

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

Thursday April 10 2014
9 – 11 am

Do **any 5** of the following 8 questions. All questions count equally.

1. Give an example of a profile of voters, with preferences over several alternatives, which has the following property.

Some alternative (say x) is a Condorcet winner, **but** this alternative x is the first alternative eliminated if Coombs's voting rule is used : under Coombs's rule, a sequence of ballots is held ; the alternative which is ranked last by the most voters is eliminated after the first ballot ; then the process is repeated (with this one alternative eliminated from the ballot), and then the alternative with the most last-place votes in this second ballot is also eliminated ; and so on, until only one alternative remains.

2. Prove the following result, which is used in the proof of Arrow's Impossibility Theorem :

If some individual is decisive over some pair of alternatives, then that person is decisive over all pairs of alternatives, if the rule for the social ordering obeys the axioms of unrestricted domain, the Pareto principle (if everyone ranks x above y , then the ordering ranks x above y), and the independence of irrelevant alternatives.

[An individual is decisive over the pair of alternatives x and y if the social choice rule ranks x above y whenever : that person ranks x above y and everybody else ranks y above x .]

3. Describe an equilibrium in which exactly 2 candidates choose to run in the “citizen–candidate” model, in which : candidates’ own preferred policies are known ; candidates care about which policy is chosen ; candidates cannot commit to a policy other than their own preferred policy ; it is costly for a citizen to become a candidate.
4. How much spending on public monuments should voters allow an elected official to undertake, in the following model of “retrospective voting”?

Voters can observe exactly the amount r which the elected official spends on public monuments. Voters get no benefit at all from this spending, and care only about minimizing the amount of money which elected officials spend. Voters can punish the elected official (after the fact) by coordinating on a voting strategy, and voting against an official who spends more on public monuments than voters allow.

The elected official places a value $V = 1$ on getting re–elected. The official also places a value of $6r - r^2$ on the amount she spends on public monuments (so that the official’s payoff is $6r - r^2 + 1$ if she spends r dollars on public monuments and is re–elected, and $6r - r^2$ if she spends r dollars and is not re–elected). The largest possible amount of money which is available to be spent on public monuments is 5.

5. Suppose that an appointed public official gets to choose the budget for her department, but that her budget must be passed by a referendum among the voters. Suppose as well that there is some “reversion level” specified for public spending, if the budget is defeated. Would increasing this reversion level of spending decrease the amount of wasteful spending in the public sector? Explain briefly.

continued

6. Suppose that there are three voters in a legislature. Suppose as well that each of the three voters has single-peaked preferences over the possible alternatives.

The three legislators are L , with the furthest-left preferred policy, M with the median of the preferred policies and R with the furthest-right preferred policy.

The legislature's rules allow for a sequence of different proposals, possibly infinite. The rules of the legislature are : (1) L is chosen to make an initial proposal ; (2) if this initial proposal passes, it becomes the law, and nothing more happens ; (3) if the initial proposal (by L) is defeated, then M gets a chance to make a proposal ; (4) if M 's proposal passes (after the initial proposal has been defeated), then M 's proposal becomes the law, and nothing more happens ; (5) if M 's proposal is defeated, then R gets to make a proposal ; (6) if R 's proposal is passed (after the initial two proposals have been defeated), then R 's proposal becomes law, and nothing more happens ; (7) if R 's proposal is defeated, then we go back to step (1).

A proposal requires a simple majority of the three votes in order to pass. Each legislator discounts the future at the rate $\delta < 1$ (so that her payoff from a policy passed in stage t is δ^{t-1} times her payoff from that same proposal if the proposal were passed in stage 1).

What would happen in this legislature, (if all 3 legislators knew the rules just enumerated)?

continued

7. Discuss the appropriate level for the provision of education in the following model : 3 local jurisdictions, or 1 national jurisdiction?

All people have the same income, 100.

Each person regards 1 unit of the public good as being worth the same as a_i units of private consumption. (So a person's utility function is $c+a_i g$ if c is her private good consumption and g is her public good consumption.) The value a_i of the public good differs among people : there are 100 people for whom $a_1 = 0$, 100 people for whom $a_2 = 1$ and 100 people for whom $a_3 = 2$.

The total cost of providing g units of the public good to each of N people is $150g$. This is a total cost : the cost per person is $150g/N$.

People are perfectly mobile. The public good must be financed by a head tax. if the public good is provided at the national level, the quantity provided must be the same for everyone.

8. What bill should a legislator propose, in the following situation?

The legislator has been chosen to propose the legislation for spending on parks in different districts. People benefit only from spending in parks in the district in which they live. The cost of all spending on parks will be divided equally among all the country's residents. Each district has a representative in the legislature, although different districts may have different populations. The value residents place on spending on a park in their district may also vary across districts.

A bill needs a simple majority to pass, and there will be no spending on parks at all if the bill is defeated.

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