Introduction to Programming and Numerical Analysis

Exercise Class 7
Exercise 4

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Today's Program

- 15:15 – 15:20: Introduction to Problem Set 2
- 15:20 – 15:50: Work on Problem Set 2
- 15:50 – 16:00: Quick Review of A1 and A2
- 16:00 – 16:15: Break
- 16:15 – 16:45: Work on Problem Set 2
- 16:45-17:00: Quick Review of A3 and A5

Introduction to Problem Set 1

Today's Agenda

- Introduction to simulating pseudo-random numbers, a fundamental technique in numerical economics
  - Model uncertain outcomes effectively
  - Model variability in preferences, resources, and productivity in economic models

Learning Outcomes

- Be able to:
  - Draw random numbers from distributions
  - Use seeds and states to ensure reproducibility
  - Solve an exchange economy model with heterogenous preferences

Tips for Problem Set 2, A1:

- Output should be this table

```
(0, 0): x = 0.569
(0, 1): x = 0.077
(1, 0): x = 0.569
(1, 1): x = 0.077
(2, 0): x = 0.569
(2, 1): x = 0.077
```

Tips for Problem Set 1, A5:

Steps

1. Generate agents, their preferences, and endowments through random number simulation

2. Define the demand and aggregate demand for good one
   - Remember, due to Cobb-Douglass preference $x_1 = \alpha \frac{I}{p_1}$ and $x_1 = (1-\alpha)\frac{I}{p_2}$

3. Define excess demand and aggregate excess demand for good one
   - Remember, due to no production $s(x_1) = \sum_{j=0}^{N} e_1^j$

4. Find the equilibrium by defining excess demand for good one as a function of price one and solve for the root

The solution is $p_1 = 1.62056$ (remember Walras-Law)

Break

Questions & comments?