

Mgt 890: Corporate Finance and Options
Spring 2001
Homework Set #4
Due Thursday January 25

1. Three securities have the following variance-covariance matrix.

	A	B	F
A	9	6	0
B	6	20	0
F	0	0	0

A) Calculate the variance of a portfolio that places 60% of its value in A and 40% in B.

B) Calculate the variance of a portfolio that places 25% of its value in F, and 75% in a mutual fund. Assume that the mutual fund keeps 60% of its funds in A and 40% in B. (Hint: You should be able to use your answer to part A to help answer part B.)

2. Imagine the world consists of just 3 firms whose returns have a covariance of zero. Each firm has exactly the same market value. Firm A has a return variance of 1, firm B a return variance of 4, and firm C has a return variance of 9.

2.1). What is the beta of the market portfolio?

2.2). What is the beta of each firm?

3. An investment analyst says, “The CAPM is too simple to capture returns in the real world. To take an example, suppose firms A and B are identical except for the quality of their management. Further assume that the managers of firm B are much better than the managers of firm A. Thus, we expect investors in B to earn a higher return than the investors in A. Nevertheless, the CAPM says that if A and B have the same beta then their investors will obtain the same returns.”

Is the analyst correct? Why or why not.

4. John Turner wants to invest all his money in the two stocks, A and B. These two stocks have the following properties:

	Stock A	Stock B
Expected return (%)	16	22
Standard deviation (%)	19	24

And the return correlation between A and B is 0.5. To help John Turner with his portfolio allocation decision, answer the following questions:

4.1). What are the expected return and standard deviation of returns on his portfolio if he invests 60% in stock A and 40% in B?

4.2). How would you advise John Turner to invest if his goal is to achieve an expected portfolio return of 30%? What would be the exact positions to take? What is the risk or standard deviation of such a portfolio?

4.3). Is it possible for John Turner to find a portfolio allocation that gives him a portfolio-return standard deviation of 10%? If no, explain why. If yes, please give the exact investment positions and the corresponding portfolio's expected return.