FINA 0025 –Financial Management
Portfolio Theory
Tutorial Questions for Lecture 6

These questions do not need to be submitted and will be discussed at the tutorial. Note that detailed answers to these questions will only be provided in tutorials. This policy is in place to ensure that you attend your tutorial regularly and receive timely feedback from your tutor. If you are unsure of your answers you should check with your tutor, a pit stop tutor or the lecturer.

Short Answer Questions

Provide brief responses to the following questions.

A1. You are given the following information in three stocks

Stock A offers an expected return of 8.0% p.a. with a standard deviation of 15.0% p.a.
Stock B offers an expected return of 10.0% p.a. with a standard deviation of 20.0% p.a.
Stock C offers an expected return of 10.0% p.a. with a standard deviation of 15.0% p.a.

For each of the following statements indicate whether the statement is true or false and explain why?

a) A risk neutral investor will be indifferent between stocks B and C.
b) A risk averse investor would prefer to invest in stock B rather than the stock C
c) A risk averse investor would prefer to invest in stock C rather than stock A
d) a risk seeking investor would be indifferent between stocks B and C

A2. Consider the following statements related to modern portfolio theory. For each of the following statements indicate whether the statement is true and false and explain why.

a) All other things being equal, increasing the size of one's portfolio should increase diversification benefits.

b) As the size of a portfolio increases the total risk level of that portfolio decreases at an increasing rate.

c) Adding securities that have low correlations with the original portfolio increases diversification benefits.

d) It is possible for an astute investor to eliminate some systematic risks via portfolio diversification.

Multiple Choice Questions

For each question pick the most reasonable response based on the information provided.

B1 An Investor buys shares in MSF Ltd at the end of year 2003 for $25.00 and sells it for $30.00 at the end of 2007. MSF Ltd did not pay any dividends over this period. The mean geometric rate of return (per annum) on the investment is <u>closest</u> to:

a) 4.7% b) 5.0% c) 6.3% d) 20.0%

B2. Daniel Singh, the owner of a major recording studio, is a strictly buy-and-hold type of investor. You have the following information on Daniel's portfolio during 2005-2007

Year	End of Year	Total Portfolio Income
2005	$100,000	---
2006	$125,000	5,000
2007	$70.000	$5,000

*The end of the year value does not include total portfolio income which is assumed to be paid at the end of each year.

Based on discrete returns over this period, the average geometric return (per annum) Dan has earned on his investment is closest to:

a) -16.3% b) -13.4% c) -9.5% d) -5.0%

B3. Leigh Ping bought a one year Treasury bond and stock in GD Ltd at the end of 2006. The investment returns and values at the end of 2007 are shown below.

	End of 2006	Interest/Dividends Paid	End of 2007
T-bond	$12,000	$500	$10,000
GD Ltd	$10,000	$300	$14,200

Leigh wants you to tell her the return she made on the investments over the year. Assuming year-end cash flows, her one-year rate of return is closest to:

a) -12.5% b) 10.0% c) 11.4% d) 13.6%

B4. The shares DBY Ltd are currently selling for $8.00 per share. You have developed the following probability distribution of the price and dividend one year from now.

State of the Market	Probability	Price	Dividend
Bearish	0.3	$6.80	$0.40
Normal	0.4	$7.60	$0.40
Bullish	0.3	$9.60	$0.80

Assume year end cash flows. The standard deviation of the rate of returns for DBY Ltd shares is closest to:

a) 2.6% b) 12.7% c) 16.3% d) 25.4%

B5. The shares CBC Ltd are currently selling for $25.00 per share. You have developed the following probability distribution of the price and dividend one year from now.

State of the Market	Probability	Price
Awful	0.3	$32.50
Normal	0.4	$30.00
Awesome	0.3	$25.00

The variance of the returns for CBC Ltd shares is closest to:

a) 0.0054 b) 0.0141 c) 0.0737 d) 0.1187

B6. Portfolio Leveraging refers to which one of the following strategies?
a) Borrowing funds at a risk free rate of return and investing these funds in a risky security.
b) Borrowing funds at a risk free rate of return and investing these funds in a risk free security.
c) Borrowing funds at a risky free rate of return and investing these funds in a risky security.
d) Borrowing funds at a risky free rate of return and investing these funds in a risk free security.

B7. Short selling a risky security refers to which one of the following strategies?
a) Borrowing and selling the security when you expect the security's price to rise in the future.
b) Borrowing and selling the security when you expect the security's price to fall in the future.
c) Lending and selling the security when you expect the security's price to rise in the future.
d) Lending and selling the security when you expect the security's price to fall in the future.

B8. Two securities that have the same expected returns and standard deviation of returns would offer diversification benefits to investors under what condition?
a) Never
b) Only if their returns are perfectly negatively correlated.
c) Only if their returns are less than perfectly positively correlated.
d) Only if their returns are perfectly positively correlated.

B9. The standard deviations of return on securities X and Y are 10 percent and 12 percent, respectively. The standard deviation of return of an equally-weighted portfolio of X and y is:
a) 11.0%
b) 15.6%
c) 33.0%
d) Not computable because there is not enough information given.

B10. Assume that the risk free rate is 5 percent and that you can invest in the market portfolio which has an expected return of 15 percent and a standard deviation of return of 20 percent. You have $5,000 available for investment and you want to form a portfolio with an expected return of 20 percent. In this case, you:
a) Need to borrow $2,500 at the risk free rate and invest $7,500 in the market portfolio.
b) Need to borrow $7,500 at the risk free rate and invest $12,500 in the market portfolio.
c) Need to lend $2,500 at the risk free rate and invest $2,500 in the market portfolio.
d) Cannot achieve an expected return of 20% because the expected return of the market portfolio is only 15%.

C. Problems
For Full credit you need to show all your calculations, including formulas used.

C1. The shares of EHA Ltd, a non-dividend paying stock, are currently selling for $20.00 per share. Your broker has developed the following probability distribution of the price and dividend next year.

State of the Market	Probability	Price
Bullish	0.3	$18.00
Normal	0.3	$20.00
Bearish	0.4	$23.00

a) Compute the expected return and standard deviation of return for EHA Ltd.

b) A T-Note with one year to maturity and a face value of $10,000 can be purchased today for $9,524. Given this, does EHA Ltd seem like a good investment at $20.00 per share? Assume that you intend to invest equal total dollar amount in the T-Note or EHA Ltd. If there was a market consensus with the above probability distribution for EHA Ltd stock, what would you expect to happen to the stock price? Explain.

C2. On her first day as a summer intern at Schmidt Baloney, Julie Singh is asked to analyze the following situation

Security	**Expected Return**	**Standard Deviation**	**Correlations**		
			A	**B**	**C**
A	10.0%	6.0%	1.0		
B	14.0%	11.0%	0.6	1.0	
C	15.0%	18.0%	0.8	0.0	1.0

a) Given an investment of $10,000 each in securities A and B, what is the expected return on this portfolio.
b) Compute the standard deviation of the portfolio of A and B offering an expected return of 12%.
c) Compute the standard deviation of the portfolio of A and C offering an expected return of 12%.
d) Which one of the two portfolios above would be more attractive to a risk averse investor? Explain.

C3. Stock A has an expected return of 6% and a standard deviation of returns of 15% while Stock B has an expected return of 8% and a standard deviation of returns of 25%. If the stocks are perfectly negatively correlated what is the expected return on the minimum variance portfolio consisting of these stocks.

C4. Consider the following data relating to the following securities.

Security	**Expected Return**	**Variances and Covariances**		
		A	**B**	**C**
A	7.0%	0.040		
B	5.0%	0.015	0.250	
C	15.05	0.022	0.031	0.090

Calculate the expected return and standard deviation of portfolios with the following weights.
a) Weight in security A is 0.6 and weight in security C is 0.4.
b) Weight in security A is 0.4, weight in security B is 0.2, and weight in security C is 0.4.
c) Provide a brief comment on the risk characteristics of the above portfolios.