

Exam Political Economics  
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This exam consists of four questions. The first two together gives 25 credits and question 3 and 4 gives 25 credits each. To get full credit, you need to state and explain your results clearly. Good Luck!

1. Assume that there are two different types of pure public goods,  $A$  and  $B$  respectively. The policy instrument  $A$  ( $B$ ) can take any value  $a$  ( $b$ ) between 0 and  $\bar{a}$  ( $\bar{b}$ ). Formally,  $a \in [0, \bar{a}]$  and  $b \in [0, \bar{b}]$ . There are three type of voters (1, 2, 3) which are of equal size in the population. The overall population size is normalized at unity. Each voter is endowed with income 1. The government collects tax revenues  $\tau$  from each voter. Revenues can be spent on both types of public goods where the price for both public good types equals unity. Voters differ with respect to their preference for public goods. Preferences of voter 1 and 3 over private consumption,  $c$ , and both public good types are  $u^i(c, a, b) = c + \theta^i \ln a + \gamma^i \ln b$ ,  $i = 1, 3$ .  $\theta^i$  ( $\gamma^i$ )  $> 0$  measures the preference intensity for the public good category  $A$  ( $B$ ). Preferences for voter 2 are  $u^2(c, a, b) = c + \theta^2 \ln a + \gamma^2 (ab - b^2)$ .
  - (a) Compute each voter's policy preference. What is the most preferred policy  $a(\theta^i, \gamma^i)$  and  $b(\theta^i, \gamma^i)$  of each voter? (Hint:  $y$ ,  $\bar{a}$  and  $\bar{b}$  are sufficiently large such that an interior solution always exists.)
  - (b) Assume that there is separate majority voting on the levels  $a$  and  $b$ . When voting on  $a$  the level of  $b$  is taken as given and vice versa. Assume that  $(\theta^1, \theta^2, \theta^3) = (0.7, 0.5, 0.2)$  and  $(\gamma^3, \gamma^1, \gamma^2) = (0.6, 0.4, 0.1)$ .
    - i. Show formally whether preferences are single-crossing in each policy dimension, i.e.  $a$  and  $b$ ?
    - ii. Compute the levels of  $a$  and  $b$  chosen in political equilibrium.
  - (c) How would the equilibrium outcome change if the levels  $a$  and  $b$  were determined sequentially? At the first voting stage the level  $b$ , preferred by a majority, is determined. At this stage, voters anticipate how a change in the voting outcome affects the subsequently determined level of  $a$ . At the second stage of the voting process, individuals vote over the level of  $a$  taking  $b$  as given. Determine the levels of  $a$  and  $b$  chosen in political equilibrium.
2. What is the basic assumption of the probabilistic voting approach which eliminates voting cycles? Explain (verbally) why the assumption eliminates voting cycles.

3. Consider first the paper “Corruption” by Glaeser and Sheifer. There are two goods 1 and 2 where  $x_1$  and  $x_2$  are the quantities. The official prices are given by  $MC_1$  and  $MC_2$  and the consumer prices are  $p_1$  and  $p_2$ .
- Show the first-order condition for the joint monopolist. Assume that the goods in this case are complementary ( $\frac{dx_1}{dx_2} > 0$ ). Compare the solution to the case when independent agencies sell one good each and the case when each good can be soled by many producers. How do the prices and quantities differ between the three cases.
  - Assume now that there is one good only and that the demand is given by  $p = a - bq$ , and the marginal cost for production, which bureaucrats should pay the central government is  $\theta$ . How much does the bureaucrat gain from stealing, i.e., not paying the government anything? What is the price level with and without theft. Show analytically and use figures to explain.
  - According to Mauro (1995), what is the link through which corruption affects growth? Which IV variable is used as a proxy for corruption and why?
4. (a) (a) Consider the paper “In Defence of Lawyers”, by Wärneryd. There are two principals, 1 and 2, who are involved in a dispute over a piece of property  $R$ . In the case of litigation, when the principals compete against each other, each principal’s equilibrium profit is  $\frac{R}{4}$ . In the case of delegation the model is solved in two steps. First the (identical) principals decide how much to pay the lawyers ( $w_1$  and  $w_2$ ), then the (identical) lawyers decide how much to invest ( $x_1$  and  $x_2$ ). In the case of delegation, the lawyer of principal 1 solves

$$\max_{x_1} \frac{x_1}{x_1 + x_2} w_1 - x_1.$$

Lawyer 2 has an analogous problem. The equilibrium investments at stage 2 are

$$x_1^* = w_1^2 w_2 \frac{1}{(w_1 + w_2)^2}$$

and

$$x_2^* = w_1 w_2^2 \frac{1}{(w_1 + w_2)^2}.$$

At stage one, principal 1 therefore solves

$$\max_{w_1} \frac{w_1}{w_1 + w_2} (R - w_1).$$

Principal 2 has an analogous problem. Derive the profits of the lawyers and principals in the delegated game. Compare the principals’ profits in the two games. What is the argument in this paper for why lawyers are used? The solution that would be optimal for the

principals if they could coordinate may be difficult to achieve because of a prisoners's-dilemma-like problem. Why is it difficult to achieve?

- (b) Briefly in words, what is the basic argument in the paper "Legal Origin" by Shleifer and Vishny for why France from the 12th century used state-employed judges whereas England opted for independent juries?