

Homework

Problem 1.

Let there be 2 securities with returns R_j and R_i . Suppose these 2 securities have identical expected returns and identical variances. Show that the equally weighted portfolio achieves the minimum variance independently of the correlation between the 2 securities.

Problem 2.

Suppose the riskless borrowing rate is higher than the riskless lending rate. Graphically demonstrate the portfolio frontier of all assets. Next suppose borrowing is not allowed. Graphically demonstrate the portfolio frontier of all assets.

Problem 3.

Let p be a frontier portfolio, and let q be any portfolio having the same expected rate of return. Show that $cov(R_p, R_q) = var(R_p)$ and, as a consequence, the correlation coefficient of R_p and R_q lies in $(0, 1]$.