

Sums of CAPM

Problem 1

- The expected return in the market portfolio is 14%. The current risk-free rate of return is 6%. What is the required rate of return of an investment with beta 1.4? What is risk premium here?

- $R_i = R_f + (R_m - R_f) * B$
- $= 6\% + (14\% - 6\%) * 1.4$
- $= 6\% + 11.2\%$
- $= 17.2\%$

Problem 2

- Mr A.Basu has a portfolio as follows:

<u>Shares</u>	<u>Price(Rs.)</u>	<u>Number</u>	<u>beta</u>
• Reliance	1500	50	1
• Tata Steel	250	100	1.2
• ITC	150	200	1.4

- Risk-free rate of return is 4%. Market return is 12%
- What is expected return from the portfolio of Mr. A Basu?

- Return from Reliance $(R_r) = R_f + (R_m - R_f) * B_r$
= 4% + (12% - 4%) * 1
= 12%
Return from Tata Steel
= 13.6%
Return from ITC = 15.2%

- Weightage
- Reliance = $1500 * 50 = 75000 = 75,000 / 130000 = 0.577$
- Tata Steel = $250 * 100 = 25,000 = 25,000 / 130000 = 0.192$
- ITC = $150 * 200 = 30,000 = 30,000 / 130000 = 0.231$
- Total Investment = 1,30,000

- Portfolio Return = $12\% * 0.577 + 13.6\% * 0.192 + 15.2\% * 0.231$
 - = $13.046\% = 0.13046$
 - Expected absolute = $13.046\% * 130000$
 - = Rs. 16959.80

Problem 3:

- Suppose you hold a portfolio consisting of 40% of ACC, 25% of HLL and rest in RBI bond (8%). Beta of ACC and HLL is 1.2 and 1.8 respectively. Expected return from market is 11%. What is the portfolio return? What is portfolio beta?

Solution: 3

- $R_p = R_f + (R_m - R_f) * B$
- $R_{acc} = 8\% + (11 - 8) * 1.2 = 11.6\%$
- $R_{hll} = 13.4\%$
- $R_p = 11.6\% * 0.4 + 13.4 * .25 + 8\% * .35$
 - $= 10.79\%$

$$\begin{aligned} \text{Portfolio beta (B}_p\text{)} &= 0.4 * 1.2 + .25 * 1.8 + .35 * 0 \\ &= .48 + .45 = .93 \end{aligned}$$

Problem No.4:

- Mr. B Dutta has Rs. 2,00,000 to invest in stocks. He will choose both between Infosys and TCS. The beta of Infosys share is 1.6 and beta of TCS is 1.4 respectively. The risk free rate of return is 6%. The expected rate of return from market is 10%. What is the proportion of investment in both the shares if goal of Mr. Dutta is to earn a return on investment of 11.5%? How much is to be invested in TCS?