

Efficient Portfolios.

A portfolio is said to be efficient if there is no other portfolio w/ a higher expected return and a smaller or equal volatility.

A portfolio is said to be not efficient if there exists another portfolio w/ a higher expected return @ a smaller or equal volatility.

- 6) You are given the following information about the four distinct portfolios:

Portfolio	Expected Return	Volatility
P	3%	10%
Q	5%	10%
R	5%	15%
S	7%	20%

Determine which two of the four given portfolios are NOT efficient.

(A) P and Q

(B) P and R

(C) P and S

(D) Q and R

(E) Q and S

$$P < Q$$

since they have the same volatility and Q has a higher expected return

$$R < Q$$

since they have the same expected returns but R has a higher volatility

The Effect of Correlation.

- If $\rho = 1$, then the feasible set is a straight line between the two asset.
- The smaller the correlation, the higher the curvature of the feasible set.
- If $\rho = -1$, then

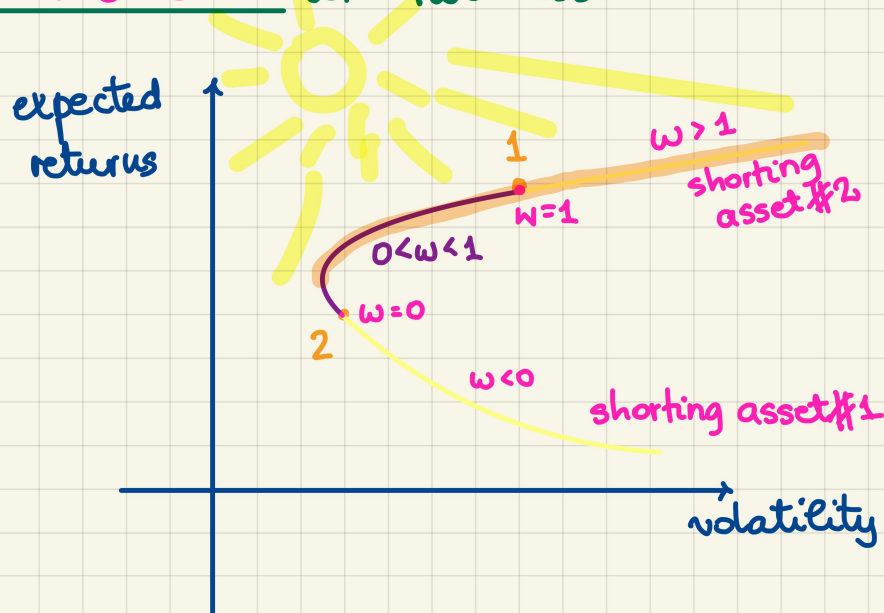
Claim. There is a weight w of asset #1 such that the resulting portfolio is risk-free, i.e., its volatility is zero.

$$\rightarrow: \text{Var}[wR_1 + (1-w)R_2] = 0$$

$$w = \frac{\sigma_2}{\sigma_1 + \sigma_2} \quad \checkmark$$

□

Short sales w/ two assets.



Three (or more) risky assets.

→ Mathematica