ECON301a: Advanced Microeconomics
Blake LeBaron
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Problem Set 8: Due Tuesday, 11/11

1. Consider a Rabin like gamble. You have a wealth level of 1,000. A consumer has expected utility with CRRA/power preferences,

$$u(x) = \frac{1}{1-\gamma}x^{1-\gamma}$$

You observe that a consumer turns down a bet of 0.5 of losing 10, and 0.5 of gaining 11. Increase risk aversion levels, γ, from 0 by 1 until you get a γ large enough so that the consumer turns down this gamble. With this γ value find the value y which is large enough so that the consumer would accept the gamble of losing 100, or gaining y with 50/50 probability. Run the same experiment where the loss is 75. Your answer might be infinity (how can you tell?).

2. Brandeis is worried about parking violations. The parking office is considering increasing the number of people checking stickers. A parking ticket currently costs an amount, F. The probability p represents the chance of getting a ticket. G is the gain from parking illegally (which you get regardless of whether you get caught). Brandeis' policy will increase p, but they will change F, so that $pF = k$ stays constant. Assume that parkers maximize expected utility, and are risk averse, $u''(x) < 0$, with a wealth level, w. Also, assume there is some amount of illegal parking taking place at the current level p. Can you tell what the impact will be from an increase in p on illegal parking at Brandeis?

3. Show that the Ellsberg paradox choices from class could be made by someone exhibiting a kind of max min type behavior. In other words, they do not believe in one well defined set of probabilities, but think there might be many different ones to chose from. These probs range from 0 to 60 blue balls in the urn. In a max min world they make choices to maximize utility in a worst case scenario. They are allowed to use a different scenario for the first set of choices, A and B, and another for the second set C and D.

4. Consider a two period consumer maximizing the following expected utility function,

$$U = u(c_1) + \beta(qu(c_{2,1}) + (1-q)u(c_{2,2})).$$

Subject to the following budget constraints for the two possible states of the world in the future,

$$y = c_1 + p_1 c_{2,1} + p_2 c_{2,2}$$

Utility is additively separable, and we have complete markets. Here p_1 and p_2 are the prices for consumption in the two states of the world. q is the probability of state 1 occurring. $c_{2,j}$ is consumption in period 2, state j. The price of consumption today is set to 1, the numerarare.

   (a) What are the first order conditions for this consumer for the 3 levels of consumption?

   (b) Assume that $u(c) = \log(c)$ in the above preferences. Show how the ratio of consumption between states 1 and 2 depends on the prices and the probabilities. Does this ratio depend on β?

   (c) What is the ratio of consumption today to the consumption in each of the two future states (again with $u(c) = \log(c)$.) If all consumers have the same discount rate, β, and the same beliefs about the probabilities, q, what can you say about the observed ratio of consumption today, to consumption in period 2 for different consumers?