University of California, Berkeley Spring 2008
ECON 100A Section 109, 112

Choice under Uncertainty

Additional Materials

This handout includes more mathematical definitions of risk attitudes as well as the definition of maximum insurance payment. They seem unlikely to be tested as this point.

I. Risk Attitudes

Definitions

i. Risk Neutral
- Equals to linear utility function—Constant marginal utility (MU)
$$\alpha U(x_1) + (1-\alpha)U(x_2) = U(\alpha x_1 + (1-\alpha)x_2)$$
- $E[U(X)] = U(\Pr_{x_1} x_1 + \Pr_{x_2} x_2)$

ii. Risk Averse
- Equals to concave utility function—Diminishing MU
$$\alpha U(x_1) + (1-\alpha)U(x_2) < U(\alpha x_1 + (1-\alpha)x_2)$$
- $E[U(X)] < U(\Pr_{x_1} x_1 + \Pr_{x_2} x_2)$

iii. Risk Loving
- Equals to convex utility function—Increasing MU
$$\alpha U(x_1) + (1-\alpha)U(x_2) > U(\alpha x_1 + (1-\alpha)x_2)$$
- $E[U(X)] > U(\Pr_{x_1} x_1 + \Pr_{x_2} x_2)$

II. Maximum Insurance Payment

Maximum Insurance Payment

Let w be the initial wealth and r be the risk premium, the maximum amount willing to pay for insurance is

$$w - E[X] + r$$