902: Issues in Economic Systems and Institutions

Department of Economics, Delhi School of Economics

Final exam. Winter Semester, 2015-16.

PART A

Answer any **two** *questions. Each question carries 15 marks.*

1. One of the traditional ideas in economics is that socially desirable behaviour can be elicited by offering monetary rewards and punishments. Discuss two theoretical reasons why monetary incentives may turn out to be counter-productive. Give examples of real life situations where such effects may arise. What light does experimental evidence throw on this issue?

2. What are the main conclusions of Condorcet's jury theorem? Distinguish between the statistical version and the strategic version and explain why the latter is a more satisfactory approach. Discuss the conditions under which the jury theorem is valid in each framework.

3. What is the difference between statistical and taste based discrimination? Explain one empirical methodology that has been used to detect discrimination in social and economic interactions. Explain another method which can be used to identify if discrimination has a taste based component. Does statistical discrimination call for any corrective intervention? Why or why not?

PART B

Answer any **two** *questions. Each question carries 20 marks.*

4. ($5 \times 4 = 20$) This question is based on the Crawford-Sobel model of cheap talk with uniform-quadratic preferences. The state-of-the-world θ is uniformly distributed on $[0, 1]$. Its realization is private information to the sender, who sends a costless message m to the receiver, potentially containing some information about θ. The receiver takes an action $a \in [0, 1]$, and preferences are given by

$$\begin{aligned} U_R &= -(a - \theta)^2 \\ U_S &= -(a - b - \theta)^2 \end{aligned}$$

where b is the sender's bias parameter.

(a) Suppose $b = \frac{1}{16}$. Find all the Perfect Bayesian equilibria.

(b) Consider the following censorship game. Suppose there is a third player, the censor, with bias $\widehat{b} > 0$ who does not know the realization of θ. All biases are common knowledge. The sender, after learning the realization of θ, sends a private cheap talk message m to the censor. Then the censor sends a message $\widehat{m}$ to the receiver, who chooses the action. Find the threshold value of $\widehat{b}$ above which "censorship is self-defeating", i.e., the censor's ex ante expected payoff is lower in the censorship game than in the game where the sender can directly communicate with the receiver (in each game, assume the most informative equilibrium is selected).

(c) Find the threshold value of $\widehat{b}$ above which there only exists a babbling equilibrium in the censorship game.

(d) Return to the original two-player game between the sender and receiver. Suppose the sender can only send a binary message (either $m = 0$ or $m = 1$). However, the sender can ex ante comit to a communication rule of the following kind: the message $m = 0$ is to be sent if and only if θ lies below some threshold $\overline{\theta}$. The sender can choose $\overline{\theta}$ optimally to maximize his expected payoff. Derive the optimum value of $\overline{\theta}$ from the sender's perspective.

5. $(10 + 3 + 2 + 2 + 3 = 20)$ Consider the following reputational cheap talk game. A decision maker choosing a binary action a must either hire $(a = 1)$ or reject $(a = 0)$ a job candidate who comes from a minority group. The candidate's quality is denoted by θ and he is either competent $(\theta = 1)$ or incompetent $(\theta = 0)$. The decision maker intially believes that $\theta = 0$ or 1 with equal probability. There is an advisor who observes a noisy signal s, whose conditional distribution is given by:

	$\theta = 0$	$\theta = 1$
$s = 0$	p	$1 - p$
$s = 1$	$1 - p$	p

where $p \in \left(\frac{1}{2}, 1\right)$ is the accuracy of the signal.

After observing s, the advisor sends a cheap talk message about the candidate's quality to the decision maker, whose payoff is dependent on the candidate's quality and the decision in the following way:

	$\theta = 0$	$\theta = 1$
$a = 0$	1	0
$a = 1$	0	1

The advisor can be one of two types: good or bad, with a prior probability μ that he is good.. The good advisor receives the same payoffs from the appointment as the decision maker herself, while the bad advisor gets a payoff of 1 when $a = 0$, and 0 when $a = 1$. That is, the bad advisor is prejudiced and never wants the candidate to be hired regardless of competence. Both advisors get an additional reputational payoff from being perceived as a good advisor, given by the function $f(\widehat{\mu}) = \alpha\widehat{\mu}$, where $\alpha > 0$ is a parameter and $\widehat{\mu}$ is the decision maker's belief that the advisor is good after hearing his message m and subsequently learning the state-of-the-world θ.

(a) Consider a truth-telling equilibrium where the good advisor always truthfully reports his signal ($m = s$) while the bad advisor always lies and sends the message $m = 0$. Let $\widehat{\mu}(m, \theta)$ denote the advisor's ex post reputation. Show mathematically that:

$$\widehat{\mu}(0, 1) < \widehat{\mu}(0, 0) < \mu$$

Give an intuitive explanation why the advisor's reputation will worsen if he makes a politically incorrect recommendation even if he turns out to be correct.

(b) Show that there is some $\overline{\alpha}$ such that the truth-telling equilibrium described above exists if and only if $\alpha \leq \overline{\alpha}$.

(c) Show that there is some $\widehat{\alpha} > \overline{\alpha}$ such that in a postulated truth-telling equilibrium as described above, both the good and the bad advisor's incentive constraint will be violated if $\alpha > \widehat{\alpha}$.

(d) Comment on the following statement: "Political correctness is a cultural trap, not an inevitability."

(e) In general, what are the social costs and benefits of political correctness?

6. $(5 + 5 + 5 + 3 + 2 = 20)$ This question is based on the Bikhchandani-Hirschleifer-Welch model of information cascades. n investors sequentially decide whether to invest in a new asset or not. Payoff from not investing is 0, and that from investing is $+1$ if the state-of-the-world is favourable (probability q) and -1 if it is unfavourable (probability $1 - q$). Every investor observes an independent private signal of precision $p \in \left(\frac{1}{2}, 1\right)$ and also knows the decisions (but not signals) of the investors who have chosen before him.

(a) Suppose $q = \frac{1}{2}$ and $p = \frac{2}{3}$. Calculate the probability of a cascade starting after the first 2 investors.

(b) As $n \to \infty$, what is the probability that a wrong cascade will eventually form?

(c) Suppose there is a prize of amount 0.4 for being contrarian, i.e. for not taking the same decision that a majority of previous investors have taken (if a tie prevails, there is no prize). After what kind of history will a cascade start? What is the probability a wrong cascade will eventually form as $n \to \infty$?

(d) Assume there is no prize for contrarians. Suppose the very first move is made by an "investment guru" whose signal precision is commonly known to be $\widehat{p} > p = \frac{2}{3}$. Find a threshold $p^* \in \left(\frac{2}{3}, 1\right)$ such that the presence of the investment guru increases the long run probability of a wrong cascade forming.

(e) Intuitively discuss why the problem of information cascades may be made worse by pundits but improved by mavericks who like to "go against the flow."