Birla Institute of Technology & Science, Pilani.
Hyderabad Campus, First Term 2022-23

Course No. ECON F412/FIN F313 Course Title: Security Analysis & Portfolio Management

Quiz-1 (CB) Max time: 50mins Marks: 20 (10% weight) Date: 11/10/2022

Name of the Student: ID No.:

Each question carries 2 marks. No negative marking. Write the correct option in the box below.

Question No.	Option chosen
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Q:1/ Given the following information about two risky assets: **-**

Stock	Expected Return	Standard Deviation
A	25%	20%
B	18%	14%

Covariance between returns of A and B is 2.8%

Choose the investment below that represents the Minimum risk portfolio if short selling is not allowed:

a) 100% invest in stock A;
b) 100% invest in stock B
c) 50% in stock A and 50% in stock B
d) 20% invest in stock A and 80% in stock B
e) None of the options are correct

Q:2/ In the absence of secondary market, which statements would have been true: -

I. There would be substantial liquidity risk i.e. risk due to illiquidity
II. Investors would demand lower rate of return
   a) Only I is correct
   b) Only II is correct
   c) Both I and II are correct
   d) Neither I nor II are correct

Q:3/ Suppose there are 2 risky stocks, A and B. Stock A has an expected return of 10% and a standard deviation of return of 8%. The corresponding statistics for Stock B are 4% and 4%, respectively. The correlation coefficient between the returns of stocks A and B is -0.5. An investor wants to achieve a standard deviation of 6% in his portfolio. What is the optimal portfolio for the investor and what is the expected return of this portfolio?

a) The optimal portfolio has 20.42% invested in Stock A and 79.58% invested in Stock B. The expected return of the portfolio is 8.77%.
b) The optimal portfolio has 79.58% invested in Stock A and 20.42% invested in Stock B. The expected return of the portfolio is 8.77%.
c) The optimal portfolio has 29.02% invested in Stock A and 70.98% invested in Stock B. The expected return of the portfolio is 7.97%.
d) The optimal portfolio has 11.25% invested in Stock A and 88.75% invested in Stock B. The expected return of the portfolio is 9.32%.
e) None of the above

Q:4/ Suppose that there are only 2 stocks in the economy, C and D. Stock C has an expected return of 2% and a standard deviation of return of 9%. The corresponding statistics for Stock D are 7% and 15%, respectively. Suppose that the covariance between the returns of stocks C and D is **(–ve)**1.35%. What is the only possible value of the risk-free rate?

a) 6.75%

b) 5.75%

c) 3.88%

d) 4.75%

e) None of the above

Q:5/ Suppose there are 2 stocks, A and B. Stock A has an expected return of 10%, a standard deviation of return of 25%, and current per share price of $150. The corresponding statistics for Stock B are 7%, 15%, and $100, respectively. The correlation coefficient between the returns of stocks A and B is 0.7. Suppose you buy 60 shares of Stock A and 80 shares of Stock B. What is the expected return of this portfolio and what is its standard deviation?

a) Expected Return range=6%-7%, Standard deviation range=17%-18%
b) Expected Return range=8%-9.4%, Standard deviation range=18.5%-19.5%
c) Expected Return range=9.5%-10.5%, Standard deviation range=18.5%-19.5%
d) Expected Return range=8%-9.4%, Standard deviation range=20%-25%
e) None of the above

Q:6/ Assume two stocks have the following characteristics: -

	Expected Return	Standard deviation
C	15%	11%
S	9%	5%

The coefficient of correlation between the returns of the two stocks is 0.
What is the % investment in the two stocks in order to have a minimum variance portfolio? Investor is fully invested and there is no short selling.

a) 32.9% in C, 67.1% in S
b) 42.40% in C, 57.6% in S
c) 17.1% in C, 82.9% in S
d) 28.1% in C, 71.9% in S
e) None of the above

Q:7/ Which of the following is/are true?

I. Variance of a portfolio with equi-proportionate investments in each security is approximately equal to the average covariance as number of securities become very small.

II. Markowitz investor prefers more risk to less risk (for a given return) and more return to less return (for a given risk).

a) Only I is correct
b) Only II is correct
c) Both I and II are correct
d) Neither I nor II are correct

Q:8/ The investor wants to allocate funds to Stock fund, and some cash (*cash can be considered to be risk free asset)*.

Following are the expected return and risk of the various assets.

Assets	Expected return	Standard deviation of returns
Stock fund	15%	25%
Risk free rate	8%	

The Investor's Utility function is

U = E(Rp) – 0.5 A *(Variance of returns of portfolio)

Where A is the coefficient of Risk aversion. A = 4.

E(Rp) is expected return of the portfolio

How much will be the asset allocation in the stock fund if short selling is not allowed?

a) 22.4% in Stock fund
b) 16% in Stock fund
c) 56% in Stock fund
d) 28% in Stock fund
e) None of the above

Q:9/ The investor wants to allocate funds to Stock fund, Bond fund and some cash (*cash can be considered to be risk free asset)*.

Following are the expected return and risk of the various assets.

Assets	Expected return	Standard deviation of returns
Stock fund	15%	25%
Risk free rate	8%	
Bond fund	10%	15%

The Investor's Utility function is

U = E(Rp) – 0.5 A *(Variance of returns of portfolio)

Where A is the coefficient of Risk aversion. A = 2.

E(Rp) is expected return of the portfolio. Correlation of returns between Stock fund and bond fund is 0.20. The optimal tangent portfolio by maximizing sharpe ratio is 66.3% in Stock fund and 33.7% in Bond fund

How much will be the asset allocation in cash if short selling is not allowed?

a) 13% in Cash
b) 40.50% in Cash
c) 60.19% in Cash
d) 20.37% in Cash
e) None of the above

Q:10/ Which of the statements are correct?

I. Diversification can be achieved if the assets are perfectly positively correlated

II. The diversification ratio of a portfolio that holds equal risk weights in two uncorrelated assets with equal volatility is 2^(1/2)

a) Only I is correct
b) Only II is correct
c) Both I and II are correct
d) Neither I nor II are correct

FORMULA LIST

$$E(R_{port}) = \sum_{i=1}^{n} W_i R_i$$

where: W_i = the percent of the portfolio in asset i

$E(R_i)$ = the expected rate of return for asset i

$$\sigma_{port} = \sqrt{\sum_{i=1}^{n} w_i^2 \sigma_i^2 + \sum_{i=1}^{n} \sum_{i=1}^{n} w_i w_j \mathrm{Cov}_{ij}}$$

where:

σ_{port} = the standard deviation of the portfolio

W_i = the weights of the individual assets in the portfolio, where weights are determined by the proportion of value in the portfolio

σ_i^2 = the variance of rates of return for asset i

Cov_{ij} = the covariance between the rates of return for assets i and j, where $\mathrm{Cov}_{ij} = r_{ij}\sigma_i\sigma_j$

Maximizing Sharpe ratio w.r.t w1 for 2 risky asset gives:-

$$w_1 = \frac{[E(R_1) - r_f]\sigma_2^2 - [E(R_2) - r_f]\,\mathrm{cov}(R_1, R_2)}{[E(R_1) - r_f]\sigma_2^2 + [E(R_2) - r_f]\sigma_1^2 - [E(R_1) - r_f + E(R_2) - r_f]\,\mathrm{cov}(R_1, R_2)}$$