Section Notes 21

Covering material from Lecture on April 11^{th}

Class Outline

1. Stock vs. Flow
2. Present Discounted Value and Investment Decisions

1 Stock vs. Flow

To be clear, we need to distinguish between a stock and a flow. A stock is something that can accumulate over time, whereas a flow is a per period choice. For example, what are these:

1. Savings Account
2. Withdraw from Account
3. Government Debt
4. Government Expenditures
5. Pollution

2 Present Discounted Value and Investment Decisions

Investment decisions should be made with comparable amounts at any moment in time. We don't know how to compare future income with income today unless we ask ourselves what value it has today, or finding it's present discounted value (PDV). This is simply done by asking the following question: What amount is X dollars in t years worth to me today if the interest rate is r and we assume no inflation? We get the following relationship:

$$\text{PDV of } X = \frac{X}{(1+r)^t}$$

What about a constant stream of income income over that period?

$$\text{PDV of stream } X = \sum_{t=0}^{T} \frac{X_t}{(1+r)^t}$$

Problem: (Pindyck & Rubinfeld, Chapter 15, Exercise 7)

Ralph is trying to decide whether to go to graduate school. If he spends two years in graduate school, paying \$15,000 tuition each year, he will get a job that will pay \$60,000 per year for the rest of his working life. If he does not go to school, he will go into the workforce immediately. He will then make \$30,000 per year for the next three years, \$45,000 for the following three years, and \$60,000 per year every year after that. If the interest rate is 10 percent, is graduate school a good financial investment?

Problem: (Pindyck & Rubinfeld, Chapter 15, Exercise 12)

A consumer has a decision: She can buy a computer for \$1000 and then pay \$120 a year for three years of Internet access, or she can receive a \$400 rebate on the computer but agree to pay \$25 per month for three years for Internet access.

a. What should the consumer do if the interest rate is 3 percent?

b. What if the interest rate is 17 percent?

c. At what interest rate will the consumer be indifferent between the two options?