Economics 58
Fall 2010

Problem Set # 5

Due 10/20/10

1. Text Problem 7.8.

2. Consider the quadratic utility function $U(W) = aW - bW^2$ where a and b are positive parameters.

    a. What constraints need to be placed on the parameters a and b to ensure that the marginal utility of wealth is positive?

    b. Does this function exhibit increasing or decreasing risk aversion?

    c. Suppose that this person is considering investing in a risky asset. One dollar invested in this asset will yield $1 + r$ dollars at the end of one period, where r is a random variable with $E(r) = \bar{r} > 0$ and variance given by σ_r^2. Any funds not invested in this asset will have an unchanged value at the end of this one period (that is, the risk-free rate of return is zero). How will this person's next period's wealth depend on the fraction (k) of current wealth he or she invests in the risky asset?

    d. How should this person choose k to maximize the expected utility of his or her next period's wealth? (Note: to answer this part you will have to know the mathematical identities that for any random variable, x,
$E(kx) = kE(x), \quad Var(kx) = k^2 Var(x),$ and $E(x^2) = \sigma_x^2 + [E(x)]^2$ -- see chapter 2 and Problem 2.14).

    e. Explain explicitly how your optimal value for k here depends on this person's initial level of wealth. Does this seem consistent with real world observations?

3. The paper "Search Intensity, Job Advertising, and Efficiency" by Chris Pissarides (*JOLE*, 1984) seeks to develop a matching model of unemployed workers and job vacancies. You should read this paper through page 136 and then answer the following questions (you can certainly read more of the paper, if you would like):

a. Show how Pissarides derives his equation for optimal search intensity (equation 2 on page 132).

b. Show how Pissarides derives the comparative statics results (this is, the signs of the partial derivatives) that he mentions below equation 2. Give an intuitive explanation for each such derivative.

c. As best you can, describe the equilibrium that Pissarides derives in his model.

d. Anti-unemployment policy has two major components: (1) Unemployment compensation for laid off workers; and (2) job search assistance for workers searching for jobs. Provide a brief description of how you think these two components might affect the equilibrium Pissarides identifies.