ECON 4640: Political Economics

Question 1: Agency and Money in Politics [35%]

Assume there is a large pool of politicians, and a donor. For simplicity, we assume that the donor can make sure a politician wins the election by donating C. An elected politician can choose to reward the donor once in office. The timing is as follows:

1. The donor donates to zero or more politicians. The election is decided by a coin-flip between the politicians receiving donations. If no politician received a donation, the election is randomly determined ("period 1").
2. The elected politician chooses whether to reward the donor or not.
3. The donor donates to zero or more politicians. The election is decided by a coin-flip between the politicians receiving donations. If no politician received a donation, the election is randomly determined ("period 2").
4. The elected politician chooses whether to reward the donor or not.

The per-period payoff for the politician is:

$$U_P = \begin{cases} 0 & \text{if not elected} \\ R & \text{if elected and not rewarding donor} \\ R-k & \text{if elected and rewarding donor} \end{cases}$$

The per-period payoff of the donor is

$$U_D = \begin{cases} 0 & \text{if not donating} \\ -C & \text{if donating and not being rewarded} \\ B-C & \text{if donating and being rewarded} \end{cases}$$

where R is the politician's benefit to holding office (e.g. wage), k is the cost of rewarding the donor (i.e. clientelism), C is the cost of donations, B is the reward from donating. Assume that $B > C$. All players discount period 2 payoffs by $\delta < 1$.

Consider the following strategy of the donor: the donor donates to politician A in period 1. If A rewards the donor, the donor donates to A in period 2. Otherwise, the donor donates to another randomly chosen politician.

(a) [5%] Under which condition, if any, will A reward the donor in period 2 (if re-elected)? Explain.
Answer: Once reelected, the politician will never reward the donor in period 2. Rewarding the donor gives $R-k$ which is smaller than the payoff from not rewarding the donor, R.

(b) [5%] Under which condition, if any, will A reward the donor in period 1 (if re-elected)? Interpret the expression.
Answer: If A rewards the donor, he receives $R - k + \delta R$ (from part (a), A will not reward in the second period if reelected). If A does not reward the donor after period 1, he receives only R (he does not get reelected). Thus the condition is:

$$R \leq R - k + \delta R$$

$$\Leftrightarrow k \leq \delta R$$

The politician is more likely to reward the donor if the "wage" R is high, the politician is patient (δ is high), and rewarding the donor is cheap (k low).

(c) [5%] Under which condition does this strategy give the donor higher payoffs than from not donating at all?
Answer: Not donating gives 0, while following the strategy above gives $B - (1 + \delta) C$. Hence the condition is $B - (1 + \delta) C > 0$. The donor will follow the strategy when the rewards exceed the cost of the campaign.

(d) [5%] Assume we are in period 2. Considering A's optimal strategy in (a), what is the donor's optimal strategy?
Answer: The donor will not donate to any candidate since no candidate will reward the donor in the last period anyway.

(e) [5%] If the donor behaves optimally in period 2, what is the optimal strategy of politician A and the donor in period 1? Explain.
Answer: The only possible future gain from rewarding would be to induce a period 2 donation. But (d) showed this is not possible. Thus, A will not have any incentive to reward the donor, since this will not increase the chances of reelection. Given this, the donor will not donate in the first place. Both the politician and the donor have commitment problems. The politician cannot commit to reward the donor in exchange for a donation, and the donor cannot commit to donate to the politician in period 2 if the politician does not reward.

(f) [10%] Given these results, do you think term limits reduce the influence of money in politics? Discuss.
Answer: In the model above, donations are not effective in influencing politics due to the commitment problems discussed. In (sub-game perfect) equilibrium, there are no donations and policy is not influenced by the donor. If A could have been reelected forever, this unraveling would not take place. Politician A could then have incentives to reward the donor in period 2, by the donor promising the help get him elected in period 3 and so on. Thus, there are theoretical arguments that term limits could help reduce the influence of money in politics.

Question 2: Citizen-Candidate Model [30%]

Consider a society inhabited by a continuum of citizens with incomes distributed uniformly between 0 and 2. Each citizen i has preferences over private consumption c and a publicly provided private good g that are given by

$$w^i = \sqrt{c^i} + \sqrt{g}.$$

The public good g is financed through a proportional income tax τ, and the government budget constraint is $\tau y = g$ where y is average income. Private consumption is $c^i = (1-\tau)y^i$.

Consider the following timing:

1. Any citizen may enter as a political candidate at a cost ε.
2. An election is held among the candidates; the candidate who gets plurality wins the election, and a tie is resolved by the toss of a coin.
3. The winning candidate selects a tax rate; if there are no candidates, then a default tax rate $\bar{\tau}$ is implemented.

Note. The mean and median of a random variable $X \sim U[a,b]$ is $(a+b)/2$.

(a) [15%] What optimal policy would a winning candidate with income y^i implement?
Answer: The most preferred tax rate of candidate with income y^i is the solution to

$$\max_{\tau} \sqrt{(1-\tau)y^i} + \sqrt{\tau y}.$$

This is solved by

$$\tau^i = \frac{y}{y+y^i},$$

which is the policy that a candidate with income y^i would implement.

(b) [15%] Suppose that $\varepsilon = 2\sqrt{\frac{1}{2}} - \sqrt{\frac{3}{4}} - \sqrt{\frac{1}{4}}$. In what region must the status quo policy $\bar{\tau}$ lie in order for the equilibrium with only the citizen with median income as candidate to exist? Note that the median income candidate must prefer implementing his/her own tax policy and paying the cost of running to accepting the outside option (i.e. default tax rate $\bar{\tau}$).
Answer: The median and mean incomes both equal 1, and the most preferred tax rate of the median income citizen is thus $1/2$. For the citizen with median income to stand candidate, it must be the case that $w^m(\tau^m) - w^m(\bar{\tau}) \geq \varepsilon$, or equivalently

$$\sqrt{\tfrac{1}{2}} + \sqrt{\tfrac{1}{2}} - \left(\sqrt{(1-\bar{\tau})} + \sqrt{\bar{\tau}}\right) \geq 2\sqrt{\frac{1}{2}} - \sqrt{\tfrac{3}{4}} - \sqrt{\tfrac{1}{4}}.$$

This holds for $\bar{\tau} \leq 0.25$ and $\bar{\tau} \geq 0.75$.

Question 3: Women as Policymakers [35%]

(a) [5%] Suppose you want to study whether women leaders spend more on health and education. Describe the ideal experiment. State clearly the unit of randomization, what is randomized, and what outcomes would be compared.
Answer: Randomly assign the gender of the political leader across comparable political units (e.g. villages/municipalities), holding the rest of the institutional environment fixed. Compare downstream policy outcomes (e.g. spending for health and education) between treated (female leader) and control (male leader) units.

(b) [15%] Consider the following regression estimated in the Chattopadhyay & Duflo (2004) paper:

$$Y_{ij} = \beta_1 + \beta_2 R_j + \beta_3 D_i \cdot R_j + \varepsilon_{ij},$$

where Y_{ij} is investment in good i in village j (standardized, i.e. in *standard deviation* terms), R_j is an indicator that village j had a seat reserved for a woman, D_i is average difference between the *fraction* of requests about good i from women and from men.

TABLE VI
OLS REGRESSIONS: DETERMINANTS OF PUBLIC GOOD PROVISION

	West Bengal					Rajasthan			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Reserved for a Woman	.23	−.17	.00	.18	.17	.16	−.29	.04	.16
	(.101)	(.123)	(.159)	(.136)	(.111)	(.115)	(.19)	(.16)	(.118)
Reserved $* D_i$	1.63		1.22	1.56	1.67	4.40		4.66	4.29
	(.501)		(.799)	(.629)	(.554)	(1.454)		(1.6)	(1.491)
Reserved $* S_i$		2.04					1.78		
		(.642)					(.728)		
Reserved $* D_{\{ij\}}$			.03					−.37	
(village level)			(.047)					(.169)	
Reserved $* S_{\{ij\}}$			−.01					.05	
(village level)			(.155)					(.27)	
Pradhan is New					−.09				
					(.079)				
Pradhan is New $* D_i$					−.10				
					(.323)				
Reservation in 2003					.03				
					(.093)				
Reservation in 2003 $* D_i$					−.19				
					(.326)				
Reserved for SC/ST					−.07				.00
					(.075)				(.18)
Reserved for SC/ST $* D_i$					.10				.03
					(.145)				(.315)
$D_{\{ij\}}$	No	No	Yes	No	No	No	No	Yes	No
$S_{\{ij\}}$	No	No	Yes	No	No	No	No	Yes	No
Pradhan's Characteristics	No	No	No	Yes	No	No	No	No	No
Pradhan's Characteristics $* D_i$	No	No	No	Yes	No	No	No	No	No

Notes: 1. The dependent variable is a standardized measure of investment in each good. There are six types of goods in West Bengal (drinking water, roads, informal education, formal education, irrigation, others) and four types of goods in Rajasthan (drinking water, roads, formal education, others). 2. Standard errors (corrected for clustering at the GP level using Moulton (1986) in West Bengal) are in parentheses below the coefficients. 3. The regressions include a good-specific fixed effect. 4. The variables D_i, S_i, $D_{\{ij\}}$, and $S_{\{ij\}}$ are defined in the text: D_i is the relative strength of women's preference for good i in the district; S_i is the average strength of preference in the district; $D_{\{ij\}}$ is the difference of indicators for whether good i was mentioned by women and men in village j; $S_{\{ij\}}$ is the sum of the indicators for whether good i was mentioned by women and men in village j. 5. Pradhan characteristics include all variables in Table VII. 6. There are 323 village level observations in West Bengal, and 100 village level observations in Rajasthan.

Table VI, column (1) reports the OLS estimates for West Bengal. Interpret (i) the coefficient on *Reserved for a Woman* and (ii) the coefficient on *Reserved*$*D_i$. Is the sign on β_3 (the interaction) as predicted by the model? Explain why or why not.
Answer: The coefficient on *Reserved for a Woman* is about 0.23, meaning that on average villages with a randomly reserved female leader invest roughly 0.23sd more in public goods compared to unreserved villages. This captures the effect of female leadership on total provision.

The coefficient on *Reserved*$*D_i$ is about 1.63. Since D_i measures how much more women (relative to men) report valuing that good, a positive β_3 means that the increase in provision under female leaders is larger for goods more preferred by women. If the difference between the frequency at which a specific request occurs for women and men is 10%, the provision of that good increases by 0.16 standard deviations in West Bengal. This sign is exactly what the model predicts if leader identity matters through policy targeted toward the group whose preferences the leader shares, i.e. it is consistent with the citizen-candidate logic.

(c) [15%] Using Table VII, discuss one alternative explanation to the gender effect and how this alternative variable, and not gender, may generate similar patterns. How would you address this empirically? (Are there concerns with your solution?)

TABLE VII

PRADHAN'S CHARACTERISTICS IN RESERVED AND UNSERVED GP (WEST BENGAL)

	West Bengal		
Dependent Variables	Mean, Reserved GP (1)	Mean, Unreserved GP (2)	Difference (3)
A. *Pradhan's Background*			
Age	31.87	39.72	−7.85
	(1.08)	(.87)	(1.45)
Years of Education	7.13	9.92	−2.79
	(.48)	(.29)	(.54)
Literacy	.80	.98	−.19
	(.06)	(.01)	(.04)
Married	.89	.87	.02
	(.04)	(.03)	(.06)
Number of Children	2.45	2.50	−.05
	(.20)	(.15)	(.26)
Below Poverty Line	.46	.28	.18
	(.07)	(.04)	(.08)
Number of Household Assets	1.72	2.36	−.64
	(.18)	(.14)	(.23)
Population of Pradhan's Own Village	1554	2108	−554
	(204)	(179)	(291)
Hesitates when Answering the Questions	.75	.41	.34
(interviewer's impression)	(.06)	(.05)	(.08)
B. *Pradhan's Political Aspirations and Experience*			
Was Elected to the GP Council Before 1998	.11	.43	−.32
	(.04)	(.05)	(.07)
Was Elected Pradhan Before 1998	.00	.12	−.12
		(.03)	(.04)
Took Part in Panchayat Activities	.28	.78	−.50
Prior to Being Elected	(.06)	(.04)	(.07)
Knew How GP Functioned	.00	.35	−.35
		(.05)	(.07)
Did Not Receive any Formal Training	.06	.00	.06
	(.03)		(.02)
Spouse ever Elected to the Panchayat	.17	.02	.15
	(.05)	(.01)	(.04)
Spouse Helps	.43	.13	.30
	(.07)	(.03)	(.07)
Will Not Run Again	.33	.21	.13
	(.06)	(.04)	(.07)
C. *Pradhan's Political Party*			
Left Front	.69	.69	−.01
	(.06)	(.04)	(.08)
Right (Trinamul or BJP)	.19	.18	.01
	(.05)	(.04)	(.06)
Observations	54	107	

Answer: One alternative explanation is that the observed differences in public goods are not due to gender, but because reserved female Pradhans differ systematically on other dimensions. The paper discusses three such possibilities: (i) women may be new/inexperienced office holders, (ii) they may be "lame ducks" with weaker reelection incentives, and (iii) they may come disproportionately from poorer or lowerstatus (SC/ST) backgrounds. Each of these could in principle generate similar public good patterns without gender being causal.

Empirically, the authors restrict the control group to GPs that share the same feature–e.g. only GPs where all Pradhans are new; or only GPs that will be reserved in the next rotation; or only GPs reserved for SC/ST. Reestimating the main specification in these subsamples leaves the coefficient on the reservation $\times$ preference gap essentially unchanged. Thus the gender effect does not disappear when conditioning on these alternative channels.

A remaining caveat is that these restrictions are not randomized manipulations of the alternative mechanisms; they are robustness exercises rather than separate

causal tests. They rule out these alternatives as first-order explanations, but they do not constitute independent experimental identification of mechanisms.