1 Introduction

Welcome to Section!

- Starting next week, section will be held in GSPP 105 on Wednesdays from 4 to 5PM
- Office hours: Currently Thursdays 4:45-5:45 in Giannini 304.
    - Can be changed
- Email policy: Please put **[DEVP252]** in the subject line.
    - I will try my best to respond within 48 hours during the week.
- Class websites
    - bCourses: course announcements, files, videos, assignments
    - Gradescope: website for submitting completed assignments
    - Datahub server: host for Jupyter notebooks

2 Inequality

The most common way to measure inequality within a country is with the Gini coefficient

$$G = \frac{1}{2N^2\mu} \sum_{j=1}^{N} \sum_{k=1}^{N} n_j n_k |y_j - y_k|$$

1. What does each variable in the formula for G mean? Can you give a verbal summary of the math in the formula?

2. What would the Gini coefficient be if everyone had equal wealth? If one person had all of the economy's wealth?

Practice Problem

Let's say the economy of ShortLife has two kinds of jobs, which are the only sources of income for the people. One kind of job pays \$200, the other pays \$100. Individuals in this economy live for two years. In each year, only half the population can manage to get the high-paying jobs. The other half has to be content with the low-paying one. At the end of each year, everybody is fired from existing positions, and those people assigned to the high-paying job next year are chosen randomly. This means that at any date, each person, irrespective of past earnings, has probability 1/2 of being selected for the high-paying job.

1. Calculate the Gini coefficient based on people's incomes in any one particular period. Now calculate each person's average per period lifetime income and compute the Gini coefficient based on these incomes. Which measure suggests more inequality? Explain why.

2. Now change the scenario somewhat. Suppose that a person holding a job of one type has probability 3/4 of having the same kind of job next year. Calculate the expected lifetime income (per year average) of a person who currently has a high-paying job, and do the same for a person with a low-paying job. Compute the Gini coefficient based on these expected per-period incomes and compare it with the measure obtained in Question 1. Explain the difference you observe.

Other useful measures of inequality include the **Kuznets Ratio**

$$\frac{H_{20}}{L_{40}}$$

where H_{20} (L_{40}) is the consumption of the richest 20% (poorest 40%) and **Lorenz Curves**

$$L(p) = \frac{L_p}{Y}$$

where Y is total consumption.

3   Poverty

In class we've discussed a few different poverty measures. What's an intuitive definition for each? Which definition do you thing is the most useful and why?

1. Headcount poverty (P_0)[1]

$$P_0 = \frac{1}{N} \sum_{j=1}^{N} \mathbb{1}(y_j < z)$$

2. Poverty index (P_1)

$$P_1 = \frac{1}{N} \sum_{j=1}^{q} \left(\frac{z - y_j}{z} \right)$$

3. Poverty severity index (P_2)

$$P_2 = \frac{1}{N} \sum_{j=1}^{q} \left(\frac{z - y_j}{z} \right)^2$$

Compute each of these three measures for the economy described in Question 2 using expected lifetime income. Assume the poverty line is $120 per year.

4   Further questions

1. What are some of the limitations of these income-based measures of poverty and inequality?

2. What are the tradeoffs between policies that emphasize reducing poverty vs. reducing inequality?

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[1]Note the $\mathbb{1}()$ is an indicator function which takes a value of 1 if the argument is true and 0 otherwise