

Problem Set 4

February 27, 2012

1. Textbook. 2.1
2. Suppose there are two assets, assets A and B, that have expected returns \bar{R}_A and \bar{R}_B and variances of σ_A^2 and σ_B^2 , respectively. Further the correlation between their returns is given by $\rho = 1$. Let us assume that $\bar{R}_A < \bar{R}_B$, but $\sigma_A^2 < \sigma_B^2$. Now form a portfolio with a proportion ω invested in asset A and a proportion $1 - \omega$ invested in asset B. The relationship between portfolio risk and expected return in σ_p, \bar{R}_p space is

$$\bar{R}_p = \frac{\sigma_B \bar{R}_A - \sigma_A \bar{R}_B}{\sigma_B - \sigma_A} \pm \frac{\bar{R}_B - \bar{R}_A}{\sigma_B - \sigma_A} \sigma_p$$

prove that this line goes through the points (σ_A, \bar{R}_A) and (σ_B, \bar{R}_B) when $\omega = 1$ and $\omega = 0$, respectively.

The Problem Set 4 is due to Mar 12th.