Exam - Political Economics

Spring 2003

1. (Structure-induced equilibrium - 15 points)

   Assume that there are two different types of government-provided pure public goods, A and B. A (B) can take any value a (b) between 0 and $\overline{a}$ ($\overline{b}$). Formally, $a \in [0, \overline{a}]$ and $b \in [0, \overline{b}]$. There are three voters $(1, 2, 3)$. Each voter is endowed with income y. The government collects tax revenues τ from each voter. Revenues can be spent on both types of public goods. The price for both public good types equals unity. Voters differ with respect to their preference for public goods. Preferences of voter i over private consumption, c, and both public good types are $u^i(c, a, b) = c + \gamma^i \ln a + \theta^i \ln (ab)$, $i = 1, 2, 3$. θ^i (γ^i) measures the preference intensity for the public good category $A(B)$. Assume further that $\gamma^3 > \gamma^1 > \gamma^2 > 0$ and $\theta^1 + \gamma^1 > \theta^2 + \gamma^2 > \theta^3 + \gamma^3$.

   The public budget constraint is $3\tau = a + b$ and the private budget constraint is

   $$\begin{aligned} c &= y - \tau \\ c &= y - \frac{a+b}{3}. \end{aligned}$$

   (a) What is the most preferred policy $a(\theta^i, \gamma^i)$ and $b(\theta^i, \gamma^i)$ of voter i? Rank the individuals according to their most-preferred policy options. (Hint: y, $\overline{a}$ and $\overline{b}$ are sufficiently large such that an interior solution always exists.)

   (b) Assume that there is separate majority voting on the levels a and b, i.e. when voting on a the level of b is taken as **given** and vice versa. Compute the levels of a and b chosen in a political (structure-induced) equilibrium.

   (c) Briefly explain how the concept of a structure-induced equilibrium solves the problem of voting cycles with a multi-dimensional policy space.

2. Consider the following model: there are n identical and risk-neutral agents who compete for a rent ω. Agent i may make investments, x_i, to increase the probability of winning the rent. $r > 0$ is a parameter. These investments are sunk costs. The probability contest success function, which determines the outcome of the game is given by

   $$p_i = \frac{x_i^r}{\sum_{j=1}^{n} x_j^r} \tag{1}$$

Agent i's problem is to solve

$$\max_{x_i} \frac{x_i^r}{\sum_{j=1}^n x_j^r}\omega - x_i. \tag{2}$$

1. (a) What are the equilibrium investments of each agent?
   (b) What happens to the equilibrium investments of each agent if r increases, give intuition.
   (c) What is the expected utility of the game for one agent? How is it affected by an increase in the number of agents?

3. In the paper "Coase versus Coasians" the authors, Glaeser and Shleifer, ask the question: when would a government want regulators and when it would want apolitical judges. What are the benefits and costs of the two systems as argued in the paper?

Good Luck!!