IN PRACTICE WEBCAST: OPTIMAL FINANCING MIX – RELATIVE ANALYSIS

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Optimal Debt Ratio: The Me Too Approach

- In the cost of capital and adjusted present value approaches, you use an intrinsic approach to estimate the optimal mix of debt and equity. Put differently, you use a company's capacity to generate earnings/cash flows on a consistent basis, to determine how much it can borrow.
- While that may seem like the rational way of approaching this question, most companies don't use these approaches. Instead, they look at how other companies in their "peer" group, often decided by analysts and investors, are financing themselves and try to stay as close as they can to that peer group financing mix.
- Even their choice of debt metrics can be driven by what analysts and investors focus on, whether it be a book debt ratio or debt as a multiple of EBITDA.

Step 1: Define your peer group

- Focus: In relative analysis, your focus is on finding what similar companies carry as debt, and to make this judgment, you have to define "similar".
- The Sector: For better or worse, in most cases, "similar" is defined as other companies in the same sector as you are.
- The Geography: To the extent that constraints on capital access and tax treatment can vary across geographies, "similar" is often defined as companies in the same geographical market.
- Other criteria: If there are enough firms that make it through the sector and geographic screens, you can add other ones including company size and growth potential.

Amgen: Peer Group

Johnson & Johnson (NYSE:JNJ)	**Criteria for peer group** 1. Pharmaceutical or Biotech company 2. Publicly traded 3. In the US 4. With market cap >$10 billion
Pfizer Inc. (NYSE:PFE)	
AbbVie Inc. (NYSE:ABBV)	
Merck & Co., Inc. (NYSE:MRK)	
Amgen Inc. (NasdaqGS:AMGN)	
Gilead Sciences, Inc. (NasdaqGS:GILD)	
Bristol-Myers Squibb Company (NYSE:BMY)	
Eli Lilly and Company (NYSE:LLY)	
Celgene Corporation (NasdaqGS:CELG)	
Biogen Inc. (NasdaqGS:BIIB)	
Vertex Pharmaceuticals Incorporated (NasdaqGS:VRTX)	
Zoetis Inc. (NYSE:ZTS)	
Regeneron Pharmaceuticals, Inc. (NasdaqGS:REGN)	
Alexion Pharmaceuticals, Inc. (NasdaqGS:ALXN)	
Incyte Corporation (NasdaqGS:INCY)	
BioMarin Pharmaceutical Inc. (NasdaqGS:BMRN)	
Nektar Therapeutics (NasdaqGS:NKTR)	
Alnylam Pharmaceuticals, Inc. (NasdaqGS:ALNY)	
Bioverativ Inc. (NasdaqGS:BIVV)	
bluebird bio, Inc. (NasdaqGS:BLUE)	

Step 2: Choose your debt metric

- Book value versus Market Value: In intrinsic analysis, like the cost of capital approach, it is the market value that wins every time. When doing me-too capital structure, book value may end up winning if this is how other CFOs assess financial leverage, and analysts compute it.
- Capital versus Cash Flow: In intrinsic analysis, the debt is tracked as a percent of capital. The me-too analysis is agnostic about metric, using whatever the decision makers in companies in the sector use to measure debt load.

Choice of metric

- With pharmaceutical companies, EBITDA is not a heavily used metric and at least three of the companies in this list have negative EBITDA.
- The choice then becomes book or market value. With drug companies, the mistreatment of their biggest cap ex (R&D) leads to misstated book values. So, we will use market value.
  - Chosen metric: Total Debt/ (Total Debt + Market Cap)
- We have assumed that book debt is close to market value of debt for the companies on this list.

Peer Group Debt Metrics

	Book Value		Market Value		
Company Name	Debt/Equity	Debt/Capital	Debt/Equity	Debt/Capital	Debt/EBITDA
Johnson & Johnson (NYSE:JNJ)	47.82%	32.35%	10.15%	9.22%	1.46
Pfizer Inc. (NYSE:PFE)	72.60%	42.06%	21.03%	17.37%	2.10
AbbVie Inc. (NYSE:ABBV)	569.61%	85.07%	21.10%	17.42%	3.12
Merck & Co., Inc. (NYSE:MRK)	70.65%	41.40%	18.07%	15.30%	2.12
Amgen Inc. (NasdaqGS:AMGN)	140.02%	58.34%	27.32%	21.46%	2.86
Gilead Sciences, Inc. (NasdaqGS:GILD)	186.07%	65.04%	35.69%	26.30%	2.47
Bristol-Myers Squibb Company	67.81%	40.41%	7.46%	6.94%	1.40
Eli Lilly and Company (NYSE:LLY)	90.87%	47.61%	16.77%	14.36%	2.08
Celgene Corporation (NasdaqGS:CELG)	228.84%	69.59%	22.31%	18.24%	2.66
Biogen Inc. (NasdaqGS:BIIB)	47.08%	32.01%	9.48%	8.66%	0.88
Vertex Pharmaceuticals Incorporated	27.61%	21.64%	1.42%	1.40%	1.25
Zoetis Inc. (NYSE:ZTS)	286.68%	74.14%	15.72%	13.58%	2.91
Regeneron Pharmaceuticals, Inc. (NasdaqGS:REGN)	11.45%	10.27%	1.98%	1.94%	0.32
Alexion Pharmaceuticals, Inc.	36.33%	26.65%	11.83%	10.58%	2.20
Incyte Corporation (NasdaqGS:INCY)	1.47%	1.45%	0.13%	0.13%	NA
BioMarin Pharmaceutical Inc.	41.44%	29.30%	7.85%	7.28%	NA
Nektar Therapeutics	293.71%	74.60%	1.87%	1.84%	NA
Alnylam Pharmaceuticals, Inc.	1.70%	1.67%	0.25%	0.25%	NA
Bioverativ Inc. (NasdaqGS:BIVV)	0.00%	0.00%	0.00%	0.00%	0.00
bluebird bio, Inc. (NasdaqGS:BLUE)	13.59%	11.96%	1.51%	1.49%	NA

Step 3: Compare yourself to what is typical for the sector

- Average: The simple average across companies the sector can be defined as ”typical”. It is simple and intuitive, but it can also be skewed by outliers.
- Median: When outliers are an issue, the middle of the peer group or the median can be a better proxy for “typical”.
- Quartiles: More generally, you can compute ranges based upon quartiles or deciles, especially if there is a lot of variability across the sector.

Comparison to "Typical"

	Book Value		Market Value		
	Debt/Equity	Debt/Capital	Debt/Equity	Debt/Capital	Debt/EBITDA
Amgen Inc.	140.02%	58.34%	27.32%	21.46%	2.86
Average	**111.77%**	**38.28%**	**11.60%**	**9.69%**	**1.85**
Median	**57.82%**	**36.38%**	**9.82%**	**8.94%**	**2.10**
First Quartile	**24.11%**	**19.22%**	**1.78%**	**1.75%**	**1.32**
Third Quartile	**151.53%**	**60.01%**	**18.81%**	**15.82%**	**2.57**

Looks slightly over levered on a debt to capital basis, if you use market value or Debt/EBITDA

Step 4: Control for differences

- If your company has a higher or lower debt ratio than is "typical" for the sector, the naïve conclusion that it is over or under levered follows.
- When you make that judgment, you are assuming that your firm's debt fundamentals are similar to that of the typical peer group company. These fundamentals include the items in the debt trade off:
  - Marginal tax rate faced by the company (tax benefits)
  - Insider/activist holdings (disciplinary costs)
  - Volatility in earnings (bankruptcy cost)
  - Asset visibility (agency costs)
- You can control for these differences subjectively or use statistical tools (like regressions).

A Debt Ratio Regression

- Regressing the debt to capital ratio (in market value terms) against EBITDA/EV (as a measure of cash flows available to service debt) and Standard deviation in Earnings (as a measure of uncertainty), here is what we get:
  - Debt/Capital = 0.0499 + 1.48 (EBITDA/EV) – .0559 (Std Deviation in Earnings)
    (5.39) (2.21) **R Squared = 61.4%**
- Plugging in Amgen's numbers for EBITDA/EV (7.51%) and standard deviation in earnings (39.2%), here is what we get:
  - Debt/Capital = 0.0499 + 1.48 (.0751) – .0559 (.392) = .1392 or 13.92%
  - Amgen is over levered at a debt to capital ratio of 21.46%

Step 5: Expand your assessment

- Since entire sectors can sometimes get over or under levered, you may want to expand your analysis by looking at a broader definition of sector, either by going across geographies or by defining your business more broadly.
- You can even expand your assessment to the entire market, and look at whether your company is over or under levered, relative to the market.

The Bottom Line

- <u>Your end game</u>: When you make an assessment of whether your firm has too much or too little debt, relative to a peer group, you are determining whether your company has too much or too little debt, relative to the companies in that group.
- <u>The twist</u>: If your peer group is filled with companies that have borrowed too much money, your company may have too little debt, relative to its sector, while having too much debt, given its fundamentals.