Company Valuation: EBITDA vs Discount Rate?

EBITDA vs Discount Rate?

- I was recently asked by a friend for a quick guide to valuing a company
- “In a nutshell, what is the formula you would use to value a company?”
- So, Mark, this is a more considered response to your excellent question!

EBITDA vs Discount Rate?

- The issue can be distilled down to EBITDA vs Discount Rate
- Profit multiple vs Cash Flow based Internal Rates of Return

EBITDA vs Discount Rate?

- The first problem with EBITDA multiples - in my view but one shared by Warren Buffett - is that it takes no account of Capex - excluded depreciation
- It takes no account of the book value of intangibles - excludes amortisation
- So we are valuing a business irrespective of its tangible and intangible asset investment

EBITDA vs Discount Rate?

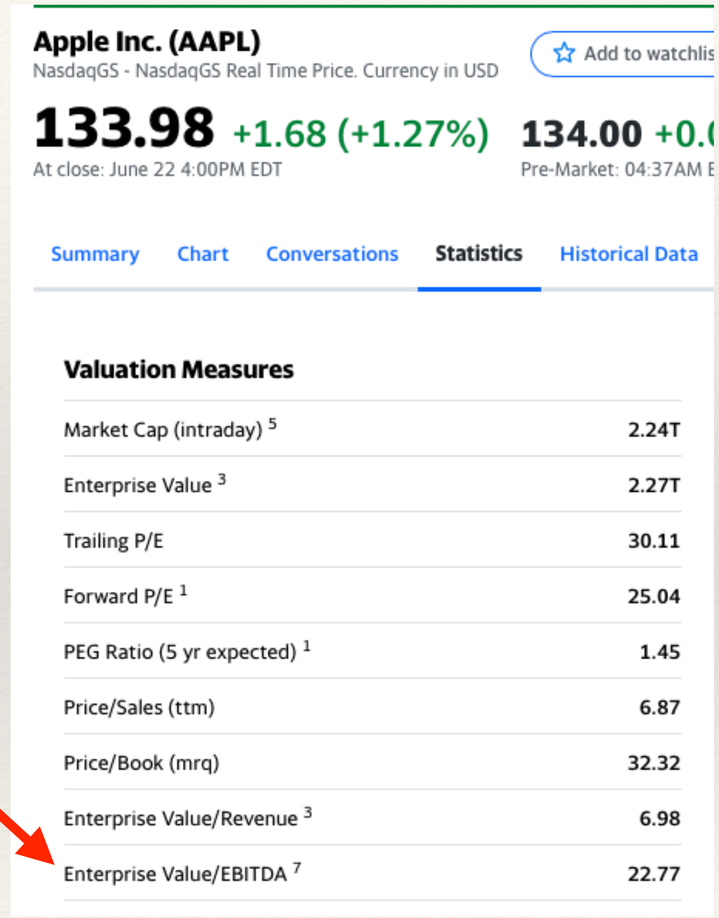
- The next question which is also difficult to answer, other than on a rule of thumb basis, is what multiple to use?
- VCs and PE houses who love to negotiate with EBITDA multiples (although they also run complex DCF models using discount rates) - are always looking for Entry Multiple arbitrage…

EBITDA vs Discount Rate?

- Can they buy at a low multiple and then later sell at a higher multiple?
- Its one of the easiest ways for them to generate positive financial returns in their deal

EBITDA vs Discount Rate?

- You can see from these metrics for Apple that it is trading at an Enterprise to EBITDA multiple of 22.77x
- Note its the Enterprise multiple not the Market Cap



Apple Inc. (AAPL)
NasdaqGS - NasdaqGS Real Time Price. Currency in USD
Add to watchlis

133.98 +1.68 (+1.27%)
At close: June 22 4:00PM EDT

134.00 +0.(
Pre-Market: 04:37AM E

Summary | Chart | Conversations | **Statistics** | Historical Data

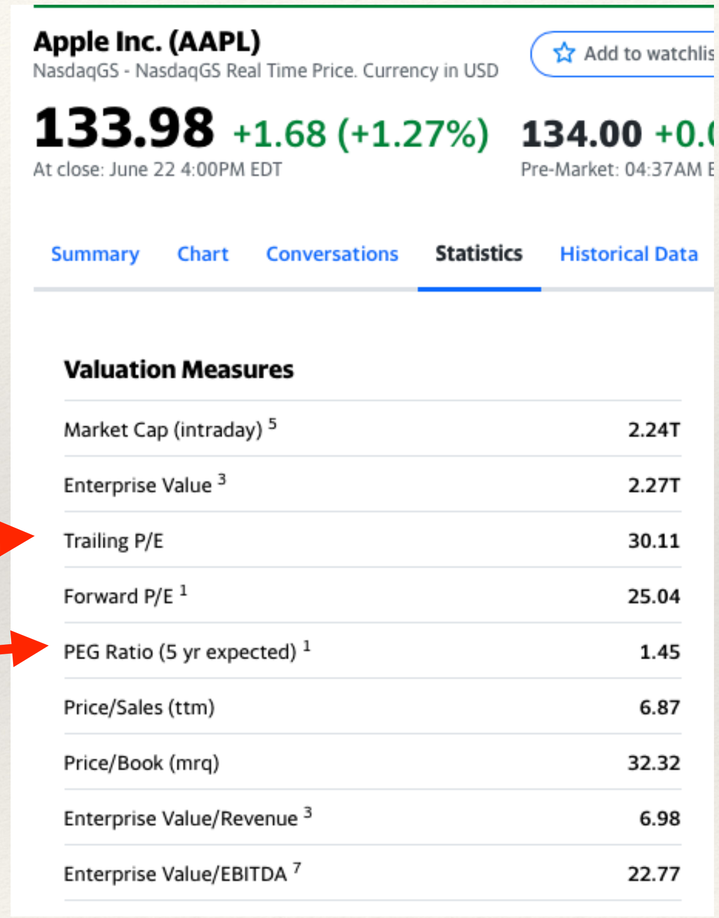
Valuation Measures

Market Cap (intraday) [5]	2.24T
Enterprise Value [3]	2.27T
Trailing P/E	30.11
Forward P/E [1]	25.04
PEG Ratio (5 yr expected) [1]	1.45
Price/Sales (ttm)	6.87
Price/Book (mrq)	32.32
Enterprise Value/Revenue [3]	6.98
Enterprise Value/EBITDA [7]	22.77

Source: https://finance.yahoo.com/

EBITDA vs Discount Rate?

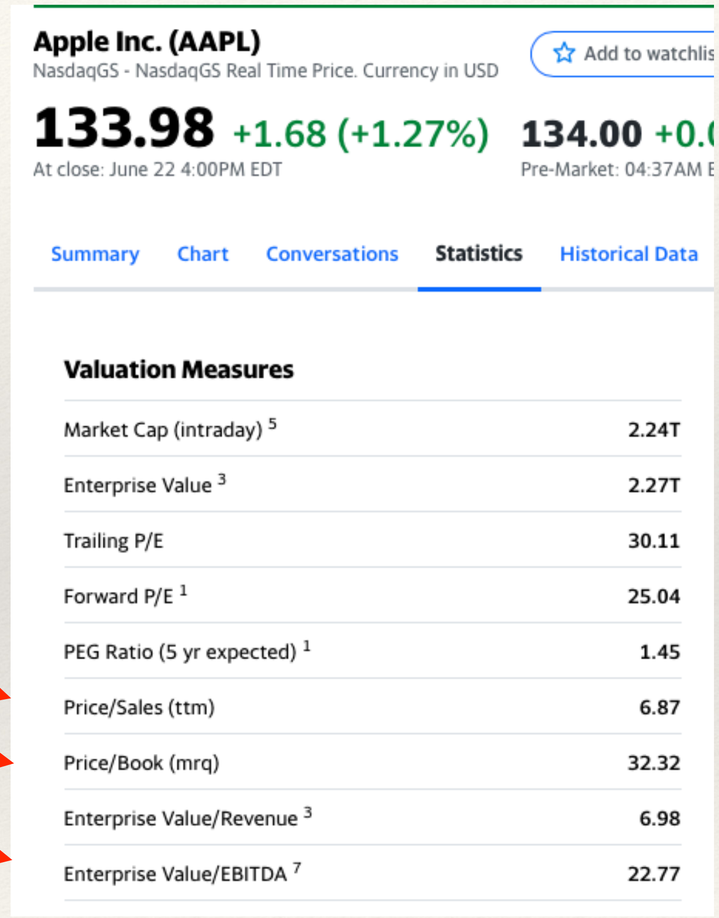
- These statistics also provide other useful ratios
  - Trailing and Forward P/E
  - PEG Ratio (Price Earnings to Growth)



Source: https://finance.yahoo.com/

EBITDA vs Discount Rate?

- We also have:
  - Price / Sales
  - Price / Book
  - Enterprise / Revenue



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EBITDA vs Discount Rate?

- These ratios are useful for trend analysis and for comparison with other companies but how do we decide on the right multiples if we are seeking to value the company and we don't have a market listing?
- Put another way, how do we know whether this represents fair value, or whether Apple is under or over valued?

EBITDA vs Discount Rate?

- If we turn to Discount Rates how can we use these to easily value a business and identify its intrinsic worth?
- Without creating a complex DCF model with all its assumptions, integrated three financial statements and outputs, lets try to short cut and answer the question in a “nutshell”…

EBITDA vs Discount Rate?

- The first question to answer is what is the right Discount Rate
- I readily admit that this is not a straightforward question but at least we can derive our discount rate on the basis of some financial theory - the Capital Asset Pricing Model (CAPM) for all its faults

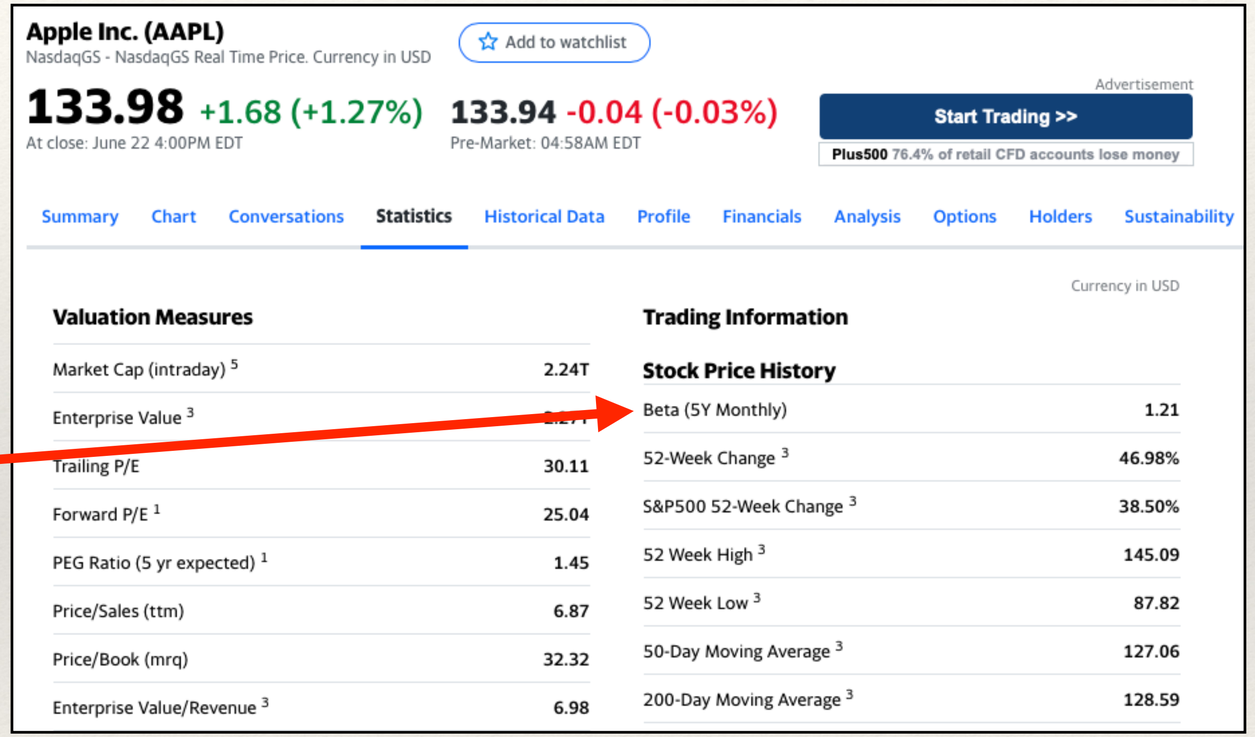
EBITDA vs Discount Rate?

- The Discount Rate comprises
  - Risk Free Rate
  - Equity Risk Premium
  - Company Specific Beta

Cost of Equity	Low	High
LT Treasury Bonds (Risk Free Rate)	5.00%	5.00%
Equity Risk Premium	6.00%	6.00%
Beta	1.10	1.35
Cost of Equity	12.10%	14.85%

EBITDA vs Discount Rate?

- Apple's Beta is 1.21 as shown in this data from Yahoo Finance



Apple Inc. (AAPL)
NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist

133.98 +1.68 (+1.27%)
At close: June 22 4:00PM EDT

133.94 -0.04 (-0.03%)
Pre-Market: 04:58AM EDT

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Summary | Chart | Conversations | **Statistics** | Historical Data | Profile | Financials | Analysis | Options | Holders | Sustainability

Currency in USD

Valuation Measures

Market Cap (intraday) [5]	2.24T
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PEG Ratio (5 yr expected) [1]	1.45
Price/Sales (ttm)	6.87
Price/Book (mrq)	32.32
Enterprise Value/Revenue [3]	6.98

Trading Information

Stock Price History

Beta (5Y Monthly)	1.21
52-Week Change [3]	46.98%
S&P500 52-Week Change [3]	38.50%
52 Week High [3]	145.09
52 Week Low [3]	87.82
50-Day Moving Average [3]	127.06
200-Day Moving Average [3]	128.59

Source: https://finance.yahoo.com/

EBITDA vs Discount Rate?

- It is also important to use the Levered or Unlevered Beta when appropriate

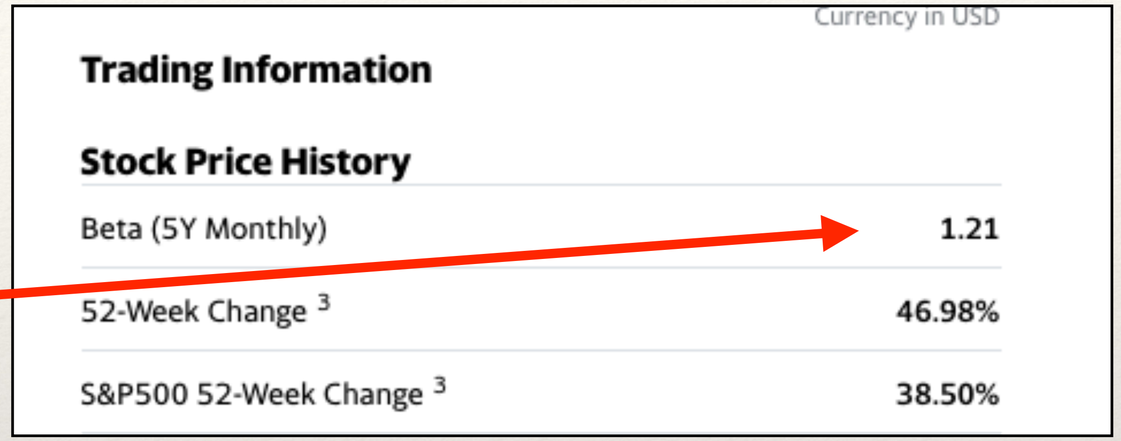
Beta (Ref: NASDAQ 100)

	Levered beta	Unlevered beta
1-Year	1.15	1.14
2-Year	1.12	1.11
3-Year	1.12	1.11

Source: Infront Analytics

EBITDA vs Discount Rate?

- You can see from this information that we already have 3 different numbers for the beta!
- It is not clear from the screen whether these are Asset or Equity betas



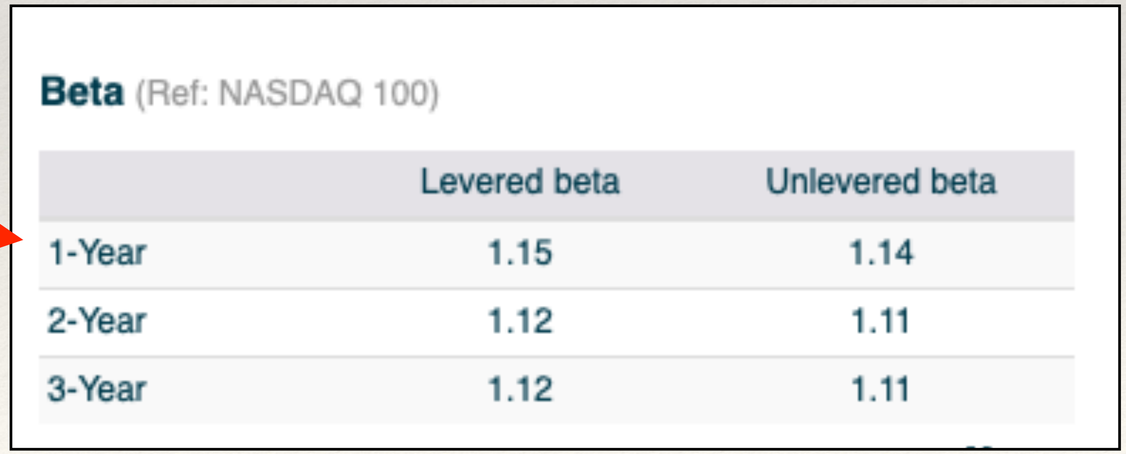
Currency in USD

Trading Information

Stock Price History

Beta (5Y Monthly)	1.21
52-Week Change [3]	46.98%
S&P500 52-Week Change [3]	38.50%

Source: https://finance.yahoo.com/



Beta (Ref: NASDAQ 100)

	Levered beta	Unlevered beta
1-Year	1.15	1.14
2-Year	1.12	1.11
3-Year	1.12	1.11

Source: Infront Analytics

EBITDA vs Discount Rate?

- It is important to make sure that you use the right discount rate with the right Cash Flow
- You also have to ensure that you adjust the Discount Rate for Tax if necessary

EBITDA vs Discount Rate?

- Capital Cash Flow = Operating Cash Flow less Actual Taxes Paid
- This requires a discount rate using the Asset Beta since Capital Cash Flow is cash flow to the whole firm
- Expected Return = Risk Free Rate / (Asset beta x Risk Premium)
- This returns the Enterprise Value and we can derive the implied discount rate if we know the Enterprise Value

29 Sep 2020	Capital Cash Flow
Operating Cash Flow	US$80,674,000
Income Tax Paid	US$12,272,000
Capital Cash Flow	US$68,402,000
Enterprise Value	US$2,270,000,000
Implied Discount Rate	3.01%

EBITDA vs Discount Rate?

- The Equity Cash Flow uses the Equity Beta as we are only measuring the cash flows to equity
- This beta should be unlevered
- We use this to derive the Market Capitalisation of the firm
- Expected Return = Risk Free Rate /[(Equity beta x (Risk Premium)]
- Unlevered Equity Beta = Levered Equity Beta/(1+D/E Ratio)

EBITDA vs Discount Rate?

- Equity Cash flows measures the cash available to stock holders after payments to debt holders are deducted
- Capital Cash Flow minus interest and debt payments plus debt issues
- Discounted at the Equity Rate of Return

29 Sep 2020	Capital Cash Flow	Equity Cash Flow
Operating Cash Flow	US$80,674,000	US$80,674,000
Income Tax Paid	-US$12,272,000	-US$12,272,000
Capital Cash Flow	US$68,402,000	US$68,402,000
Interest Paid		-US$3,002,000
Issuance of Debt		US$16,091,000
Repayment of Debt		-US$12,629,000
Equity Cash Flow		US$68,862,000
Free Cash Flow		
Enterprise Value	US$2,270,000,000	
Market Capitalisation		US$2,240,000,000
Implied Discount Rate	3.01%	3.07%

EBITDA vs Discount Rate?

- Free Cash Flow measures the value of the whole firm
- This includes the cost of debt so we need a discount rate that balances the debt equity ratio
- This is the Weighted Average Cost of Capital or WACC

- WACC = (Debt/Value)(1-Tax Rate)x kd + (Equity/Value)x ke

EBITDA vs Discount Rate?

- The Free Cash Flow is stated in the summary of the Cash Flow Statement so we can use it directly
- The WACC discount rate returns an Enterprise Value
- Using the actual EV, we can derive a Discount Rate

29 Sep 2020	Capital Cash Flow	Equity Cash Flow	Free Cash Flow
Operating Cash Flow	US$80,674,000	US$80,674,000	
Income Tax Paid	-US$12,272,000	-US$12,272,000	
Capital Cash Flow	US$68,402,000	US$68,402,000	
Interest Paid		-US$3,002,000	
Issuance of Debt		US$16,091,000	
Repayment of Debt		-US$12,629,000	
Equity Cash Flow		US$68,862,000	
Free Cash Flow			US$73,365,000
Enterprise Value	US$2,270,000,000		US$2,270,000,000
Market Capitalisation		US$2,240,000,000	
Implied Discount Rate	3.01%	3.07%	3.23%

EBITDA vs Discount Rate?

- But lets work the problem from the basics…
- The Current US 10 year Treasury bond is trading at 1.5%
- The current US Equity Risk Premium is 5.2%

EBITDA vs Discount Rate?

- Using Google we can easily find Apple's Cost of Debt - 2.606%
- We can use the same technique to identify the current cost of Equity
- Apple's Tax Rate is 24.6%

As of Sep. 2020, **Apple's** interest expense (positive number) was $2873 Mil. Its total Book **Value of Debt** (D) is $110241.5 Mil. **Cost of Debt** = 2873 / 110241.5 = 2.6061%.

https://www.gurufocus.com › AAPL › WACC-Percentage

What is Apple's cost of equity?

7.4%

Apple's cost of equity is 7.4%.

https://finbox.com › NASDAQGS:AAPL › explorer › cost...

24.6 percent

Apple's worldwide effective **tax rate** is 24.6 **percent**, higher than average for US multinationals. 6 Nov 2017

https://www.apple.com › newsroom › 2017/11 › the-facts...

EBITDA vs Discount Rate?

- From this we can calculate Apples after tax cost of debt = 1.96%
- The cost of equity is confirmed by the calculation = 7.43%

Apple WACC	
Cost of Debt	2.61%
Tax Rate	24.60%
After Tax Cost of Debt	1.96%
Risk Free Rate	1.5%
Beta	5.2%
Market Risk Premium	1.14
Cost of Equity	7.43%

EBITDA vs Discount Rate?

- From the 2020 Financial Statements Apple has $74.42 bn net debt (term debt minus cash)
- Total Shareholders Equity is $65.34bn

Total Debt $bn	US$112.44	
Cash $bn	US$38.02	
Net Debt	US$74.42	53.25%
Total Shareholders Equity	US$65.34	46.75%
Total Capital	US$139.76	

EBITDA vs Discount Rate?

- From this we can calculate the WACC for Apple

Cost of Capital		
W. cost of Equity	3.47%	
W. Cost of Debt	1.05%	
WACC	4.52%	

EBITDA vs Discount Rate?

- If we use this WACC as a discount rate for the Free Cash Flow
- The EV from our calculation is $1.62T
- The current market capitalisation is $2.34T (the EV is 2.27T so almost no different)
- Apple is therefore trading at a 44.65% premium to its historic EV

Free Cash Flow	US$73,365,000
Enterprise Valuation	US$1,623,486,833
Weighted Average No of Shares	17528214
Share Price	133.98
Market Value of Equity	US$2,348,430,112
Market Premium	44.65%

EBITDA vs Discount Rate?

- But we may have some timing differences here - and these are important, particularly for fast growing and highly rated companies.
- If we look at Apple's stock price on 26 Sep 2020, the price of $108.22 only represents a 16.84% premium to our calculated EV
- This is with a background of very strong share price growth in the preceding 2 years
- The other difficulty is of course Apples and Pears (no pun intended) - Profits vs Cash Flow.
- A 37% increase in EPS cannot be extrapolated to a 37% increase in FCF.

Free Cash Flow	US$73,365,000	
Enterprise Valuation	US$1,623,486,833	US$1,623,486,833
	23 June 2021	26 Sep 2020
Weighted Average No of Shares	17528214	17528214
Share Price	133.98	108.22
Market Value of Equity	US$2,348,430,112	US$1,896,903,319
Market Premium	44.65%	16.84%

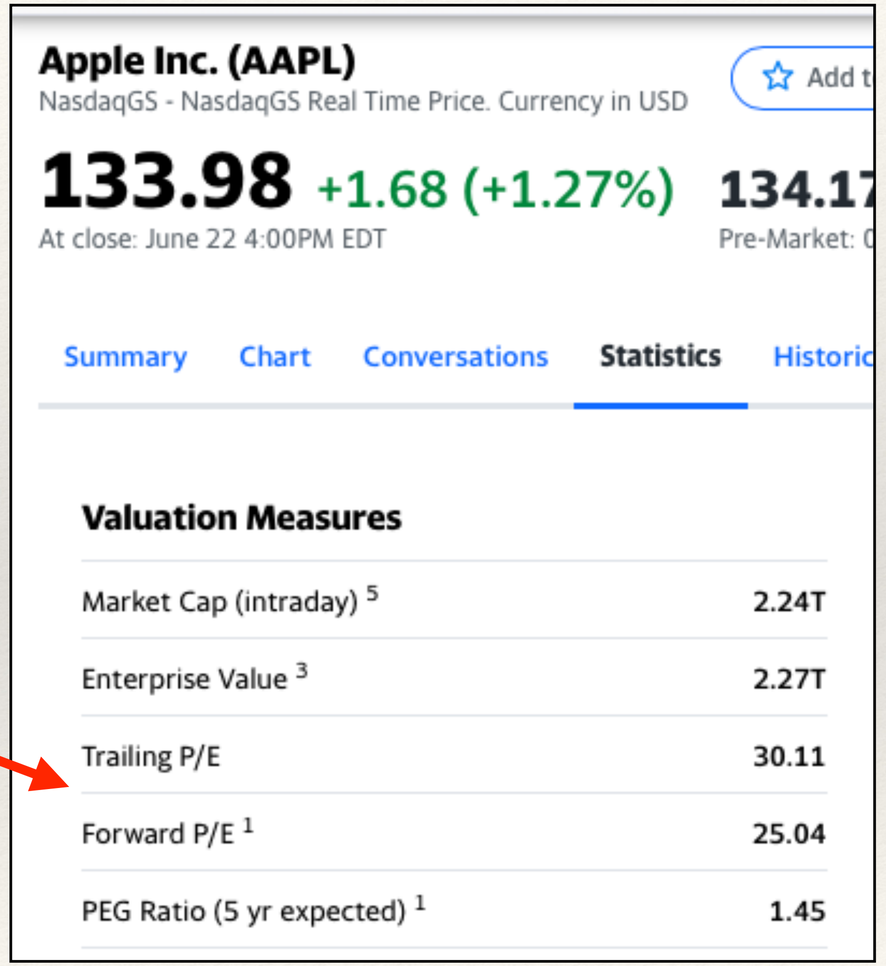
EBITDA vs Discount Rate?

- If we look at the Trailing Twelve Months (TTM) FCF, the implied EV is just over $2T
- The current market capitalisation is only 17% higher and we are well into Q3, so this may not be that far out of line!

	26 Sep 2020		TTM
Free Cash Flow	US$73,365,000		US$90,473,000.00
Enterprise Valuation	US$1,623,486,833	US$1,623,486,833	US$2,002,068,073.5
	23 June 2021	26 Sep 2020	23 June 2021
Weighted Average No of Shares	17528214	17528214	17528214
Share Price	133.98	108.22	133.98
Market Value of Equity	US$2,348,430,112	US$1,896,903,319	US$2,348,430,112
Market Premium	44.65%	16.84%	17.30%

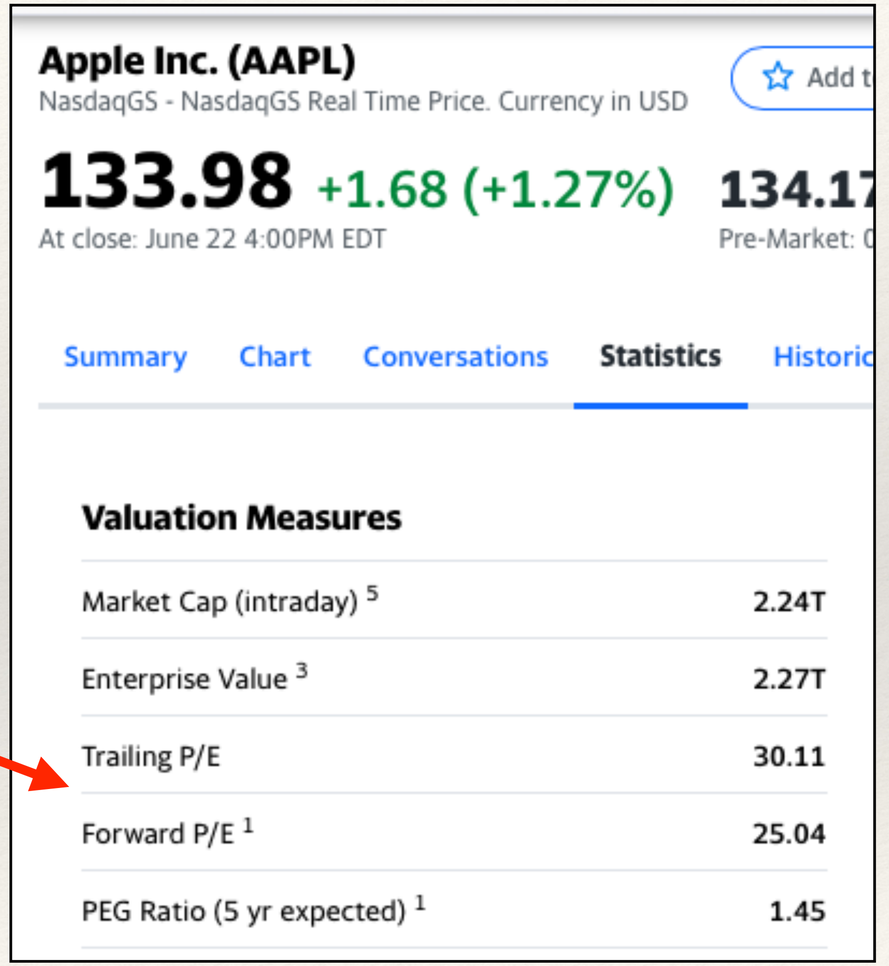
EBITDA vs Discount Rate?

- Lets go back to Profit Ratios, P/E
- In 2020 Apple's fully diluted EPS was $3.28
- The consensus forecast for Apple earnings in 2021 is $4.45, an increase of 35.7%
- The trailing and forward PE are 30.11 and 25.04 respectively.
- The Forward P/E is looking to 2022



EBITDA vs Discount Rate?

- Unfortunately this does not tell us anything about VALUE only PRICE - and the two are very different
- What IS the right PE ratio with which to value Apple?



EBITDA vs Discount Rate?

- And perhaps that is the problem…
- The use of EBITDA multiples or PE multiples depend on price and tell us nothing about intrinsic value
- If you think the price is too high or two low, you are entitled to your relative opinion…
- …but the question I would ask is what is the basis for that opinion?

EBITDA vs Discount Rate?

- If we use Discount Rates we are valuing the risk associated with the cash flow - a measure of intrinsic value
- We may be prepared to PAY more - or we may not and that depends on our opinion but the valuation is based on a risk calculation and cash (not profits)

EBITDA vs Discount Rate?

- Of course we can use a comparative PE or EBITDA multiple to calculate a value, although peer group selection is always problematic
- Or, we can calculate discount rates to arrive at an intrinsic value
- What this tells us at the end of the day, depends then on our perception of price and value

EBITDA vs Discount Rate?

- Let me end by returning to Mark's question:
- "In a nutshell, what is the formula you would use to value a company?"
- My preference would be for discount rates over profit multiples as I think the latter gives a better indication of intrinsic value whereas profit multiples are more subjective.

EBITDA vs Discount Rate?

- But we have seen that this is a long answer to a short question and the more you look into it, the more complex the problem becomes.
- And maybe that highlights a different problem: how can you get a short answer to a short question…from an investment banker?

Company Valuation: EBITDA vs Discount Rate?