Unless stated otherwise, interest is compounded annually and payments occur at the end of the period. Numbers in parentheses are the points for each problem.

FORMAT: You can use a Word document, an Excel spreadsheet or both. If you use Excel, submit the Excel file rather than embedding Excel into a Word document. Please use single-space, 10-11 pt. font. Your name needs to be on the first page of the document AND as part of the document name, i.e. ReichertIndividual1.xls when it is submitted.

**You will need the following information about your firm: Firm Name**

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Number | Source | Date |
| Stock Price |  |  |  |
| Current Dividend |  |  |  |
| Growth Estimate |  |  |  |
| Debt –Equity Ratio: firm |  |  |  |
| Debt-Equity ratio: industry or nearest competitor |  |  |  |
| Effective Tax Rate (5 year average) |  | Reuters |  |
| Beta |  |  |  |
| 10-year Treasury-bond rate |  |  |  |
| Times Interest Earned (Interest Coverage Ratio) |  |  |  |

If your effective tax rate is less than 0, then use 20% as the tax rate.

Use the Times Interest Earned ratio to estimate the debt rating and theyield on the debt (You add the spread to the 10-year government T-bond rate). If the firm has no debt, use .9% as the spread. If the times interest earned isbelow .4, use 5.45% as the spread.

|  |  |  |
| --- | --- | --- |
| Times Interest Earned Ratio | Rating | Spread |
| 18.5 or higher | AAA | .90% |
| 14.0 – 18.49 | AA | 1.09% |
| 8.0 – 13.99 | A | 1.24% |
| 4.7 – 7.99 | BBB | 1.83% |
| 2.5 – 4.69 | BB | 2.95% |
| 1.2 – 2.49 | B | 4.65% |
| .4 – 1.19 | CCC | 5.45% |

1. You get a memo from forecasting with estimates on Tarragon, Vintner and the market portfolio (S&P 500). You create the following table to summarize the information:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Economic State | Probability | Tarragon | Vintner | Market |
| Recession | 1/3 | -16% | 22% | -17% |
| Average | 1/3 | 16% | 12% | 18% |
| Boom | 1/3 | 25% | -15% | 27% |

1. You believe that your firm should invest 80% in Tarragon and 20% in Vintner. What is the return and standard deviation on this portfolio (Assume this is a population rather than a sample)?
2. Your firm wants to get the same portfolio standard deviation using a combination of T-bonds (a risk-free asset) and the market portfolio. How much should you put in each one (T-bonds and Market) to get the desired standard deviation? What is the return and beta on this portfolio?
3. Assume your firm has zero coupon bonds maturing in 10 years with a face value of $183.75 million.
4. If the assets are worth $150 million, what is the value of the stocks and the bonds?
5. If the assets are worth $400 million, what is the value of the stocks and the bonds?
6. If the assets are worth $400 million, the standard deviation is 0.60 and the risk-free rate is the T-bond rate, what is the value of the option to default on the bonds? What is the value of the stockholders’ call option? Use Black and Scholes to get the answer to part c.

Note: For parts a and b, assume the options would be exercised immediately. Be sure to label your answer.

1. Compare the debt – equity ratio for your firm and for the industry: What is the amount of debt used by your firm (See table below)? How does your firm compare to the industry or the nearest competitor? Why do you think they use that amount of debt (Give one reason)? Limit: ½ page

|  |  |
| --- | --- |
| **Debt – Equity Ratio** | **Amount of Debt Used** |
| 0 | No Debt |
| 0 –25% | Low Debt |
| 25.01%-100% | Medium Debt |
| 100.01%-300% | High Debt |
| Over 300% | Very High Debt |

1. Assume your firm’s present capital structure (debt-equity ratio) is also its target capital structure.
   1. Use either the capital asset pricing model or the dividend discount model to estimate the cost of equity. For the CAPM, assume the market risk premium is 6%. You can choose either method.
   2. Use your firm’s effective tax rate and the debt yield (from the introduction) to estimate the weighted average cost of capital (WACC). If your firm is all equity, assume the target debt-equity ratio is 5% to answer this question. NOTE: Normally you would use the marginal tax rate instead.
2. Your firm wants to diversify with a new product line. The project requires an initial investment of $8,000,000 and will provide $1,890,000 in unlevered after-tax cash flows at the end of each year for 10 years. Debt (bonds) of $4,000,000 will be issued (This will not change the firm’s overall debt-equity ratio). Assume the 10-year debt was issued with a coupon rate equal to the debt yield rate (so the coupon = yield). Use your firm’s effective tax rate, the information on the risk-free rate and a 6% market premium to
   1. Find the value using APV (adjusted present value). You will need to estimate the unlevered cost of capital.
   2. Find the value using FTE (flow to equity).
3. Briefly describe 1 global risk faced by your firm. Does the firm hedge against this risk? Explain. Limit: ½ page