Political Economy
Theory and Experiments

Lecture 1

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Course Syllabus — Part 1: Elections

Lecture 1: Median Voter Theorems and Probabilistic Voting

Readings

. P. Ordeshook 1986. *Game Theory and Political Theory: An Introduction*, Cambridge University Press, Chapter 4.

. A. Lyndbeck and J. Weibull 1993. “A model of political equilibrium in a representative democracy,” *Journal of Public Economics*, 51(2): 195-209.

Lecture 2: Policy Motivated Candidates

Readings

. R. Calvert 1985. "Robustness of the multidimensional voting model: Candidate motivations, uncertainty, and convergence," *American Journal of Political Science,* 29(1): 69-95.

. D. Bernhardt, J. Duggan and F. Squintani 2009. "The case for responsible parties," *American Political Science Review,* 103(4): 570-587.

. M. Osborne and A. Slivinski 1996. "A model of political competition with citizen-candidates," *Quarterly Journal of Economics,* 111(1): 65-96.

. T. Besley and S. Coate 1997. "An economic model of representative democracy," *Quarterly J. of Econ.*, 112: 85-114.

Lecture 3: Agency Models

Readings

. J. Banks and R. Sundaram 1998. "Optimal retention in agency problems," *Journal of Economic Theory*, 82(2): 293-323.

. J. Duggan 2000. "Repeated elections with asymmetric information," *Economics and Politics*, 12(2): 109-135.

. E. Maskin and J. Tirole 2004. "The politician and the judge: accountability in government," *American Economic Review* 94(4): 1034-54.

Lecture 4: Information Aggregation in Elections

Readings

. S. Berg 1993. “Condorcet’s jury theorem, dependency among jurors,” *Social Choice and Welfare*, 10: 87 – 95.

. D. Austen-Smith and J. Banks. 1996. “Information aggregation, rationality, and the Condorcet jury theorem,” *American Political Science Review,* 90(1): 34-45.

. T. Feddersen and W. Pesendorfer 1997. “Voting behavior and information aggregation in elections with private information,” *Econometrica,* 65(5): 1029-1058.

. T. Feddersen and W. Pesendorfer 1996. “The swing voter’s curse,” *American Economic Review*, 86(3): 408-424.

Part 2: Information Transmission

Lecture 5: Cheap Talk and Political Advice

Readings

. T. Gilligan and K. Krehbiel 1987. "Collective decision-making and standing committees: An informational rationale for restrictive amendment procedures," *Journal of Law, Economics, and Organization*, 3(2): 287-335.

. S. Morris 2001. "Political correctness," *Journal of Political Economy* 109(2): 231-265.

. N. Kartik and Y.K. Che. (2009): "Opinions as incentives," *Journal of Political Economy* 117(5): 815-860.

Lecture 6: Juries and committees

Readings

. T. Feddersen and W. Pesendorfer 1998. “Convicting the innocent: The inferiority of unanimous jury verdicts under strategic voting,” *American Political Science Review,* 92(1): 23-35.

. U. Doraszelski, D. Gerardi and F. Squintani 2003. “Communication and voting with double-sided information,” *Contributions to Theoretical Economics,* 3(1) Art. 6.

. D. Austen-Smith and T. Feddersen 2006. “Deliberation, preference uncertainty, and voting rules,” *American Political Science Review,* 100(2): 209-217.

. D. Gerardi and L. Yariv 2007. “Deliberative voting,” *Journal of Economic Theory,* 134(1): 317-338.

Part 3: International Conflict

Lecture 7: Causes of Conflict

Readings

. J. D. Fearon 1995. “Rationalist explanations for war,” *International Organization* 49(3): 379-414.

. M. Jackson and M. Morelli 2007. “Political bias and war,” *American Economic Review* 97 (4): 1353-1373.

. S. Baliga and T. Sjöström 2012. “The hobbesian trap,” in *Oxford Handbook of the Economics of Peace and Conflict,* M. Garfinkel and S. Skaperdas Eds., Oxford University Press.

Lecture 8: Peace talks and mediation

Readings

. M. Fey and N. Ramsay 2009. "Mechanism design goes to war: Peaceful outcomes with interdependent and correlated types," *Review Economic Design* 13: 233-250.

. J. Hörner, M. Morelli, and F. Squintani 2015. "Mediation and peace," *Review of Economic Studies* 82(4): 1483-1501.

. A. Meirowitz, M. Morelli, K. Ramsay, and F. Squintani 2019. "Dispute resolution institutions and strategic militarization," *Journal of Political Economy,* 127(1): 378-418.

. A. Casella, E. Friedman, and M. Perez 2020. "Mediating conflict in the lab," *NBER WP,* No. 28137.

Lecture 9: Student Presentations

Readings

. P. Ortoleva and E. Snowberg (2015): "Overconfidence in political behavior," *American Economic Review* 105(2): 504-535.

. G. Levy and R. Razin (2015): "Correlation neglect, voting behavior, and information aggregation," *Am. Econ. Rev.* 105(4): 1634-45.

. B. Lockwood (2017): "Confirmation bias and electoral accountability," *Quarterly J. of Political Science* 11(4), 471-501.

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Models of Elections

. Elections are modelled as non-cooperative games.

. There may be 2 or more office motivated candidates, possibly with different ideology or valence.

. Candidates' strategic decisions may include whether and when to run in the election, policy platform, campaign spending amount, ...

. Voters are ideologically differentiated.

. Their decisions may include whether and who to vote, and whether to support a candidate through activism or lobbyism.

. Different electoral rules may be considered.

. Repetition and private information may play a role.

Downsian elections

. Two candidates $i = A, B$ care only about winning the election.

. Candidates i simultaneously commit to policies $x_i \in \mathbb{R}$ if elected.

. There is a continuum of voters.

. The payoff of a voter with ideology b if policy x is implemented is $u(x, b) = L(|x - b|)$, with $L' < 0$.

. Ideologies are distributed according to (continuous and strictly increasing) empirical cumulative distribution F, of median m.

. After candidates choose platforms, each citizen votes, and the candidate with the most votes wins.

. If $x_A = x_B$, then the election is tied.

. Office motivated politicians converge on median positions.

Theorem (Median Voter Theorem) The unique Nash Equilibrium of the Downsian election is such that candidates $i = A, B$ choose $x_i = m$, and tie the election.

Proof. We calculate candidate payoffs as function of (x_A, x_B).

. Fix any (x_A, x_B) such that $x_A \neq x_B$.

. Because $L' < 0$, each voter with ideology b votes for the candidate i that minimizes $|x_i - b|$.

. Hence, when $x_i < x_j$, candidate i's vote share is $F(\frac{x_A + x_B}{2})$, and candidate j's is $1 - F(\frac{x_A + x_B}{2})$.

. Now, consider any profile (x_A, x_B) such that $x_i \neq m$ for at least one candidate $i = 1, 2$.

. j's best response is $BR_j = \{x_j : |x_j - m| < |x_i - m|\}$, by playing a best response, candidate j wins the election.

. But if j plays x_j such that $|x_j - m| < |x_i - m|$, i's best response cannot be x_i, as i can at least tie the election by playing m.

. Hence, there cannot be any Nash equilibrium where either candidate i plays $x_i \neq m$.

. Suppose now that both candidates play $x_A = x_B = m$.

. All voters are indifferent between x_A and x_B: the election is tied.

. If either candidate i deviates and plays $x_i \neq m$, then she loses the election.

. Hence, there is a unique Nash equilibrium: $x_A = x_B = m$.

. Median voter theorem corresponds to equilibrium of the "Hotelling" model of monopolistic competition.

. Producers choose to make identical products, in a model of monopolistic competition with horizontal differentiation.

. But lack of product differentiation hurts aggregate consumer welfare in Hotelling model, whereas convergence to the median benefits voters in Downsian model.

. E.g., if F is uniform on $[0, 1]$, then consumer welfare is maximal in the Hotelling model with $x_A^* = 1/4$, and $x_B^* = 3/4$.

. And for general F, the optimal products x_A^* and x_B^* are similarly differentiated.

. Matters are very different in the Downsian model.

Proposition If voters are risk averse, then the median platforms $x_A = x_B = m$ are preferred by a majority to any pair x'_A, x'_B. If x'_A, x'_B is 'competitive', i.e. $|x'_A - m| = |x'_B - m|$, then x_A and x_B are unanimously preferred to x'_A, x'_B.

Proof. Each platform x'_i in any competitive pair x'_A, x'_B, is voted by $1/2$ of voters.

. The pair x'_A, x'_B is a 'bet' with expected value equal to m.

. If voters are risk averse, $L'' < 0$, then they all prefer the sure outcome $x_A = x_B = m$.

. Consider now any distribution F and platform x'_A, x'_B: the election selects the platform x'_i closest to m.

. Thus, a majority of voters prefers $x_A = x_B = m$ to x'_A, x'_B.

Proposition If the ideology distribution F is symmetric, $F(b) = 1 - F(2m - b)$ for all b, and the loss function L is a power function, $L(|x - b|) = |x - b|^n$ for some integer n, then convergence to the median, $x_A = x_B = m$, maximizes "utilitarian" voter welfare $W(x) = -\int_{-\infty}^{+\infty} L(|b - x|)dF(b)$.

Proof. If F is symmetric around m, $F(b) = 1 - F(2m - b)$ for all b, and L is a power function, then all central moments of F coincide with the median m (the zero-th moment).

. Solving $x^* = \arg\max_x \{W(x) = -\int_{-\infty}^{+\infty} |x - b|^n dF(b)\}$, we obtain that $x^* = m$.

. When F is symmetric, there are also fairness considerations that make median convergence appealing.

. But when F is not symmetric, median convergence does not maximize utilitarian welfare W unless L is a linear function.

Ordinal preferences

. Consider a compact policy space X and a set of voters $N = \{1, ..., n\}$, with n odd.

. Preferences are single-peaked on space X with linear order $>$, if for each voter j there is a policy b_j such that for all $x, y \in X$,

- . if $b_j \geq y > x$, then $y \succ_j x$,
- . if $x > y \geq b_j$, then $x \succ_j y$.

. Preferences are single-crossing on space X with linear order $>$, for voter index permutation $p : N \to N$, whenever

if $x > y$ and $p(j) > p(i)$, or if $x < y$ and $p(j) < p(i)$, then $x \succ_{p(i)} y$ implies $x \succ_{p(j)} y$.

. A policy x that defeats any other policy y is a Condorcet winner.

Theorem Say that an odd number of voters vote among two candidates. If policy x is the Condorcet winner, then both candidates choose x in equilibrium.

Theorem (Black, 1948; Gans and Smart, 1996) If an odd number of voters have single-peaked or single-crossing preferences, then the Condorcet winner is the ideal point of the median voter m.

. There are preference profiles with no Condorcet winners.

1: $x \succ y \succ z$
2: $y \succ z \succ x$
3: $z \succ x \succ y$

. The two results are independent: single-crossing condition does not imply single-peakedness, nor vice-versa.

. Preferences may be single crossing but not single peaked.

. $1 : x \succ y \succ z$
$2 : x \succ z \succ y$
$3 : z \succ y \succ x$

are single crossing on order $x < y < z$ but not single peaked:
$z \succ_2 y \Rightarrow z \succ_3 y$, $x \succ_2 z \Rightarrow x \succ_1 z$, $x \succ_2 y \Rightarrow x \succ_1 y$.
(Not single peaked for any $>$ as each x, y, z is the worst for a voter.)

. Preferences may be single peaked but not single crossing.

. $1 : w \succ x \succ y \succ z$
$2 : x \succ y \succ z \succ w$
$3 : y \succ x \succ w \succ z$

are single peaked on $w < x < y < z$, but not single crossing:
for $2 < 3$, $z \succ_2 w$ but $z \not\succ_3 w$; for $3 < 2$, $y \succ_3 x$ but $y \not\succ_2 x$.

Multi-dimensional policy spaces

. Policy platforms are usually multi-dimensional.

. But often multidimensional policy can be projected on a left-right unidimensional space on which voters can be ordered.

. Consider a compact policy space $X \subset \mathbb{R}^d$ and set of voters N.

. The voters in $j \in N$ have "intermediate preferences" if every j's payoff can be written as $L_j(x) = J(x) + K(p_j)H(x)$ for some voter index permutation p, where K is monotonic, whereas $H(x)$ and $J(x)$ are common to all voters.

Proposition Say that an odd number of voters with intermediate preferences vote among two candidates. Then both candidates choose policy $x(p_m)$, the ideal point of the voter i with median p_m.

. Suppose agents preferences can be represented by $L(||x - b_i||)$, where b_i is vector describing i's bliss point in this policy space.

. L decreasing and concave in the Euclidean distance $||x - b_i||$.

Theorem (Plott, 1967) There exists a Condorcet winner policy in the interior of a multidimensional policy space X if and only if there is a policy m median in all directions.

. The existence of a median in all direction requires strong symmetry assumptions on the distribution of individual ideal points.

. The 'top cycle' of X is the set of all alternatives $x \in X$ such that for each $y \neq x$, there are $c_1, ..., c_K$ such that $x = c_1 \succ c_2 \succ ... \succ c_K = y$, where $\succ$ represents a preference by a majority.

Theorem (McKelvey 1976) In a multi-dimensional policy space, if there is no Condorcet winner, then the top cycle is the whole set of alternatives.

Example Consider the divide the dollar game with 3 voters.

. Set of alternatives is $X = \{(x_1, x_2, x_3) \geq 0 : x_1 + x_2 + x_3 = 1\}$.

. Each voter i's payoff is increasing in x_i.

. The top cycle is $TC = X \setminus \{(1,0,0), (0,1,0), (0,0,1)\}$.

. In fact, every $x \in X$ is defeated by at least one among $(1/2, 0, 1/2)$, $(1/2, 1/2, 0)$ and $(0, 1/2, 1/2)$.

. If $x > 0$, then $x \succ (0, \varepsilon, 1-\varepsilon) \succ (1/2, 0, 1/2)$ for some small $\varepsilon > 0$ and similarly for $(1/2, 1/2, 0)$ and $(0, 1/2, 1/2)$.

. If exactly two entries of x are positive, then x beats some $x' > 0$, which then indirectly beats all other alternatives.

Agenda setting

. Suppose there are no candidates.

. Voters choose among a finite set of fixed alternatives X.

. The choice is made by sequential pairwise elimination.
E.g., voters choose x vs. y, winner is matched to z, and so on.

. The 'agenda' is the sequence in which alternatives are voted.

. If there is a Condorcet winner, it is selected for all agenda.

. If voters vote sincerely on each alternative, then for every policy x in the top cycle set, there exist agenda that select x.

. By McKelvey theorem, the top cycle is X:
the agenda-setter can determine the outcome.

. If voters are strategic and know the agenda,
the game is solved by backward induction.

. The Banks set includes all alternatives in X that survive successive elimination by strategic voters for some agenda.

. If there is a "status quo" $\bar{x}$ in X, it is voted last against the penultimate surviving alternative in the agenda.

. The inclusion of status quo further restricts the set of alternatives "available" to the agenda setter.

Probabilistic voting

. In Downsian elections, winning probabilities jump discontinuously because voters preferences are known.

. Probabilistic voting models smooth out discontinuities by adding "noise" to voters' preferences.

. If candidates maximize probability to win, then platforms converge to the expected median platform.

. If candidates maximize vote share, then platforms converge to an weighted average platform.

. Platforms may converge also in multi-dimensional policy spaces.

Aggregate uncertainty (Calvert 1985)

. Candidates maximize the probability of winning majority.

. Voters' preferences do not vary independently.

. Median platform depends on a random common state.

. Each voter j with bliss point $b_j \in \mathbb{R}$ has utility $L(|x - b_j|)$, with $L' < 0$, $L'' < 0$, and $\lim_{z \downarrow 0} L'(z) = 0$, $\lim_{z \uparrow \infty} L'(z) = -\infty$.

. Each ideal point b_j is decomposed as: $b_j = m + \delta_j + e_j$:

- . δ_j is the fixed j's bias relative to the median platform m, the empirical distribution of δ_j across j has median zero;
- . m is the random median platform, with c.d.f. F and median μ;
- . e_j is noise, i.i.d. over j, with symmetric density and $E[e_j] = 0$.

. As in the Downsian model there are two candidates, $i = A, B$ who care only about winning the election.

. Candidates i simultaneously commit to policies $x_i \in \mathbb{R}$ if elected.

. After candidates choose platforms, each voter votes, and the candidate with the most votes wins.

. If $x_A = x_B$, then the election is tied.

Proposition In the unique Nash equilibrium of the probabilistic model with aggregate uncertainty, the candidates $i = 1, 2$ choose x_i equal to the median μ of the distribution of the median policy m and tie the election.

Proof: Suppose that $x_i < x_j$, then candidate i wins the election if $m < (x_A + x_B)/2$ and j wins if $m > (x_A + x_B)/2$.

. The probability $q_i(x_i, x_j)$ that i wins the election is

$$q_i(x_i, x_j) = \begin{cases} F(\frac{x_A + x_B}{2}) & \text{if } x_i < x_j, \\ 1/2 & \text{if } \ x_i = x_j, \\ 1 - F(\frac{x_A + x_B}{2}) & \text{if } x_i > x_j. \end{cases}$$

. Given x_j, candidate i chooses x_i to maximize $q_i(x_i, x_j)$.

. Suppose that $x_j < \mu$. Then, $q_i(x_i, x_j) > 1/2$ and strictly decreasing in x_i for $x_i > x_j$. i's best response is empty.

. Likewise, if $x_j > \mu$, then i's best response is empty.

. If $x_j = \mu$, then $q_i(x_i, x_j) < 1/2$ and strictly increasing in x_i for $x_i < x_j$, $q(\mu, x_j) = 1/2$, and $q_i(x_i, x_j) < 1/2$ and strictly decreasing in x_i for $x_i > x_j$. i's best response is $x_i = \mu$.

. Hence, there is a unique equilibrium: $x_A = x_B = \mu$.

Vote share maximization (Lyndbeck and Weibull 1993)

- There are G groups of voters g with s_g share of voters in each g.
- Candidates $i = A, B$ simultaneously announce platforms x_i in $\mathbb{R}^d$.
- The payoff of voter k in group g is: $u_k(x, i) = L_g(x) + \eta_{ki}$
- L_g is a continuously differentiable loss function, strictly decreasing in the distance $||x - b_g||$ from a bliss point b_g in $\mathbb{R}^d$.
- η_{ki} are non-policy benefits for k if i is in power.
- Let $\varepsilon_k = \eta_{kB} - \eta_{kA}$, drawn independently across individuals, with cumulative distribution H_g on $\mathbb{R}$ and density h_g.
- Let q_{gi} be fraction of voters in g that vote candidate $i = A, B$.
- Candidate i picks x_i to maximize vote share $q_i = \sum_{g=1}^{G} s_g q_{gi}$.

Results

- Each voter k in group g votes for A if $L_g(x_A) - L_g(x_B) > \varepsilon_k$.
- Vote share for A in group g is $q_{gA} = H_g(L_g(x_A) - L_g(x_B))$.
- Suppose that
  - $q_A = \sum_{g=1}^{G} s_g H_g(L_q(x_A) - L_q(x_B))$ is strictly concave in x_A
  - $q_B = \sum_{g=1}^{G} s_g [1 - H_g(L_q(x_A) - L_q(x_B))]$ str. concave in x_B.
- Then the equilibrium (x_A, x_B) solves the FOC:

$$\sum_{g=1}^{G} s_g h_g(L_q(x_A) - L_q(x_B)) DL_g(x_A) = 0$$

$$\sum_{g=1}^{G} s_g h_g(L_q(x_A) - L_q(x_B)) DL_g(x_B) = 0,$$

where $DL_g(x_i) = (\frac{\partial L_g}{\partial x_{i1}}, ..., \frac{\partial L_g}{\partial x_{in}})^T$.

Proposition If a pure strategy equilibrium (x_A, x_B) of probabilistic voting model exists, then $x_A = x_B = x$ such that

$$\sum_{g=1}^{G} s_g h_g(0) DL_g(x) = 0.$$

. Nash-equilibrium corresponds to solution to maximization of weighted utilitarian social welfare function:

$$\sum_{g=1}^{G} w_g DL_g(x) = 0,$$

with group weights $w_g = s_g h_g(0)$.

. Group weight corresponds to group size s_g and responsiveness to policy changes $h_g(0)$, i.e. share of unbiased voters/swing voters.

. When do pure strategy equilibria exist?

  . Strict concavity of q_i in x_i for $i = A, B$ is hard to check.

  . A sufficient condition is that for each group g, $H_g(L_g(x_A) - L_g(x_B))$ is strictly concave in x_A and x_B.

Summary

. We have reviewed Downsian and probabilistic elections.

. Two office-motivates candidates credibly commit to platforms.

. Then, voters vote for the preferred platform candidate.

. If policies are uni-dimensional, candidates' platforms “converge” to the policy preferred by the median voter.

. If the policy space is multi-dimensional, anything goes.

. If there are no candidates and alternatives are voted sequentially, the agenda setter is a dictator unless voters are strategic.

. Equilibrium exist in multi-dimensional policy spaces, if candidates maximize vote shares and voters' preferences are uncertain.

. This equilibrium is Pareto efficient for the electorate.

Next lecture

. I will introduce policy motivation in spatial models of elections.

. Suppose candidates have policy preferences in the aggregate uncertainty probabilistic model.

. Because of uncertainty, equilibrium platforms diverge.

. If voters' preferences may change during campaigns, then platform divergence improves electorate welfare.

. Suppose candidates have policy preferences, cannot credibly commit to platforms, and choose whether to run or not.

. There exist equilibria where platforms "diverge" from the median.

. Candidate may enter elections in the expectation of losing, only to steal votes from perspective winner.