Homework Financing Options

1. A company will distribute coupon amount to 3 million dollar and dividend amount to 2 million dollars next year. The market value of bond is 100 million dollars and the market value of the equity is 100 million dollars as well. So the yield of the perpetual bond is 3% and the dividend yield is 2%. Assume the growth rate of the dividend is 4% per year. What is the cost of equity? What is WACC? What is asset value calculated from discounting by WACC? What is the asset value as the sum of debt and equity? Is the asset value calculated from WACC the same as the sum of debt and equity?
2. A company will distribute coupon amount to 3 million dollar and dividend amount to 6 million dollars next year. The market value of bond is 100 million dollars and the market value of the equity is 200 million dollars. So the yield of the perpetual bond is 3% and the dividend yield is 3%. Assume the growth rate of the dividend is 4% per year. What is the cost of equity? What is WACC? What is asset value calculated from discounting by WACC? What is the asset value as the sum of debt and equity? Is the asset value calculated from WACC the same as the sum of debt and equity?
3. A company will distribute coupon amount to 5 million dollar and dividend amount to 8 million dollars next year. The principle of the bond is 100 million dollars. Duration of the bond is 15 years. The bond yield is 5%. The equity premium over bond yield is 4%. Assume the growth rate of the dividend is 3% per year. What is the market value of the bond and the equity? What is the cost of equity? What is WACC? What is asset value calculated from discounting by WACC? What is the asset value as the sum of debt and equity? Now suppose the bond yield becomes 4%. Other data remain the same. Please recalculate market values of bond and equity, WACC and asset value calculated from discounting by WACC.
4. (Capital structure and asymmetric information) A project requires initial investment of 8 million dollars. The project will last for 6 years. The expected annual output is 5 million dollars. Variable cost in production is 60% of the output. What is the annual gross profit of the project? If the discount rate is 10% per year, what is the NPV of the project? The project requires 4 million external financing, either by debt or equity. Interest rate for debt is 6%. What is the annual repayment for the debt with 6 equal annual installment? With equity financing, the external investor will require 10% expected return. What is the ownership share of the external equity investor? Suppose all profits are distributed as dividend. If the annual outputs from the project are 4 million, 5 million or 6 million respectively, how much dividend will the original owner receive each year with debt and equity financing? What conclusion you can draw?
5. Assume the bank’s borrowing rate is 2% per annum. A business applies for 25 million loan for a project and plans to repay the loan in one year. A loan officer estimates the payoff from the project will be 42 million with 80% probability and 20 million with 20% probability. If a loan defaults, on average, a bank can get 60% of the salvage value. If the bank requires 2.5% return on its loans, what would be the loan rate? What would be the expected net payoff for the project investors?
6. (Continued from last question) Next we consider mixed debt and equity financing, 10 million equity, 15 million debt. What would be the loan rate? Assume required equity return is 10%. What would be the share of ownership for external equity investors? What would be the expected net payoff for the original project investors? How is this result compared with pure debt financing?
7. (Continued from last question) Now we consider funding with pure external equity. Assume required equity return is 9%. What would be the share of ownership for external equity investors? What would be the expected net payoff for the original project investors? How is this result compared with pure debt financing and mixed debt and equity financing?
8. There are two companies, one high tech company and one utility company. Each company requires 100 million initial investment. The high tech company has an expected payoff of 1 billion for 10% probability and 30 million for 90% probability. The utility company has 120 million payoff for 90$ probability and 100 million for 10% probability. Suppose the cost of borrowing to the bank is 1% per annum. Bank loans requires 2% return. The salvage ratio is 60% when a company goes under. The equity financing, the expected rate of return is 12%. Please calculate the expected payoff for the original operatorss for each company when the projects are financed with debt or equity.