Paper 4: An Analysis of Coca Cola

Ian Clark

The Discount Rate

To choose the discount rate, I have opted to use the ten-year treasury as the guide. I am choosing this rate for the following: I feel that the ten-year treasury (and to a large extent the Federal Reserve's actions in relation to it) allow a rational layman to reasonably estimate general economic conditions. So, my current Discount Rate will be 1.92 as of today. However, since the ten-year treasury rate has been so volatile, I have decided to use the range of $\{1.90 \rightarrow 1.99\}$ for further calculations, so to give a more reasonable estimate.

Market Risk Premium

In determining the Market Risk Premium, I have chosen to follow the implied approach. Because I have chosen this method of determining the MRP, I must establish the following: current dividend yield of 1.91.

Now, the expected earnings growth and the Expected Return on Stocks must be estimated using these formulas:

$$ExpectedEarningsGrowth = Productivity + LaborGrowth + Inflation$$

$$ExpectedReturnOnStocks = CurrDivYield + ExpectedEarningsGrowth$$

$$MarketRiskPremium = ExpectedReturnOnStocks - RiskFreeRate$$

Firstly, I will establish Inflation as the $\%\Delta CoreCPI$. I have chosen the Core CPI because it better covers the current economic state. The core CPI is the CPI less food and energy and because of the volatility within the energy market, specifically due to the competition introduced within the oil market. Moreover, I don't feel the in-elasticity introduced by food in the CPI is necessary. So, we can assert that $\Pi = 1.8$.

Next is Labor Growth and Productivity. I don't have any other fancy metrics for these and Professor Sweet's reasoning behind his numbers seemed solid, so I will follow those. So, $LaborGrowth = .5\%$ and $Productivity = 2\%$.

So, with our newly established variables, it can be concluded that:

$$ExpectedEarningsGrowth = .02 + .005 + .18 = .43$$

$$ExpectedReturnOnStocks = 0.019 + 0.043 = .062$$

$$MarketRiskPremium = .062 - .0191 = .0429$$

Determination of Beta

Revenue Sensitivity

As surprising as this sounds, Coca-Cola is the second-most recognized word in the world, following OK. Moreover, there can be argued a great in-elasticity between Coke and other soft drink products because consumers of Coke are unlikely to switch to Pepsi and vice-versa. As such, it is fair to assert that within recession, Coca-Cola can continue to prosper. Because of this, it is a fair assertion that Coca-Cola's stock will be below 1.

Operating Leverage

Coca-Cola has high fixed costs mostly due to research & development and production. As we can see in the following two tables, Coca-Cola ranks lower than the median by a significant margin in both Gross and Net margins which can imply that the stock will be below 1 in terms of Beta.

Gross Margin Standard Deviation		S&P 500	KO UN Equity	Rank
Median		2.88	1.73	20.6
90 Percentile		8.93		
10th Percentile		1.00		

Net Margin Standard Deviation		S&P 500	KO UN Equity	Rank
Median		3.26	1.46	14.6
90 Percentile		11.42		
10th Percentile		1.11		

Financial Leverage

As the table below depicts, Coca-Cola has a significantly high debt in relation to the S&P 500. There has been a trend of estimating the beta to be below one and I do not think this high debt will do much to change it. Even though, as depicted below, Coca-Cola has massive amounts of debt.

Debt to Equity		S&P 500	KO UN Equity	Rank
Median		61.90	111.71	75.6
90 Percentile		200.70		
10th Percentile		13.60		

CAP-M K_e

Before any calculations are completed, I would assume that Coca-Cola's beta is in the range of $\{0.5 \rightarrow 0.7\}$. However, we're not not (entirely) in the business of estimations, so I will assert that beta will be 0.7. Well below 1, but not too low.

$$K_e = 1.91 + .7 * 1.91 = 4.98\%$$

Paper 5: A Valuation of Coca Cola

Gordon Growth Model

The biggest assumption here will be that dividends growth is relative to the growth in earnings. I am making this decision to calculate it this way because I am more interested in the long term growth of a company. So, our long term growth will be the same as our expected earnings from paper four, or 4.3%.

$$Value = 1.32 * (1 + 0.043)/(0.0498 - 0.043) = \$202.2467$$

Capitalized Earnings Model

Given my justification for Core CPI in paper 4, I will choose to use a 2% for inflation, as it is nearer to my original estimate. From our calculations, we can assert that Coca-Cola is undervalued by nearly 25% from its 24 April 2015 closing price of 41.04.

$$Value = 1.58/(4.98\% - 2\%) = 53.02$$

H Model

Given our previous estimations, we have two remaining estimates: H and Short-term growth. For the short- term growth, I have opted to use the PEG ratio.

$$ShortTermGrowth = (41.04/1.58)/4.22 = 6.035\%$$

$$Value =$$
$$(1.32 * (1 + 0.043) + 1.32 * 3 * (0.06035 - 0.043))/(0.0498 - 0.043) = \$212.56$$

Conclusions

Needless to say, I don't think that the Gordon Growth Model offers a viable stock price. The Capitalized Earnings Model, however, offers a reasonable

price, and a price that is undervalued and warrants a purchase. With the H-model, as well, one would certainly purchase at that price.

References

[1] Yahoo! Finance, $http://finance.yahoo.com/q?s=KO$.

[2] Yahoo! Finance, $http://finance.yahoo.com/q?s=SPY$.

[3] Bureau of Labor Statistics, $http://www.bls.gov/news.release/cpi.nr0.htm$.