Multidimensional Signaling and the Rise of Cultural Politics

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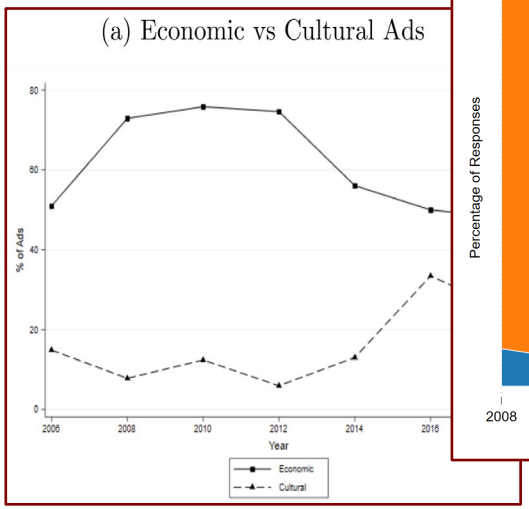
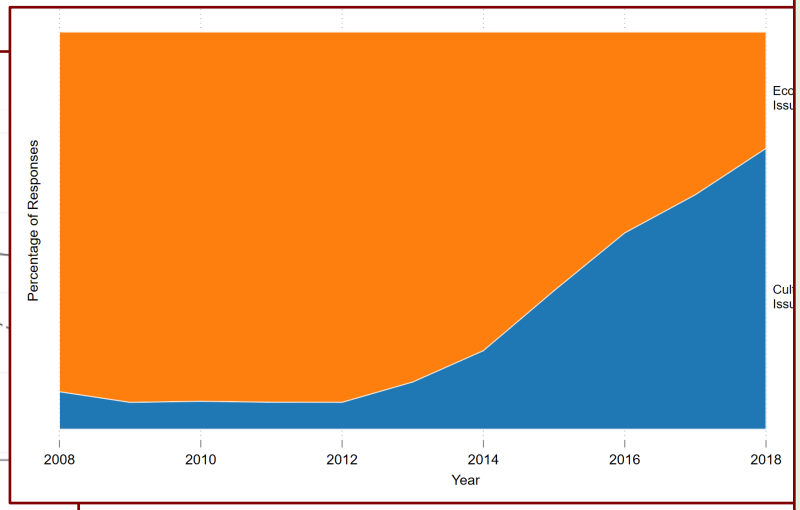
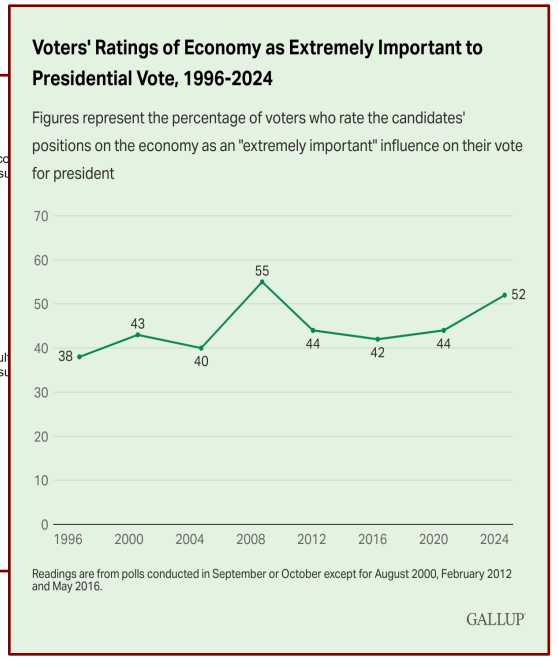
Culture vs. Economy







- Voters care about the economy, but campaigns are increasingly run on cultural issues

Our Theory

- Voters care about economic issues
- Economic platforms are increasingly complex; voters have difficulty to distinguish parties' platforms
- On cultural issues, it is easier to cut through the noise
- Voters make inference about the politicians' stand on the economy from their cultural platforms
- Politicians use cultural dimension to signal where they stand on what matters

Culture vs. Economy (Noy and Rao, 2025)

Literature

- Multidimensional political competition
  - Social choice in multiple dimensions: McKelvey (1979), Zhou (1991)…
  - Issues in political campaigns: Polborn and Yi (2006), Aragones et al (2015)…
  - Voting over multiple issues: Lindbeck and Weibull 1987), Ansolabehere and Snyder (2000), McMurray (2017), Ahn and Oliveros (2011)
- Signaling
  - Traditional models: Spence (1973), Cho and Kreps (1987)…
  - Signaling in elections: Banks (1990), Canes-Wrone, Herron, and Shotts (2001), Smart and Sturm (2006), Callander and Wilkie (2007), Kartik and McAfee (2007)
  - Signaling of multiple dimensions with binary action: Austen-Smith and Fryer (2005), Bursztyn, Egorov, Jensen (2017)
  - Noisy signals: Acemoglu, Egorov, Sonin (2013), Kartik and Van Weelden (2019), …
- Cultural politics
  - Culture and politics: Feddersen and Sandroni (2006), Benabou and Tirole (2011)
  - Identity and (voting) behavior: Gennaioli and Tabellini (2024)…
  - Political effects of migration: Alesina and Tabellini (2024)…
  - The rise of cultural politics: Inglehart and Norris (2019), Bonomi, Gennaioli, and Tabellini (2021), Noy and Rao (2025)…

Policy space and politicians

- Policy space is n-dimensional
- Politicians are from two parties, R and D
- In each party, a candidate may be of two types, $t \in \{N, E\}$
  - Equally likely (for simplicity)
  - Ideal points $\boldsymbol{b}^N$ and $\boldsymbol{b}^E$

- Utility from policy p:

$$U^t(\boldsymbol{p}) = -\sum_{k=1}^{n} (p_k - b_k^t)^2$$

  - dimensions normalized so politicians put equal weight on them
- Two candidates, one from each party, with types known only to themselves, compete in an election

Political campaigns

- Candidates from parties R and D simultaneously choose political platforms $\boldsymbol{q}^R$ and $\boldsymbol{q}^D$ to campaign on ("political rhetorics")
  - $\boldsymbol{q}^R = (\boldsymbol{q}^{RN}, \boldsymbol{q}^{RE}), \boldsymbol{q}^D = (\boldsymbol{q}^{DN}, \boldsymbol{q}^{DE})$
- For a candidate type t, choosing campaign position $\boldsymbol{q}$ entails cost

$$C^t(\boldsymbol{q}) = \sum_{k=1}^{n} \beta_k \left(q_k - b_k^{tj}\right)^2$$

  - Vector $\boldsymbol{\beta}$ captures difficulty of misrepresentation of true self on different dimensions

- Voters observe politicians' rhetorics $\boldsymbol{q}^i$, $i \in \{R, D\}$ with noise:

$$\boldsymbol{s^i} = \boldsymbol{q^i} + \boldsymbol{\xi^i}$$

- $\{\xi_k^i\}$ are i.i.d., normal, zero-mean, with variance σ_k

Politicians' Utility

- Payoff of politician of type t is given by

$$V^t(\boldsymbol{p}, \boldsymbol{q}, w) = U^t(\boldsymbol{p}) - C^t(\boldsymbol{q}) + W\mathrm{I}_{\{win\}}$$

  - $\boldsymbol{p}$: policy that is chosen by the winner
  - $\boldsymbol{q}$: campaign rhetoric chosen by the politician
  - W: benefit from office

Voters

- Continuum of voters
- Voters have quadratic (dis)utility over policy: for voter j with ideal point π^j,

$$W^j(\boldsymbol{p}) = -\sum_{k=1}^{n} \kappa_k \left(\pi_k^j - p_k\right)^2$$

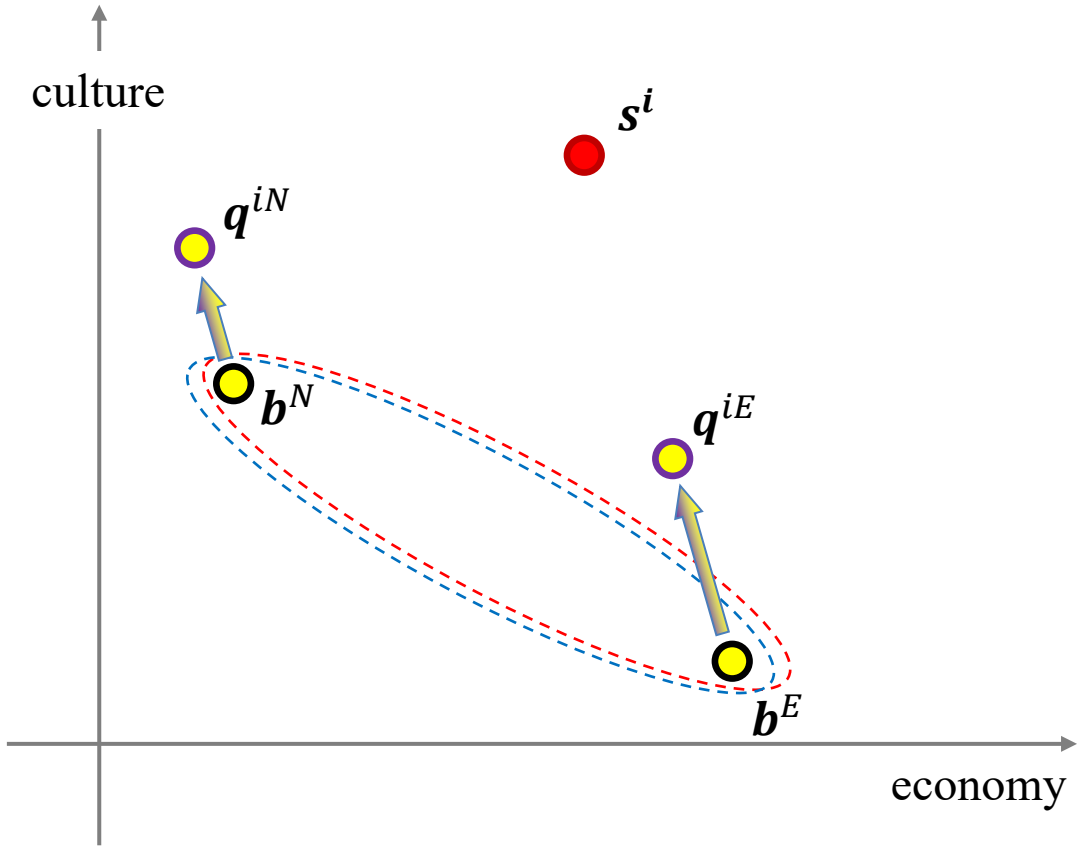
- Voters are heterogenous and subject to aggregate shocks (as in Calvert 1985):

$$\pi^j = d + \varepsilon^j + \delta$$

  - d is expected policy position
  - ε^j is idiosyncratic shocks (so voters are heterogenous)
  - δ is common shock (so "median voter's" position is uncertain)

- Summing up, let θ = probability that a majority prefers type N

$n = 2$, Candidate $i \in \{R, D\}$



Timing

- Two politicians are chosen to run for office, with ideal points $\boldsymbol{b}^R \in \{\boldsymbol{b}^N, \boldsymbol{b}^E\}$ and $\boldsymbol{b}^D \in \{\boldsymbol{b}^N, \boldsymbol{b}^E\}$ known only to them
- They choose campaign rhetorics $\boldsymbol{q}^R$ and $\boldsymbol{q}^D$
- Voters get noisy signals $\boldsymbol{s}^R$ and $\boldsymbol{s}^D$
- Voters' preferences are subjected to individual shocks $\boldsymbol{\varepsilon}^j$ and aggregate shock $\boldsymbol{\delta}$
- Voters cast ballots
- The elected candidate chooses policy $\boldsymbol{p}$

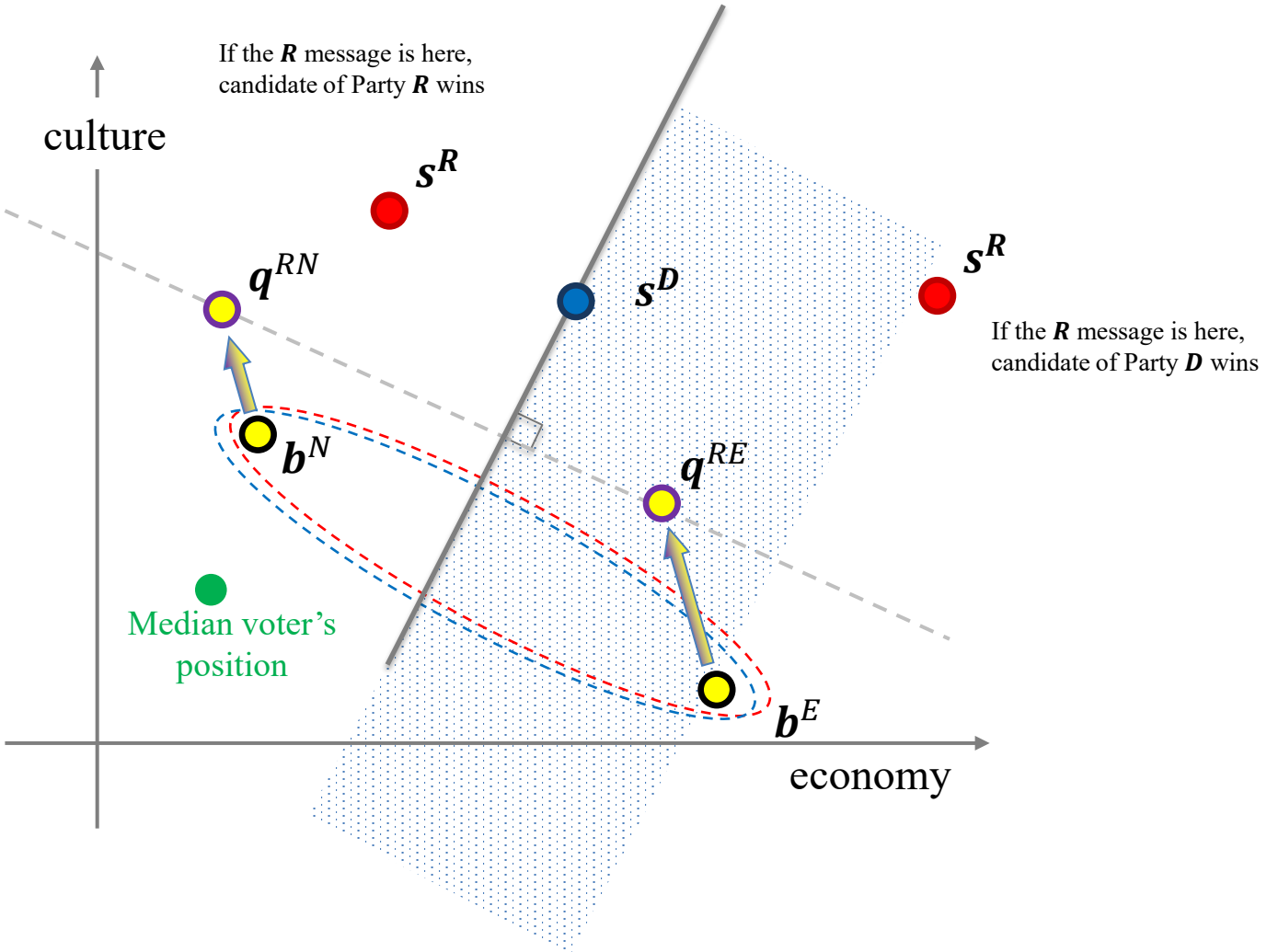
Equilibrium concept

- Voters vote for preferred candidate (continuum of voters so no voter is pivotal)
- Perfect Bayesian equilibrium
- No need for further refinement: all signals that voters may obtain happen on-path

Analysis: Voters' Induced Preferences

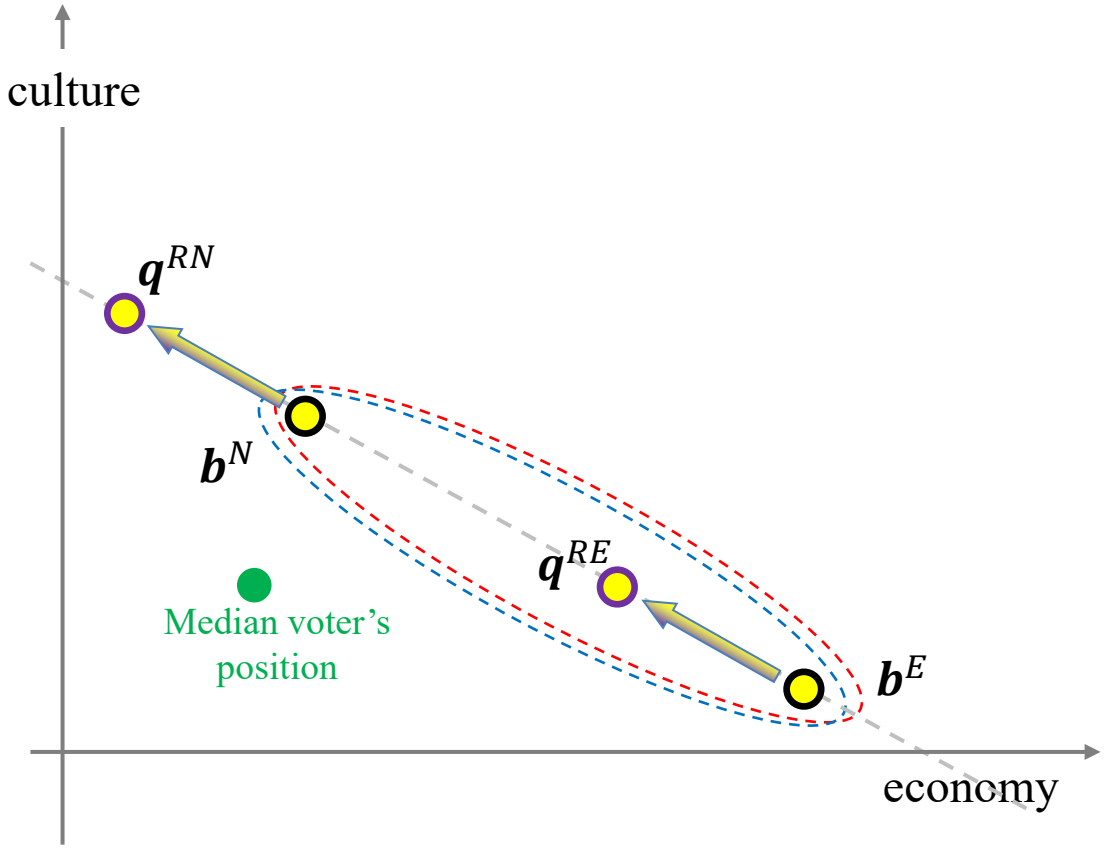
- Politician of type t, if elected, will choose their ideal policy vector, $\boldsymbol{p} = \boldsymbol{b}^t$
- A majority of voters prefers candidate of type N with some probability θ
  - If they do, they are trying to understand, which candidate (1 or 2) is more likely to be of type N, given signals $\boldsymbol{s^1}$ and $\boldsymbol{s^2}$

Symmetric Noise: Voting



- Parties are identical; this analysis is for R

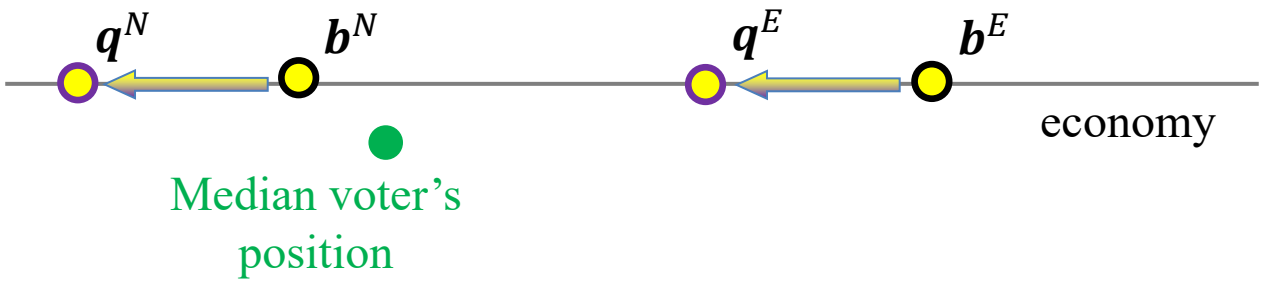
Symmetric noise: Equilibrium strategies



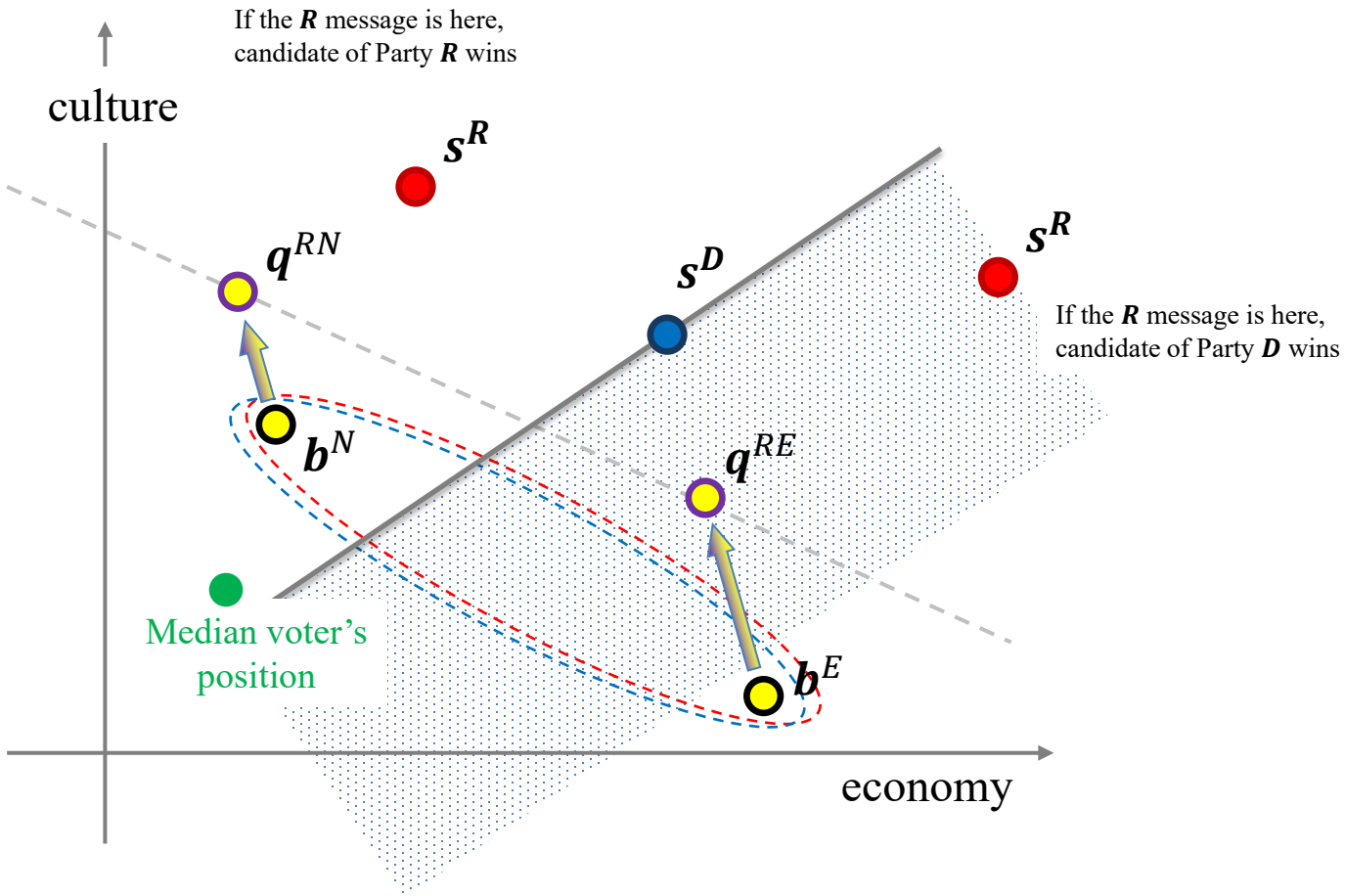
- Parties are identical; this analysis is for R

One-dimensional Populism

- The case of symmetric noise is a general extension of one-dimensional populism model (AES, 2013)
  - Earlier paper: incumbent who can signal runs against a random challenger. Here: Both types of candidates [from both parties] signal
  - The direction of pandering is again one-dimensional, but endogenous
  - Equal likelihood of both types makes the shift in rhetorics equal for both types

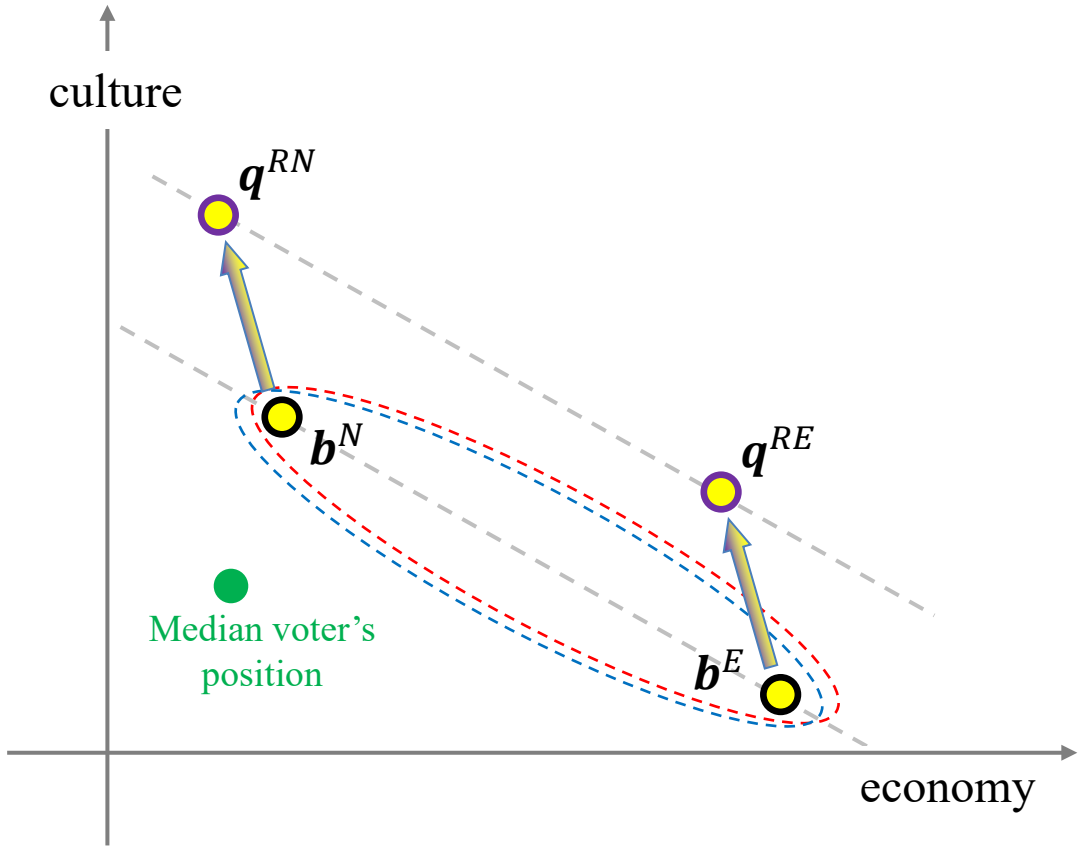


General Case: Voting



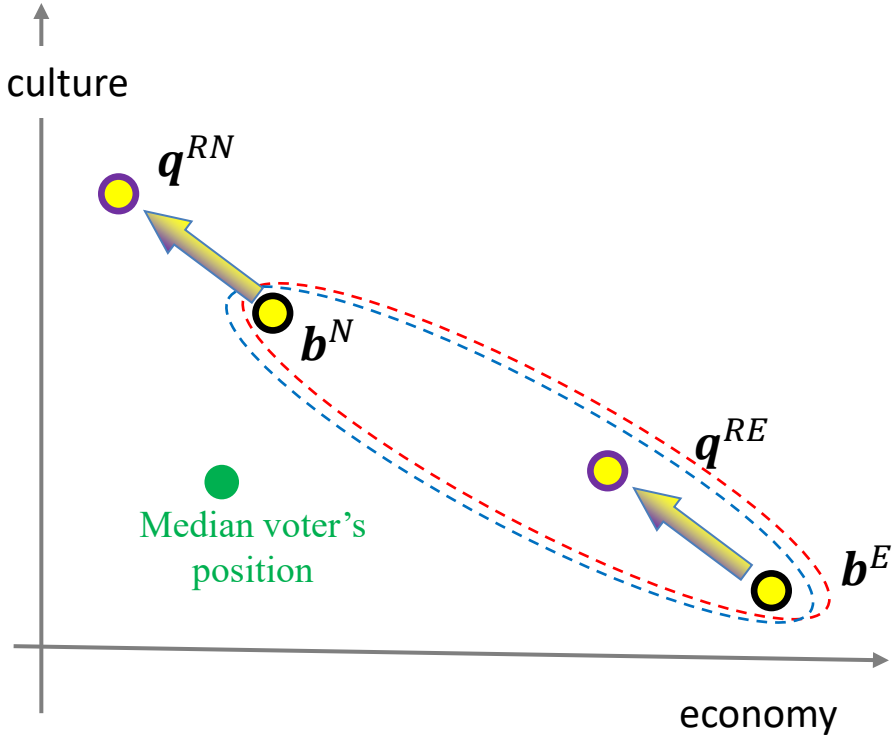
- Now, suppose that there is less noise on the culture dimension
- Parties are identical; this analysis is for R

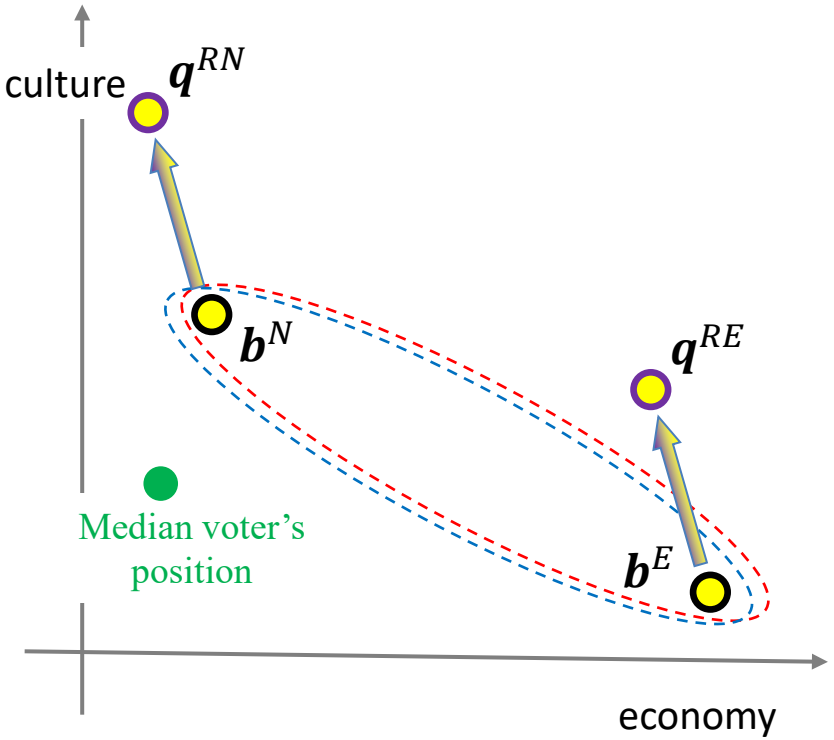
General Case: Equilibrium Strategies



- There is less noise on the culture dimension
- Parties are identical; this analysis is for R

The Rise of Cultural Politics





Proposition 1: Equilibrium

- *In equilibrium, the two types of politicians [in each party] offer different campaign rhetorics.*
- *These rhetorics coincide with their policy preferences if and only if* $\theta = \frac{1}{2}$. *Otherwise, there is strategic pandering.*

Proposition 2: Pandering

- *The "pandering vectors" (campaign rhetorics)* $\boldsymbol{q}^{iN} - \boldsymbol{b}^{N}$ *and* $\boldsymbol{q}^{iE} - \boldsymbol{b}^{E}$ *are equal,* $i \in \{R, D\}$.
- *The sign of each coordinate* $\boldsymbol{q}_k^{iN} - \boldsymbol{b}_k^{N}$ *is the same as* $\boldsymbol{b}_k^{iN} - \boldsymbol{b}_k^{N}$ *if* $\theta > \frac{1}{2}$ *and opposite if* $\theta < \frac{1}{2}$.
- *Pandering is stronger if* θ *is further away from* $\frac{1}{2}$ *or benefit from office* W *is higher.*

Proposition 3: Comparative Statics

- *On each issue k, a lower β_k (cost of campaigning further away from true preferences) increases pandering on issue k.*
- *On each issue k, a lower σ_k (higher precision of signal) decreases pandering on all other dimensions.*
  - *The effect on dimension k is ambiguous (and positive for σ_k sufficiently large).*
- *For each issue k, an increase in polarization $\left|\boldsymbol{b}_k^N - \boldsymbol{b}_k^E\right|$ on this issue reduces signaling on all other dimensions but may have a nonmonotonic effect on dimension k.*

Proposition 4: Probability of Winning

- *Probability of winning of the disadvantaged type of a candidate is less than* $\frac{1}{2}$ *but is increasing in distance* $\|\boldsymbol{b}^N - \boldsymbol{b}^E\|$.

Social Pressure and Cancel Culture

- Suppose there is a "social norm" vector $\boldsymbol{h}$, and politicians pay a social cost if the voters get signal far from $\boldsymbol{h}$:

$$S(\boldsymbol{q}, \boldsymbol{\xi}) = \sum_{k=1}^{n} \eta_k (q_k + \xi_k - h_k)^2$$

  - Previous case: $\boldsymbol{\eta} = \mathbf{0}$

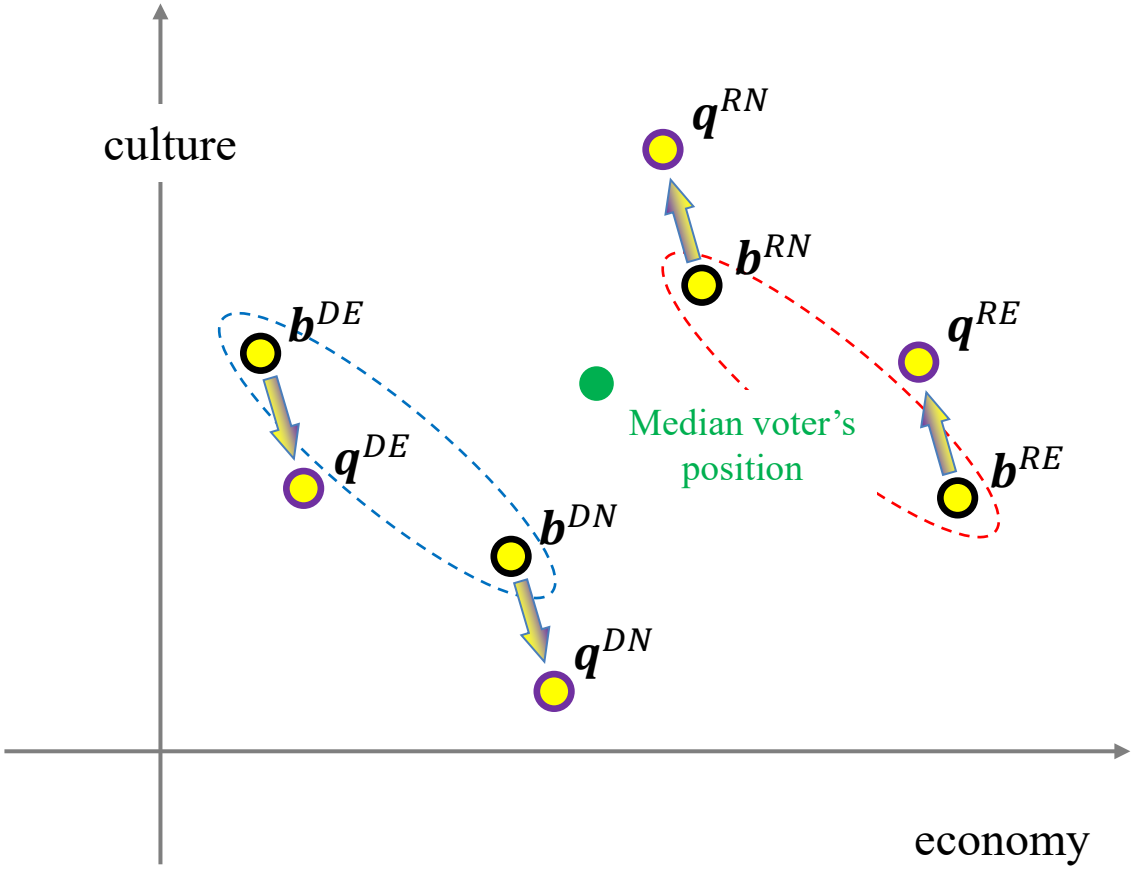
- *Increasing η_k moves politicians' rhetorics closer to vector $\boldsymbol{h}$ and to each other, so $\|\boldsymbol{q}^A - \boldsymbol{q}^B\|$ is decreasing. The probability of politician of either type getting elected gets closer to $\frac{1}{2}$, benefitting type B if $\theta > \frac{1}{2}$ and type A if $\theta < \frac{1}{2}$.*

- *More popular type of politicians (A if $\theta > \frac{1}{2}$) prefers $\boldsymbol{\eta} = \mathbf{0}$, less popular prefers $\boldsymbol{\eta} \gg \mathbf{0}$.*

Heterogenous Parties

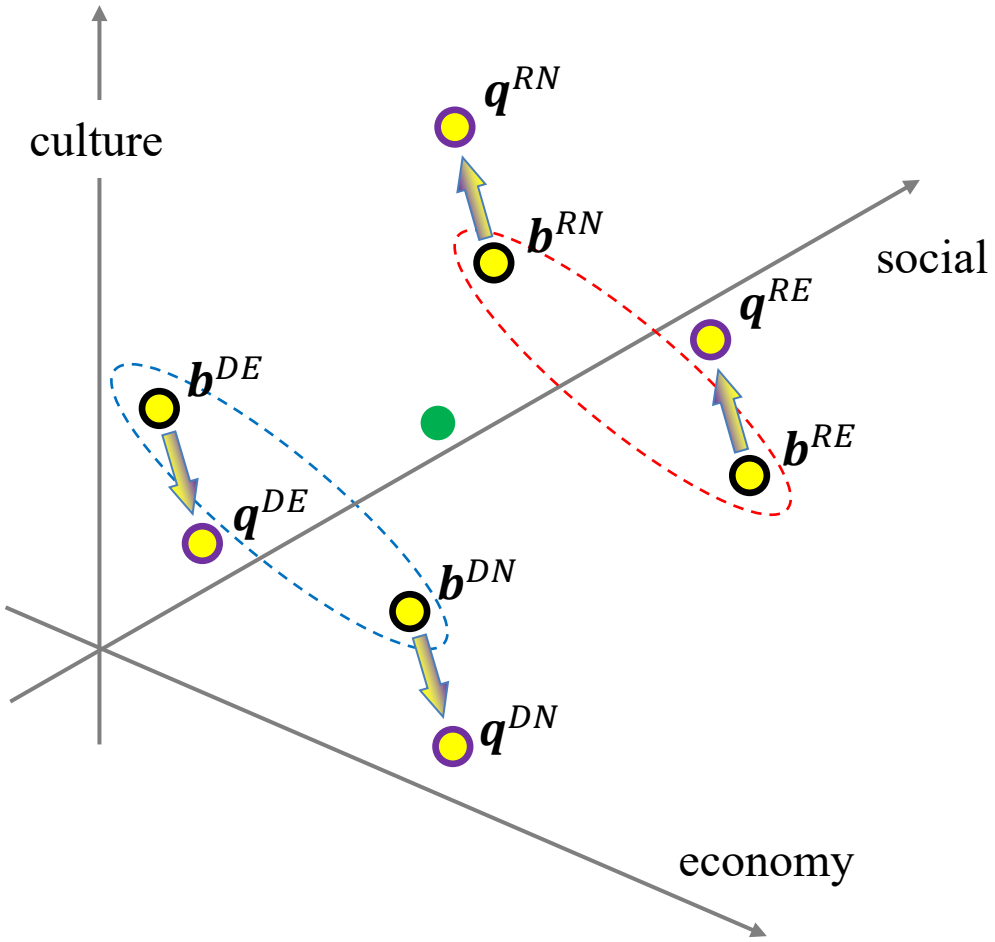
- Our results do not substantively depend on parties being identical.
- Suppose that each party has candidates of two types, and these types are different for each party, with ideal points: $\boldsymbol{b}^{RN}$ and $\boldsymbol{b}^{RE}$ from party R (again, with equal probability) and $\boldsymbol{b}^{DN}$ and $\boldsymbol{b}^{DE}$ from party D.

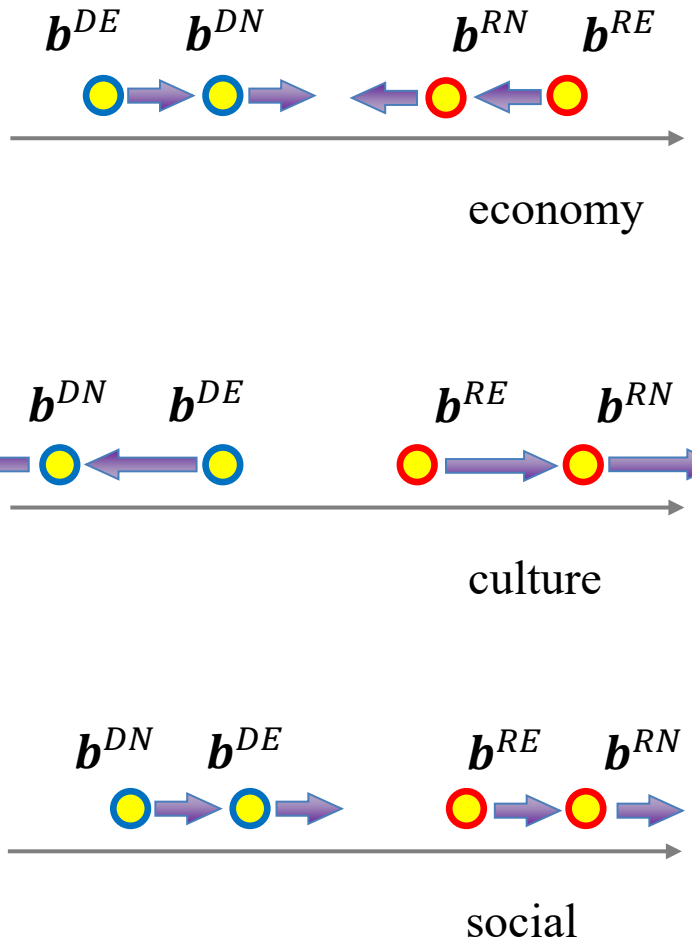
Heterogenous Parties



- Even if parties are not identical, it is possible to have a closed-form solution
- With less noise on cultural dimensions and economy more important for voters, it is possible to have campaigns converging on the economy dimension and diverging on cultural one

An Example with Three Dimensions





- If candidates ideal points form a regular tetrahedron, there is a closed-form solution. Otherwise, continuity allows to extend results to any generic four points in $\mathbb{R}^3$.
- Any four points on a plane are an orthogonal projection of some regular tetrahedron in $\mathbb{R}^5$.

Conclusion

- We build a highly tractable model of multidimensional signaling in politics
- Politicians pander not only to what voters value, but also to what voters observe better
- Campaigns may become centered on highly visible dimensions like culture
- The rise of cultural politics can be attributed to rising observability of cultural positions
- Moderation on some dimensions (economy) may be accompanied by polarization in other (culture)