Chapter 8

Practice Problems

1. Gumby Industries plans to finance the construction of a new plant by selling 10-year, $10,000 face value bonds paying 10% semi-annual coupons. The CFO estimates that these bonds will sell for $8,853. If the firm faces a 34% tax rate, what is its after-tax cost of debt?
2. Jetson Inc. wishes to issue 100,000 shares of common stock, which are expected to sell for $50 per share. The stock will pay annual dividends (beginning in one year) that are expected to grow at a constant rate of 5% per year, and the first dividend will be $2 per share. Using the stock price valuation formula for a constant growth stock, solve for the discount rate to calculate the cost of equity. Assume that your calculated cost of equity is the "truth", and that you would obtain the same estimate under the CAPM assumptions. If the risk free rate is 3%, and the return on the market is 8%, then what is the implied beta of Jetson Inc.?
3. Given the following information for Panda Corp. (as of the end of 2015), what is the company's WACC?
    - The firm has 1000 bonds outstanding with $1000 par value, 6% annual coupons, current YTM of 8% and 10 years to maturity.
    - The firm has 4,000 shares of prefered stock outstanding, paying $13 annual dividends, and currently trading at $130 per share.
    - The firm has 50,000 shares of common stock outstanding, issued in 2000 for $10 per share, and current trading at $20 per share. The next dividend is expected to be $2, and dividends are expected to grow at a constant rate of 4% forever. Again, assume you can solve for the discount rate using the constant growth stock valuation formula.
    - The firm is in the 30% tax bracket.
4. Texaco's current beta is 0.75, it has a debt-to-equity ratio of 1, and it faces a tax rate of 42%. What will the new Beta of Texaco be if the managers double Texaco's debt-to-equity ratio?
5. You plan to form a new company that will consist of an airline division (30% of total capital), a car division (45%), and a division which makes those little plastic tips on the end of shoe laces (25%). You calculate unlevered betas for each industry (in order) of 1.20, 1.40, and .80. Your company will be financed with 40% debt and 60% equity. What will your company's beta be if the tax rate is 40%?
6. As the CFO of P&G, you are considering building a potato chip factory. You determine that you will use a D/E ratio of 1, and that the after-tax cost of debt is 5%. To get the cost of equity for the factory, you plan to use information from a comparable firm, Frito Lay. The beta on Frito lay's stock is 1.5, and its D/E is 0.7. If the T-bond rate is 8%, the market risk premium is 5.5%, and the tax rate for both P&G and Frito Lay is 40%, what is the project's WACC?
7. Taco Rico Inc. has the following optimal (and therefore planned) capital structure: 40% debt, 10% preferred stock, and 50% common equity. Its tax rate is 40%. Bonds outstanding are currently selling for $938.55: they mature in 10 years, pay an annual coupon of 9%, and have a face value of $1,000. The beta of the company's common stock is 1.6, the risk-free rate is 6%, and the market risk premium (MRP) is 5.5%. The current market price of preferred stock is $40, and the preferred dividend is $4.00. What is Taco Rico Inc's WACC?

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1. Gumby Industries plans to finance the construction of a new plant by selling 10-year, $10,000 face value bonds paying 10% semi-annual coupons. The CFO estimates that these bonds will sell for $8,853. If the firm faces a 34% tax rate, what is its after-tax cost of debt? **r_d = 8.158%**

2. Jetson Inc. wishes to issue 100,000 shares of common stock, which are expected to sell for $50 per share. The stock will pay annual dividends (beginning in one year) that are expected to grow at a constant rate of 5% per year, and the first dividend will be $2 per share. Using the stock price valuation formula for a constant growth stock, solve for the discount rate to calculate the cost of equity. Assume that your calculated cost of equity is the "truth", and that you would obtain the same estimate under the CAPM assumptions. If the risk free rate is 3%, and the return on the market is 8%, then what is the implied beta of Jetson Inc.? **β = 1.20**

3. Given the following information for Panda Corp. (as of the end of 2015), what is the company's WACC?
    - The firm has 1000 bonds outstanding with $1000 par value, 6% annual coupons, current YTM of 8% and 10 years to maturity.
    - The firm has 4,000 shares of preferred stock outstanding, paying $13 annual dividends, and currently trading at $130 per share.
    - The firm has 50,000 shares of common stock outstanding, issued in 2000 for $10 per share, and current trading at $20 per share. The next dividend is expected to be $2, and dividends are expected to grow at a constant rate of 4% forever. Again, assume you can solve for the discount rate using the constant growth stock valuation formula.
    - The firm is in the 30% tax bracket.

    Answer: WACC = 10.08%

4. Texaco's current beta is 0.75, it has a debt-to-equity ratio of 1, and it faces a tax rate of 42%. What will the new Beta of Texaco be if the managers double Texaco's debt-to-equity ratio? **β = 1.03**

5. You plan to form a new company that will consist of an airline division (30% of total capital), a car division (45%), and a division which makes those little plastic tips on the end of shoe laces (25%). You calculate unlevered betas for each industry (in order) of 1.20, 1.40, and .80. Your company will be financed with 40% debt and 60% equity. What will your company's beta be if the tax rate is 40%? **β = 1.666**

6. As the CFO of P&G, you are considering building a potato chip factory. You determine that you will use a D/E ratio of 1, and that the after-tax cost of debt is 5%. To get the cost of equity for the factory, you plan to use information from a comparable firm, Frito Lay. The beta on Frito lay's stock is 1.5, and its D/E is 0.7. If the T-bond rate is 8%, the market risk premium is 5.5%, and the tax rate for both P&G and Frito Lay is 40%, what is the project's WACC? **WACC = 11.15%**

7. Taco Rico Inc. has the following optimal (and therefore planned) capital structure: 40% debt, 10% preferred stock, and 50% common equity. Its tax rate is 40%. Bonds outstanding are currently selling for $938.55: they mature in 10 years, pay an annual coupon of 9%, and have a face value of $1,000. The beta of the company's common stock is 1.6, the risk-free rate is 6%, and the market risk premium (MRP) is 5.5%. The current market price of preferred stock is $40, and the preferred dividend is $4.00. What is Taco Rico Inc's WACC? **WACC = 10.80%**