

AP/ECON 4380 & GS/ECON 5950 : Midterm Exam

February 12 2014
11:30 am – 12:30 pm

Do all 3 questions. All questions count equally.

1. What level of spending would be chosen in the following jurisdiction, if residents of the jurisdiction voted directly over levels of spending, using **pairwise majority** rule?

Voters differ in their income y . Each voter has the same preferences, represented by the utility function

$$u(x, g) = \log x + \log G$$

where x is the person's after-tax income, and G is the level of public spending.

Public spending is financed by a **head tax** : each voter pays for an equal share of the cost of the public sector.

There are 1001 voters ; the mean income of the voters is 50,000 dollars, the median income is 40,000 dollars and the standard deviation of voters' income is 10,000 dollars.

2. Which of the axioms of Arrow's Impossibility Theorem does the following social ordering [based on "Nanson's Rule"] violate?

Start by calculating the Borda count for each of the N alternatives. Then eliminate the $m < N$ alternatives which got a below-average score in the initial Borda count. Recalculate the Borda count for the remaining $N - m$ alternatives, and eliminate $j < N - m$ alternatives which get a below-average score in this second round. Continue this process until there is only one alternative left.

This last alternative remaining will be ranked first. Of the alternatives eliminated in the last round, the one with the second highest Borda count (in that round) is ranked second, then the one with the third highest and so on. The highest-scoring alternative to be eliminated in the second-last round is ranked next-highest, and so on, with the alternative which got the lowest Borda count in the very first round being ranked last.

3. If voters' preferences are single-peaked over a one-dimensional set of alternatives, what assumptions ensure that the winning party in an election will choose the median of voters' preferred policies as its platform?

Explain briefly.