Mgt 890: Corporate Finance and Options

Spring 2001

Bonus Assignment #1

Due Tuesday January 30

1. "By diversifying its assets, a company protects itself from market movements and thus is more valuable than an undiversified firm." True or false? Explain.

2. "The most important element in determining the variance of a well-diversified portfolio is the variance of the individual stocks." True or false? Explain.

3. Suppose you are forming different portfolio combinations of two stocks, Yahoo and IBM. For Yahoo and IBM, their expected returns are 60% and 30%, while their standard deviations are 70% and 33%, respectively. Under each of the following scenarios, please calculate and draw the entire investment opportunity set that is feasible with these two stocks, where short selling of either stock is allowed and is not constrained.

   3.1). The correlation between Yahoo and IBM is 0.4.
   3.2). The correlation is 1.0.
   3.3). The correlation is –1.0.
   3.4). In each of the above 3 cases, is it possible to construct a portfolio with no risk? If yes, find the exact portfolio positions.

4. There are 3 stocks, A, B and C, that you can put your money in. Their expected returns are 10%, 20% and 40%, while their standard deviations are 15%, 28% and 50%, respectively. The correlation between any two of the 3 stocks is 0.5.

   4.1). Find 4 portfolios of the 3 stocks that give you an expected return of 20%. For each portfolio, please give the exact positions and calculate the portfolio's standard deviation.
   4.2). Find 2 portfolios of the 3 stocks that give you a standard deviation (risk) of 30%. For each portfolio, please give the exact positions and calculate the portfolio's expected return.

5. There are few, if any, real companies with negative betas. But suppose you found one with β = -0.3.

   5.1). How would you expect this stock's rate of return to change if the overall market rose by an extra 10 percent? What if the market fell by an extra 5 percent?
   5.2). You have $10 million invested in a well-diversified portfolio of stocks. Now you receive an additional $500,000 bequest. Which of the following actions will yield the safest overall portfolio return?

      i. Invest $500,000 in Treasury bills (which have β =0).
      ii. Invest $500,000 in stocks with β = 1.
      iii. Invest $500,000 in the above stock with β = -0.3.

      Explain your answer.