FIN325 - Homework 5
Due : November 26

Problem 1 (70pts)

Consider a project whose EBIT, each period and for ever, is either $50M or $100M. There is a 20% chance that EBIT is $50M each period. The project is financed in part by an interest-only perpetuity with face value D with an interest rate of 7%. The rest of the financing is equity. Investment is $20M each period, as is depreciation. The company pays $\tau = 30\%$ in income taxes. Equity holders require a 10% return when $D = 0$.

1. What is the value of the corporation when $D = 0$? (In other words, what is V^U?)

2. What is the highest possible face value (D_{max}) of the perpetuity such that the perpetuity is risk free?

3. For face values D ranging from 0 to D_{max} plot on one chart the expected return on equity and WACC.

4. Produce the same graph for the case where $\tau = 0$. What is the main qualitative difference between this chart and the chart you plotted in the previous step?

5. Assume now that τ is back to 30% and that the corporation has the option to go bankrupt. Expected costs associated with bankuptcy are $0.0005 \, (D)^2$. This includes any and all loss in debt tax shield. Plot the corporation's value against $\frac{D}{E}$.

6. What is the corporation's optimal capital structure (approximately)?

Problem 2 (30pts)

Estimate the WACC of a publicly traded company of your choice. For the cost of debt, use data on the yield of corporate bond with similar rating as your company. For the cost of equity, use CAPM or a Fama-French regression. Use current values to estimate the target capital structure. (I.e. assume that today's capital structure is the target capital structure.) Explain what tax rate you used and why. If the company has preferred stocks outstanding, make sure to include them in your calculations and explain how you measured their return.

(We will be lenient here since this is difficult to do in practice and tough assumptions have to be made but, for full credit, do make an effort to explain clearly how you approximated each element of WACC.)