Homework 2

Due Tuesday February 17, 2014

Economics of Sustainability

K Foster, Colin Powell School CCNY, Spring 2015

You are encouraged to form study groups to work on these problems. However each student must hand in a separate assignment: the group can work together to discuss the papers and comment on drafts, but each study group member must write it up herself/himself. When emailing assignments, please include your name and the assignment number as part of the filename.

- 1. What are the names of people in your study group?
- 2. Consider some discount rate calculations.
 - a. If the interest rate is 5%, what is the discounted value of \$10,000 in 3 years? (You can pick your annualizing frequency)
 - b. If the interest rate is 1%, what is the discounted value of \$10,000 in 3 years? (same frequency as before)
 - c. If the interest rate is 10%, what is the discounted value of \$10,000 in 3 years? (same frequency)
 - d. At a discount rate of 7%, what is the present value of 3 payments made in 10, 12, and 15 years in the future? Calculate at annual compounding, semi-annual compounding, and continuous compounding.
 - e. (extra) Consider a case where we use (something like) hyperbolic discounting. So to value \$10m in 100 years, we use a discount rate of 0.5% from years 50-100, a discount rate of 1% for years 25-49, and a discount rate of 2% for years up to 25. What is the discounted value? What would be the discounted value at a flat rate of 1%? (Choose a frequency of annualizing)
- 3. Suppose a possible gas well site, currently untapped, could produce gas sufficient to turn a profit of \$1m in 7 years. How much is the site worth now, if the discount rate were 9%? If the discount rate were 14% because of a greater riskiness? If there is a 50% chance that the rate is 9%, and a 50% chance that the rate is 14%, what is the well worth? What interest rate would give the same value (is it an average of 9% and 14%)?