ECON 455, Discussion Section 2

TA: Shane Auerbach (sauerbach@wisc.edu) ; Date: 02/06/15
Office: SS 6470. OH: Wed 8:00-9:30am; Thu 4:15-5:45pm; or by appt.

1. (Colonoscopies) (*Modified from Angner 9.4*) Most colon cancers develop from polyps. Because early screening can detect polyps before they become cancerous, colonoscopies are a good idea for adults. The problem with colonoscopies, however, is that they're unpleasant. Consider a model with three time periods, $t = 0$ (youth), $t = 1$ (adult), and $t = 2$ (elderly). Anne and Bob may choose between the following two options in period $t = 1$:

   - **Colonoscopy (C)** Have one in $t = 1$ ($u_1^C = 0$) and be healthy in $t = 2$ ($u_2^C = 18$)
   - **No colonoscopy (N)** Avoid it in $t = 1$ ($u_1^N = 6$) and be unhealthy in $t = 2$ ($u_2^N = 0$)

   Anne discounts the future exponentially with $\delta = 2/3$. Bob discounts the future quasi-hyperbolically with $\beta = 1/6$ and $\delta = 1$.

   (a) Is it irrational (generally speaking, not just for Anne and Bob) to avoid the colonoscopy?

   (b) At $t = 0$, what are Anne's present values for C and N?

   (c) At $t = 1$, what are Anne's present values for C and N?

   (d) At $t = 0$, what are Bob's present values for C and N?

   (e) At $t = 1$, what are Bob's present values for C and N?

   (f) Shane's Colonoscopy Kidnapping Company (SCKC) offers a service in which clients in $t = 0$ pay Shane to kidnap them in $t = 1$, drug them (safely, of course), and forcibly take them to their doctors for a colonoscopy. In period $t = 0$, assuming both agents are sophisticates, what is the maximum Anne would be willing to pay for that service? What about Bob? (Think dollars = utils)

2. (Calculating β and δ Q1)(*Modified from Angner 9.5*) Suppose we know that Martha is a quasi-hyperbolic discounter and that she is indifferent between one util today and three utils tomorrow. We also know that Clive (also a quasi-hyperbolic discounter) is indifferent between 1 util tomorrow and 3 utils the day after tomorrow.

   (a) If Martha's $\beta = 1/2$, what is Martha's δ?

   (b) If Martha's $\delta = 4/9$, what is Martha's β?

   (c) Explain why we cannot determine Clive's β even if we're given his δ?

   (d) What is Clive's δ?

3. (Calculating β and δ Q2)(*Modified from Angner 9.7*) Sobaka (my cat) is a quasi-hyperbolic discounter with $\beta, \delta \in (0, 1)$. Given that today he's indifferent between the following three options (A, B and C), calculate his β and δ.

- A: 2 fish today
- B: 5 fish tomorrow
- C: 10 fish the day after tomorrow

4. (The Sophisticate's Curse)(*Modified from Angner 9.8/9*) Your movie theater's schedule over the next four days is as follows – your utility from attending each movie is included in parentheses.

   - Day 0 (Today): **F**ifty Shades of Grey ($u_0 = 3$)
   - Day 1: **T**he Interview ($u_1 = 5$)
   - Day 2: **W**hiplash ($u_2 = 8$)
   - Day 3: **B**oyhood ($u_3 = 13$)

   For all questions below, suppose $\delta = 1$ and $\beta = 1/2$, and QH stands for quasi-hyperbolic.

   (a) If you are an exponential discounter and can go to three movies, which do you skip?

   (b) If you are a naive QH discounter and can go to three movies, which do you skip?

   (c) If you are a sophisticated QH discounter and can go to three movies, which do you skip?

   (d) If you are an exponential discounter and can go to one movie, which do you go to?

   (e) If you are a naive QH discounter and can go to one movie, which do you go to?

   (f) If you are a sophisticated QH discounter and can go to one movie, which do you go to?

   (g) If you are the sophisticate in (c) and could, today, whack yourself in the head to make yourself a naif, would you have incentive to do so?

   (h) If you are the sophisticate in (f) and could, today, whack yourself in the head to make yourself a naif, would you have incentive to do so?