Nike Cost of Capital (WACC)

SEE READING:

NIKE, INC. COST OF CAPITAL

Concepts and Formulas to Review Prior to Case

Cost of Capital = Weighted Average Cost of Capital

WACC = $D/V\ r_D\ (1-T) + E/V\ r_E$

- D = market value of debt
- E = market value of equity

- V = total market value of debt and equity = D + E

- D/V = proportion of debt
- $r_D\ (1-T)$ = after-tax cost of debt

- E/V = proportion of equity
- r_E = cost of equity

Cost of Debt

"Higher is risk, higher is expected return"

Debt is less risky than equity.

Why? Bondholders get paid back first.

Thus, the Cost of Debt is lower than Cost of Equity.

Interest on Debt is tax deductible.

Cost of debt can be determined in two ways:
- The average yield on the company's bonds

- Cost of debt = risk-free rate (Treasury) + Credit Risk premium
  - Pick the risk-free rate that has the length of the firm's debt
  - Credit risk premium you add depends on bond rating

Example of Cost of Debt

Suppose three years ago, IBM issued a 10-year bond with a face value of $1,000. The bond carries a coupon of 6% paid *semiannually*. An investor would be able to purchase the bond today at a market price of $960. The company's tax rate is 35%. Use your financial calculator to estimate IBM's cost of debt (an investor's yield) on this bond. What is IBM's cost of debt (ignoring tax savings). What is the company's after-tax cost of debt on this bond if the company's tax rate is 35%?

N = 7*2= 14, PV = -960, PMT = (.06*1000)/2 =30, FV = 1000;

I%/YR or cost of debt = 6.73%

After-tax cost of debt = 6.73% *(1- .35) **= 4.37%**

OR Similarly a faster, more reliable technique

Suppose IBM's average debt maturity is 7 years and that IBM's debt credit rating is AA. The company's tax rate is 35%. An analyst looks up the Risk-free rate for 7-year Treasuries and finds the risk-free yield or cost is 4%. The analyst looks up what the average credit risk premium is for companies rated AA with 7-year corporate debt and finds the premium is 2.73%.

What is IBM's cost of debt (ignoring tax savings) and after-tax cost of debt on this bond if the company's tax rate is 35%?

Cost of debt = risk-free rate (Treasury) + Credit Risk premium = 4 + 2.73 **= 6.73%**

After-tax cost of debt = 6.73% *(1- .35) **= 4.37%)**

Cost of Equity = CAPM

"Higher is risk, higher is expected return"

Stock is riskier than debt

The risk of equity depends on operating risk & financial risk (debt)

The most widely used model for the cost of equity is the CAPM or Capital Asset Pricing Model

CAPM posits that equity risk is priced relative to the risk-free rate and the return on the market

The risk of a stock is captured by its "market" or systematic risk, which is called "beta"

Cost of Equity = CAPM

The higher is beta, the higher is the expected return or cost of equity

- B_E = beta equity (beta of the stock market is 1)
- r_f = risk-free rate or Treasury
  (use the 10 to 30 year Treasury rate)
- R_M = expected return on the stock market
  (standard is the S&P500)
- $(R_M - r_f)$ = expected excess return on the market
  (5.5% to 7.5% most often used)

Cost of equity (CAPM) = $r_f + B_E (R_m - r_f)$

The CAPM: Beta

Beta should be forward looking or expected

- ◦ Beta = covariance of stock returns with market returns / variance of the market.

- ◦ Beta = slope from regression.

  - ◦ Regress monthly (or weekly) stock return on monthly (or weekly) market returns.

- ◦ Forward looking betas not observable

- ◦ We can look at different sample sets of the historical beta a guide

- ◦ We can also assess changes in risk in the company and industry in which it operates
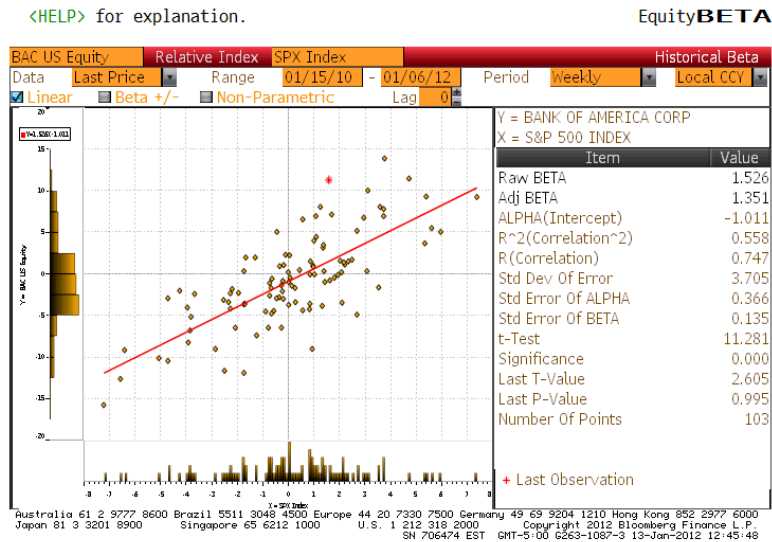
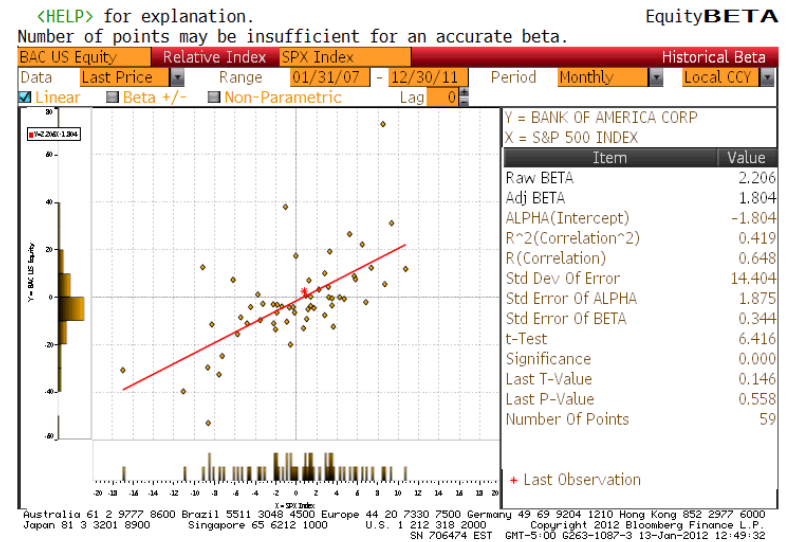# The CAPM continued: Beta

Compromises on beta historical proxy:

- Weekly or monthly, 2 or 5 years

- Raw or adjusted for "mean reversion"

- Adjusted beta = (raw beta*.67) + (1*.33)

Examples of two beta regressions

BAC, 12/11 2 YEAR WEEKLY   BAC, 12/11 5 YEAR MONTHLY

Cost of equity = $r_f + B_E(R_m - r_f)$ Two Analysts

ANALYST 1 COST OF EQUITY BAC

- ☐ Analyst 1 is working with an equity only, long term application and has selected the 10 year Treasury rate of 2% and a market risk premium of 6%. Analyst 1 believes that BAC risk profile will improve in the future and uses the 2-year beta after it is adjusted for reversion to the mean of 1 (.67 raw / .33 mean). Calculate the cost of equity according to Analyst 1.

ANALYST 2 COST OF EQUITY BAC

- ☐ Analyst 2 is working with an equity only, long term application and has selected the 10 year Treasury rate of 2% and a market risk premium of 6%. Analyst 2 continues to be concerned about the future of the banking industry and particularly with BAC's position relative to peers. Analyst 2 selects the 5-year monthly raw regression. Calculate the cost of equity according to Analyst 2.

Two Analysts you do the work

Remember Analyst 1 chooses 2-year Adjusted beta

Remember Analyst 2 chooses 5-year Raw beta (regular equity beta)

The two analysts agree on the risk-free and the expected market premium

Analyst 1 CAPM =

Analyst 2 CAPM =

These two analysts must have very different views of the future risk of the banking industry and this company within the banking industry

  Analyst 1 CAPM: 2+1.35*6 = **10.10**

  Analyst 2 CAPM: 2 + 2.206*6 = **15.24**

Example of Cost of Capital or WACC

◦ Current Treasury Rates & Risk Premiums & Estimated Market Risk premium

  ◦ 5 year – 3.86%, 10-year = 4.27%, 20-year = 4.72%

  ◦ CRP: AAA = 1.05%, AA = 1.24%, A = 1.43%, BBB=1.62%

  ◦ $(R_M - r_f)$ = expected excess return on the stock market = 7%.

Suppose Walmart's average maturity of debt is about 10 years, the company's debt is rated AA, and the company's tax rate is 34.7%. Also, Walmart's beta is .80. (You may use this beta rather than adjust it.) Wal-Mart's capital structure is 87.59% equity and 12.41% debt. What is Walmart's WACC or cost of capital?

  ◦ 1. Estimate the after-tax cost of debt: $r_D * (1 - T)$= 5.51(1-.347) = **3.6%**

  ◦ 2. Estimate the cost of equity: r_E = 4.27 + (.8*7) = **9.87%**

  ◦ 3. Weight by .1241 and .8789:   **WACC**= **9.09%**

Nike Inc: Cost of Capital Case NKE current price = $42.09

July 2001 Portfolio Manager Ford, who managed a large cap value fund, noticed Nike share price had declined significantly year to date and was considering adding Nike stock to the portfolio. In 2000 and 2001 the fund has significantly outperformed the S&P500

Reasons for the stock price decline include:
- Market share decline of 6% over three years
- Low revenue growth past several years
- Low income growth past year (1.8%)
- Recent supply chain issues; Adverse currency effects

Nike- Background information

Management, though, has recently announced a strategy for revitalizing the company.

To boost revenue, develop more athletic shoe products in mid-priced line, a segment recently overlooked

Continue to push the extremely well performing *apparel* product line

Management believes revenue growth can increase from most recent 5.5% to target of 8-10% going forward

Management states it will exert better cost control so that earnings would grow faster than revenue (above 15%)

Analysts' Reactions, NIKE = $42.09

Mixed.

Some bullish, saying buy NIKE.
- ◦ Significant growth opportunities in apparel line.
- ◦ Significant growth opportunities abroad.
- ◦ Stock price will rise above $42.09 and provide a good return.

Lehman issued a strong buy.

Others somewhat bearish, saying hold NIKE.
- ◦ Management's targets too aggressive.
- ◦ The revitalization problem is good but they can't achieve that much.

UBS and CSFB recommended a hold.

Ford's 10-year DCF forecast

Ford runs her own NIKE stock price model.

This is called a Discounted Cash Flow.

Ford needs the WACC or cost of capital to discount the future CFs.

Ford forecasts revenue growth of 6 – 7%.

Ford forecasts some cost declines over time.

Assumes Depreciation = CAPEX.

Uses growing perpetuity assumption for ongoing value of firm

$$TV = FCF*(1+g)/(WACC-g)$$

Ford's Assumptions: I.S., terminal g, WACC not yet computed

Exhibit 2

Nike, Inc.: Cost of Capital

Discounted Cash Flow Analysis

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Assumptions:										
Revenue growth (%)	7.0	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0
COGS/sales (%)	60.0	60.0	59.5	59.5	59.0	59.0	58.5	58.5	58.0	58.0
SG&A/sales (%)	28.0	27.5	27.0	26.5	26.0	25.5	25.0	25.0	25.0	25.0
Tax rate (%)	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0
Current assets/sales (%)	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0
Current liabilities/sales (%)	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
Yearly depreciation and capex equal each other.										
Cost of capital (%)	12.00									
Terminal growth rate (%)	3.00									

Ongoing Value of Firm End of Forecast Period

Free cash flow forecast end of forward year 10 = 1,572.7

Terminal growth = 3%
- This assumption seems reasonable enough
- 3% allows for 1% real growth and 2% inflation

WACC not yet calculated – it is the job of the new analyst named Cohen.

Ford has shown stock price for WACC between 8% and 12%.

First run assume WACC = 12%.

TV = _____

- TV = 17,998.68

DCF if use default WACC of 12%

Discounted Cash Flow
(in millions of dollars except per-share data)

Operating income	$ 1,218.4	$ 1,351.6	$ 1,554.6	$ 1,717.0	$ 1,950.0	$ 2,135.9	$ 2,410.2	$ 2,554.8	$ 2,790.1	$ 2,957.5
Taxes	463.0	513.6	590.8	652.5	741.0	811.7	915.9	970.8	1,060.2	1,123.9
NOPAT	755.4	838.0	963.9	1,064.5	1,209.0	1,324.3	1,494.3	1,584.0	1,729.9	1,833.7
Capex, net of depreciation	-	-	-	-	-	-	-	-	-	-
Change in NWC	8.8	(174.9)	(186.3)	(198.4)	(195.0)	(206.7)	(219.1)	(232.3)	(246.2)	(261.0)
Free cash flow	764.1	663.1	777.6	866.2	1,014.0	1,117.6	1,275.2	1,351.7	1,483.7	1,572.7
Terminal value										17,998.3
Total flows	764.1	663.1	777.6	866.2	1,014.0	1,117.6	1,275.2	1,351.7	1,483.7	19,571.0
Present value of flows	$ 682.3	$ 528.6	$ 553.5	$ 550.5	$ 575.4	$ 566.2	$ 576.8	$ 545.9	$ 535.0	$ 6,301.2

Enterprise value	$ 11,415.4
Less: current outstanding debt	1,296.6
Equity value	$ 10,118.8
Current shares outstanding	271.5
Equity value per share	$ 37.27

Current share price: $ 42.09

WACC and target price ...Ford needs Cohen to calculate WACC

Sensitivity of equity value to discount rate:	
Discount rate	**Equity value**
8.00%	$ 75.80
8.50%	67.85
9.00%	61.25
9.50%	55.68
10.00%	50.92
10.50%	46.81
11.00%	43.22
11.17%	**42.09**
11.50%	40.07
12.00%	37.27

Cohen makes errors

1. Cohen underestimates the cost of debt.

2. Cohen overestimates the proportion of debt.

3. How does Cohen make these errors?

4. The analyst does not yet know how to use financial data sets.

5. Thus, the analysts looks things up on the historical financial statements instead of current market numbers.

Cohen's wrong WACC

1. Cohen, using poor methods, says WACC = 8.36%.

2. If the WACC were 8.36%, the stock value or what we call target price would be $70.

3. NIKE currently trades at $42.09.

4. [(70 – 42.09)/42.09] * 100 = 66.31%.

5. If the stock is really worth $70, then once the price corrects the investor would gain 66.31%!

6. If so, this is a very undervalued stock.

Corrections to WACC

Ford returns from her meeting and looks over the assistant Cohen's work. Out comes the red pen and instructions to re-work the WACC.

- D = 1,295.7
- NIKE stock price = 42.09, and current shares = 271.5
- E = _____
- V = D + E = _____
- D/V = _____
- E/V= _____

$$E = 11{,}427.44 \qquad V = 12{,}723.14 \qquad D/V = .1018 \qquad E/V = .8982$$

NIKE debt in the market

20 years to maturity

6.75% semiannual yield

Slight discount

Current Yield on Publicly Traded Nike Debt*
Coupon   6.75% paid semi-annually
Issued   07/15/96
Maturity   07/15/21
Current Price $ 95.60

Cost of Debt at NIKE

Cost of debt must be higher than 4.2%. Run the YTM for r_D.

FV = 1000

PV = -956

N = 20*2=40 (bond matures in 20 years)

PMT = 1000*.0675/2 = 33.75

I/YR = _____*2 = _____

- ◦ cost of debt = 7.17

Cost of Equity from CAPM

Intermediate Treasury = risk-free rate = 5.74%

Geometric market risk premium, 1926-1999 = 5.9%

Implies expected return on the market = 5.74 + 5.9 = 11.64

$r_E = r_f + beta (r_M - r_f)$

$r_E = 5.74 + [.8*(11.64 - 5.74)$

$r_E = 5.74 + (.8*5.9)$

so = r_E = _____

10.46

Calculate the Corrected WACC

Put it all together

WACC = D/V r_D (1-T) + E/V r_E

WACC = .1018* 7.17% *(1-.38) + .8982 *10.46%

WACC = _____%   WACC = 9.85%

What does this WACC imply about NKE stock price?

The stock value, according to Ford's model is about $53

 [(53 – 42.09)/42.09] * 100 = 25.92%

Yes, Ford will add NIKE to her value fund

She concludes NIKE is a good buy

Ford estimates the correct NIKE Value is $53 (not $70)

WACC and target price ...Remember Values from Ford

Sensitivity of equity value to discount rate:

Discount rate	Equity value
8.00%	$ 75.80
8.50%	67.85
9.00%	61.25
9.50%	55.68
10.00%	50.92
10.50%	46.81
11.00%	43.22
11.17%	**42.09**
11.50%	40.07
12.00%	37.27