- EBITDA fails to reflect changes in working capital. Thus, if during the period the company consumes cash by building either inventory or accounts receivable or paying down previously stretched accounts payable, actual cash generated will be lower.
- EBITDA does not reflect the need to make capital expenditures (CAPX). Depreciation (and sometimes amortization) is a noncash accounting entry designed to reflect the "cost" of using a capital asset, like a machine, during the period. Those assets must be replaced or maintained. However, EBITDA calculations discount this on the theory that during any particular period, such costs are discretionary and can be deferred. Thus, depending on the capital intensity of the business, analysts may prefer to use EBIT (earnings before interest and taxes) or EBITDA-CAPX.
- EBITDA, as discussed above, often needs to be adjusted to reflect "one-time" charges. Particularly in the context of a firm in financial distress, these charges can cover a broad variety of things, such as severance costs of laid-off workers or charge-offs of unsaleable inventory or un-

collectible accounts receivable. These charges often represent a cash cost to the business (either immediately or in the future) but, arguably, are out of the ordinary course. Thus, unless EBITDA is adjusted, it may understate the company's cash-flow-generating ability.

- If the conditions in which the firm has operated over the last 12 months (the typical period of analysis) are considered likely to be unrepresentative (for financially distressed firms such results are usually below the firm's "capability"), it may be appropriate to rely on an estimate of "normalized" future EBITDA rather than historical data. This will be particularly true if, because of its distressed circumstances, portions of the business have been closed or sold.

Despite these limitations, in practice, EBITDA or an appropriate variant thereof is the standard proxy for cash flow.

Comparing Discounted Cash Flow and EBITDA Multiple Approaches

As discussed at the outset of the chapter, although the theoretically correct value of a firm is the present value of all future cash flows (also referred to as the DCF approach), in practice, most investors use a methodology that involves multiples as a shortcut for the tedious, and ultimately inexact, process of developing such cash flow forecasts. There are several reasons why the multiple methodology is used, including simplicity, familiarity, comparability, and practicality. It involves the simple multiplication of two numbers — EBITDA × multiple, which is familiar to most analysts because it is similar to estimating the potential value of a stock by multiplying earnings per share × P/E ratio. It is also very practical because the data to perform the estimate are readily available, which allows basic analysis to be performed quickly and investors to make decisions in often fast-moving markets.

Mathematically, multiples can be a very close substitute for the actual DCF process. In Table 5-4, a sensitivity analysis is provided which shows the present value of a 25-period series of cash flows divided by the initial cash flow amount. These figures were derived using the following variant of the standard DCF equation:

$$\sum_{1}^{25}[CF * (1 + g)^n * 1/(1 + DCR)^n]/CF$$

where CF = initial cash flow amount, g = growth rate %, DCR = present value discount rate, and n = period.

Table 5-4. Multiple for Various Growth and Discount Rates

Discount Rate	Growth Rate				
	0%	2%	4%	6%	8%
10%	9.1x	10.6x	12.6x	15.1x	18.4x
12%	7.8x	9.0x	10.5x	12.4x	14.9x
15%	6.5x	7.3x	8.3x	9.7x	11.3x
18%	5.5x	6.1x	6.8x	7.8x	8.9x
20%	4.9x	5.5x	6.1x	6.8x	7.7x
25%	4.0x	4.3x	4.7x	5.2x	5.7x
30%	3.3x	3.6x	3.8x	4.1x	4.5x

What this table shows is that if, for example, a firm's cash flow were, over the long term, expected to grow at 4% (slightly above the historical growth rate of the U.S. economy), and the firm's risk profile merited a 20% discount rate (i.e., the required investment return), the valuation multiple would equal 6.1x. The risk associated with investing in distressed debt is relatively high; thus, most investors tend to require returns of between 15 and 25% and will, to be conservative, assume relatively low (i.e., 0–4%) growth rates. This implies a multiple range of between 4.0x and 8.3x depending on the circumstances. Of course, this implicitly assumes a fairly stable, long-term business. Adjustments will need to be made if initial growth rates are expected to be higher (which is often foreseeable or expected if a firm has been constrained by financial distress) or if the time horizon (the example assumed 25 periods) is shorter. However, as illustrated in Figure 5-1, the percentage addition to the present value for incremental periods of cash flow beyond 15, depending on the discount rate, is relatively low. In other words, to add an additional period of cash flow beyond the 15th period would change the present value (i.e., valuation) by less than 2% at a 20% DCR.

The point of this discussion is to demonstrate that using the multiple approach can fairly effectively replicate the results of using the more theoretically correct, but extremely time consuming, approach of long-term projections. This is a particularly important point when one considers the practical difficulty, if not impossibility, of being able to forecast the future results of financially distressed firms with any degree of certainty.

Comparable Company Analysis Based on Enterprise Value

The basic premise of EBITDA multiple-based valuations is that by using the EBITDA metric, it is possible to estimate the enterprise value (EV) of a firm by multiplying the appropriately derived EBITDA by a multiplier. The key is

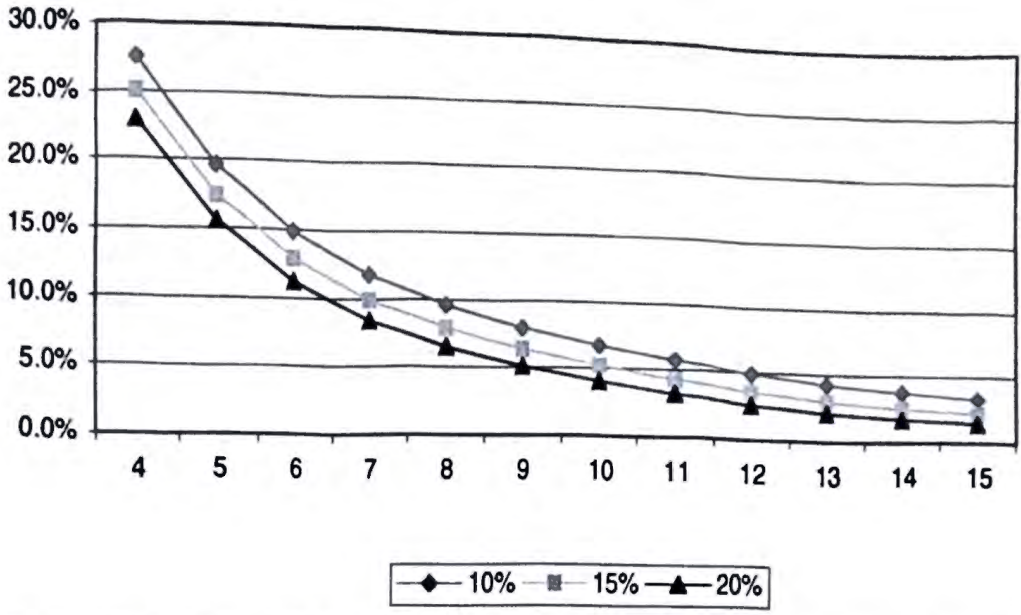

Figure 5-1. Percentage Impact of Incremental Periods of Cash Flow

to choose the appropriate multiplier or multiple. Unfortunately, this is not an exact science that can be accomplished by simply writing out a formula. It takes judgment, experience, and knowledge of the marketplace. The process begins with the development of an array of comparable company multiples. To develop this array, the investor selects a group of companies that are in the same industry. The companies need to be publicly traded so that the investor has access to both the companies' financial data as well as security prices determined by the trading market. Access to data relating to private companies that have recently been purchased or sold can also be very useful. Ideally, some of the companies in the comparable universe will be of approximately the same size as the target company in terms of revenues.

Once the universe is identified, the investor should assemble the key operating, balance sheet, and valuation data about the firms. What is relevant will vary from industry to industry, and thus a basic understanding of the industry in question is an essential prerequisite to performing a competent valuation. Among the most important data points in this analysis are the EBITDA and EV figures.

Calculating Enterprise Value

The concept of EV has not yet been defined. EV is the market-indicated value of a business adjusted to consider debt and cash.[15] The value is typically derived as follows:

Equity value (market price of stock × shares outstanding)
+ Debt
− Cash balance
= Enterprise value

However, as with everything else in financial analysis, this formula must be applied thoughtfully. The following are some basic issues that need to be considered when developing EVs for comparable companies.

Equity — If the firm being analyzed is in financial distress, the threshold issue is whether it is relevant to even consider the equity. As discussed in Chapter 3, the market equity value for financially distressed companies may be fairly meaningless when it trades at a very low nominal value (e.g., less than $1 per share) or the debt in the capital structure trades at a significant discount. If the debt is trading at a discount, it may be more accurate to use the market value of the debt to estimate EV. Assuming equity is to be counted, which would be the typical case, the number of shares to include in the calculation should be considered. Most of the time, it will be appropriate to use the number of shares outstanding, but if there is a significant disparity (i.e., greater than 10%) between the primary and fully diluted share figures, the investor may need to adjust the share number for common share equivalents (CSE).[16] A typical example would be warrants or options with exercise prices considerably below current market values. When adding such securities to the share count, it is common to adjust EV to reflect the amount the firm would receive as a result of their exercise.[17] Preferred stock should be treated as a debt security and valued at its aggregate liquidation value (with appropriate adjustment for accrued but unpaid dividends).

Debt — Debt typically should be valued as shown on the GAAP balance sheet. There are at least three exceptions to this rule. First, if the debt is convertible, it should generally be valued as a debt (this applies to convertible preferred stock as well) unless the security's conversion feature is "in the money" (i.e., the current market price is above the effective conversion price), which will be fairly rare in the case of a financially distressed firm. In that case, it may be more appropriate to treat it as a CSE, but care should be taken to ensure there is no double counting of shares if the CSE method has been used as a result of using the fully diluted share count. Second, and this is a very limited exception, if the debt is the obligation of a firm that has previously gone through a chapter 11 reorganization and is accounted for using "fresh-start" accounting principles (which value the debt at a discounted rate),[18] then the face or full principal amount of the debt is more appropriate. Finally, as mentioned above,

if the firm is in financial distress, then it may be more appropriate to value the debt using market prices as opposed to its balance sheet value. Thus, if there is $200 in debt but it is trading at 40, then it may be more appropriate to value it at $80 instead of $200.

Special care should be taken when the debt in question was structured and issued as discount debt. Discount debt is a debt obligation that is intentionally structured with a coupon rate (which can be payable for a specified portion or the entire life of the bond) significantly below the yield required by the market for the bond to trade at par. Because of the below-market coupon (which can often be 0% or less than 5% for a credit that might require a coupon greater than 10%), the bond is initially sold at a discount (the discount determined by the appropriate "market" interest rate) but is paid off at par.[19] Such debt structures are frequently used in start-up companies that are not expected to generate sufficient cash flow in their early years of operation to pay interest at market rates. It has also been popular for established companies to issue long-maturity, deep-discount 0% coupon convertible securities that are often initially sold at steep discounts (e.g., 40%) to face.[20]

Under GAAP, discount debt initially is carried on the balance sheet at approximately the price sold and then "accretes" to par value based on the internal rate of return represented by the original issue discount adjusted by the coupon, if it is greater than 0%.[21] Discount securities are typically structured as 0% coupon for life or a specified number of years, after which the bond begins paying interest at a higher "market" rate. This latter structure is known as a "step-up" or "split-coupon" bond. A hypothetical 10-year split-coupon bond might pay no interest for the first 5 years and then pay 12% interest for the last 5 years (split coupons such as this are often designated "0/12"). This bond is likely to have been issued at a price equal to the present value of $1000 (standard bond denomination) discounted by 12% for five years or $567, representing a trading value of 56.7. At the end of two years, it will be carried on the issuer's balance sheet at an amount representing the present value discounting for three years (the time remaining until it turns "cash pay"), or 71.2. Table 5-5 illustrates the basic accounting treatment of the 0/12 split-coupon bond just described.

Table 5-5. Accounting for 0/12 Split-Coupon Bond

Period	0	1	2	3	4	5	6	7	8	9	10
Balance Sheet Carrying Value	56.7	63.6	71.2	79.7	89.3	100.0	100.0	100.0	100.0	100.0	100.0
Interest Expense Accrued		6.8	7.6	8.5	9.6	10.7					
Interest Expense Paid							12.0	12.0	12.0	12.0	12.0

When valuing discount securities, for the purpose of estimating EV or otherwise, it is important to note that the market trading convention is to quote the trading price as a percentage of face or full principal value. Thus, if after two years the 0/12 was trading at 65, this would mean it was trading at $650 or 65% of the $1000 face amount. Its accreted or carrying value was calculated to be 71.2, and thus its trading price as a percentage of accreted value is 91.3%. The trading price as a percentage of accreted value is important to note because, as in this example, it can give important insight as to whether the debt is trading as if the firm is in financial distress. Here the debt had a market price of 65, which would normally be an indication of financial distress. However, when viewed relative to its accreted amount (i.e., 65/71.2 = 91.3%), it suggests it is trading at only a modest discount and the firm is apparently not perceived as being in financial distress. For purposes of determining EV, a discount bond should be valued at accreted or carrying value if it is not in financial distress and at market value if the issuer is considered distressed.

Cash — A final consideration in estimating EV is the treatment of cash or cash equivalents such as short-term investments. Particularly if a firm has recently completed a financing and not yet deployed all the proceeds into the business, it may hold large cash reserves. This was commonplace in the late 1990s when firms, especially in the telecommunications and biotechnology fields, raised large amounts of capital in a favorable market environment to prefund large capital expenditure programs or projected start-up operating losses. In cases like these, an investor might, adjusting for scale, find a firm with $300 in debt and $500 in market capitalization of equity, implying an EV of $800 but $250 in cash equivalents. The conceptual issue is whether the market is valuing the core enterprise at $800 or as an enterprise worth $550 with $250 in cash. The usual convention is to be conservative and assume the latter; thus the indicated EV is typically reduced by "excess" cash.

Even when the excess cash is not the result of a recent financing, it is standard practice to reduce EV by cash. The rationale for this is that the decision by the firm to hold cash rather than pay down debt is a strategic financial decision. For example, consider two firms that, for hypothetical purposes, have exactly the same intrinsic EV. The management of Firm X wants to appear to have strong liquidity and thus holds a large cash balance over the quarter-end reporting date. The management of Firm Y wants to show that it has relatively less leverage and thus uses all available cash to pay down a working capital line on the last day of the quarter. If no adjustment for cash is made, Firm Y would appear to have a higher EV even though, per our assumption, they are equal.

Netting debt by all cash may not always be appropriate, however. First, the practice can be criticized as not being realistic about the practical needs of a

Table 5-6. Calculation of Enterprise Value

	Firm		
	A	B	C
Equity Market Capitalization	168.0	2280.0	1800.0
+ Debt	685.0	775.0	0.0
– Cash	(40.0)	(150.0)	(120.0)
EV	813.0	2905.0	1680.0
EV/EBITDA	4.8x	7.4x	6.0x
F-EV/Shares*	23.93	8.24	11.20
P/E	14.3x	16.6x	12.0x

* Fixed-mult EV (F-EV) calculated as [(LTM EBITDA × 6 mult) – gross debt]/shares.

business. Firms need ready liquidity to function and pay the bills. Some need this in the form of cash. For example, a fast-food restaurant chain requires cash in its point of sale registers. Second, while most liquidity needs can be handled with a working capital line of credit, such lines are not universally available to all types of businesses and do entail costs. So, just as not using cash to pay down debt can be viewed as a strategic decision, not having a working capital line of credit can be viewed as a strategic decision. In the latter case, there may be no practical option but to maintain a certain amount of working capital in the form of cash. Thus, like most general rules, judgment is required in specific situations.[22]

With these caveats in mind, the EVs of Firms A, B, and C are calculated in Table 5-6. To simplify the presentation, it is assumed that all amounts characterized as current assets are in the form of cash.

Notice that EV can provide significant insight into the issue of relative value among these firms. If a fixed EV multiple (i.e., industry multiple) is used to derive EV (F-EV), an alternative share valuation can be derived. Firm C, which appeared the "cheapest" on a P/E basis, now looks to be appropriately valued with an F-EV/sh of $11.20 per share versus its market price of $12. Firm B is considerably overvalued from an F-EV/sh perspective and should have a share price of $8.24, which would bring its P/E ratio down to 11.2x, which is more in line with Firm C. Firm A, on the other hand, is clearly undervalued with operating metrics that would justify a share price of $23.93.

Determining the Correct Multiple

Obviously, in the simple formula EBITDA × multiple = EV, the validity of any answer is directly dependent on choosing an appropriate multiple. Why is any given multiple appropriate? There is no exact science. As a practical matter, one examines the data developed in a comparable firm analysis and then uses judg-

ment as to how any particular target compares, an exercise that will be done shortly. But the data are not viewed in a vacuum. As was established in Table 5-4, given the relatively high DCRs typically applied to compensate for the inherent risk associated with investing in distressed situations, the range of multiples will likely be within the range of 4x–8x. Values that appear to be materially outside that range should be closely scrutinized.

Another consideration in judging the appropriateness of a given multiple is whether it represents a financial or strategic valuation. The distinction between these two is rooted in the merger and acquisition marketplace, which, as a simplification, is comprised of two types of buyers: financial and strategic. A financial buyer is an entity that purchases a firm solely on the expectation that the investment will provide a satisfactory risk-adjusted rate of return on a stand-alone basis. A strategic buyer is an entity that typically is already involved in the industry and views the rate of return on investment within the context of a larger entity. The basic difference is what has come to be skeptically viewed as "synergy" values. The strategic buyer may believe the entity is worth more to it because it can increase revenues by making it a part of its product line or by using its distribution system or can improve operating profitability by consolidating manufacturing, sales, or administrative functions. Whatever the source of the expected synergistic value, methodologically these can be thought of as an increase in postacquisition expected levels of EBITDA generation.

First, the perspective of the financial buyer will be examined in more detail since this, in practice, forms the bedrock of firm valuations. Financial buyers, as a group, can be thought of as the leveraged buyout firms[23] of the 1980s or the private equity firms[24] of the current period. The financial buyer accepts the proposition, discussed at the outset, that a firm is the present value of future cash flows but solves the equation differently: Given a forecasted series of cash flows, if the purchase requires an investment of X, what is the return on that investment? Financially this is referred to as the *internal rate of return* or IRR of an investment. The IRR is the effective equivalent of the DCR: it is just a function of what are viewed as dependent versus independent variables. The IRR is the dependent variable calculated based on the independent variable price. The present value, or price, is the dependent variable calculated based on the independent variable DCR. Financial buyers tend to think in terms of the price paid (independent variable) and then determine whether the IRR is adequate. The price paid, of course, can be thought of or derived as an EBITDA multiple.

In Table 5-7, the IRR of an investment/purchase is derived for an array of multiples and forecasted EBITDA growth rates. For example, if the base EBITDA was $10, and the buyer conservatively assumed that this would be constant and offered to pay a multiple of 5x or $50, the IRR on the investment would be

Table 5-7. Expected IRRs for Different Growth Rates and Purchase Multiples

Growth Rate	Purchase Multiple					
	2	4	5	6	8	10
0%	50.0%	24.9%	19.8%	16.3%	11.7%	8.8%
2%	52.0%	26.9%	21.8%	18.3%	13.7%	10.7%
4%	54.0%	28.9%	23.7%	20.2%	15.6%	12.6%
6%	56.0%	30.9%	25.7%	22.2%	17.6%	14.6%
8%	58.0%	32.9%	27.7%	24.2%	19.5%	16.5%
10%	60.0%	34.8%	29.7%	26.1%	21.4%	18.4%

19.8%. If the firm could be purchased for 2x EBITDA, the return would be a very attractive 50%, but that level of potential return would be likely to attract higher competing offers. If buyers thought EBITDA was likely to grow at an average rate of 4%, they could pay 6x and still realize an IRR of 20.2%. For investors seeking 20%+ returns, which is a typical return target for financial buyers, purchase multiples in excess of 6x can only be justified if they believe sustained EBITDA improvement is attainable.

In order to boost returns, financial buyers will often employ leverage (i.e., borrow a portion of the purchase price to minimize the equity investment). This can significantly enhance equity returns, but also increase risk. However, there are practical constraints on how much can be borrowed. Lenders, in particular banks, want to see a cash flow forecast that shows the borrower can generate sufficient internal cash flow to repay, or significantly pay down, the loan. In Table 5-8, a forward cash flow projection is developed assuming that: (a) the investor used 80% borrowed money to finance the purchase, (b) EBITDA (which is shown net of maintenance CAPX) is assumed to grow at 4%, (c) the interest rate on the loan is 10%, and (d) the banks require that the loan be paid

Table 5-8. Ability of Firm to Internally Finance Debt Payoff

EBITDA-CAPX	10	Debt Multiple	4.0x	Amortization Period (Years)	7					
Growth Rate %	4%	Debt Interest %	10%							
	Period									
	1	2	3	4	5	6	7	8	9	10
EBITDA-CAPX	10.0	10.4	10.8	11.2	11.7	12.2	12.7	13.2	13.7	13.7
Interest	4.0	3.4	2.9	2.3	1.7	1.1	0.6	0.0	0.0	0.0
Available	6.0	7.0	8.0	9.0	10.0	11.0	12.1	13.2	13.7	13.7
Beginning Debt	40.0	34.3	28.6	22.9	17.1	11.4	5.7	0.0	0.0	0.0
Amortization	5.7	5.7	5.7	5.7	5.7	5.7	5.7	0.0	0.0	0.0
Excess $	0.3	1.5	3.8	7.0	11.3	16.6	23.0			

off evenly over seven years. Although the projection suggests this level of leverage can be managed, there is very little margin for error, particularly in the first three years. If everything works as planned, the investor could earn a very high IRR on investment. However, if performance is somewhat below plan, the borrower could quickly be in default on the loan. Thus, as this illustration justifies, and is in fact true in practice, without a very compelling strategy for EBITDA improvement, lenders, particularly bank lenders, tend to be reluctant to extend credit when total leverage reaches much above 4.0x EBITDA. Banks, even on a secured basis, will often limit lending to 2.5x leverage.

Strategic buyers will often be observed apparently paying above the range of 4x–6x. Their decisions to pay more can be justified on two grounds. First, they may believe that by integrating the target firm into their existing operations, EBITDA can be increased above the target's stand-alone forecast. Thus, if EBITDA is expected to grow relatively faster, a higher purchase price can be justified. Second, the strategic buyer may have a lower targeted return on investment. Typically strategic buyers can justify any acquisition where the IRR exceeds the acquiring firm's cost of capital.[25] Referring back to Table 5-7, if the required IRR is, for example, only 15%, then, particularly in high-growth-rate scenarios, multiples as high as 10x can be rationalized. Of course, no buyer will pay more than it needs to, but if there are several strategic buyers in the market, the competition will tend to drive the price up.

A common strategy is for financial buyers to purchase assets that they think will ultimately have "strategic value" to a strategic buyer and wait for the right opportunity to sell at a higher value. In very simple terms, the financial buyer will opportunistically purchase a company at, say, 5x EBITDA, do what it can to improve operations, and then wait for a stronger point in the market and attempt to sell the firm to a strategic buyer for a higher multiple, say 7x–8x EBITDA.[26] When these strategies are financed on a leveraged basis and work as planned, returns can be very high. However, there is always the danger that when the financial buyer assumes control of a stand-alone company, the incumbent operators in the industry will view the target as a financially frail (because of its leverage) competitor whose market share can be attacked. This can lead to aggressive competitive practices that can diminish the value of the target, wipe out the investment of the financial buyer, and create a distressed debt restructuring opportunity.

Using Comparable Company Analysis

Now that some of the more general considerations that relate to applying comparable company analysis have been developed, it is time to apply what has been discussed to help estimate the value of a target. In Table 5-9, the data on

Firms A, B, and C are represented together with data on a target firm, T, whose stock is trading at $0.50 per share and debt is offered at 25. The goal of the analysis is to decide efficiently whether there is a potential investment opportunity in T.

What can one quickly tell about T? First, it should be recognized that T is the largest firm in the group, with revenues greater than B and considerably

Table 5-9. Preliminary Valuation of Target

Income Data	A	B	C	T
Revenue	1000.0	3000.0	2000.0	3500.0
Net Income	11.7	137.0	149.5	–156.0
Earnings per Share	0.84	0.72	1.00	–0.78
Share Price	$12.00	$12.00	$12.00	$0.50
P/E	14.3x	16.6x	12.0x	NM
Balance Sheet				
Current Assets	40.0	150.0	120.0	20.0
Property, Plant, and Equipment	800.0	2000.0	1000.0	3500.0
Total Assets	840.0	2150.0	1120.0	3520.0
Current Liabilities	25.0	125.0	35.0	20.0
Debt	685.0	775.0	0.0	2400.0
Equity	130.0	1250.0	1085.0	1100.0
Total Liabilities and Equity	840.0	2150.0	1120.0	3520.0
Shares	14.0	190.0	150.0	200.0
EBITDA Calculation				
Net Income	11.7	137.0	149.5	–156.0
+ Taxes	6.3	73.8	80.5	0.0
+ Interest Expense	71.9	54.3	0.0	156.0
+ Depreciation and Amortization	80.0	125.0	50.0	175.0
EBITDA	170.0	390.0	280.0	175.0
Selected Data				
EBITDA/Revenue %	17.0%	13.0%	14.0%	5.0%
Debt/EBITDA	4.0x	2.0x	0.0x	13.7x
EBITDA/Share	12.14	2.05	1.87	0.88
Interest Rate	10.5%	7.0%	5.0%	6.5%
Tax Rate	35.0%	35.0%	35.0%	35.0%
Revenue/Assets	119.0%	139.5%	178.6%	99.4%
Enterprise Value				
Equity Market Capitalization	168.0	2280.0	1800.0	0.0
+ Debt	685.0	775.0	0.0	600.0
– Cash	(40.0)	(150.0)	(120.0)	(0.0)
Enterprise Value	813.0	2905.0	1680.0	600.0
EV/EBITDA	4.8x	7.4x	6.0x	3.4x
F-EV/Shares*	23.93	8.24	11.20	(6.75)

* Calculated as [(LTM EBITDA × 6) – gross debt]/shares.

more assets. (It is unclear what those assets are currently worth, but the GAAP carrying value is $3500.) T lost money during the reported period on a GAAP basis. This is probably due to the fact that its EBITDA/revenue margin was only 5% relative to the peer range of 13–17%. This suggests significant operating issues in addition to whatever problems might be caused by T's very high $2400 debt load. T essentially has no liquidity, with current assets equaling current liabilities. Its EBITDA is positive and exceeds interest expense, so it conceivably could limp along for a while, but if depreciation is representative of maintenance CAPX, then it cannot afford to maintain its plant. On the surface, it would be reasonable to infer that T needs an operational turnaround and a balance sheet restructuring.

Looking at EV, since the stock is trading below $1 per share and debt is trading at 25, the small implied equity value is excluded from the analysis and the debt is valued at its market trading level of 600 (2400 × 25%). No adjustment is made for cash since there is clearly no excess liquidity. This implies an EV of 600, which represents an EV/EBITDA multiple of 3.4x. This multiple is below the multiple range of the peer group, which is between 4.8x and 7.4x. However, as discussed above, C's valuation is probably the most representative; thus the valuation range can probably be narrowed to 5.5x–6.0x.

On a very preliminary basis then, it appears that T could potentially be undervalued. There is certainly not enough known to make an investment decision, but by playing with the spreadsheet one can estimate that if T traded at an EV multiple of 5.5x, the bonds should be worth 40, roughly 60% above current levels. Further, if operations could be improved so that the EBITDA margin was raised to 10%, still below C's 13%, the bonds, still at an EBITDA multiple of 5.5x, would potentially be worth 80. And, absent the existence of significant off-balance-sheet liabilities, it might be reasonable to assume there is limited downside from 25. There are many, many more things to investigate, which will be discussed in Chapter 11, but the preliminary review suggests that an investment in T bonds has sufficient return potential to merit additional due diligence.

ALTERNATIVES TO THE EBITDA MULTIPLE APPROACH

While cash-flow-based multiple valuations are the most common approach to valuation, several alternatives are also commonly used. In this section, four of the most common of these will be reviewed: revenue-based, asset-based, customer-based, and liquidation. The primary reasons for using alternatives are that either (a) actual cash flow experience may not be a very reliable indicator of a firm's potential or (b) data on the purchase or sale of companies, which is frequently considered superior to general market trading-based valuations be-

cause the purchaser has presumably done significant due diligence in determining the price paid, are commonly reported on an alternative basis.

Revenue-Based Valuations

Revenue-based valuations are frequently used for both of the rationales listed above. In fact, it is hard to imagine performing a valuation without weighing various operating metrics relative to revenue. At the most basic level, revenue is an indication of breadth of the target's customer relationships or product acceptance, which is among the defining elements of a successful enterprise. In the three-firm example analyzed above, several references were made to the EBITDA/revenue margin. A metric like this can be very useful because it may be a general indication of the quality of management, something for which EBITDA does not adjust. If several firms are fairly similar but one management can achieve a 17% EBITDA margin (Firm A) and another only 5% (Firm T), it is natural to wonder what the potential of the underperforming firm might be under the direction of more successful management. Thus, in many industries where the product or service is fairly generic (e.g., food retailers, low- and mid-price-point restaurants, movie theaters, commercial paper products, commodity industrial chemicals, just to name a few), the fact that a company has significant revenues may itself constitute a significant competitive asset. The potential of those sales under the control of another management team may be more relevant to valuation than what the existing management team has been able to accomplish. In considering the use of revenue-based valuation metrics, EBITDA/revenue or EV/revenue would be the most common approach.

Asset-Based Valuations

Asset-based valuations are most frequently employed where possession of a key asset is a significant competitive advantage. The most prominent examples of this relate to natural resources or real estate that may have some measure of scarcity value. Because of this scarcity issue, the question is not so much whether any particular firm can sell the product, but when and for what margin over cost. In addition, the amount of the scarce resource possessed by the firm, barring new acquisitions or discoveries, puts a cap on its future revenue and cash-flow-generating potential. For example, it would not make much sense to extrapolate 25 years of EBITDA projections based on the last 3 years of history for a gold mine with only one project site that is expected to be exhausted in 3 years. In that case, the amount of gold reserves owned would significantly influence the valuation estimate. Thus in industries where raw material scarcity is an issue, metrics based on the quantity controlled (e.g., proven and unproven

reserves in the case of an oil and gas production company) must be factored into the valuation calculus.

Customer-Based Valuations

Similar to the rationale in asset-based valuation approaches, often the critical competitive issue is possession of a customer, particularly where there are economic or regulatory constraints that limit free access to customers.

Perhaps the most prominent example is cable television companies. Prior to the advent of satellite-based television systems, cable companies effectively had a monopoly on the customers within their geographic service area. Accordingly, it was fairly common to measure the potential value of these companies by reference to metrics associated with existing or potential customers. Furthermore, most sales transactions tend to be reported on this basis rather than relative to cash flow.

For example, a cable company might report that it sold a noncore service area for a price equaling $2000 per existing subscriber, but it will be less common to know what the cash flow associated with the sale represented. The purchaser of the assets will presumably base the purchase price on a cash flow basis. However, since often such buyers will be "strategic" in nature, it may be hard to use the price paid to make an inference of what historical EBITDA might have been because the strategic buyer may have a significantly different view of the purchased asset's EBITDA potential within its system. Assume, to continue the example, that the service area sold was a noncore, noncontiguous region that the seller controlled by virtue of an old acquisition. Because of its small scale and location, it may not make economic sense for the seller to make capital investments that would allow it to offer premium or on-demand programming or to offer broadband Internet access in this area. Thus its average revenue per subscriber might be $30 a month, well below the average for upgraded systems. If a cable company with an adjacent service area purchased the remote service area, it might be able to provide upgraded services with minimal incremental capital investment by leveraging its existing infrastructure. If this would allow it to forecast the ability to extract $70 a month per subscriber, then it would likely be willing to pay a price considerably higher than the EBITDA generated by the existing owner based on what the lower monthly revenue might merit.

Wireless communication companies, including radio stations, also are often valued, at least in part, on the size of their existing or potential customer base. This is because part of their competitive advantage stems from the possession of a regulatory license that gives them some degree of customer access monopoly.

Liquidation Valuations

As mentioned in Chapter 4, sometimes businesses simply cannot generate sufficient "value added" to justify their existence as a going concern, and thus the highest and best use of their assets is to be sold in a liquidation. This is particularly true for firms that for either competitive circumstance, inadequacy of physical plant, or poor management simply cannot generate positive EBITDA on a sustained basis. In these situations, historical or potential future EBITDA generation is irrelevant to the firm's value. The investor must attempt to estimate the selling price of the firm's assets (portions of which might be saleable as business units with going-concern valuations). This is a very speculative endeavor because there is typically very little information on the market value of a firm's assets,[27] and it may be unclear whether the liquidation will be conducted on a fire-sale versus orderly basis.

However, this does not mean that good returns may not be available for distressed investors. The very fact that the firm will be going out of business tends to eliminate the interest of many investors — and there is often a positive correlation between disinterest in a situation and the likelihood of misvaluation.[28]

SUMMARY

Perhaps no other skill is more necessary to successful distressed debt investing, indeed investing in general, than valuation. This chapter reviewed the basic principles behind the most commonly used methodology, the EBITDA multiple valuation approach, and how it compares to the more theoretically correct, but time consuming, DCF approach. It also described some of the basic advantages and disadvantages of using the EBITDA metric. Finally, it also discussed several of the more common alternative valuation methodologies and some of the more common contexts in which those alternatives are used. In the next chapter, the concept of credit support and its relationship to valuation is developed.

This Chapter's Chess Moves

9. Nh4, Ph6

10. Pf4, Ng6

11. Nxg6, Pxg6