FINC460: Homework 3

1 Rosetree

Read the Rosetree Mortgage Opportunity Fund case in the course packet. Then, prepare answers to the following questions:

1. Why is the $ 65 million loan portfolio a potentially interesting investment?
2. What is the loan portfolio's fair market value? How much should Rosetree bid?

2 Equilibrium risk and return

1. You are given the following information: the variance of return on stock-1, stock-2, and the market portfolio are: $\sigma_1^2 = 0.16$, $\sigma_2^2 = 0.09$ and $\sigma_M^2 = 0.04$. The covariance between these assets are $\sigma_{1\,2}^2 = 0.02$, $\sigma_{1\,M}^2 = 0.064$, and $\sigma_{2\,M}^2 = 0.032$. Consider forming a portfolio 'p' that has 75% invested in stock-1 and 25% invested in stock-2.
   (a) What is the variance of return for portfolio p?
   (b) What are the betas of stock-1, stock-2, and p relative to the market (that is, what are $\beta_{1\,M}$, $\beta_{2\,M}$, and $\beta_{p\,M}$ respectively)?
   (c) What are the R^2 values for regressing returns of stock-1, stock-2, and p on the market portfolio?
2. Mr. Larson E. Rich has asked you for some financial advice. His retirement savings are currently invested as follows: $20,000 in the riskless asset, $40,000 in GM stock, and $40,000 in Microsoft stock. He wants to know if this is a sensible portfolio. You decided to analyze it based on the CAPM. You want to find out if Mr. Rich's portfolio is on the Capital Market Line.

You look in a "Beta Book" and find that GM stock has a beta of 1.1 and its R^2 of the regression to market is 0.40. Microsoft stock has a beta of 0.8 and its R^2 of the regression to market is 0.30. Suppose further that the correlation between the return to GM stock and the return to Microsoft stock is 0.3.

(a) If R_f is 4% and the expected excess return on the market ($E[R_M] - R_f$) is 6%, what is the expected return on Mr. Richs portfolio?

(b) If market return has a volatility of 20%, compute the volatility of Mr. Richs current portfolio.

Hint: You may use the information in the R2 values to calculate the standard deviation of each stocks return. Then use the information about correlations between the two stock returns to calculate the portfolio standard deviation.

(c) Assuming that the CAPM is correct, find an efficient portfolio that has the same volatility as Mr. Richs current portfolio. What is the expected return on this portfolio? How does it compare to the expected return of his current portfolio? You may assume that that market return has a volatility of 20%, R_f is 4%, and ($E[R_M] - R_f$) is 6%.

3. There are three stocks in the economy ('A', 'B', and 'C') that are all uncorrelated with each other. The riskfree rate for borrowing and lending is 4% over the holding period. The table below summarizes the information for each stock regarding its expected return and variance:

Stock	Expected Return	Variance of Return
A	14%	0.004
B	12%	0.002
C	11%	0.002

(a) Compute the tangency portfolio weights of these three stocks and the expected return and volatility of the tangency portfolio.

(b) Suppose the CAPM holds true and these are the only three risky assets in the economy. If stock-A has a market capitalization of $100 million, what are the market caps of stock-B and stock-C? [1-million = 1,000,000 = 10^6].