



An Introduction to Stock Valuation

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Background:

“Risk comes from not knowing what you are doing.” – Warren Buffet

Buying stocks without understanding their value is like buying a (car, set of golf clubs, vacation) without asking the (price, model, location) first. How do you know you are getting a good deal if you don't know the value?

This e-book is an overview of valuation. Its purpose is to help you understand how to value stocks. Picking stocks, once you know this, is an easier process as it gives you a level of confidence that you are purchasing stocks that have a value you have determined based on the risks you understand.

The material can be a bit dry at times; we'll try and keep it light.

Who should read this book?

This book is an introduction to valuation so there is some level of understanding that will be needed (and can easily be obtained). The book is of value:

- If you are investing but are not sure how the stocks you own are valued
- If you are aware of financial statements, may recognize Revenue and Net Income but not much else and want to expand that knowledge as it pertains to the Stock Market

Novice Investor	Intermediate	Day Trader	CPA Level	CFA Level
Highly valuable but requires additional work to understand some financial terms	Greatest gain from this e-book will happen for investors with some financial knowledge	Book is valuable for day traders looking to add fundamental knowledge	CPA's that have not analyzed stocks will find this a fast easy read	Limited value. CFA's have the knowledge to write this ebook

There are many other parts to understanding what stocks to buy (or sell) and we will cover some of those in future editions, specifically analyzing a company's financial statements and ratios to understand what risks we need to be aware of (does the company have too much debt compared to its industry, does the company face a liquidity crunch in its short term financing...) We do touch on ratios here and introduce some limited financial statement analysis.

To run a valuation on a company try it here: https://stockcalc.com/get_valuation_report.aspx

About the Author:

Brian is the President of StockCalc (www.stockcalc.com) a fundamental valuation website for retail Investors and Investment Advisors. Brian is a Chartered Business Valuator (CBV), a Canadian valuation designation (www.cicbv.ca)

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Introduction:

If you want to learn how to value stocks, this introduction to valuation is designed for you. In this e-book we review a number of valuation techniques and work through some current examples. Once you have worked through the text and examples you will be able to apply the frameworks to the stocks you are interested in.

This is (hopefully) a practical book you can use to understand how to value stocks. Stock valuation is a methodical process that helps you understand the boundaries of what a company is worth and lets you zone in on the ultimate value. Values change when the inputs change.

There are a few things I would like to start with before you jump into the details below:

Valuation is based on:

- Assumptions about the future of the company
- Assumptions about how it compares to other companies
- Assumptions (or assessments, much better) of the value of the assets the company has and the debts and obligations it owes

Those 3 statements capture the 3 broad ways we look at valuation

- On the basis of Cash Flow
- On the basis of Comparable Companies
- On the basis of the Assets the company has

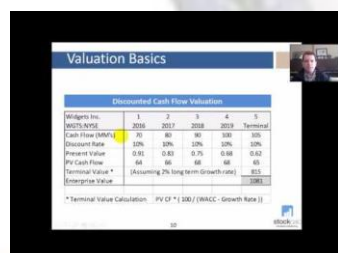
We will go over each of these. First let's start with a few terms to set the stage:

Technical and Financial Terms:

This book is being written for someone new to valuation. Our online valuation company (www.stockcalc.com) keeps a help file at your ready. The dictionary is found here and it contains both definitions and calculations: <https://www.stockcalc.com/Help/index.html#Financial%20Dictionary>

There are also many great resources in the web including: <http://www.investopedia.com/>

Our YouTube [StockCalc Channel](#) also has a number of videos you should find educational:



How to Value Stocks



Facebook Valuation Overview

We need to set the stage with a few definitions: equity vs enterprise value, book vs market value

Equity and Enterprise Value:

We hear the term **equity** a lot when dealing with the stock market.

- Equity in the stock market context is the stock (share certificates) that gets traded between investors and can be common or preferred (common stock, preferred stock).
- Equity on financial statements (Balance Sheet specifically) is part of the value of the company and includes the amount of funds contributed by the owners plus the retained earnings (total amount of gains and losses of net income the company has had over time) (Source: Investopedia)

Enterprise Value is the total value of the company and includes both the equity in the company as well as the debt the company has. Enterprise value is generally thought of in market value not book value terms. i.e. we want to know what someone would pay for the company.

Enterprise Value = Equity Value + Debt Value

Valuation Basics

Enterprise Value versus Equity Value
Equity Value (Think Value of the stock)
Common Stock Price* # Common Shares Outstanding+
Preferred Stock Price* # Preferred Shares Outstanding
Enterprise Value (Think Value of the Company)
Value of the Equity Plus Value of the Debt or
Equity Value = Enterprise Value - Debt



Figure 1. Enterprise vs Equity Value

So What?

Why do
Enterprise and
Equity values
matter?

Well 2 things actually:

- 1) We can calculate the value of the Equity directly (equity is what we want to know because we can calculate stock price from it) or
- 2) If we can calculate the total value of the company, we can subtract the debt to get the value of the equity (so we can calculate stock price from it)

Valuation Basics

Enterprise Value versus Equity Value
So What?
Can Determine Equity or Enterprise Value
Discount rates differ
(Equity Value per share is what we want to know)
Also note the difference between Book Value (as shown on the Balance Sheet) and Market Value (what it would sell for)



Figure 2. Enterprise vs Equity Value: So What?

Financial Statements:

There are 3 financial statements of interest to the new investor: (Source: Investopedia)

Income Statement: a financial statement that reports a company's financial performance over a specific accounting period. Financial performance is assessed by giving a summary of how the business incurs its revenues and expenses through both operating and non-operating activities.

Balance Sheet: A balance sheet is a financial statement that summarizes a company's assets, liabilities and shareholders' equity at a specific point in time. (Sample on next page)

Cash Flow Statement: a financial statement that shows how changes in balance sheet accounts and income affect cash and cash equivalents, and breaks the analysis down to operating, investing and financing activities.

Balance Sheet	Johnson & Johnson		December 31, 2016	
<i>Line Item USD Millions</i>	<i>31-Dec-13</i>	<i>31-Dec-14</i>	<i>31-Dec-15</i>	<i>31-Dec-16</i>
Total Assets	132683	131119	133411	141208
Current Assets	56407	59311	60210	65032
Cash And Cash Equivalents	20927	14523	13732	18972
Other Short Term Investments	8279	18566	24644	22935
Receivables	11713	10985	10734	11699
Inventory	7878	8184	8053	8144
PrepaidAssets	4003	3486	3047	3282
Deferred Income Taxes	3607	3567	0	0
Total Non Current Assets	76276	71808	73201	76176
Gross PPE	37133	36685	36648	37773
Accumulated Depreciation	-20423	-20559	-20743	-21861
Net PPE	16710	16126	15905	15912
Goodwill	22798	21832	21629	22805
Intangibles	27947	27222	25764	26876
Other Non Current Assets	8821	6628	9903	10583
Total Liabilities	58630	61367	62261	70790
Current Liabilities	25675	25085	27747	26287
Payables	7036	8133	7418	7889
Current debt	4852	3638	7004	4684
Non Current Liabilities	32955	36282	34514	44503
Long Term Debt	13328	15122	12857	22442
Total Equity	74053	69752	71150	70418
Stockholders Equity	74053	69752	71150	70418
Preferred Stock	0	0	0	0
CapitalStock	3120	3120	3120	3120
Common Stock	3120	3120	3120	0
Treasury Stock	15700	19891	22684	28352
Retained Earnings	89493	97245	103879	110551
Other Equity	-34260	-50504	-58533	0
Total Liabilities and Total Equity	132683	131119	133411	141208

Figure 3. Balance Sheet for Johnson & Johnson (JNJ:NYS)

Book Value and Market Value

Want to spend a bit of time here as this can be confusing for new investors.

- On the balance sheet we see the value of items at the time they are entered into the accounting system. (Purchased a computer for \$1000 – entered it into the accounting systems as a \$1000 computer. Its book value is \$1000 on the balance sheet). These values get adjusted each year by how much the asset depreciates.
- The value on the balance sheet is called book value and the value someone would pay for that item is called market value.
- Equity is what we want to know to calculate the value of a stock (the market value of equity specifically - we have the book value of equity on the balance sheet).
- You also have heard of the ratio “Price to Book Value”. Since we know the values recorded on the balance sheet are book values, a Price to Book value ratio is the amount we would multiple the book value on the balance sheet by to get a Market value (aka Price).

We see the Dec 31, 2016 Equity Value on the balance sheet above is 70418 (in 000 000's of \$). If we divide that equity value by the number of shares outstanding we get the book value per share for the company. (\$26.02).

Table 1. Book Value of Equity for JNJ:NYS

Book Value of Equity for Johnson & Johnson as of Dec 31 2016	
Equity on Balance Sheet (000's)	70 418 000
Number of Shares Outstanding (000's)	2 706 511
Book Value Per Share	\$26.02

Since companies do not report their financials until weeks (months) after the end of the fiscal period the price to book ratio will use the most recent value we have (ie Dec 31st). We can backtrack to the date of the most recent financials so we are always using the same date to compare over time. For example, on Dec 31, 2016, JNJ's stock was trading at \$112.25. If we divide that price per share by the book value per share we get a Price to Book value of 4.31. This is at the high end of its PB range for the last 10 Years

Table 2. Historic PB ratios for JNJ:NYS

Historic Price to Book Values for Johnson & Johnson 2007-2016										
Year	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
P:B Ratio	4.31	3.97	3.80	3.70	3.00	2.91	3.00	3.51	3.90	4.37

Is JNJ Expensive on a Price to Book Ratio?

Based on the historic values we would have to conclude Yes.

We see from the high in 2007 of 4.37 (and we could go further back) JNJ's book value per share dropped to below 3.00 during 2010-2012 period.

Its stock price has doubled since then with its book value increasing about 50%.

But that is not the whole picture, rather 1 data point in a valuation.



Johnson & Johnson (JNJ)

NYSE - NYSE Delayed Price. Currency in USD

☆ Add to watchlist

123.51 -0.44 (-0.35 %)

At close: 5 May 4:04PM EDT

Summary

Conversations

Statistics

Profile

Financials

Options

Holders

Historical Data

Analysts

Previous Close	123.95	Market Cap	334.82B
Open	123.80	Beta	0.67
Bid	0.00 x	PE Ratio (TTM)	20.76
Ask	0.00 x	EPS (TTM)	5.95
Day's Range	122.86 - 123.80	Earnings Date	18-Jul-2017
52 Week Range	109.32 - 129.00	Dividend & Yield	3.20 (2.59%)
Volume	4,139,755	Ex-Dividend Date	2017-02-24
Avg. Volume	6,433,919	1y Target Est	128.82

1D 5D 1M 6M YTD 1Y 2Y 5Y **10Y** MAX [Interactive chart](#)

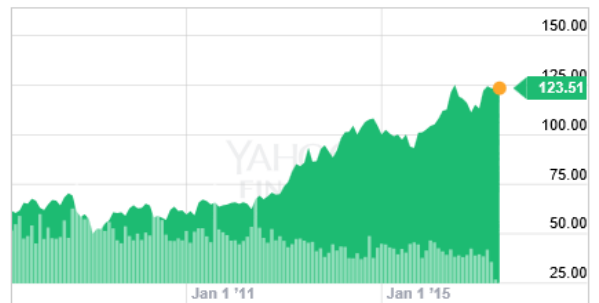


Figure 4. Five year Price performance for JNJ:NYS (Source Yahoo Finance)

Discount Rates:

Now we need to introduce discount rates: (A discount rates is an interest rate or fee charged, i.e. a cost)

As we mentioned above the company's total value (Enterprise Value) consists of debt and equity. Each of these has a cost to obtain them. Let's start with debt as it is the more common and easier to understand.

Debt to a company is the same as a mortgage or car loan to a consumer. Both have to pay principal and interest on the debt. For companies, interest debt is paid before taxes so it is considered a pre-tax cost (noted as we will make an adjustment for this later)

Equity has a cost as well. Think of it in this manner

You start a business and bring in a shareholder for say 25% of the value of the equity so you have some money to buy equipment with or pay salaries.

From the investors perspective the cost of equity can be thought of as the return they would expect to get by investing (buying stock) in the company. In the public markets an investor that buys a blue chip stock expects a lower but safer return than one that buys stock in a new technology company for example. The return would need to be higher (much) in the technology company to offset the risk involved.

If a company has preferred shares their cost is the dividend paid (expressed as a %)

Which has the better return?

Which has the better return?

5 Blue chip stocks that increase in price by 6%, 8%, 8%, 9% and 4% or

5 Technology companies that return %52, 18%, -22%, 76% and -100% (ie went bankrupt)

If you invested \$1000 in each of the 10 companies above the 5 blue chips would have returned

$\$60 + \$80 + \$80 + \$90 + \$40 = \350 (or now be worth \$5350)

The 5 Technology companies would have returned

$\$520 + \$180 - \$220 + \$760 - \$1000 = \240 (or now be worth \$5240)

Valuation Basics

Discount Rates – Used to Calculate Present Value
Cost of Common Equity (Ke)
Think return investors expect
Cost of Preferred Equity (Kp)
Think Dividend Rate of Preferred Stock
Cost of Debt (Kd)
Interest paid / Debt Outstanding
Is an after tax rate

Figure 5. Overview of Discount Rates

To calculate these rates we do the following:

Cost of Debt = $(\text{Interest paid} / \text{Value of the debt}) * (1 - \text{Tax Rate})$

Cost of Preferred stock = $\text{Dividends paid} / \text{Price of Preferred stock}$

Cost of common equity = This is calculated using a formula that takes into consideration how the stock moves with the overall market, risk of equity over debt and other company specific risks. The formula looks like this but we won't go any deeper at this point.

Cost of Equity (Ke) = $\text{Risk free rate} + \text{Beta} * (\text{Market Risk Premium}) + \text{Company Risks}$

We combine these costs to come up with a value we refer to as WACC or Weighted Average Cost of Capital. The WACC is simply a weighting of the debt and equity for the company times their respective

costs. We use the WACC if we are valuing the company on an Enterprise basis or use just the Cost of Equity if we are valuing the equity directly.

Valuation Basics

Discount Rates
Weighted Average Cost of Capital (WACC)
% Common Equity * Ke +
% Preferred Equity * Ke +
% Interest Bearing Debt * Kd * (1-Tax Rate)
WACC is used for Enterprise Value
Ke is used for Equity Value



Figure 6. Calculating Weighted Average Cost of Capital

Weighted Average Cost of Capital

Company: JNJ:NYS

Component	Value	%	K	Cost Of
Common Equity	334,713,834,252	93.00	Ke	8.22
Debt (Book Value)	26,989,000,000	7.00	Kd	2.24
Preferred (Book Value)	0	0.00	Kp	0.00
Enterprise Value	361,702,834,252	100%		
Weighted Average Cost of Capital			WACC	7.80

Figure 7. Calculating Weighted Average Cost of Capital JNJ:NYS

It was important to review that information as now we have the pieces we need to start to do valuation.

Valuation Methods:

We are going to go over 3 valuation methods that are commonly used:

- Cash Flow
- Comparable Companies
- Assets

Valuation Methods

Fundamental Approaches
• Cash Flow Based Valuation
Discount Projected Cash Flows
• Asset Based Valuation (Adjusted Book, Liquidation)
Market Values of Assets – Liabilities
• Relative or Comparable Valuation
Value based on Comparable Companies



Figure 8. Fundamental Valuation Methods

Cash Flow Methods:

We will look at Cash Flow methods first

Cash flow based valuations can take the form of a discounted cash flow where we project cash flows in to the future and discount them all back to the present using the WACC we calculated above or capitalized cash flows where we assume an average cash flow for the company and capitalize it using the WACC. We will go over a discounted cash flow approach here as it is more complex.

First – What is Cash Flow? It is the cash available to the company after taxes and capital expenses (buildings, equipment) have been paid. We refer to this as Free Cash Flow or cash flow that is freed up and available to the company.

To do a discounted cash flow we need

- Cash Flows
- WACC

To calculate value per share we also need

- Interest Bearing Debt
- Number of Shares

We also need to understand how long we are projecting the cash flows for at which point we create a value we refer to as the terminal value where we assume a steady state cash flow. For companies that go through economic cycles like commodity based companies (oil, gold, forest products for ex) we need to project cash flows through the cycle whereas companies that have steady (flat, rising constantly, declining constantly) cash flows we only need a few years of cash flows prior to creating the terminal value.

Valuation Methods

Cash Flow Based Valuation
Components
Projected Cash Flows
Terminal Time and Value
Discount Rate
Debt
Shares Outstanding



Figure 9. Cash Flow Based Valuation Components

So if we look at the example below for the Widgets Company we see how to set up a discounted cash flow. We have (an assumed) cash flow of 70, 80, 90 and 100 million (MM \$) in years 2016, 2017, 2018 and 2019. Starting in the year 2020 we assume the cash flow will be steady at 105 (or 5% above the 2019 value)

We stated at the first of this e-book we need to make assumptions. For a DCF we need assumptions about these cash flows and when and how much the terminal value will be. These values are based on analysis of the company, the industry it is in and any other factors that may affect it.

Valuation Basics

Discounted Cash Flow Valuation					
Widgets Inc. WGTS:NYSE	1 2016	2 2017	3 2018	4 2019	5 Terminal
Cash Flow (MM's)	70	80	90	100	105
Discount Rate	10%	10%	10%	10%	10%
Present Value	0.91	0.83	0.75	0.68	0.62
PV Cash Flow	64	66	68	68	65
Terminal Value *	(Assuming 2% long term Growth rate)				815
Enterprise Value					1081
* Terminal Value Calculation PV CF * (100 / (WACC - Growth Rate))					



Figure 10. Discounted Cash Flow Set-up

You see the next line in Figure 10 is the Discount rate. If the cash flow is before interest payments we will use WACC, if after we use just the Cost of Equity. This is tied to the Enterprise value versus Equity value discussion from above. Are we valuing just the equity or are we valuing the Enterprise and removing the debt after to get the equity.

The present value factor line is calculated as follow:

$$1 / (1 + \text{discount Rate}) ^ \text{year}$$

Example for Year 3: $1/(1 + .1) ^ 3 = 0.75$

The present value factor discounts the cash flow back to today, i.e. what is that future cash flow worth in todays terms. We then multiple the Cash flow value by the present value factor to get the Present Value of Cash Flows line values

Next step is to determine the Terminal Value – For that we need a Terminal growth rate which is the very long term growth rate for the company under the assumption the company will survive forever. For that reason, and the fact most companies do not survive forever, the terminal growth rates tend to be a small number like 2 or 3 %. (There is a lot of literature on this of you are interested.)

The terminal value is calculated as $100 / (\text{WACC} - \text{Terminal Growth Rate})$

In this example therefore $100 / (10 - 2) = 12.5$

We then add up all the Present Values from year 1 to 4 plus the terminal value to give us the Enterprise Value (1081 in our example)

To Calculate the Equity value therefore we need to subtract the interest bearing debt which we have assumed to be 300 million in this example leaving \$781 million in Equity. If there is Preferred Equity (preferred stock) those preferred shareholder get paid before common shareholders if the company was being liquidated so we removed the value of the preferred stock prior to dividing by the number of common shares outstanding to get a value per share. In our example we are (assuming) using book values (from the balance sheet) for both debt and preferred stock. In reality we would use market values for both which would require calculations as well. A minority of companies (10% or so) have preferred stock.

Valuation Basics

Discounted Cash Flow Valuation					
Widgets Inc. WGTS:NYSE	2016	2017	2018	2019	Terminal
Enterprise Value					1081
Debt (assume)					300
Equity Value					781
Preferred Equity					100
Common Equity					681
Shares Outstanding					50
Value per Share					\$ 13.61



Figure 11. Discounted Cash Flow: Value per Share Calculation

That is the process for a discounted cash flow. You see there are some numbers we can easily get from the financial statements and there are assumptions and research required to get the cash flows, growth rates and discount rates

DCF's are
normally done
in Spreadsheets

Asset Based Valuation:

Another way to value a company is to add up the value of the assets it has and remove the value of the debts and obligations. This concept is simple in theory but complicated in practice as it is difficult to obtain the market value of the assets and liabilities for even a small company. With that there are ways we can look at the company and determine its value using its balance sheet and its historical price to book ratio as we introduced above.

We will cover 2 asset based valuations both based on the same foundation:

Adjusted Book Value:

In the first method we look to adjust the balance sheet to reflect market values from the book values (we call this adjusted book value) presented there. We can try and do this line by line if we are very familiar with the company or we can look at historic price to book ratios and apply them to the current balance sheet to adjust those book values to market values.

The second method builds on the first: Once we have calculated an adjusted book value for the company we can determine the value that is available to common shareholders if the company was going through a liquidation by removing costs associated with a bankruptcy.

Valuation Methods

Asset Based Valuation
Adjust the Balance Sheet to Reflect
Adjusted Book Value
Update Assets and Liabilities on the Balance Sheet to reflect current market conditions
Liquidation Value
Update Assets and Liabilities on the Balance Sheet to reflect current market conditions + determine gains/losses during a liquidation/bankruptcy



Figure 12. Asset Based Valuation Method

Lets start with a simple example of adjusting the book value as you see in Figure 13.

Valuation Basics

Asset Based Valuation – Adjusted Book Value

Balance Sheet Summary	Book Value	Market Value
Total Assets	9000	9800
Current Assets	1000	800
Fixed Assets	8000	9000
Total Liabilities + Equity	9000	9800
Current Liabilities	1500	1500
Non-Current Liabilities	6500	6500
Equity (remaining)	1000	1800
Shares Outstanding	1000	1000
Value Per Share	\$ 1.00	\$ 1.80
Book Value - As shown on Balance Sheet		
Market Value - Value if sold on open market		



Figure 13. Adjusted Book Value Approach

Can you calculate the Price to Book Ratio for this company?

Liquidation Value:

Next we look at the same company if it was undergoing a liquidation (or bankruptcy). We start with the adjusted book value and add or remove revenues and expenses associated with a liquidation. In the example below we show line items like:

Disposition costs: costs incurred to sell the assets of the company

Profit or Loss during liquidation: Net income or loss experienced during the liquidation

Liquidation Costs: these can be other costs associated with the liquidation including selling inventory at a discount or walking away from receivables

Taxes: if there is revenue being generated during the liquidation there may be a tax implication that we need to account for

Valuation Basics

Asset Based Valuation – Liquidation Value

Assets	9800
Disposition Costs	250
Liabilities	8000
Net	1550
# Months to Liquidate	6
Profit/Loss During	-600
Liquidation Costs	200
Taxes	262
Equity Remaining	488
Preferred Shares	0
Equity for Common	488
Shares Outstanding	1000
Liquidation Value per Share	\$ 0.49



Figure 14. Liquidation Analysis

So in the example above we had a book value of \$1.00 per share, a Market value of \$1.80 per share and a liquidation value of \$0.49 per share. It is obviously important if we invest in a company like this we want to see it ongoing and not go through a liquidation.

Comparable Valuation:

Using Comparable (also called Relative valuation) methods allows us to value 1 company using values or ratios from other companies that we average to create 1 common value. To do this we want to use companies as similar as possible to the company we are generating a value for.

To calculate the price of 1 company from other companies we first need to select companies that are as similar to the chosen company as we can. That means

- Similar Industry
- Similar size
- Similar geography
- Similar financial conditions (debt level for example)

It is not reasonable to compare a small technology company for example to Apple given Apples size, reach, marketing power, sourcing power, financial power... we want to try and find similar companies.

Valuation Methods

Relative or Comparable Valuations
Value w/Metrics from Comparable Companies
Comparable Companies
Industry, Company Size, Geography, Technology, Financials, Risk, Liquidity
Metrics
Price to: Earnings, Cash Flow, Book, Sales
Enterprise Value to EBITDA



Figure 15. Comparable or Relative Valuation Method

There are 5 ratios we are using to value the company we are interested in. Lets review those

PE RATIO: (Price to Earnings Ratio) This is a very commonly used ratio that is calculated by taking the price of the stock and dividing by the (most recent generally but can be any time point) 12 months Earnings per share for the company. Earnings per share is calculated as Net Income (Income Statement) divided by fully diluted number of shares of the company.

Stock Price / Earnings per Share

PB Ratio: (Price to Book Ratio) This is also a very commonly used ratio that is calculated by taking the price of the stock and dividing by the (most recent generally but can be any time point) 12 months Book Value of the company. If you recall book value is the value on the financial statements. The Book value for a company is the Common Shareholder's Equity found on the balance sheet and consists of the

PS RATIO: (Price to Sales Ratio) This is another common ratio that is calculated by taking the price of the stock and dividing by the (most recent generally but can be any time point) 12 months Total Sales per share for the company.

PCF RATIO: (Price to Cash Flow Ratio) This is also a relatively common ratio that is calculated by taking the price of the stock and dividing by the (most recent generally but can be any time point) 12 months cash flow per share for the company. You saw reference to cash flow above in the discounted cash flow section of this book.

EV2EBITDA (Enterprise Value to EBITDA) This is also a common ratio used to value companies and is calculated by taking the Enterprise Value of the company (we discussed Enterprise Value above) and dividing it by the EBITDA (Earnings before Interest, Taxes, depreciation and Amortization)

It is worth noting where EBITDA and Net Income are on the Income Statement because they have implications on how we value a company directly with these ratios.

Earnings v EBITDA

PE ratio uses net income, or the accounting income remaining after all other costs are paid (salaries, materials, interest, taxes and depreciation)

EV2EBITDA uses EBITDA in the denominator which does not include interest, taxes and depreciation.

If you think about this for a minute, Earnings takes into account the interest payments we make on the debt whereas EBITDA does not.

So let's look at a detailed example for Johnson & Johnson (JNJ:NYS)

To calculate the valuation for JNJ we are starting with these ratios above for 5 similar companies: AbbVie, Bristol-Myers Squibb, Eli Lilly, Merck & Co, Pfizer

To price our company, we use the 5 ratios we have above and calculate the average values for each of those ratios. We then multiply the average ratios by the appropriate measure (earnings per share, sales per share, EBITDA) to generate a value for our company for each of the 5 ratios.

We can then average the 5 calculated values to come up with a comparable value for our company or if the industry warrants, we can use some of the 5 ratios to calculate the value.

In the lower table we show the 5 ratio values for each of these companies along with their average and the values for JNJ on the far left. In the upper left box we show the current per share values for JNJ and in the upper right box the calculated values.

Company JNJ:NYS	End Date Value	Price Based on Comps	Adjustment Factor (%)
Earnings/Share	\$5.93	\$169.16	<input type="text" value="0"/>
Book Value/Share	\$25.98	\$224.24	<input type="text" value="0"/>
Sales/Share	\$25.78	\$109.96	<input type="text" value="0"/>
Cash Flow/Share	\$6.73	\$117.08	<input type="text" value="0"/>
EBITDA/Share	\$8.71	\$189.23	<input type="text" value="0"/>

JNJ:NYS	Ratios Used	Average Values	ABBV:NYS	BMJ:NYS	LLY:NYS	MRK:NYS	PFE:NYS
20.82	PE Ratio	28.53	18.17	19.46	31.81	44.21	28.99
4.75	PB Ratio	8.63	22.64	6.41	6.46	4.26	3.39
4.79	PS Ratio	4.27	4.19	4.71	4.11	4.36	3.95
18.35	PCF Ratio	17.40	15.27	23.87	17.96	16.74	13.14
15.58	EV to EBITDA	22.85	15.17	14.83	26.64	33.89	23.72

The average PE Ratio for the 5 comparable companies is 28.53 and JNJ's PE at this time is 20.82. If we take JNJ's current Earnings per share value of \$5.93 and multiple it by the average value of 28.53 we get a relative or comparable PE based valuation of \$169.16 for JNJ. We do this over the 5 ratios to get an average and not have 1 value skew the result dramatically. If we have values we think need to be dropped because they are excessively high or low we can do that as well. (Ex: the PB Ratio for ABBV is much higher than the rest and could be removed. Dropping ABBV's PB ratio reduces the calculation from \$224.24 down to \$133.27)

(Note: as we mentioned above EBITDA is pre-interest so we need to subtract the debt/share from EV2EBITDA to have it on the same level as the other 4 ratios.)

Once this is done we can average the calculated values to get a valuation for JNJ of
 $(169.16 + 133.27 + 109.96 + 117.08 + 189.23) / 5$
 \$143.74

JNJ is trading in the \$125 range which implies on a relative basis it is undervalued by 15%.

Do we buy JNJ based on this calculation?

Do we buy JNJ
based on this
Calculation?

Not immediately. What would be helpful first is: Does JNJ always look undervalued compared to this group? We could rerun this calculation for the last 3-5 years to see if this is the trend or we can look at JNJ's ratios compared to its industry:

Ratio	JNJ NYS	Healthcare Drug Mfg	% Difference
P:E	16.74	20.69	81%
P:B	3.57	4.31	83%
P:S	3.24	3.11	104%
P:CF	13.17	14.89	88%
EV:EBITDA	10.18	8.65	118%
Average			95%

On average over the last 10 years JNJ's ratios have been 95% of the average for the industry it is in. Based on that, if we reduced the valuation of \$143.74 by 5% we still get \$136.55 or a 10% undervaluation compared to the industry.

Notes and cautions: This comparable methods works well if you have companies that are similar as noted above and also companies that are generating revenue and earnings. Companies that have no revenue are difficult to value using this method as the method is based on revenue or earnings based ratios. In order to do this we would have to make revenue or earnings assumptions for our company.

We have constructed another method for valuing those companies in StockCalc using changes in price over the last 12 months, net PPE and cash and book values.

Summary:

This introduction to valuation is designed for users who want to understand fundamental valuation and how it is used to value stocks. In this e-book we review a number of valuation techniques and work through current examples.

Valuation is or has to be based on:

- Assumptions about the future of the company
- Assumptions about how it compares to other companies
- Assumptions (or assessments, much better) of the value of the assets the company has and the debts and obligations it owes

Those 3 statements capture the 3 broad ways we look at valuation

- On the basis of Cash flow
- On the basis of Comparable Companies
- On the basis of the Assets the company has

We follow up in the Appendix with an example for JNJ (Johnson & Johnson)

If you found this e-book of value and would like to explore valuation more you can sign up at www.stockcalc.com for a free 30 day trial. Now that you are armed with this knowledge you can start to look at companies you are interested in to see if they are under or overvalued. I expect you also have a lot of questions (maybe more questions now?) and we would be happy to help. Start with a trial and look at the videos and walk through on the StockCalc site as they go into detail on how the various calculations occur or drop us a line at info@stockcalc.com and we will get back to you.

Comprehensive Example:

Johnson & Johnson:

We have used JNJ for a number of examples here so it is only appropriate to use it in a comprehensive review. Data is run as of May 5 2017. To receive a full valuation simply enter JNJ in the company textbox along with your email at <https://www.stockcalc.com/valureport.aspx>

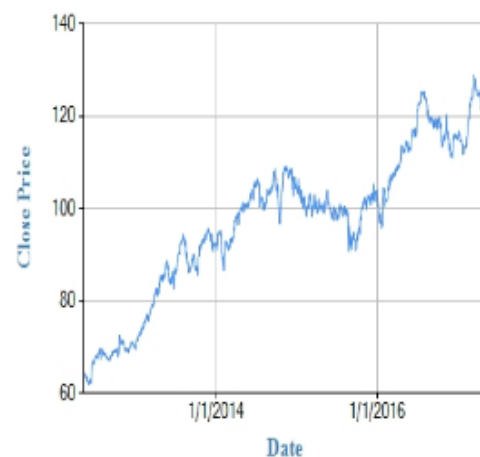
Valuation Summary: Johnson & Johnson \$123.51 (USD) Close Price as of 05/05/2017

Based on the analysis conducted in this report, Johnson & Johnson, (JNJ:NYS) is found to be **Undervalued** (refer below to each of the models for detailed calculations and assumptions).

Company	Johnson & Johnson
Symbol:Exchange	JNJ:NYS
Industry	Healthcare:Drug Manufacturers-Major
Close Price/Date	\$123.51 (USD) 05/05/2017
Weighted Average Valuation Summary	\$133.66 (USD) JNJ:NYS is found to be Undervalued by 8.2% using the 3 valuation models shown below.
Valuation Models Used (in order of importance)	Analyst Consensus: \$132.25 (USD) Comparables: \$149.63 (USD) Adjusted Book Value: \$105.93 (USD)
Valuation Methods Analysis	This company is:
Cash Flow Basis:	Undervalued on a Cash Flow Valuation basis
Comparable Company Basis:	Undervalued on a Comparable Valuation basis
Asset Basis:	Overvalued on an Asset Valuation basis

Company Overview (JNJ:NYS USD)

Bid:Ask	:
Price	123.21
Change %Change	-0.04 - -0.03%
Day Range	122.88 - 123.47
52 Week Range	109.32 - 129.00
Open Price	123.23
Day Volume	3762488
Average Volume	6429860
P/E Ratio	20.71
Diluted EPS	5.95
Shares Outstanding	2710891992
Market Cap	334,009,002,334



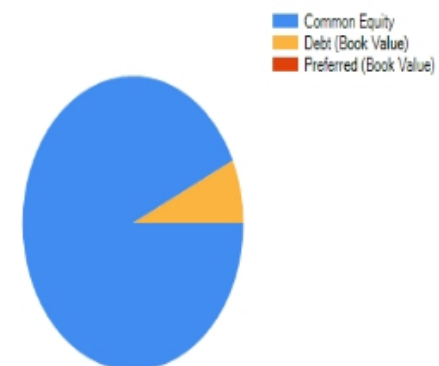
Detailed Company Description

Johnson & Johnson is a holding company, which is engaged in the research and development, manufacture and sale of products in the health care field within its Consumer, Pharmaceutical and Medical Devices segments.

Cost of Capital

We have calculated the WACC for JNJ:NYS to be **7.81** based on the following assumptions:

Component	Value	%	K	Cost Of
Common Equity	334713834252	93	Ke	8.22
Debt (Book Value)	26989000000	7	Kd	2.24
Preferred (Book Value)	0	0	Kp	0.00
Enterprise Value	361702834252	100		
Weighted Average Cost of Capital			WACC	7.81



The Company's Beta was calculated as 0.77 using a 60 month time frame and the Dow Jones index.

Income Statement Projections for JNJ:NYS Johnson & Johnson

[illegible]

Discounted Cash Flow

Using a Discounted Cash flow model we generate a Value per share for JNJ:NYS of \$153.02 (USD)

Year	2017	2018	2019	Terminal Growth Rate(%)
				2.8
EBITDA (Cash Flow)	27601000000	30031700000	32772400000	33690027200
Normalizations & Adjustments	0	0	0	0
Normalized EBITDA	27601000000	30031700000	32772400000	33690027200
Tax Rate(%) 16.4773	4547899573.00	4948413304.10	5400006665.20	5551206851.83
+/- Tax Loss Carry Forward	0	0	0	0
Net Operating After Tax Cash Flow	23,053,100,427	25,083,286,696	27,372,393,335	28,138,820,348
Capital Investment Required (Estimate)	-3386400000	-3386400000	-3386400000	-3386400000
Tax Shields on Capital Investment	401347728	401347728	401347728	401347728
Incremental Working Capital Requirements	-882000000	-882000000	-882000000	-882000000
Discretionary Cash Flow	19,186,048,155	21,216,234,424	23,505,341,062	24,271,768,076
Terminal Multiple (100 / (WACC - Growth Rate))				19.98
Capitalized Terminal Value				484,884,711,393

Year: (For Discounted Calculations)	1	2	3	3+
WACC:				
7.81 - User Defined	7.81	7.81	7.81	7.81
Discounted Annual Cash Flows	17,796,880,909	18,255,134,356	18,760,380,805	387,002,333,123
Present Value of Discretionary Cash Flow				54,812,396,069
Discounted Terminal Value				387,002,333,123
Total Discounted Cash Flow				441,814,729,192
Present Value of Tax Shields				0
Redundant Assets				0
Enterprise Value				441,814,729,192
Less Interest Bearing Debt				26989000000
En Block Fair MarketValue(FMV) Equity				414,825,729,192
Book Value of Preferred Equity				0
Value of Common Equity				414,825,729,192
Number of Fully Diluted Shares Outstanding				2710891992
Calculated Value Per Share (\$/share)				\$153.02 (USD)

Comparable Companies

(Using Price Based Ratios)

We ran **JNJ:NYS** against comparable companies in its space and generated a valuation of **\$149.61 (USD)**. The comparable companies included AbbVie (ABBV:NYS), Bristol-Myers Squibb (BMY:NYS), Eli Lilly (LLY:NYS), Merck & Co (MRK:NYS) and Pfizer (PFE:NYS)

Company JNJ:NYS	End Date Value
Earnings/Share	\$5.93 (USD)
Book Value/Share	\$25.98 (USD)
Sales/Share	\$25.78 (USD)
Cash Flow/Share	\$6.73 (USD)
EBITDA/Share	\$8.71 (USD)

Price Based on Comps	Adjustment Factor (%)
\$169.16 (USD)	-16.2
\$224.24 (USD)	-15.4
\$109.96 (USD)	8.0
\$117.08 (USD)	-7.3
\$189.23 (USD)	0.0

JNJ:NYS	Ratios Used	Average Values	ABBV:NYS	BMY:NYS	LLY:NYS	MRK:NYS	PFE:NYS
20.82	PE Ratio	28.53	18.17	19.46	31.81	44.21	28.99
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15.58	EV to EBITDA	22.85	15.17	14.83	26.64	33.89	23.72

Adjusted Book Value versus Historical Price to Book

The average the Price to Book ratio for **JNJ:NYS** for the last 10 years was **4.07**
We ran the Adjusted Book Value for **JNJ:NYS** as follows and see a value of **\$26.02 (USD)**
By multiplying these we get an adjusted valuation of **\$105.95 (USD)**

Line Item	Most Recent Book Value	Estimated FMV	Realizable %
Total Assets	141208000000	141208000000	
Current Assets	65032000000	65032000000	
Cash and Cash Equivalents	18972000000	18972000000	100.00
Other Short Term Investments	22935000000	22935000000	100.00
Receivables	11699000000	11699000000	100.00
Inventory	8144000000	8144000000	100.00
Prepaid Assets	3282000000	3282000000	100.00
Deferred Income Taxes	0	0	0.00
Other Current Assets	0	0	0.00
Non-Current Assets	76176000000	76176000000	
Gross PPE	37773000000	37773000000	
Accumulated Depreciation	-21861000000	-21861000000	
Net PPE	15912000000	15912000000	100.00

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