

Indian Institute of Technology, Kharagpur

Date _____ FN/AN Time: 3 hours Full Marks: 50 No of Students: 30 (approx)
 End Spring Semester 2013 Deptt: HSS Sub No: HS50017
 5-Year Integrated M.Sc in Economics Sub Name: Equity Research
(Statistical tables can be provided on request)

1. An investor buys the stock of XYZ Ltd. and would like to hold it for four years. XYZ is expected to pay the dividend from second year onwards at 20% of its forecasted earnings. His required rate of return is 15% and the earnings which are currently Rs. 4.00 per share are expected to grow at the rate of 9%. At the end of fourth year the P/E ratios expected to be 15. Find the current market price?

(5 Marks)

2. ABC Limited paid a dividend of Rs. 2.00 for the current year. The dividend is expected to grow at 40% for the next 5 years and at 15 % thereafter. The return on 182 days T-Bills is 11% per annum and the market return is expected to be around 18% with a variance of 24%. The covariance of ABC's return with that of market is 30%. Calculate the intrinsic value of ABC stock?

(5 Marks)

3. Optima Limited earned Rs 7 per share during the last year and paid a dividend of Rs 2.5 per share. The earnings were expected to grow at the rate of 10% for the next three years and thereafter stabilize at 3%. The pay-out ratio is expected to remain at the same level during the three years and then increases to 60%. If the required rate of return is 16% compute (i) the expected price of Optima Ltd. at the end of third year and (ii) the current price of the stock.

(5 Marks)

4. Using the following data answer the question given below:

Security	Expected Return	Beta	Unsystematic Risk
1	15	1	50
2	17	1.5	40
3	12	1	20
4	17	2	10
5	11	1	40
6	11	1.5	30
7	11	2	40
8	7	0.8	16
9	7	1	20
10	5.6	0.6	6

- (i) Based on the above data construct an optimal portfolio under Sharpe portfolio optimization
 (ii) Is an investor has a risk tolerance of 50%. verify whether the securities included in the above portfolio were offering higher utility than those excluded.

(10 Marks)

5. Mr. Malhotra is trying to construct an optimal portfolio with least risk and a target return of 16% p.a. from the three stocks namely A, B and C. The relevant market data is given as under:

Stock	Expected Monthly Return	Standard Deviation	Variance -covariance matrix (%)		
			A	B	C
A	18%	17%	289	90	140
B	20%	20%	90	400	195
C	13%	15%	140	195	225

You are required to calculate the proportions of funds to be invested in each of the three securities by Mr. Malhotra so as to generate a return of 16% with least possible risk.

(10 Marks)

6. Mr. Ram has categorised all the available stocks in the market into following types (i) Small cap value stocks, (ii) Small cap growth stocks, (iii) Large cap value stocks and (iv) Large cap growth stocks. He has also estimated the weights of the above category of stocks in the market index. Furthermore, the sensitivity of returns on these categories of stocks to the three important factors are estimated to be:

Category of stocks	Weight in the market Index	Factor 1(Beta)	Factor 2 (Price/Book)	Factor 3 (Average capitalisation)
Small cap value	10%	0.9	0.75	1.25
Small cap growth	25%	0.8	1.39	1.35
Large cap value	15%	0.85	2.05	6.75
Large cap growth	50%	1.165	2.75	8.65
Risk Premium		6.85%	-3.5%	0.65%

The risk free rate of return is 4.5%. Using these information answer the following questions. (i) Using Arbitrage Pricing Theory, determine the expected return on the market index. (ii) Using Capital Asset Pricing Model, determine the expected return on the market index. (iii) Mr. Ram wants to construct a portfolio constituting only the "small cap value" and "large cap growth" stocks. If the target beta for the portfolio is one, determine the composition of his portfolio. **(5 Marks)**

7. Relative Strength Index (RSI) is a good tool in the hands of technical analyst for measuring the momentum. The following information pertains to the price of stock ABC Ltd. For the last 8 trading days. You are required to calculate RSI of stock ABC Ltd. And interpret the result so obtained.

Days	Closing Price (Rs.)	Days	Closing Price (Rs.)	Days	Closing Price (Rs.)
1	190.00	4	210.00	7	310.00
2	150.00	5	300.00	8	150.00
3	250.00	6	290.00

(5 Marks)

8. The following information is available on the performance of seven portfolio during the past ten year period:

Portfolio	Avg. Annual Return %	Standard Deviation %	Correlation with Market
1	15.6	27.0	0.81
2	11.8	18.0	0.55
3	8.3	15.2	0.38
4	19.0	21.2	0.75
5	-6.0	4.0	0.45
6	23.5	19.3	0.63
7	12.1	8.2	0.98
Market	13.0	12.0	
T-Bills	6.0		

Based on the above information, you are required:

- Rank the portfolio based on Sharpe's ratio and Treynor's ratio.
- Compare the rankings in (a) above and explain the reasons for differences noted, if any.
- Determine whether any portfolios have outperformed the market, with justification.

(5 Marks)