

DISCOUNTED CASH FLOW VALUATION PART 2

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Reference Material: **Wall Street Prep DCF Modeling Chapter 4**

KEY CONCEPTS

1. Diluted Shares Outstanding
 - Dealing with Equity Issued to Employees
2. Loose Ends and Minor Tweaks
 - Mid-year Discounting
 - Cash
 - Cross Holdings
 - Estimate MV Debt
 - Dual Class Shares
3. Levered Free Cash Flows
4. Sensitivity Analysis
5. Final Thoughts on Valuation

SHARES OUTSTANDING

What is the right shares outstanding to divide equity value by?

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- Diluted Shares outstanding?

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- Shares outstanding?
- Diluted Shares outstanding?
- Issue is how to deal with equity granted to employees.

FORMS OF EQUITY GRANTS

- Restricted Stock Units (RSUs)
- Employee Options

RESTRICTED STOCK GRANTS

How to incorporate into valuation?

- Past: Include in shares outstanding (even if not vested, Why?)
- Future: Estimate value as % of revenue. Forecast and include in compensation expense.

OPTIONS

A right to buy a share at a fixed price over a period of time

Approaches to incorporating into valuation:

1. Treasury Approach
2. Treasury with a Twist Approach
3. Option Value Approach

OPTION TERMINOLOGY

(Note all compensation options are call options)

- Exercise or strike price: Price at which you can buy the stock.
- In-the-money: If the strike price is less than the current stock price.
- Exercise: Invoking the terms of the option contract, i.e., buying the stock.
- Unexercisable: Options that have been granted to the employee but not yet vested. The employee cannot exercise the option until it vests, i.e., becomes exercisable.

WRONG! DILUTED SHARE COUNT APPROACH

- Adjust the denominator (shares outstanding) for shares if options are exercised
- Look at in the money options and adjust shares by number of in the money options
- Issue?

DON'T DO THIS!!!

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- Issue?
- Fails to consider that exercising options will bring cash in.

DON'T DO THIS!!!

TREASURY APPROACH

1. Follow the diluted shares approach for shares
2. Add the value received from the exercise of options to the equity value
3. Ignores the time premium on the options

TREASURY WITH A TWIST APPROACH (OUR METHOD)

- Use the proceeds to buy back the stock at the current price
- Adjust the shares for the options exercised AND the shares repurchased
- Equity value remains unchanged. Why?
- Still ignores time premium

OPTION VALUE APPROACH

Value the options and subtract from equity value

- Use existing option value model (ex. Black Scholes) to value employee options
- Subtract from Equity Value
- Divide by existing shares (don't mess with share count)
- Issues:
 - Option models not designed for employee options.
 - Employee options are long-term, not liquid, exercised early, dilutive, and have vesting schedules.
- Note: can multiply by (1-tax rate) as options give tax break

OPTIONS OUTSTANDING VS EXERCISABLE

- Options outstanding includes unexercisable options, i.e., options that have not yet vested.
- Why might it be appropriate to include unexercisable options? (Think about modeling assumptions you've likely made)
- Similar logic applies to performance based equity grants.

BASIC EXAMPLE

You have calculated the equity value of GoNuts4Donuts at \$150 million. The latest share count is 15 million. Your boss says "Ok, well this firm is valued at \$10/share!" (10 million if you work at MSCNBC/NYT!). You know this is wrong since the firm has the following equity grants: 2 million options outstanding with an exercise price of \$6 and 1 million unvested RSUs. You have also calculated the value of the options using Black Scholes at \$7.80 a share. The stock is currently trading at \$12/share. What is the new value per share under the Treasury Method? Treasury with a Twist Method? Option Value Method?

SOLUTION

TREASURY

$$\text{Value/Share} = \frac{150M + (2M * 6)}{15M + 2M + 1M}$$

$$\text{Value/Share} = 9$$

TREASURY WITH TWIST

$$\text{Value/Share} = \frac{150M}{15M + 2M + 1M - \frac{2M * 6}{12}}$$

$$\text{Value/Share} = 8.82$$

OPTION VALUE

$$\text{Value/Share} = \frac{150M - (2M * 7.80)}{15M + 1M}$$

$$\text{Value/Share} = 8.40$$

LOOSE ENDS

MID-YEAR DISCOUNTING

When do cash flows occur?

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When do we assume they occur?

MID-YEAR DISCOUNTING

When do cash flows occur?

When do we assume they occur?

- Solution is to discount as if they occur on average in the middle of the year

- $$\frac{\text{FCFF}_1}{1+\text{WACC}^{0.5}} + \frac{\text{FCFF}_2}{1+\text{WACC}^{1.5}} + \dots$$

- In Excel. Multiply the NPV by $(1 + \text{WACC})^{0.5}$

CASH

- Best practice: Keep it out of valuation!
- Ex. Do not include interest income from Cash
- Add cash back at the end

PREMIUM/DISCOUNT CASH

- Cash itself is not the issue!
- When is cash bad (discount)?
 - Probability that company will waste cash
 - Think of activist investors?
- When is cash good (premium)?
 - In markets where access to capital is of concern.
 - More likely in foreign countries
 - Think of start-up ex. Lyft vs Uber

CROSS HOLDINGS

Holdings in another company

1. Minority passive: I/S shows dividends, B/S shows original investment
2. Minority active: I/S income from cross holding, B/S original investment plus retained earnings
3. Majority active: financial statements are consolidated. (act like you own 100% until...Minority interest (non controlling interest) under liability)

HOW TO DEAL WITH CROSS HOLDINGS

1. Figure out the accounting method!
2. Add in value of minority passive or minority active
3. Subtract value of non-controlling interest

What is the value of Company A if you use consolidated financials to come up with a \$1 billion value for the FCFF and the firm has \$300 million in debt and \$100 million in cash?

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Company A holds a passive 10% of Company B who has a MV of 500 million. They also hold 60% of company C that has been fully consolidated with a book value of \$ 40 million. What is the value?

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What is the issue?
Value needs to be intrinsic!!!

PERFECT WORLD

Assume the value of company A is \$750 million using only the parent financials. You separately value company B and C at \$250 million each using their intrinsic value. What is the value of company A?

IDEAL SOLUTION

1. Value the company without cross holdings (using unconsolidated financial statements)
2. Value the equity (intrinsically) of each cross holding individually
3. Add each of the values of cross holdings (value times % held) to value of the company.

MORE REALISTIC ALTERNATIVE

- For majority holdings (under full consolidation): Multiply the BV of minority interest by the Price-to-Book ratio for the industry of the subsidiary and subtract from value of equity of parent
- For Minority holdings: Multiply the BV of holdings by the Price-to-Book ratio for the industry of the subsidiary and add from value of equity of parent

MV OF DEBT

- Wait what?
- Can estimate (treat as gigantic bond):
 - Treat debt amount as face value
 - Interest expense is coupon
 - Discount at cost of debt
 - Use average maturity

This will be similar to BV for healthy companies.

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What about distressed companies?

ESTIMATE MV OF DEBT

A company has a BV of debt of \$1 billion and shows an interest expense of \$132 million. The average maturity on the debt is 4 years and you estimate the cost of debt to be 8.2%. What is your best estimate for the MV of debt?

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$N=4$; $YTM=8.2\%$; $PMT=132M$; $FV=1,000M$

Answer: \$1,164.87 million

DUAL CLASS STOCK

Multiple share classes (A, B, etc) with different voting rights and potentially different cash flow rights.

How do we value dual class shares?

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How do we value dual class shares?

Apply a premium to the voting class shares (5-10%). Adjust for difference in cash flow rights directly.

DUAL CLASS EXAMPLE

On 1-800-Flowers.Com Inc's most recent filing it states "The number of shares outstanding of each of the Registrant's classes of common stock as of January 31, 2020: Class A Common Stock of 35,753,963 and Class B Common Stock of 28,542,823 share" Voting rights are 10-1 (B-A) and Class B is not publicly traded. If you value the equity at \$1.2 billion and place a 5% premium on voting shares, what is the value per share? (assume no dilutive securities outstanding)

DUAL CLASS ANSWER

$$\textit{Value/NonVotingShare} = \frac{1200}{35.754 + 28.543 * (1.05)}$$

$$\textit{Value/NonVotingShare} = 18.26$$

LEVERED FREE CASH FLOWS OR FCFE

Cash flows after financial obligations

$$FCFE = NonCashNI + DA - Investments - (DebtRepaid - DebtIssued)$$

Discount using Cost of Equity

EXAMPLE

You have been asked to value a firm with expected annual after-tax cash flows, before debt payments, of \$100 million a year in perpetuity. The firm has a cost of equity of 12.5%, a market value of equity of \$600 million and a market value of debt of \$400 million. If the debt is perpetual and the after-tax interest rate on debt is 6.25%.

EXAMPLE

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What if the MV of equity was \$800 million?

ANSWER1

$$WACC = \frac{400}{1000} 6.25 + \frac{600}{1000} 12.5 = 10$$

Using unlevered cash flows:

$$Value\ of\ Firm = \frac{100}{.1} = 1000$$

$$Value\ of\ Equity = 1000 - 400 = 600$$

Using levered cash flows:

$$FCFE = 100 - (400 * .0625) = 75$$

$$Value\ of\ Equity = \frac{75}{.125} = 600$$

ANSWER2

$$WACC = \frac{400}{1200} 6.25 + \frac{800}{1200} 12.5 = 10.42$$

Using unlevered cash flows:

$$Value\ of\ Firm = \frac{100}{.1042} = 960$$

$$Value\ of\ Equity = 960 - 400 = 560$$

Using levered cash flows:

$$FCFE = 100 - (400 * .0625) = 75$$

$$Value\ of\ Equity = \frac{75}{.125} = 600$$

WILL YOU GET SAME ANSWER?

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- Issue arises because we use MV of Equity in WACC
- Problem gets compounded with growth (need to keep debt ratio fixed)
- Need to iterate through to get cost of capital (also constant debt rate)

SENSITIVITY ANALYSIS

How does our valuation change when we change our assumptions?

- What are key drivers?
- Best and worst case scenarios?
- Reasonable range?

EXCEL TOOLS

- Data Tables
 - Vertical
 - Horizontal
 - Two-way
- Scenario Manager
 - Allows multiple inputs to be varied at once

EXAMPLE: DATA TABLE

		WACC								
		4.0%	5.0%	6.0%	7.0%	8.0%	9.0%	10.0%	11.0%	12.0%
	\$33.7									
	1.5%	\$39.8	\$38.1	\$36.6	\$35.1	\$33.7	\$32.4	\$31.1	\$29.9	\$28.8
	2.00%	\$43.4	\$41.6	\$39.9	\$38.2	\$36.7	\$35.2	\$33.8	\$32.5	\$31.3
	2.50%	\$48.0	\$45.9	\$44.0	\$42.2	\$40.5	\$38.8	\$37.3	\$35.8	\$34.4
g	3.00%	\$53.8	\$51.5	\$49.3	\$47.3	\$45.3	\$43.5	\$41.7	\$40.0	\$38.5
	3.50%	\$61.7	\$59.0	\$56.5	\$54.1	\$51.8	\$49.7	\$47.6	\$45.7	\$43.9
	4.00%	\$72.7	\$69.5	\$66.5	\$63.6	\$60.9	\$58.4	\$56.0	\$53.7	\$51.5
	4.50%	\$89.4	\$85.4	\$81.6	\$78.1	\$74.7	\$71.6	\$68.6	\$65.7	\$63.0
	5.00%	\$117.5	\$112.2	\$107.2	\$102.5	\$98.0	\$93.8	\$89.8	\$86.0	\$82.4

EXAMPLE: SCENARIO MANAGER

<i>Scenario Summary</i>			
	<i>Best_Case</i>	<i>Base_case</i>	<i>Worse_Case</i>
Changing Cells:			
Sales Growth	7.0%	4.5%	2.5%
COGS as % of Revenue	61.0%	62.4%	64.0%
SGA as % of Revenue	3.0%	4.0%	4.5%
CAPEX	6.5%	5.5%	5.0%
Terminal Growth	3.5%	1.5%	1.5%
Result Cells:			
Implied equity value (Perpetuity)	\$55.1	\$33.7	\$32.0
Implied equity value (Exit multiple)	\$19.6	\$18.4	\$17.4
Implied equity value (Perpetuity and all options)	\$54.19	\$33.39	\$31.76

FINAL THOUGHTS

SOME VALUATION NOTES

- Good valuation is at the intersection of the numbers and the story
 - Bad valuations come when you are at one end or the other.
- Key story (number) drivers
 - Company history
 - The markets and its growth
 - Competitors it faces (and will face)
 - Macro environment

VALUATION STEPS

- Survey the landscape
- Create a narrative for the future
 - Simple, focused, and grounded
- Common sense check the narrative
 - Is it possible? plausible? probable?

IS IT?

- Impossible
 - Growth rate greater than economy
 - Bigger than total market
 - Profit margin > 100%
 - Depreciation without capex
- Implausible
 - Growth without reinvestment
 - Profits without competition
 - Returns without risk
- Improbable
 - High Growth and low risk
 - High Growth and low reinvestment
 - Low risk and high reinvestment

MORE STEPS

- Connect narrative to key drivers of value
- Be ready to modify narrative as information (events) updates

NEXT TIME

Multiples