ECON30024
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# Tutorial 3 (for Week 4)

1. Review Quiz 3 questions

2. Following question (5) of Quiz 3, summarise the properties of the indifference curves of a mean-variance objective

$$G(\mu_P, \sigma_P^2) = \mu_P - \alpha\sigma_P^2$$

and explain the economic meaning behind the properties.

3. An investor has initial wealth $A$ to divide between two risky assets, with payoffs $v_1$ and $v_2$ per unit, respectively. The prices at which the assets may be purchased are $p_1$ and $p_2$, respectively. Denote the number of units of the assets in the investor's portfolio by $x_1$ and $x_2$, so that: $A = p_1x_1 + p_2x_2$.

   (a) Obtain expressions for the two assets' rates of return, $r_1$ and $r_2$, and for the proportions of initial wealth invested in each of the two assets, $a_1$ and $a_2$.

   (b) Show that the terminal wealth (after the payoffs become known), $W$, can be expressed as:

$$W = A + (a_1r_1 + a_2r_2)A$$

   and hence that the rate of return on the portfolio, $r_P$, can be written as:

$$r_P = a_1r_1 + a_2r_2.$$

   (c) Suppose that the expectations of $r_1$ and $r_2$ are given by $\mu_1$ and $\mu_2$, respectively and their standard deviations are $\sigma_1$ and $\sigma_2$, respectively. Obtain expressions for $\mu_P$ (expected rate of return on the portfolio), and for $\sigma_P^2$, the variance of the rate of return on the portfolio.

   (d) Using the result in (c), find expressions for $E(W)$ (expected terminal wealth), and $var(W)$ (variance of terminal wealth).

4. Discussion question:

   (a) The EUH is the mainstream approach to modeling decision making under uncertainty in economics. Think about the underlying assumptions it presumes in the context of an investor's portfolio selection problem.

$$U = E(u(W)) = \pi_1u(W_1) + \pi_2u(W_2) + \ldots + \pi_Ku(W_K)$$

   (b) When you choose a portfolio of assets to invest in, are there other things about the portfolio that you may care about, in addition to the expected value and risk of its return?