Introduction to Political Economy 14.770
Problem Set 6

Due date: December 8, 2017.

Question 1:

Consider the Banerjee, Hanna, and Mullainathan model of corruption. Assume there are two types of agents in the economy, group 1 with size N_1 and group 2 with size N_2. There is a good that the central government owns and the total measure of this good is 1. The social value of assigning an agent of group 1 the good is H and the social value of assigning the agents of group two the good is L, and assume that $H > L$. There is a misalignment between the social valuation and the private valuation. In particular, assume that the private valuation and the ability to pay for an agent in group 1 are h and y_1 respectively, and for group 2 are l and y_2 with $h = y_1 < l = y_2$. There is scarcity in the good to be allocated, in particular assume that $N_1 = 1$ and $N_2 > 1$. The agents' type is private information.

Assume also that there is a detection procedure in which by testing t units of time you can find the agent's type with probability $\phi(t)$ where $\phi'(t) > 0$. The cost of testing is zero for the bureaucrat, and δ per unit of testing for both the social planner and agents of both types.

Finally, assume that bureaucrats vary according to their cost of being corrupt. In particular, if a given bureaucrat pays a fixed cost γ, he can be corrupt and ignore whatever rules the government sets. Bureaucrats are distributed according to the cdf $F(\gamma)$.

1. Define allocative efficiency in this case.

2. Suppose the government can set pairs (p_i, t_i) of prices and testing for each type. Let π_i be the probability that a member of group i gets the good (this is not related to the issue of testing and getting 'found

out', but rather that the good may be rationed randomly given limited supply). Write down the IR (individual rationality/participation constraint) and IC (incentive compatibility) constraints for both types. Assume that if testing reveals an agent to be lying then that agent does not get the good.

3. Solve for the winner pay mechanism that the social planner would use to maximize allocative efficiency in this economy. (You can ignore the possibility of corrupt bureaucrats for now – assume that the rules are followed.)

4. Solve for the winner pay mechanism that a corrupt bureaucrat will use in order to maximize his profits.

5. Suppose that the social planner sets the rule (p_1^*, t_1^*) as the one that maximizes allocative efficiency. If the bureaucrat is not corrupt, he keeps all prices paid under this rule; but, if he pays the corruption cost γ, he can set his own rule and keep all profits. What is the level of γ that makes a bureaucrat indifferent between being corrupt or not?

6. Assume citizens are randomly matched to bureaucrats, whose costs γ are distributed $F(\gamma)$. What is the average level of testing in the economy amongst those in group 1? What is the fraction of corrupt bureaucrats in the economy? How do average testing and corruption vary as the misalignment level varies $(l - h)$?

7. Next, consider the case where there is no social misalignment, i.e., $h \geq y_1 > y_2 \geq l$. Also assume $N_1 < 1$. What are the socially efficient prices and testing levels in this case?

Question 2:

In class we discussed the idea that there could be multiple equilibria in corruption based on the idea that the probability of detection decreases as more people in the economy are corrupt. However, there are many other theories that could generate multiple equilibria in corruption levels. Here are two examples:

- Ability to bribe the enforcers - you can be corrupt if the police are corrupt, and the police are corrupt because the people that keep them honest are corrupt.

- Chance other party is honest - in any given transaction you don't know whether the other side is honest or corrupt. So the probability you are honest depends on your belief that the other party in the transaction is honest too.

Pick one of these two stories - or some other story (not the one discussed in class) and:

1. Write down a simple model that encapsulates that theory and generates multiple equilibria.

2. Discuss comparative statics of with respect to at least one parameter of your model that determine of when multiple equilibria are more or less likely to obtain in your model.

3. Discuss what your model implies for effective anti-corruption policy.

References

Banerjee, Abhijit, Rema Hanna and Sendhil Mullainathan (2012). "Corruption", Chapter 27 in *Handbook of Organizational Economics*, edited by Robert Gibbons and John Roberts, Princeton University Press.

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