VALUATION: A CONCEPTUAL OVERVIEW

of Investment Banking Technical Training

In this chapter we will introduce the reader to some key, high-level concepts required to understand valuation and how it's done on Wall Street. We will cover three key topics:

Enterprise Value: The 30,000-Foot View

Understanding Enterprise Value vs. Market Value

An Introduction to Valuation Techniques

Enterprise Value: The 30,000-Foot View

Investment bankers use four primary valuation techniques when advising corporate clients. These techniques apply almost universally, regardless of the company, industry or circumstance. They will be introduced in the next chapter, Valuation Techniques Overview.

But how are the valuation techniques actually constructed? When should which technique be used? What are the basic building blocks required for them? We will find more detailed answers to some of these questions in the next chapter. However first we're going to take a step back and explain some of the building blocks of these valuation techniques so that they make sense when we later discuss them in technical depth.

In this chapter, therefore, you will find a detailed overview of the core building blocks of the valuation techniques used by investment bankers.

Enterprise Value (frequently referred to as **EV**—not to be confused with **Equity Value**, which is another name for **Market Value** of a company) is the core building block used in financial modeling. The reason is this: Enterprise Value is designed to represent the _entire_ value of the company's operations. By contrast, Market Value is a residual: it represents the value of the company remaining once the value ascribed to other stakeholders (non-owners) has been taken out.

Enterprise Value must therefore account for all of the differences between Market Value (remember, this figure is the Market Value of a company's _Equity_ or ownership) and the Value of Operations (or

Operating Value) of a Company.

Let's start with a basic identity equation:

Enterprise Value =

Operating Value of a Company =

Net Value of all the Claims on the Company's Assets (Excluding Excess Cash)

This equation is simple enough. Assuming that the company is profitable, and that it's more valuable in operation than in liquidation (in other words, the company is worth more money if it continues in business rather than stopping business and selling off the assets to the highest bidders), the value of the company is equal to the value of its productive operations. This value must also equal the value of all of the net claims against the company's assets, because these assets are being used to produce money for these claimants, or stakeholders (assuming, of course, that these claims have been valued correctly). The "Excluding Excess Cash" piece will be explained in a moment.

The net value of all the claims on a company's assets can be broken down as follows:

> **Debt:** Money that has been lent to the company by another person or institution. Debt holders have a higher priority than equity holders on the claims of the company's assets and value, so they get paid first. In order to get to EV, _we must add Debt_ to the Market Value of the company's Equity.
>
> **Cash:** Money that is owned by the company—in other words, it's sitting on the company's balance sheet. This money, assuming it is not required by the operations of the business, _could_ be used to pay off existing claimants, or stakeholders. (For example, the cash could be used to pay off Debt; it could also be used to repurchase outstanding shares in the company's Equity.) Thus the higher the Cash balance a company has, the _less_ its operations must be worth. This concept is counterintuitive: shouldn't owning more cash be a good thing? Yes, in a sense it is—but assume for a moment that a company's Market Value (of Equity) is fixed at a certain dollar amount. That value can be ascribed to only two sources: (1) the residual claim value on a company's operations after all other stakeholders have been paid off, and (2) the value of the money on the company's balance sheet. The higher (2) is, the lower (1) is, and vice versa. Therefore, to get to EV, _we must subtract Cash_ from the Market Value of the company's Equity. (This is one way of looking at it. In practice, Cash is often subtracted from Debt to get an important statistic called **Net Debt**. Net Debt is the value of the Debt once balance sheet Cash has, hypothetically, been used to pay some of it off. Diagrams below will explain the different ways of conceptualizing this.)

Minority Interest: This is a tricky one. Corporations often have a Liability account called Minority Interest (MI). This is a special accounting designation for a specific scenario: *when a Corporation owns most, **but not all**, of a subsidiary company*. If that is the case, the subsidiary company is consolidated entirely into the Corporation's financial statements, so that it would appear, at first glance, that the Corporation does indeed own 100% of that subsidiary. In fact it does not, so this Liability account is created to represent the value of the shares owned in the subsidiary by other individuals or companies. (Similarly, there will be a corresponding Minority Interest expense on the Income Statement for the Corporation, representing the portion of value from the subsidiary's operating results that actually belongs to the other shareholders in the subsidiary.) Since this MI represents the value of the partial ownership (by others) in this subsidiary, it should be treated like Debt – that is, in order to get to EV, *we must add Minority Interest* to the Market Value of the company's Equity. (We should keep in mind, then, that this EV statistic *will include the entire value of the company's subsidiary*, even though the Corporation itself does not own 100% of it.)

Preferred Equity: Despite the name, Preferred Equity primarily operates as Debt, not Equity. It is junior to all other forms of Debt, but it is also senior to the Equity (often called **Common Equity** or just "common.") Often, Preferred Equity can be converted to shares of Common Equity, hence the name. It *may* be convertible to Common Equity but, until that time, it receives interest and is in line ahead of the Common Equity in the capital structure, so it is "preferred" to the common shares. It receives *preferential treatment*. Because Preferred Equity is actually primarily Debt unless and until it is converted to Equity, *we must add Preferred Equity* to the Market Value of the company's (Common) Equity.

Visually, we can look at this two different ways:

1. ENTERPRISE VALUE + CASH = *TOTAL* VALUE OF ALL CLAIMS
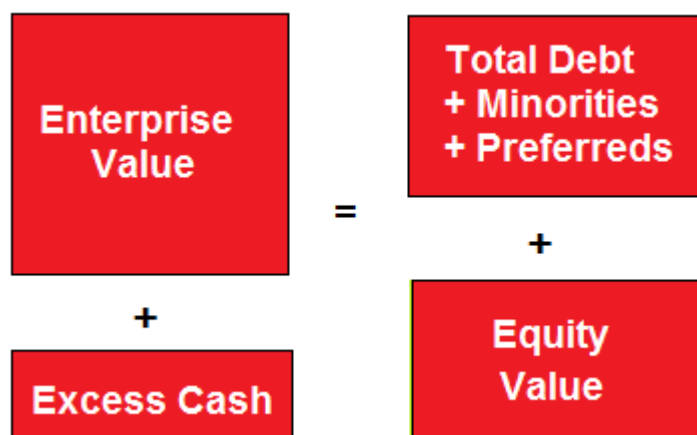
2. ENTERPRISE VALUE = *NET* VALUE OF ALL CLAIMS
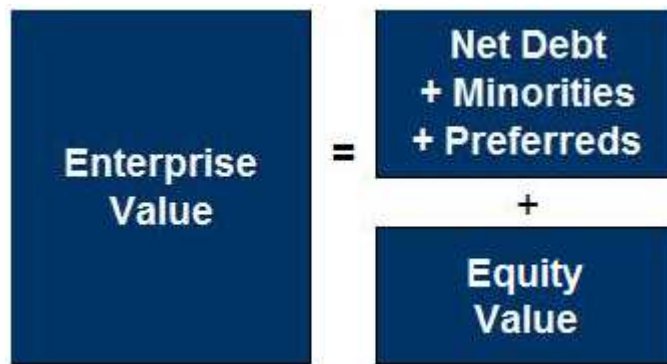
Typically, investment bankers and investors look at this equation the second way (the Net Debt/Net Value version). This is the one to be most familiar with.

ANOTHER VIEW OF ENTERPRISE VALUE

There is another way of looking at EV: core assets vs. non-core assets. Core assets are used to generate profit for the business; non-core assets are things owned by the business but not central to its money-generating operations.

Core Assets: assets critical to the operating business, such as Inventory, Fixed Assets, Accounts Receivable, etc.

Non-Core Assets: assets not critical to the operating business such as Derivatives, Currencies, Real Estate, Commodities, Stock Options, etc.

In this sense, Cash on the Balance Sheet usually (at least for the most part) is non-core. Unless it's cash that the business needs to operate (such as dollar bills in the registers at a retail operations), it is not being used to generate profit in the business operations. That's why it is stripped out in EV calculations. (Other non-core assets may be as well, especially if they can be sold off for cash without harming the operations of the business. For example, Real Estate and Commodities can often be sold without impacting the Company's cash-generating operations.)

Therefore Cash is (generally) a non-core asset. Other similar assets, such as Marketable Securities, are simply ways of attempting to earn profit on that Cash, but are not core to the company's operations. These Cash-like assets can also be sold off, and should be stripped out of the Net Debt Calculation.

PRIMARY COMPONENTS OF NET DEBT

(+) **Short-Term Debt:** Debt with less than one year maturity.

(+) **Long-Term Debt:** Debt with more than one year maturity.

(+) **Debt Equivalents:** Operating Leases and Pension Shortfalls.

(−) **Cash and Cash Equivalents:** Cash, Money Market Securities, and Investment Securities

Notice in this list that "Cash and Cash Equivalents" is a _subtraction_ from the calculation—Cash and Cash-like assets are thus a sort of "anti-Debt." Debt can also come in several different flavors, but on the Balance Sheet it's almost always broken down into Short-Term Debt and Long-Term Debt. This is because Short-Term Debt is coming due soon (within less than a year), and thus must be paid off or refinanced in the near future. This may be of interest if the company is having financial trouble—the due date on the near-term Debt may trigger difficulties for the Company in terms of repayment. This type of difficulty, which can end up being a crisis under the right circumstances, is called a **liquidity** problem (or crisis).

Understanding Enterprise Value vs. Market Value

Nearly all valuation techniques will focus on either Enterprise Value or Market Value (or Equity). So which do we use, and when? In a nutshell:

Techniques related to the value available to _shareholders_ should focus on Market Value (of Equity).

Similarly,

Techniques related to the value available to _all stakeholders_ should focus on Enterprise Value.

Let's start by looking at three commonly used trading multiples:

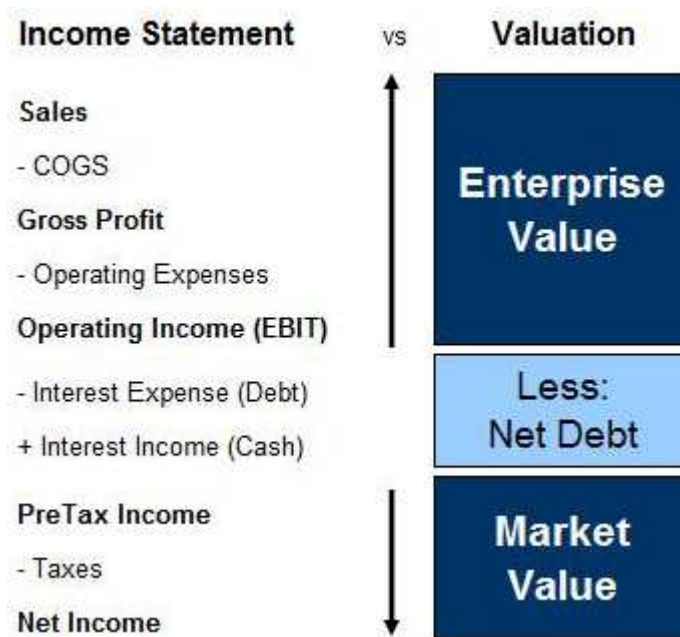**EV/Sales:** Enterprise Value ÷ Sales (or Revenue)

EV/EBITDA: Enterprise Value ÷ EBITDA (Earnings before Interest, Taxes, Depreciation & Amortization)

Price/Earnings (or P/E): Market Value of Equity ÷ Net Income (alternatively, Stock Price ÷ Earnings Per Share, or EPS)

Notice that in the first two examples, Enterprise Value is used. This is because Sales and EBITDA generate profit/value that is available to _all stakeholders_. No compensation has yet been taken out for non-Equity stakeholders. By contrast, Price/Earnings reflects the Net Income for a company, which is computed _after compensation for other stakeholders has been removed_ (Interest Expense and Minority Interest). Therefore, this profit/value is only available to Equity stakeholders.

People new to valuation may ask, *"Why is it incorrect to use Market Value/EBITDA or Enterprise Value/Net Income?"* The answer lies in the fact that for any multiple, the denominator *and* numerator within that multiple must either *include* or *exclude* leverage. In other words, both the numerator and denominator must both relate to either *all stakeholders* or *only shareholders*. Otherwise, comparisons across companies will not be "apples-to-apples"—they will be difficult to compare because different companies utilize different amounts of leverage.

This concept is demonstrated in the following graphic:

Income Statement vs **Valuation**

Sales

- COGS

Gross Profit

- Operating Expenses

Operating Income (EBIT)

- Interest Expense (Debt)

+ Interest Income (Cash)

PreTax Income

- Taxes

Net Income

Enterprise Value

Less: Net Debt

Market Value

In summary:

Enterprise Value matches with Revenue, EBITDA and EBIT—items found *before Interest Expense* (and Minority Interest, where applicable) on the Income Statement.

Conversely,

Market Value matches with Pre-Tax Income (sometimes called Earnings Before Taxes, or EBT), Net Income, and Earnings Per Share—items found *after Interest Expense* (and Minority Interest, where applicable) on the Income Statement.

An Introduction to Valuation Techniques

You will read about the four main valuation techniques for Investment Bankers in great detail in the upcoming chapters. Here is a brief overview of them all, with this concept of Enterprise Value vs. Market Value in mind:

COMPARABLE COMPANY ANALYSIS

Comparable Company Analysis, frequently referred to simply as **"Comps,"** is a valuation technique used to find company values based on traded values of similar (comparable) companies.

Comps a market-based valuation analysis relying on current market prices for publicly traded companies.

Comps valuation can revolve around either the **_Enterprise Value_** of the company or the **_Market Value_** of the company, depending on the multiples being used. For example, EV/Sales or EV/EBITDA multiples would refer to Enterprise Value, while Price/Earnings multiples (equivalent to Market Value/Net Income) would refer to Market Value.

THE THREE MAIN STEPS OF A COMPS VALUATION

1. Identify publicly-traded companies with characteristics similar to those of the company being valued.
2. "Spread" the Comps—i.e., map-out the trading multiples (EV/Sales, EV/EBITDA, and P/E) for this set of comparable companies.
3. Assign these multiples to company financial results to determine valuation ranges.

COMPARABLE COMPANIES ANALYSIS EXAMPLE

ABC Company is currently generating annual Net Income of $150 million.

Publicly traded comparable companies are trading, on average, at 10x current year Net Income.

How much is the Equity of this company worth?

Using Comparable Company Analysis, this company's Equity is worth _$1.5 billion_ based on $150 million of Net Income and the comparable company average of 10x Net Income. Note that a proper range of the valuation can be obtained by looking at the highest and lowest Net Income multiples in the comparable companies set.
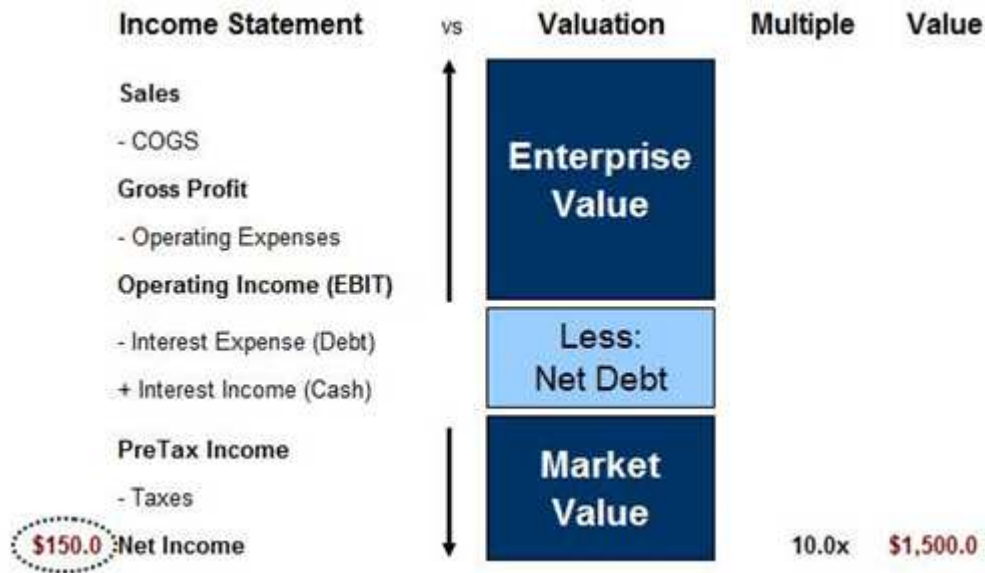
DISCOUNTED CASH FLOW (DCF) ANALYSIS

DCF analysis values a company by projecting its future **Free Cash Flows** (FCF) and then using the **Net Present Value** (NPV) method to value the firm.

DCF valuation builds off of Free Cash Flow forecasts that are typically done for the upcoming 5 to 10 years.

DCF valuation primarily returns the **_Enterprise Value_** of the company, because Free Cash Flow refers to the cash generated by the operations of a business, irrespective of Net Debt and Minority Interest/Preferred Equity. However a DCF model can also be used to project **_Market Value_** if Interest Expense and Minority Interest are projected and stripped out to produce **Levered Free Cash Flows** (LFCF).

THE FOUR MAIN STEPS OF A DCF VALUATION

1. Forecast out a company's Free Cash Flows for the next 5-10 years.
2. Calculate the **Weighted Average Cost of Capital** (WACC).
3. Calculate the firm's **Terminal Value**, or the future value of the firm assuming a stable long-term growth rate.
4. Discount 5-year Free Cash Flows plus Terminal Value back to Year 0 (today) to derive the Enterprise Value of the company.

Free Cash Flows are discounted back to Year 0 (today) to solve for Enterprise Value, as displayed in this graphic:
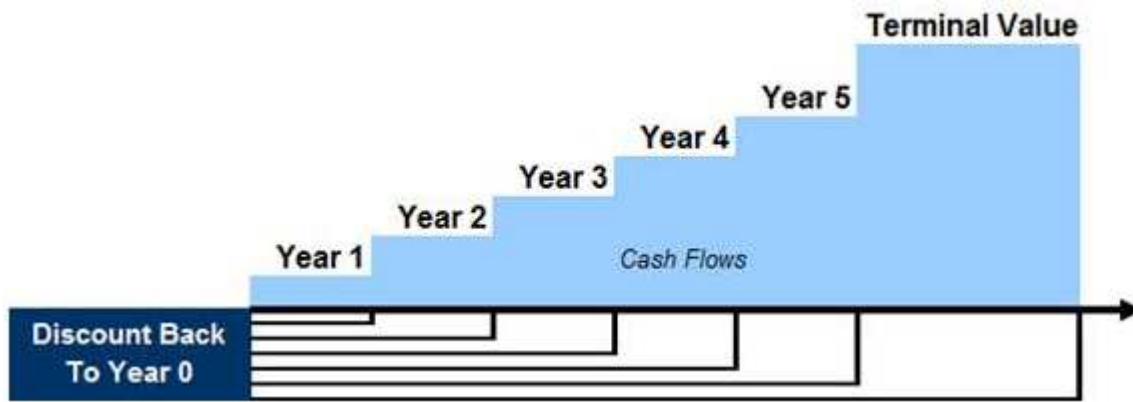
PRECEDENT TRANSACTION ANALYSIS

Precedent Transaction Analysis, also called "Comparable Transactions," looks at recent historical M&A activity involving similar companies to get a range of valuation multiples.

This transaction valuation analysis relies on whatever historical M&A transaction information is available.

Precedent Transaction valuation can revolve around either the **_Enterprise Value_** of the company or the **_Market Value_** of the company, depending on the multiples being used. For example, EV/Sales or EV/EBITDA multiples would refer to Enterprise Value, while Price/Earnings multiples (equivalent to Market Value/Net Income) would refer to Market Value. The most commonly used transaction multiples are EV/Sales, EV/EBITDA, and P/E.

THE THREE MAIN STEPS OF PRECEDENT VALUATION

1. Identify publicly traded companies with similar characteristics.
2. "Spread" the comps or map-out trading multiples such as EV/Sales, EV/EBITDA, and P/E.
3. Assign industry multiples to company figures to determine valuation ranges.

PRECEDENT TRANSACTION ANALYSIS EXAMPLE

PDQ Company is currently generating annual Net Income of $150 million.

Precedent M&A transactions since 2004 have shown industry average of 20x P/E (see image below). How much is the Equity of this company worth?

Using Precedent Transaction Analysis, PDQ's Equity is worth _$3.0 billion_ based on $150 million of Net Income and the precedent P/E multiple of 20x Net Income. Note that a proper range of the valuation can be obtained by looking at the highest and lowest Net Income multiples in the precedent transactions set.

Date Acquired	Target / Acquiror	Equity Value	Enterprise Value	Enterprise Value / LTM Revenue	Enterprise Value / LTM EBITDA	LTM P/E
8/20/2004	Company X / Company Y	$360	$302	2.3x	10.3x	20.3x
10/25/2004	Company X / Company Y	285	280	2.6	10.6	20.6
1/5/2005	Company X / Company Y	35	67	2.4	10.4	20.4
5/8/2005	Company X / Company Y	1,058	1,090	2.6	10.6	20.6
12/25/2005	Company X / Company Y	579	611	2.4	10.4	20.4
4/6/2006	Company X / Company Y	89	121	2.7	10.7	20.7
8/1/2006	Company X / Company Y	2,587	2,645	1.9	9.9	19.9
7/8/2008	Company X / Company Y	789	847	2.2	10.2	20.2
9/1/2008	Company X / Company Y	497	555	1.8	9.8	19.8
12/14/2009	Company X / Company Y	614	672	3.1	11.1	21.1
12/28/2009	Company X / Company Y	129	191	1.6	9.6	19.6
2/17/2010	Company X / Company Y	119	181	3.3	11.3	21.3
5/28/2010	Company X / Company Y	893	955	1.0	9.0	19.0
Min				1.0x	9.0x	19.0x
Max				3.3x	11.3x	21.3x
Mean				2.3x	10.3x	20.3x
Median				2.4x	10.4x	20.4x

LEVERAGED BUYOUT (LBO) ANALYSIS

An LBO is the acquisition of a public or private company with a significant amount of borrowed funds. Leveraged Buyout Analysis is discussed later in this training module; it is also discussed in great depth in the Private Equity Training Module.
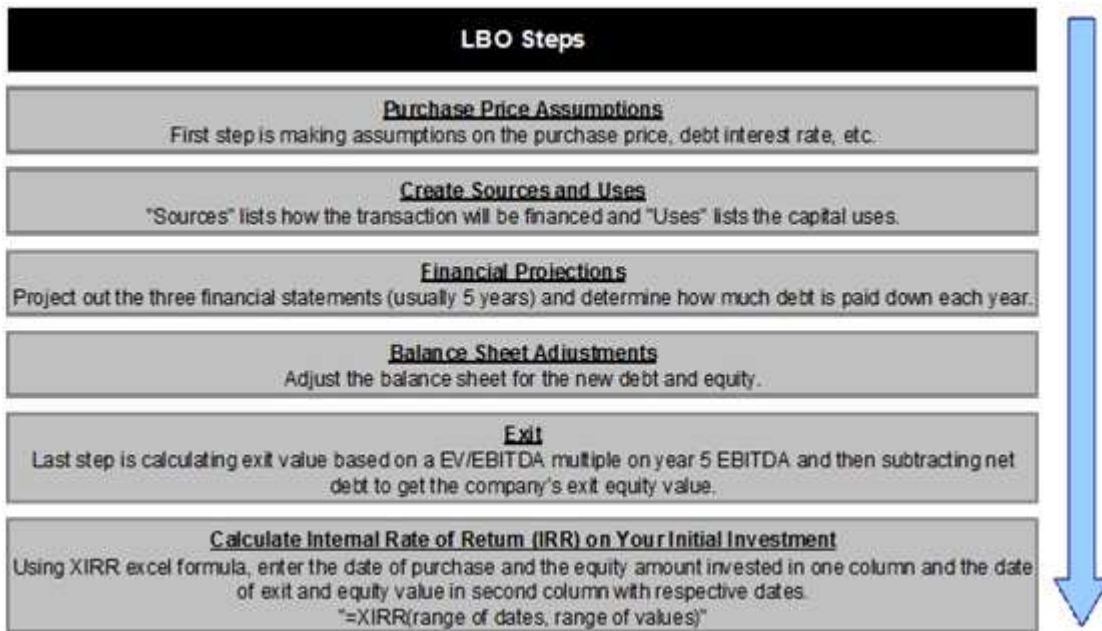
LBO acquirers are typically Private Equity sponsors.

This is a transaction-based valuation technique. Private Equity buyers typically look to sell the business within 5 years after purchase.

LBO valuation revolves around the **_Enterprise Value_** of the company, because the entire business will be acquired and all (or essentially all) of the pre-existing Debt will be paid off.

THE FIVE MAIN STEPS IN AN LBO ANALYSIS

1. Make transaction assumptions based on the purchase price, Debt interest rate, etc.
2. Build the **Sources & Uses** table, where "Sources" lists how the transaction will be financed and "Uses" lists the capital uses—i.e., where the "Sources" money will be spent.
3. Adjust the Balance Sheet for the new Debt and Equity, and other transaction-related adjustments.
4. Project out the three financial statements (usually 5 years) and determine how much Debt is paid down each year.
5. Calculate exit value scenarios based on EBITDA multiples.

LBO Steps

Purchase Price Assumptions
First step is making assumptions on the purchase price, debt interest rate, etc.

Create Sources and Uses
"Sources" lists how the transaction will be financed and "Uses" lists the capital uses.

Financial Projections
Project out the three financial statements (usually 5 years) and determine how much debt is paid down each year.

Balance Sheet Adjustments
Adjust the balance sheet for the new debt and equity.

Exit
Last step is calculating exit value based on a EV/EBITDA multiple on year 5 EBITDA and then subtracting net debt to get the company's exit equity value.

Calculate Internal Rate of Return (IRR) on Your Initial Investment
Using XIRR excel formula, enter the date of purchase and the equity amount invested in one column and the date of exit and equity value in second column with respective dates.
"=XIRR(range of dates, range of values)"