PLCY 289 Problem Set 1

This assignment is due in class on Thursday February 2, 2006—hand-in the first 2 questions only please. You may work together but should not copy answers verbatim and must hand-in individual assignments. Assignments will not be returned so make a copy of what you turn in.

1. In deciding to park in an illegal place, an individual knows that the probability of getting a ticket is $p$, and that the fine for receiving a ticket is $f$. The individual, who is risk averse, has an initial wealth $w_0$. Compare the following two policies designed to deter illegal parking, and explain which would be more effective.

   Policy I: The fine is increased by the fraction $\alpha$ to $(1+\alpha)*f$.
   Policy II: The probability of being caught is increased by the same fraction $\alpha$.

2. Carlos, a risk-averse Cuban, is deciding whether or not to sail a raft to Miami. If he sails, he will make the trip successfully with probability $p$ and receive a wealth of $W_m$, but if he is caught he will be fined an amount $F$. His initial wealth in Cuba (which he cannot take with him) is $W_c$ ($W_m > W_c$) and there is an additional psychic/emotional cost associated with the trip of $C$.
   a. What is his expected utility if he goes on the trip? What condition must be met in order for him to make the trip?
   b. Suppose his utility function is $\ln(w)$, initial wealth in Cuba is 5, wealth in Miami will be 10, F=2, C=1, and $p=0.4$. Will he flee to Miami?
   c. Say Fidel Castro allows anyone who wants to leave Cuba to do so, and eliminates the penalty $F$. How does this alter Carlos’s behavior? Will he flee?
   d. In response to Castro’s policy, President Bush deploys more coast guards off the shore of Miami to reduce the probability of a successful trip. What must be the probability $p$ that will stop Carlos (and others like him) to not emigrate? (Hint: Use a diagram)

3. An expected utility maximizer has an initial wealth of $160,000 and is subject to a risk of fire. There is a 0.05 chance of a major fire with a loss of $70,000 and a 0.05 chance of a disastrous fire with a loss of $120,000. If her utility of wealth function is $w^{1/2}$ how much would she pay for full insurance if the deductible was set at $7620$?

4. An expected utility maximizer has a utility of wealth function $u(w)=1-(1/w)$.
   a. Is this person risk averse?
   b. The individual has the opportunity to invest in a risky prospect which yields $J$ with probability $\frac{1}{2}$ and $0$ with probability $\frac{1}{2}$. The prospect costs $8$ and initial wealth is $16$. Calculate his EU. Will he invest in the risky prospect? Explain.
   c. Say he has a twin brother with identical preferences and they are considering undertaking the prospect as a joint venture (in order to spread the risk), with each covering half the cost and thus receiving half the return. If $J=32$, should they undertake the venture?