

How to Value a Stock with Reverse DCF

% oldschoolvalue.com/blog/valuation-methods/reverse-discounted-cash-flow-dcf/

How to value stocks series

What is reverse DCF and its advantages over DCF valuation

Disadvantages of Discounted Cash Flow Valuation

I am a fan of the [discounted cash flow valuation](#) method. It isn't perfect, but it also isn't as horrible as a lot of people make it out to be. With everything, there is a strength and weakness. As long as you are aware of each, a DCF model is a valuable tool to have in your belt.

But first, let's quickly go over the main weaknesses of DCF.

1. Projecting Future Cash Flow

All evidence points out that humans cannot predict. This is no different when it comes to projecting the future cash flow of the business. There is too much uncertainty when trying to forecast and you are also basing the future values based on past results.

With such forecasting, a small error can result in a drastic change in the DCF valuation.

2. Calculating a Proper Discount Rate

Unless you have a good understanding of [what a discount rate](#) is, this value can lead to inaccurate assumptions. A big problem is that you may end up playing around with the discount rate to match the intrinsic value you are seeking.

3. Predicting Growth Rates

The main problem with determining a feasible growth rate is that a DCF will simulate the growth rate to be on-going. Unless you apply multiple stage DCF valuations, a single growth rate is usually used to project the growth for the next 10 years.

In my own [stock valuation spreadsheets](#), I use a decay to reduce the growth rate every certain number of years. It's not a 2 stage or 3 stage DCF model, but similar and simpler.

Reverse DCF Overview

What the **reverse DCF** attempts to do in order to improve from the reputation of its twin, is to eliminate the need to forecast.

Instead of starting with a given year's FCF, and then projecting towards an unknown, the purpose of the reverse discounted cash flow is to calculate what growth rate the market is applying to the current stock price.

In other words, by working backwards, you can see whether the implied growth rate by the market is higher or lower than what the company is capable of.

Let's see how it is actually done.

Reverse DCF Valuation of Microsoft (MSFT)

Using the **DCF model** from the premium [stock valuation spreadsheets](#), set the discount rate to 9%.

My rule of thumb for large caps is to calculate the discount rate as

discount rate = risk free rate + risk premium

with the current risk free rate being approx 3.5%

large cap discount rate = 3.5% + 5% = 8.5%

and you can round up the 8.5% to 9%.

Now that you have the discount rate set to 9%, play around with the growth rate until you get a value that matches the current price.

On my spreadsheet, the growth rate has to be set to -2.6% for the reverse DCF valuation to match the current stock price.

(The -2.6% value should be used as a ballpark figure and not the gospel as my spreadsheets contains more customization than a regular straight line DCF.)

Enjoy what you're reading? Get Access to More

Get more tips and investing strategies in your inbox. I'll send you 9 FREE Investing Spreadsheets as a welcome bonus.

Click to enlarge image.

Here, you see that the market is currently pricing MSFT to have negative growth. Whether this is true or not is up to you, but it is definitely hard to imagine a free cash flow machine like MSFT shrinking year over year.

However, recent news of the drop in Windows OS sales and the purchase of Skype could very well prove to be an indication of a slowly declining business.

Reverse DCF Valuation of Cisco (CSCO)

With all the negative press and sentiment on CSCO, it couldn't be more hated on Wall Street than now.

Sticking with the same discount rate of 9% as MSFT, the implied growth for CSCO is at a jaw dropping -9.6%

Again, this is a ball park figure, give +/- 2% to the final value.

Microsoft Corp (MSFT)

5/16/2011

Enter Ticker

Help

Select input with
each list or enter

Refresh

CLEAR

Shares Out.	M.O.S	Growth	Discount %	Terminal %	Select FCF	Adjust 2010 FCF
8,430.00	50%	-2.6%	9.0%	3%	Owner Earnings	
		-2.6%				

Current Price	Intrinsic \$	Buy Under	Actual M.O.S	52 Wk High	52 Wk Low
\$25.03	\$25.07	\$12.54	0%	\$29.46	\$22.73

Fiscal Year	Trend	2001	2002	2003	2004	2005	2006	2007	2008	2009
Operating Margin	37.2%	36.9%	36.9%	39.1%	36.9%	36.9%	36.4%	36.9%	37.2%	36.9%
Net Margin	28.9%	28.0%	28.9%	29.5%	28.0%	28.9%	28.0%	28.9%	28.9%	28.9%
Revenue Growth	13.2%	10.9%	9.9%	11.8%	12.5%	13.4%	9.7%	9.4%	19.8%	11.8%
Earnings Growth	16.0%	12.5%	12.5%	12.7%	14.9%	15.2%	16.7%	13.4%	26.0%	14.9%
Cash from Ops Growth	7.0%	4.0%	6.2%	1.4%	4.2%	6.5%	5.4%	7.7%	12.4%	6.2%

Projection of future Free Cash Flow

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Yearly Growth Input Field										
-3%	\$18,950.14	\$18,457.44	\$17,977.55	\$17,697.85	\$17,283.72	\$16,879.28	\$16,484.30	\$16,409.76	\$16,064.17	\$15,725.86
Terminal Growth	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
3%	\$16,197.63	\$16,683.56	\$17,184.07	\$17,699.59	\$18,230.58	\$18,777.49	\$19,340.82	\$19,921.04	\$20,518.68	\$21,134.24

Calculation

Total Cash	\$	50,150.00
MAX(0, Current Liabilities-Current	\$	-
Excess Cash	\$	50,150.00
Adding some Intangibles	\$	-
Present Value	\$	211,378.95
Shares Outstanding		8430
Per Share Value	\$	25.07
Margin of Safety		50%
Purchase Price	\$	12.54
Current Price	\$	25.03
Actual M.O.S		0%

Variable Fields

Intangibles% add to DCF	0%
Decay Rate (Yr4E-Yr7E)	10%
Extra Decay (Yr8E-Yr10E)	10%

Sensitivity Matrix: Growth vs Discount Rate

		7%	8%	9%	10%	11%
	-7%	\$23.68	\$22.46	\$21.37	\$20.39	\$19.52
	-5%	\$25.79	\$24.37	\$23.11	\$21.99	\$20.99
Growth Rates	-3%	\$28.17	\$26.53	\$25.07	\$23.78	\$22.62
	-1%	\$30.86	\$28.96	\$27.28	\$25.79	\$24.46
	1%	\$33.89	\$31.70	\$29.76	\$28.05	\$26.52

Sensitivity Matrix: Margin of Safety %

		7%	8%	9%	10%	11%
	-7%	-5.7%	-11.5%	-17.1%	-22.7%	-28.2%
	-5%	3.0%	-2.7%	-8.3%	-13.8%	-19.3%
Growth Rates	-3%	11.2%	5.7%	0.2%	-5.3%	-10.6%
	-1%	18.9%	13.6%	8.3%	2.9%	-2.3%
	1%	26.1%	21.0%	15.9%	10.8%	5.6%

Reverse DCF MSFT

Cisco Systems Inc (CSCO)

5/16/2011

Help

Select input with
each list or enter

Shares Out.	M.O.S	Growth	Discount %	Terminal %	Select FCF	Adjust 2010 FCF
5,530.00	50%	-9.6%	9.0%	3%	Owner Earnings	

Enter Ticker

Refresh

CLEAR

Current Price	Intrinsic \$	Buy Under	Actual M.O.S	52 Wk High	52 Wk Low
\$16.88	\$16.90	\$8.45	0%	\$26.00	\$16.52

Fiscal Year	Trend	2001	2002	2003	2004	2005	2006	2007	2008	2009
Gross Margin	69.6%	69.6%	68.4%	70.3%	70.3%	69.7%	68.3%	67.7%	68.4%	69.6%
Operating Margin	24.9%	24.9%	24.9%	25.4%	25.4%	25.4%	24.9%	24.4%	24.4%	24.9%
Net Margin	20.0%	20.0%	20.0%	19.3%	20.3%	20.7%	20.7%	20.0%	19.5%	20.0%
Revenue Growth	8.5%	9.7%	11.3%	5.0%	13.0%	15.9%	10.4%	10.1%	12.4%	10.4%
Earnings Growth	0.0%	22.8%	15.0%	0.0%	36.2%	21.2%	11.1%	8.9%	0.0%	11.1%
Cash from Ops Growth	9.5%	6.0%	9.9%	4.3%	8.9%	18.2%	6.8%	6.1%	9.7%	8.9%

Projection of future Free Cash Flow

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Yearly Growth Input Field										
-10%	\$7,945.26	\$7,182.51	\$6,492.99	\$6,122.99	\$5,593.97	\$5,110.65	\$4,669.09	\$4,599.29	\$4,241.65	\$3,911.82
Terminal Growth	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
3%	\$ 4,029.18	\$ 4,150.05	\$ 4,274.55	\$ 4,402.79	\$ 4,534.87	\$ 4,670.92	\$ 4,811.05	\$ 4,955.38	\$ 5,104.04	\$ 5,257.16

Calculation

Total Cash	\$ 43,367.00
MAX(0, Current Liabilities-Current	\$ -
Excess Cash	\$ 43,367.00
Adding some Intangibles	\$ -
Present Value	\$ 93,466.93
Shares Outstanding	5530
Per Share Value	\$ 16.90
Margin of Safety	50%
Purchase Price	\$ 8.45
Current Price	\$ 16.88
Actual M.O.S	0%

Variable Fields

Intangibles% add to DCF	0%
Decay Rate (Yr4E-Yr7E)	10%
Extra Decay (Yr8E-Yr10E)	10%

Sensitivity Matrix: Growth vs Discount Rate

				Discount Rates					
				7%	8%	9%	10%	11%	
	-14%	\$ 16.16	\$ 15.66	\$ 15.21	\$ 14.81	\$ 14.44			
	-12%	\$ 17.11	\$ 16.53	\$ 16.01	\$ 15.54	\$ 15.12			
Growth Rates	-10%	\$ 18.18	\$ 17.50	\$ 16.90	\$ 16.36	\$ 15.88			
	-8%	\$ 19.39	\$ 18.61	\$ 17.91	\$ 17.29	\$ 16.73			
	-6%	\$ 20.76	\$ 19.85	\$ 19.04	\$ 18.32	\$ 17.68			

Sensitivity Matrix: Margin of Safety %

				Discount Rates					
				7%	8%	9%	10%	11%	
	-14%	-4.5%	-7.8%	-11.0%	-14.0%	-16.9%			
	-12%	1.3%	-2.1%	-5.5%	-8.6%	-11.6%			
Growth Rates	-10%	7.1%	3.6%	0.1%	-3.2%	-6.3%			
	-8%	12.9%	9.3%	5.7%	2.4%	-0.9%			
	-6%	18.7%	15.0%	11.4%	7.9%	4.5%			

The more important question now, is whether the business of CSCO really is going to continue slide at such speed.

Initial thoughts lead me to believe the answer is no.

Reverse DCF as a Point of Reference

So that's how easy a reverse DCF can be applied. Just match the intrinsic value to the current price and ask yourself whether the growth rate makes any sense.

It simplifies the DCF thought process and output from "what is the future growth rate?", to "is the expected growth rate realistic?".

Always remember that the growth rate you end up with is a frame of reference that will help you with your research, NOT the reference point or the deciding factor in concluding whether a stock is cheap or not.