Inattentive Voters and Electoral Competition

(Preliminary and Incomplete)

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The Question

What do Political Equilibria look like in a model where:

- Two candidates run in a winner-take-all election,
- Voters care about policies, but also about 'valence' of candidates,
- Voters are 'inattentive' and focus on one 'salient' attribute,
- Candidates strategically manipulate voters attention.

Model 0: Observable Valence and no Salience

- A continuum of voters, $V = [0,1]$,
- Two candidates, indexed by $k = L, R$.
- Each voter's utility function is single-peaked around a bliss point $b \sim U[0,1]$ and linearly increasing in a candidate's valence:

$$u_k(\pi_k, b, v_k) = - \mid \pi_k - b \mid + v_k \tag{1}$$

- Candidates, propose a policy, denoted by $\pi_L \equiv l \in [0,1]$ and $\pi_R \equiv r \in [0,1]$.
- Candidates are policy motivated and have single-peaked utilities, with bliss points x_L and x_R.

Political Equilibria: Definition

A Political Equilibrium is a pair of policy choices, (l^*, r^*) such that:

$$\begin{aligned} l^* &\in \arg\max_{l} u_L(l,r) = L(l,r)(-|l - x_L|) + R(l,r)(-|r - x_L|) \\ r^* &\in \arg\max_{r} u_R(l,r) = L(l,r)(-|l - x_R|) + R(l,r)(-|r - x_R|) \end{aligned}$$

where $L(l,r)$ and $R(l,r)$ denote candidate L and R electoral support.

Political Equilibria with Observable Valence and no Salience: Characterization

For $0 \leq x_L \leq l \leq r \leq x_R \leq 1$ and $v_R - v_L \equiv \delta$ Political Equilibria, characterized in terms of equilibrium platforms are as follows:

- for a large valence advantage in favour of candidate R, i.e. for $\delta \geq x_R - 0.5 > 0$, $r^* = x_R$ and $l^* \in [0, 0.5]$;
- for a small valence advantage in favour of candidate R, i.e. for $x_R - 0.5 > \delta > 0$, $r^* = \delta + 0.5 < x_R$ and $l^* = 0.5$;
- when candidates are equally valent, i.e. for $\delta = 0$: then $r^* = l^* = 0.5$;
- for a large valence advantage in favour of candidate L, i.e. for $-\delta \geq 0.5 - x_L > 0$, $l^* = x_L$ and $r^* \in [0.5, 1]$;
- for a small valence advantage in favour of candidate L, i.e. for $0 < -\delta \leq 0.5 - x_L$, $l^* = 0.5 + \delta > x_L$ and $r^* = 0.5$.

Political Equilibria with Observable Valence and no Salience: Intuition

- Absent differences in valence (for $\delta = 0$): median voter theorem.
- Valence, when it matters (for $\delta \neq 0$) induces a degree of polarization in the policy domain.
- Candidate with the higher valence acquires the ability to implement policies closer to his or her ideal point.
- Candidate with the lowest valence limits the extremism of the winning policy whenever possible.
- Testable implications:
  - valence advantages *de facto* determine the electoral outcome
  - platform polarization, $\mid r^* - l^* \mid$ is increasing in valence polarization, $\mid v_R - v_L \mid$

Model 1: Observable Valence and Inattentive Voters

Salient voter b's perceived utility from voting for candidate k is given by:

$$u_k(\pi_k, b, v_k, \beta) = \begin{cases} -\beta \mid \pi_k - b \mid + v_k & \text{if valence is salient} \\ - \mid \pi_k - b \mid + v_k & \text{if equally salient} \\ - \mid \pi_k - b \mid + \beta v_k & \text{if policy is salient} \end{cases}$$

where $0 \leq \beta \leq 1$ the distortion introduced by salience in voters' perception of the candidates' attributes of policy and valence.

Model 1: Observable Valence and Inattentive Voters

Salience tilts the attention of voters in favour of the candidate that has the highest ratio of valence to policy:

$$\frac{v_k}{\mid \pi_k - 0.5 \mid}$$

Valence is salient - vs. policy is salient - according to whether:

$$\frac{v_R}{v_L} \geq \frac{\mid r - 0.5 \mid}{\mid l - 0.5 \mid} \qquad or \qquad \frac{v_R}{v_L} \leq \frac{\mid r - 0.5 \mid}{\mid l - 0.5 \mid}$$

Political Equilibria with Observable Valence Inattentive Voters: Characterization

Consider $0 \leq x_L \leq l \leq r \leq x_R \leq 1$, let the valence differential be $v_R - v_L \equiv \delta \geq 0$, $v_L = 1$ and the salience parameter be $0 \leq \beta \leq 1$.

Then for any $\delta \geq 0$ there exists a $\bar{\beta} \leq \frac{1}{2(\delta+1)}$ such that for any $\beta \leq \bar{\beta}$ a Political Equilibrium with Salience exists, it is unique and it is characterized by the following equilibrium platforms:

$$r^* = 0.5 + \beta(1 + \delta)$$

and

$$l^* = 0.5 - \beta.$$

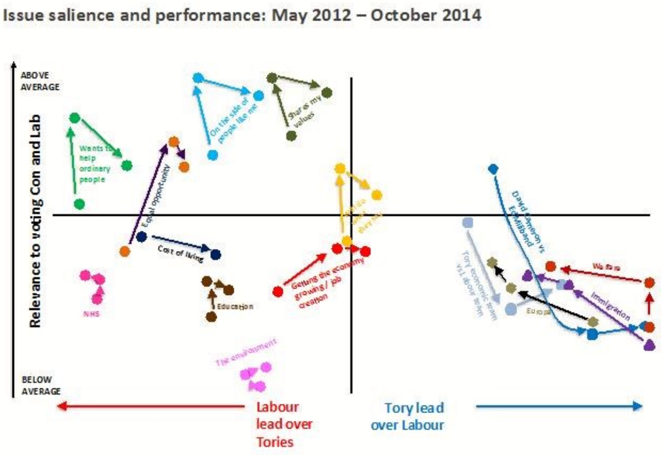
Political Equilibria with Observable Valence Inattentive Voters: Intuition

- If valence is salient, voters pay more attention to valence when choosing a ballot. Hence, by changing his policy, a candidate exerts *an attention externality* on Voters, which can be used strategically:
  - Candidate R is more valent, while the attributes of policy and valence are equally salient. Valence disadvantaged Candidate L could reduce $\mid l - 0.5 \mid$, so as to achieve a higher valence to policy ratio.
    $\rightarrow$ By this doing policy becomes salient in voters' utility and valence less prominent.
    $\rightarrow$ *coeteris paribus*, increase L's share of the votes and potentially compensate for L's valence disadvantage.
    $\rightarrow$ Of course Candidate R faces exactly the opposite incentives.

Political Equilibria with Observable Valence Inattentive Voters: Moral

When β is small, voters are inattentive in relation to one of the attributes. By assumption, Candidate R enjoys a higher level of valence, but if β is relatively small, Candidate L is able to use policy to significantly direct voters' attention towards policy and by making it salient, to partly compensate this disadvantage. In the extreme case of $\beta = 0$, Candidate could completely wipe out any difference in any of the attributes (and the model would reproduce the standard symmetric framework).

Further Remarks: Many Issues



Lord Ashcroft Polls

Further Remarks: Endogeneous Valence

Unobservable Valence and Inattentive Voters

- Valence is not publicly observable: agent, faced with uncertainty, learn from observing other agents (*social learning*).
- A voter gathers information about valence in two ways:
  - (S)he observes a private symmetric binary signal with precision q on the realized state of nature $\omega \in [L, R]$, where R (vs. L) denotes candidate R (vs. L) having the highest valence.
  - (S)he observes the opinion held in the neighbourhood.
- Key elements: Spatial Externality + Probabilistic Voting

Model 2: Unbservable Valence and Inattentive Voters

What is the optimal allocation of fundings in an electoral campaign, where:

- Two Candidates run in a winner-take-all election.
- Voters care about policies, but are also affected by their neighbours.
- Model is spatial, because Candidates position themselves in the policy space
- Model is spatial, because Voters live at a given location and only observe their neighbours.

Spatial Externality

- The set of Voters is countable and that each Voter $v \in V$, with bliss point b is also provided with a location x, i.e. an *address* on a 1-dimensional lattice Z^1.
- Addresses are fixed and independent of preferences. $v(b, x)$, a Voter with bliss point b, located at x, observes the opinion of a randomly chosen nearest neighbours, i.e. any Voters at locations $y :\mid y - x \mid = 1$, and draws Bayesian inference on the basis of that.
- Since neighbourhoods are overlapping, Voters choice are spatially correlated. We refer to this effect as a "spatial externality" of candidates' decision.

Probabilistic Voting

- Each Voter can be either:
  - policy motivated (with probability $1 - \alpha$), or
  - valence motivated (with probability α).
- A policy motivated Voter follows a cut-off rule and votes for candidate R if and only if $b \geq 0.5(l + r)$ (consistently with Model 0 and 1) which occurs with probability $1 - 0.5(l + r)$.
- A valence motivated Voter estimates the probability that $v_R - v_L = \delta > 0$ (i.e. that candidate R is more valent) by observing the opinion held in his or her immediate neighbourhood.

Valence Motivated Voters

- Valence motivated Voter $v(b, x)$ votes for candidate R with probability:

$$g_\sigma(p(x)) = \frac{1}{1 + \exp[-4\sigma(2p(x) - 1)]} \tag{2}$$

where $p(x) \in \{0, 0.5, 1\}$ denote the fraction of x's neighbours in favour of candidate R

- For any value of $\sigma < \infty$, $g(0.5) = 0.5$, $0 < g(0) < g(1) < 1$ and $g(0) + g(1) = 1$.
- Noisy form of imitation. As $\sigma \to \infty$, $g_\sigma(p(x)) \to p(x)$ (pure imitation).

The Dynamics of Public Opinion

Definition (Public Opinion)

For any $t \geq 0$, let $\alpha \in [0,1]$, and $g_\sigma(p(x_t))$ defined in (2).
At each random exponential time t, with mean one, Voter x chooses ballot R at rate:

$$\Pr[v_t(x) = R \mid (l, r), \alpha] = (1-\alpha)(1 - \frac{l+r}{2}) + \alpha g_\sigma(p(x_t))$$

$\alpha \in [0, 0.5)$: Policy Salient Public Opinion
$\alpha \in (0.5, 1]$: Valence Salient Public Opinion

Policy Salience with $\alpha = 0$ (No Local Externalities)

- For $z \equiv (1 - \frac{l+r}{2})$, let $\mu \equiv \mu_z$ be the product measure with density z, i.e. $\mu_z\{v(x) = R\} = 1 - \frac{l+r}{2}$ for all $x \in V$. Public Opinion is described by a product measure with parameter $(1 - \frac{l+r}{2})$, which is also the expected share of the votes in support of Candidate R.
- Model 0 (Median Voter) revisited dynamically.

Valence Salience with $\alpha = 1$ [Theorem 1: Ergodicity]

- The following measure is the unique invariant measure for the process:

$$\mu^\sigma(v) = K \exp[\sum_x \sum_{\{y:|y-x|=1\}} \sigma(2v(x)-1)(2v(y)-1)] \quad (3)$$

  where $v(x) = 1$ iff Voter x supports candidate R and K is such that $\sum_v \mu^\sigma(v) = 1$.
- $\lim_{t\to\infty} \mu_t^{\sigma,\mu_0} \equiv \mu_\infty^\sigma = \mu^\sigma$ for any initial distribution μ_0.
- For all σ, let $v^k = \{v^{\mathbf{L}}, v^{\mathbf{R}}\}$ denote the configurations of opinion that show consensus on candidate K and $v \neq v^k$ any other configuration. Then:

$$\frac{\mu_\infty^\sigma(v^{\mathbf{L}})}{\mu_\infty^\sigma(v^{\mathbf{R}})} = 1 \qquad \textit{and} \qquad \lim_{\sigma\to\infty} \frac{\mu_\infty^\sigma(v)}{\mu_\infty^\sigma(v^k)} = 0$$

Intuition: Local Externalities

- If valence is salient, policy is ineffective.
- Two configurations, identical, apart from:

$$\begin{array}{lllll} v_A : & .. \quad v(x-2)=R & v(x-1)=L & v(x)=R & v(x+1)=L \\ v_B : & .. \quad v(x-2)=R & v(x-1)=R & v(x)=L & v(x+1)=L \end{array}$$

Under Model 0 both configuration would have exactly the same limit probabilities. Under Model 1 limit probabilities are:

$$\mu_{\infty}^{\sigma}(v_A) \propto \exp[-6\sigma] \quad \mu_{\infty}^{\sigma}(v_B) \propto \exp[2\sigma]$$

By ergodicity, $\mu_{\infty}^{\sigma}(v)$ also defines the amount of time the process spends in configuration v.

Valence Salience with $\alpha = 1$ [Theorem 2: Path-Dependence]

- For $z \in [0, 1]$, let $\mu \equiv \mu_z$ be the product measure with density z, i.e. $\mu_z\{v(x) = R\} = z$ for all $x \in V$. Suppose that the process is started with μ_z at time 0. Then the process is path dependent and:

$$\mathfrak{I}_e = \{\mu^{\mathbf{L}}, \mu^{\mathbf{R}}\} \text{ and } \lim_{t \to \infty} \mu_t^{\mu_z} = (1 - z)\mu^{\mathbf{L}} + z\mu^{\mathbf{R}}$$

- Convergence obtains at rate $\sqrt{t}$

Intuition: Slow Clustering

- Since clustering grows very slowly, along the dynamics one observes almost stationary homogenous areas, inside which Voters unanimously support one Candidate. Policy choices determine the basin of attraction of the limit configurations.
- If policy can be made conditional on the location of a Voter, a Candidate has an incentive to direct resources towards the marginal Voter, i.e. the Voters at the boundary between areas supporting different Candidates.

Intuition: Marginal Voters

Consider a border at x.

- By buying the vote of Voter x, a Candidate increases the probability that at time t Voters in $\{x-1, x, x+1\}$ support her or him by twice as much as (s)he would do by buying the vote of Voter $x+1$ or Voter $x+2$.
- This is because by moving the border of a cluster by one Voter, the Candidate guarantees stability of the area inside the cluster, that being inward looking is not so exposed to sudden swings in opinions.

Conclusions

- We add an additional valence dimension to the standard Downsian spatial policy dimension, by which the candidates running for election are of different quality.
- Novel elements:
  Voters are inattentive and candidates may strategically exploit this, by making one attribute salient.
  Information about valence is imperfect, and voters learn about it in a process of social learning.
- Elections are a way of aggregating preferences, as well as information. Welfare? Informational efficiency?

Contact

THANKS!

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