Information Revelation and Pandering in Elections

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Motivation

Large literature studies how well elections aggregate voters' information

- Austen-Smith and Banks, Feddersen & Pesendorfer, Myerson ...

But politicians are generally much better informed than voters

- various empirical studies of voter ignorance on policy issues

Our broad interest:

How well do elections aggregate politicians' private information?

Specifically, in this paper:

Standard Hotelling-Downs election but with "expert" politicians

Motivation

- Platforms now play dual role
  - Aggregate preferences and determine policies
  - Signals of private information
- Two opposing views about office-motivated candidates
  - Competition promotes info. revelation and efficiency

    > *The arguments made for the voters being uninformed implicitly assume that the major cost of information falls on the voter. However,* **there are returns to an informed political entrepreneur from providing the information to the voters, winning office***, and gaining the direct and indirect rewards of holding office. [Donald Wittman, 1989]*

  - Competition induces pandering to electorate's prior, precluding info. revelation and efficiency
- Which is correct?

Preview of Model

- Two office-motivated politicians simultaneously commit to platforms
- The (median) voter updates beliefs and votes for the platform closest to expected state
- Unlike previous work, a richer space of platforms and information
  - Continuum policy space; baseline Normal-Normal model
- This allows possibility of both pandering to the prior and for overreaction to information

Preview of Results (1)

Most general results (minimal assumptions on information structure):

1. Elections cannot efficiently aggregate both politicians' information
2. In **any** equilibrium, voter welfare is effectively determined by only one politician's information
   - not necessarily using this information efficiently
   - even though there are two information sources
3. Maximum welfare is attained by a non-competitive equilibrium in which one politician always wins and uses his information efficiently
   - Any competitive equilibrium has strictly lower welfare

Note: This tight welfare bound applies even with cheap talk, subject to plausible refinement

Preview of Results (2)

For a class of information structures (Conjugate-Exponential family):

4. Incentive to distort platforms by overreacting / anti-pandering
   - simple statistical property of Bayesian updating
5. Optimal pandering would be good for electorate
   - better than not only any equilibrium (with office-motivated candidates) but also better than "unbiased" strategies
   - precluded by office motivation

$\Rightarrow$ Overall, both initial views are incomplete/incorrect

Literature

- Pandering to influence voters' belief about policy-state match
  - Heidues & Lagerlof (2003): binary policy / state / signal model
    - see also: Schultz (1996), Laslier & Van der Straten (2004), Loertscher (2010), Gratton (2012), Klumpp (2012)
  - Turban (2013)
- "Career concerns" about perceived ability or preferences
  - Canes-Wrone et al (2001), Maskin & Tirole (2004), Morris (2001)
  - Anti-pandering can arise, but very different logic
- Group polarization
  - Glazer and Sunstein (2009), Roux and Sobel (2012)

Plan

Baseline Model

- A (median) voter has preferences represented by

$$U(y,\theta) = -(y-\theta)^2,$$

  where $y \in \mathbb{R}$ is the policy and $\theta \in \mathbb{R}$ is an unknown state

- Two purely office-motivated candidates, A and B:

$$u_i = \mathbf{1}_{\{\text{i is elected}\}}$$

- $\theta \sim \mathcal{N}(0, 1/\alpha)$

- Each candidate i receives a signal $\theta_i = \theta + \varepsilon_i$, where $\varepsilon_i \sim \mathcal{N}(0, 1/\beta)$
  - β is common knowledge
  - could allow for $\beta_A \neq \beta_B$ or for privately known β

Baseline Model

Timing:

1. Nature draws θ and then θ_A, θ_B (conditionally iid)
2. Each candidate i privately observes θ_i
3. A and B simultaneously commit to platforms y_A and y_B
4. Voter elects a candidate i, and i implements y_i

Study Perfect Bayesian equilibria, $(y_A(\theta_A), y_B(\theta_B), p(y_A, y_B))$

- Purely notational that candidates play pure candidates
- Voter randomizes 50-50 when indifferent (not essential)
- Technical:
  1. restrict to eqa. where for any y_A, $p(y_A, \cdot)$ has only at most a countable number of discontinuities; analogously for any y_B
  2. a.e. qualifiers

Aside: Communication

- If platforms are non-binding (or cheap talk before binding platforms), there are equilibria that fully aggregate information
- However, these equilibria are not plausible
  - Each candidate would like to be the sole proprietor of all information
- (A version of) Farrell 1993's neologism-proofness condition eliminates informative communication
  - One of the extensions we formally study

Linear Updating

Quadratic prefs $\Rightarrow$ voter selects platform closest to expected state

Normal-Normal structure implies linear updating:

$$\mathbb{E}[\theta|\theta_1,\ldots,\theta_n] \quad = \quad \frac{n\beta}{\alpha+n\beta}\left(\frac{\sum_i \theta_i}{n}\right)$$

More generally, expectation is linear when distribution of $\theta_i|\theta$ is in the exponential family and the prior is a conjugate prior

- includes continuous and discrete distributions: normal, exponential, gamma, beta, chi-squared, binomial, Dirichlet, Bernoulli, Poisson, ...
- anti-pandering results extend to this class; main welfare result is even more general

Some Definitions

- A strategy $y_i(\theta_i)$
  - is unbiased if $y_i(\theta_i) = \mathbb{E}[\theta|\theta_i]$
  - has pandering if
    1. $\theta_i > 0 \Rightarrow y_i(\theta) \in [0, \mathbb{E}[\theta|\theta_i])$
    2. $\theta_i < 0 \Rightarrow y_i(\theta) \in (\mathbb{E}[\theta|\theta_i], 0]$
  - has overreaction if
    1. $\theta_i > 0 \Rightarrow y_i(\theta) > \mathbb{E}[\theta|\theta_i]$
    2. $\theta_i < 0 \Rightarrow y_i(\theta) < \mathbb{E}[\theta|\theta_i]$
- Because of latitude in off-path beliefs, any pair of constant strategies is an equilibrium
- Our interest is in informative equilibria

Unbiased Strategies

Proposition.

It is not an equilibrium for both candidates to use unbiased strategies.

Reason: would be optimal for voter to elect more extreme candidate, and hence a profitable deviation is to overreact.

- each candidate's estimate is based on one signal
- voter's estimate is based on two signals ($\because$ full revelation)
- so voter's estimate puts less weight on the prior and hence is more extreme than the average of the candidates' estimates
  - could even be more extreme than both candidates' estimates
- hence she would elect the more extreme candidate

Proof

Symmetric FRE

Despite the incentive for overreaction, can information be revealed?

Proposition.

1. *There is a symmetric fully revealing equilibrium. It has overreaction:*

$$y(\theta_i) = \mathbb{E}[\theta|\theta_i, \theta_{-i} = \theta_i] = \frac{2\beta}{\alpha + 2\beta}\theta_i.$$

   The voter chooses each candidate with prob. $\frac{1}{2}$ for all platform pairs.

2. *This is the unique (continuous) symmetric FRE.*

▸ Proof

Main Welfare Results (1)

While the previous eqm is fully revealing, policy distortion from overreaction

- platforms are commitments

But perhaps this is the best eqm, in terms of ex-ante voter welfare?

Main Welfare Results (2)

Rich setting; infeasible to characterize all equilibria. Nevertheless:

- For any candidates' strategy profile, σ, let $v_i(\sigma)$ be the voter's welfare from electing candidate i no matter the platform pair.
- If σ is an equilibrium profile, voter's welfare must be **at least** $V(\sigma) \equiv \max\{v_A(\sigma), v_B(\sigma)\}$.
- Political competition is beneficial only if welfare is **strictly larger** than $V(\sigma)$.

Theorem.

In any equilibrium with candidates' strategies σ, voter welfare is $V(\sigma)$.

$\Rightarrow$ in any eqm, as if welfare only depends on one candidate's policy fn.!

$\Rightarrow$ sharp upper bound on eqm voter welfare

Main Welfare Results (3)

Defn: An equilibrium is non-competitive if one candidate wins with ex-ante prob. one. It is competitive if each candidate wins with ex-ante positive prob.

Theorem.

1. *There is a non-competitive equilibrium in which the winning candidate plays the unbiased strategy.*
2. *No equilibrium yields higher voter welfare. Any competitive equilibrium yields strictly lower welfare.*

$\Rightarrow$ contested elections cannot do better — and can do worse — than non-contested elections.

- Naturally, competition has benefits for reasons outside this model.

Key Lemma

Benevolent Candidates

- Normatively, how to maximize welfare within Downsian game form?
- Consider an auxiliary benevolent candidates game:
  - Each candidate maximizes the voter's welfare
  - Team problem in sense of Marschak & Radner (1972)
  - Pareto-dominant eqm $\iff$ solution to normative exercise

Proposition.

In the benevolent candidates game, unbiased strategies are not an eqm either, but now because candidates would deviate to pandering.

- Recall: unbiased strategies $\Rightarrow$ winner has more extreme signal
- This "winner's curse" $\Rightarrow$ benevolent moderation of platform when conditioning on winning, i.e. deviate to pandering.

Pandering Normatively Desirable

Proposition.

In the benevolent candidates game,

1. *There is a symmetric FRE with pandering:*

$$y(\theta_i) = \mathbb{E}[\theta \mid \theta_i, |\theta_{-i}| < |\theta_i|],$$

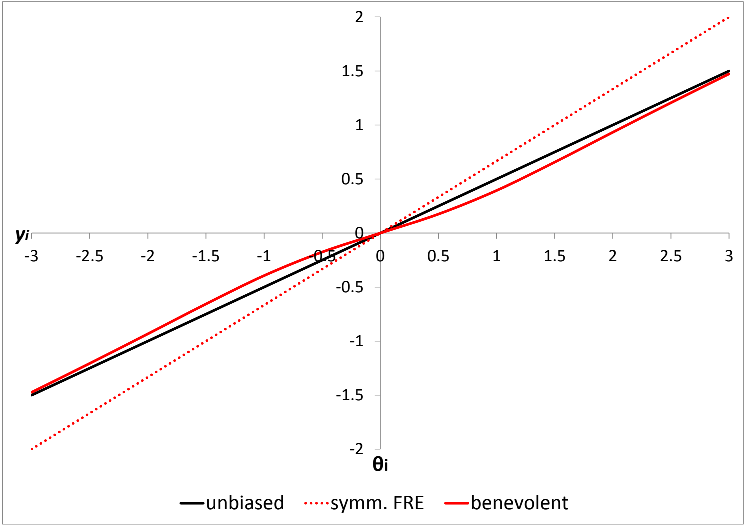
   and voter elects the more extreme candidate.

2. *This is the Pareto-dominant equilibrium subject to i winning whenever $|\theta_i| > |\theta_{-i}|$.*

- *conjecture that caveat in part 2 can be dropped*

Comparison of Strategies

Let $\alpha = \beta = 1$. Graph of various strategies:



Extensions

1. More general information structures
   - welfare bound results require minimal assumptions (some correlation)
   - (anti-)pandering results apply within conjugate-exponential family
2. Cheap talk
   - non-binding platforms; elected official implements best policy given all avail. information
   - define a version of nelogism-proof equilibria (Farrell, 1993)
   - Theorem: only uninformative equilibria are neologism-proof
   - intuition: revealing info can only make opponent more attractive
3. Idelogical motivation
   - $u_i = -\rho_i(y - \theta - b_i)^2 + (1 - \rho_i)\mathbf{1}_{\{i \ wins\}}$
   - Theorem: for small $(\boldsymbol{\rho}, \mathbf{b})$, any welfare-maximizing equilibrium is almost non-competitive

Details

Conclusion

- Office-motivation can $\Rightarrow$ distort policies by anti-pandering
- Yet, platforms can reveal information
- Main result: tight upper bound on welfare
  - in any eqm, welfare effectively depends on one candidate's policy fn.
  - hence, elections cannot aggregate more than one candidate's signal
  - competitive equilibria $\prec$ best non-competitive equilibrium
- Normatively: optimal degree of pandering benefits voter welfare

Thank you!

Deviation from Unbiased Strategies

Back to Proposition

Proof.

- Given $y_i(\theta_i) = \mathbb{E}[\theta|\theta_i]$, the mid-point of the platforms is

$$m(\theta_A, \theta_B) = \frac{\mathbb{E}[\theta|\theta_A] + \mathbb{E}[\theta|\theta_B]}{2} = \frac{\beta}{\alpha+\beta}\left(\frac{\theta_A+\theta_B}{2}\right).$$

- On the other hand,

$$\mathbb{E}\left[\theta|\theta_A,\theta_B\right] = \frac{2\beta}{\alpha+2\beta}\left(\frac{\theta_A+\theta_B}{2}\right).$$

- Thus, the more extreme signal or platform wins:

$$|\theta_i| > |\theta_j| \Rightarrow |y_i(\theta_i) - \mathbb{E}\left[\theta|\theta_A,\theta_B\right]| < |y_j(\theta_j) - \mathbb{E}\left[\theta|\theta_A,\theta_B\right]|,$$

- Hence, profitably deviate by overreacting (but not by pandering).

□

Symmetric FRE

Proof of existence.

◂ Back to Proposition

Only need to check voter's optimality.

Since $y(\cdot)$ is fully revealing and onto, and using mean-variance decomposition of utility, it suffices that for any θ_A and θ_B,

$$(y(\theta_A) - \mathbb{E}[\theta|\theta_A,\theta_B])^2 = (y(\theta_B) - \mathbb{E}[\theta|\theta_A,\theta_B])^2 .$$

Substituting in yields

$$\left(\frac{2\beta}{\alpha+2\beta}\theta_A - \frac{2\beta}{\alpha+2\beta}\left(\frac{\theta_A+\theta_B}{2}\right)\right)^2 = \left(\frac{2\beta}{\alpha+2\beta}\theta_B - \frac{2\beta}{\alpha+2\beta}\left(\frac{\theta_A+\theta_B}{2}\right)\right)^2,$$

which is plainly true for any θ_A, θ_B. □

The Ex-Post Lemma

Welfare Theorem

Lemma.

Fix an informative equilibrium $(y_A(\cdot), y_B(\cdot), p(\cdot))$ and let μ be the induced ex-ante probability measure over platform pairs. There is $p^* \in [0,1]$ such that for μ-a.e. (y_A, y_B), $p(y_A, y_B) = p^*$.

- Implies that any informative eqm is an ex-post eqm: no candidate can profitably deviate even after observing opponent's platform
- Proved by applying an (apparently new) general theorem about constant-sum Bayesian games with type-independent payoffs
  - uses minimal correlation of players' information
- By this Lemma:
  - Uninformative equilibria $\prec$ unbiased non-competitive eqm
  - $p \in \{0,1\} \preceq$ unbiased non-competitive eqm
  - If $p \in (0,1)$, then voter welfare is the same as if **either** candidate were always elected; but at least one of them cannot be playing unbiased strategy; therefore $\prec$ unbiased non-competitive eqm

Mixed-Motivated Candidates

Back to Extensions

- A mixed-motivations game is parameterized by $(\boldsymbol{\rho}, \mathbf{b})$
  - $u_i = -\rho_i(y - \theta - b_i)^2 + (1 - \rho_i)\mathbf{1}_{\{i \ wins\}}$
  - pure office motivation when $(\boldsymbol{\rho}, \mathbf{b}) = (\mathbf{0}, \mathbf{0})$
- Let $\Sigma^{\varepsilon}(\boldsymbol{\rho}, \mathbf{b})$ be set of ε-competitive equilibria.
- Let $U^{\varepsilon}(\boldsymbol{\rho}, \mathbf{b}) := \sup_{\sigma \in \Sigma^{\varepsilon}(\boldsymbol{\rho}, \mathbf{b})} U(\sigma)$ be highest voter welfare among ε-competitive equilibria.

Theorem.

Assume candidates have mixed motivations. Then,

1. *As* $(\boldsymbol{\rho}, \mathbf{b}) \to (\mathbf{0}, \mathbf{0})$, $U^0(\boldsymbol{\rho}, \mathbf{b}) \to U^0(\mathbf{0}, \mathbf{0})$.
2. $\forall \varepsilon > 0$, $\exists \delta > 0$: $\|(\boldsymbol{\rho}, \mathbf{b}) - (\mathbf{0}, \mathbf{0})\| < \delta \Rightarrow U^{\varepsilon}(\boldsymbol{\rho}, \mathbf{b}) < U^0(\boldsymbol{\rho}, \mathbf{b}) - \delta$.

$\Rightarrow$ when close to pure office motivation, any welfare-maximizing eqm must be almost non-competitive.