Electoral Competition with Rationally Inattentive Voters

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Voters are poorly informed - Internet didn't help

Carpini & Keeter (1996) on US voters:

- Only 1 voter out of 2 knows that each state has 2 senators
- When asked to name 2 largest spending programs:
  - 41% says foreign aid (actual budget share: 1.5%)
  - 14% says social security (actual budget share: 21.6%)

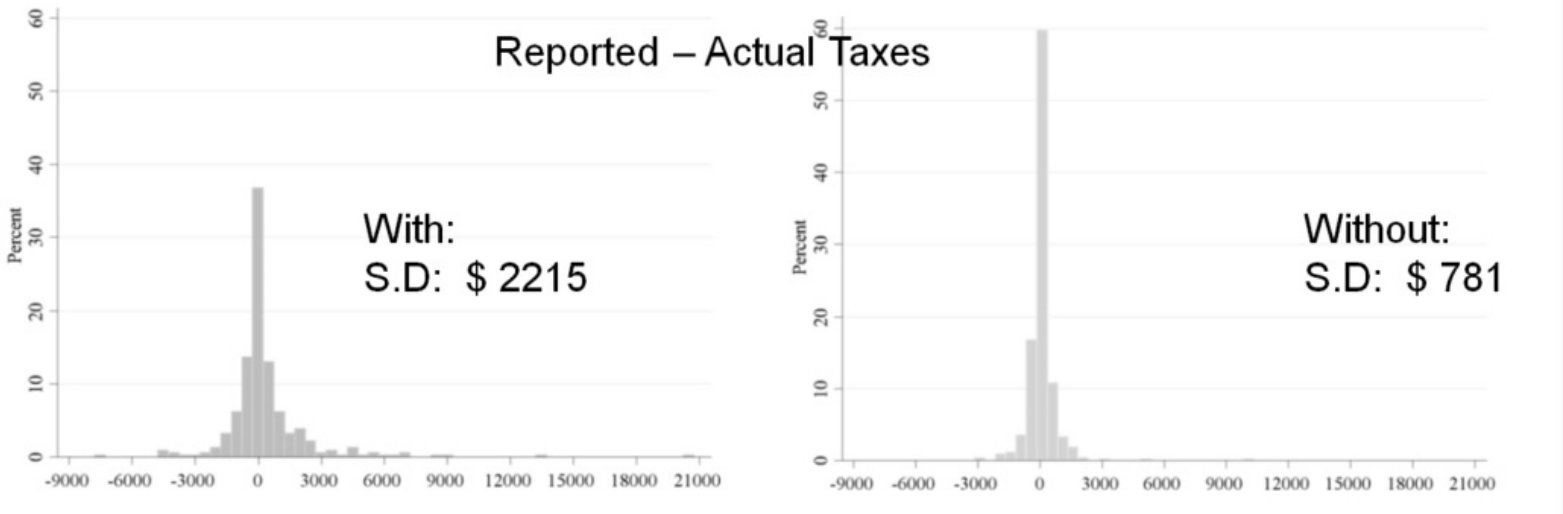
Prior (2007) on advent of Internet:

- Informational asymmetries across issues (what one is informed about) have become more prominent.
- On average, Americans' public knowledge did not increase relative to the late 1980s (The Pew Research Center 2007).
- Perhaps, easier to avoid info now.

Voters' ignorance is not random

It is related to Cost (or entertainment value) of information

- Cabral & Hoxby 2012: compare info on property taxes paid by homeowners with /without tax escrows



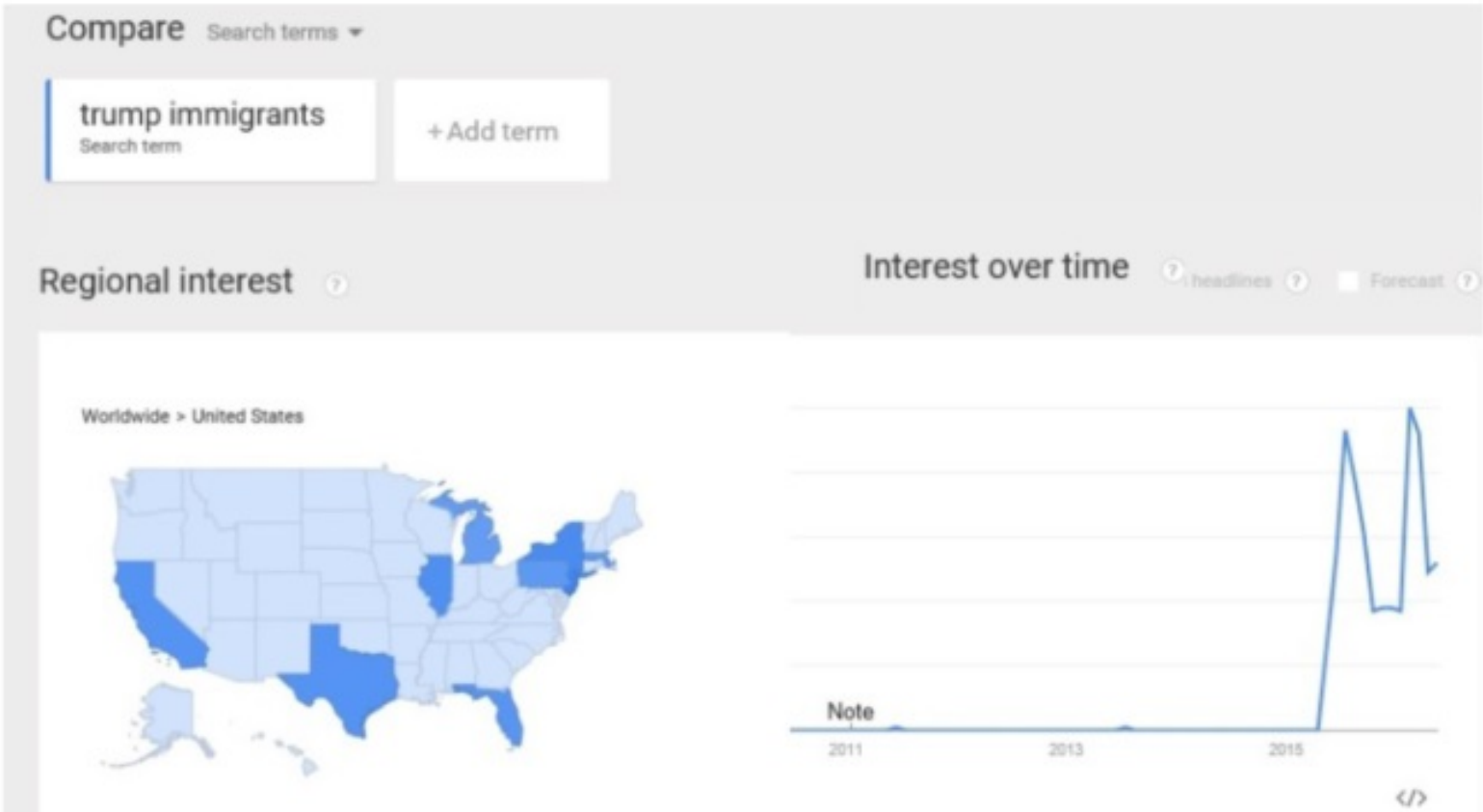
taxes larger where real-estate taxes less salient.

- G. Bush vs Clinton campaign:
  - 15% knew that both candidates supported death penalty
  - 85% knew that Bushes' dog was named Millie

Voters' ignorance is not random

It is related to What is at Stake for the individual

- Women more informed about education policies than men
- African Americans generally less informed, but more informed about racial policies
- Interest on immigration policy is stronger in border states



Questions and goals

How does *endogenous* selective ignorance interact with policy formation?

- What explains what voters know / don't know ?
  - Voters have limited attention span
  - Internalize same information differently, depending on their stakes
- How does selective ignorance influence policy choice?
  - Can it explain popular demands for misguided policies?

Build simple model of selective attention, with wide range of applications

- Electoral competition with 2 opportunistic candidates
  - Probabilistic voting
  - Voters allocate costly attention to candidates' platforms–
- In equilibrium, voters' attention and policy choices are jointly determined

Outline

- Theoretical framework
- Preliminary results on general properties of equilibrium
  - Both candidates want to please more attentive voters
  - More attentive voters are those with higher stakes and lower cost
- Three applications
  - *One dimensional policy*: RI amplifies effects of intensity of policy preferences (extremists/minorities more attentive and influential)
  - *Several policy instruments*: excessive targeting, under-provision of G, attn to more divisive issues
  - *Poverty alleviation* empowers the poor (multiple equilibria)
- Concluding remarks

Related Literature

- Sims 2003, many others on Rational inattention in economics
- Several papers on policy effects of exogenous imperfect information by voters, and on media
  - Gavazza & Lizzeri, Ponzetto, Glaeser et al., Stromberg, + vast literature on retrospective voting
- Empirical literature on economic + political effects of tax instruments with different visibility & on political effects of information supply
  - Chetty et al., Cabral & Hoxby, others, Survey by Prat-Stromberg
- Normative literature on collective decisions when information is endogenous, but no analysis of policy
  - Persico 2003
- Empirical literature on what voters know / content of electoral campaigns;
- Carpini & Keeters, Hillygus & Shields, others

This paper: interaction of information and policy choice.

General framework: electoral competition

- Two opportunistic candidates ($C \in \{A, B\}$), who maximize prob. of winning
  - Each commits to a *target* policy vector $\hat{q}_C = [\hat{q}_{C,1}, ..., \hat{q}_{C,M}]$ ahead of elections
  - *Actual* policy platform is $q_C = \hat{q}_C + e_C$, where $e_{C,i} \sim N(0, \sigma_{C,i})$ is implementation error.

- Probabilistic voting: voters tradeoff policy / candidate preferences:
- Voter v in economic group $J = 1, 2..N$, has utility $U_C^{v,J}(q_C)$ if C wins:

$$U_A^{v,J}(q_A) = U^J(q_A), \qquad U_B^{v,J}(q_B) = U^J(q_B) + x^{v,J}. \tag{1}$$

  - $U^J(q_C)$ concave and differentiable
  - $x^{v,J} = \tilde{x} + \tilde{x}^{v,J}$: popularity shock + idiosincratic bias in favor of B (realized before elections, same uniform distribution in all groups, iid)

Timing

1. Voters form priors over platforms,
2. Candidates choose platforms, voters attention strategies,
3. Voters observe signals about policies
4. Preferences over candidates are realized,
5. Elections held - winner enacts announced policies.

In equilibrium:

- Voters and candidates optimize
- Voters' prior beliefs are consistent with equilibrium platforms

Voter's rational inattention 1/2

Prior beliefs about $q_{C,i}$ are iid normal, consistent with equilibrium

$$q_{C,i} \sim N(\hat{q}^*_{C,i}, \sigma^2_{C,i})$$

- Imperfect attention: each voter receives noisy signal on each $q_{C,i}$:

$$s^{v,J}_{C,i} = q_{C,i} + \epsilon^{v,J}_{C,i},$$

$\epsilon^{v,J}_{C,i} \sim N(0, \gamma^{v,J}_{C,i})$; $\gamma^{v,J}_{C,i}$ is subject to choice,

- Endogenous attention, useful choice variable $\xi^J \in [0,1]^{2M}$.

$$\xi^J_{C,i} = \frac{\sigma^2_{C,i}}{\sigma^2_{C,i} + \gamma^J_{C,i}} = 1 - \frac{\rho^J_{C,i}}{\sigma^2_{C,i}},$$

$\rho^J_{C,i}$ is posterior variance. i.e: $\xi^J_{C,i}$ measures reduction of uncertainty

  - More attention $=>$ $\xi^J_{C,i}$ closer to 1 $=>$ $\rho^J_{C,i}$ closer to 0
  - Assume $\xi^J_{C,i} \geq \xi_0 > 0$ (at least minimal attn)

Voter's rational inattention 2/2

2 stages:

1. Choice of attention, cost of information incurred,
2. Voting conditional on received signals (but not on being pivotal)

Entropy-based cost of information: more precise signals costlier

- Cost of info proportional to reduction of uncertainty measured by entropy
  - Reduction of uncertainty due to signal s : $\log(\sigma^2) - \log(\rho) = -\log(1-\xi)$

Voter's objective (as if he was pivotal):

$$\max_{\xi^J \in \mathbb{R}^{2M}_{+0}} \quad E\left[max_{C\in\{A,B\}} E[U_C^{v,J}(q_C)|s_C^{v,J}]\right] + \sum_{C\in\{A,B\},i\leq M} \lambda_{C,i}^J \log(1-\xi_{C,i}^J). \tag{2}$$

$\lambda_{C,i}^J$ = cost of acquiring info on $q_{C,i}$

Discussion of assumptions

Our model is a reduced form: we study implications of imperfect knowledge and selective attention.

Noise in prior beliefs

- Many possible sources: erratic candidates, ideological shocks, random environment, additional preference shocks of voters...
- Consistency requirement: prior mean = equilibrium
- Independence across instruments

Voter's objective

- Sincere attention (meaningful vote), as if always pivotal
- Sincere voting, without conditioning on being pivotal

Robustness: simple arguments (based on monotonicity).

Model: equilibrium

Definition

The equilibrium is a set of targeted policy vectors chosen by each candidate, $\hat{q}_A^*, \hat{q}_B^*$, and of attention strategies ξ^{*J} chosen by each group of voters, such that:

a) The targeted policy vector $\hat{q}_C^*$ maximizes C's probability of winning, taking as given voters' attention ξ^{*J}.

b) The attention strategies ξ^{*J} solve the voters' problem (2) for prior beliefs with means $\hat{q}_C^*$ and noise σ_C^2.

Rational inattention and probabilistic voting

Probabilistic voting ($\lambda^J = 0$): equilibrium maximizes social welfare

$$\max_{q_C \in \mathbb{R}^M} \quad \sum_J m^J U^J(q_C) \tag{3}$$

RI, $\lambda^J > 0$: Equilibrium maximizes "perceived" social welfare.

$$\max_{\hat{q}_C \in \mathbb{R}^M} \quad \sum_J m^J E_\epsilon^J \left[E\left[U^J(q_C) | s_C^{v,J} \right] \right]. \tag{4}$$

where E_ϵ^J reflects $J's$ attention strategies (common within the group).

Small noise approximation

Assume: uncertainty is small $\rightarrow$ first-order approx, $u^J_{C,i} = \frac{\partial U^J}{\partial q_{C,i}}|_{q_C=\hat{q}^*_C}$.
PV:

$$\Delta p_C = \sum_{J=1}^{N} m^J \Delta U^J(q_C) \propto \sum_{J=1}^{N} m^J \sum_{i=1}^{M} u^J_{C,i} \Delta q_{C,i}$$

RI:

$$E[q_{C,i}|s^{v,J}_C] = \xi^J_{C,i} s^{v,J}_C + (1-\xi^J_{C,i})\hat{q}^*_{C,i} = \hat{q}^*_{C,i} + \xi^J_{C,i}(q_{C,i} - \hat{q}^*_{C,i} + \epsilon^{v,J}_{C,i})$$

$$\begin{aligned} \Delta p_C &\propto \sum_{J=1}^{N} m^J \sum_{i=1}^{M} u^J_{C,i} E^J_\epsilon [E[\Delta q_{C,i}|s^{v,J}_C]] \\ &\propto \sum_{J=1}^{N} m^J \sum_{i=1}^{M} \xi^J_{C,i} u^J_{C,i} \Delta q_{C,i} \end{aligned}$$

Small noise approximation

Proposition

The candidates' first order conditions:

$$\sum_{J=1}^{N} m^J \xi_{C,i}^J u_{C,i}^J = 0, \qquad \forall i. \tag{5}$$

More attentive voters weigh more than socially optimal (more likely to perceive deviation from equilibrium).

Optimal attention weights?

$$\xi_{C,i}^J = \max\left(\xi_0, 1 - \frac{\hat{\lambda}_{C,i}^J}{(u_{C,i}^J)^2 \sigma_{C,i}^2}\right) \tag{6}$$

Attention increases in utility-stakes $|u_{C,i}^J|$, decreases in cost $\lambda_{C,i}^J$

- RI amplifies effects of intensity of policy preferences

Application 1: Heterogeneity in preferences

Voter J: has bliss-point t^J and cost λ^J.

$$U^J(q) = U(q - t^J),$$

$U(\cdot)$ concave, symmetric, maximized at zero.

Electoral equilibrium maximizes a modified planner's objective:

$$\max_{q_C} \sum_J m^J \xi_C^J U^J(q_C)$$

where ξ_C^J are evaluated at the equilibrium.

- ξ_C^J is increasing in $|\hat{q}^* - t^J|$
- More extreme voters matter more (pay more attention)

App 1: Asymmetries

Extreme voters:

Corollary

Let $t^1 < t^2 < t^3$ such that $t^2 - t^1 < t^3 - t^2$. Then as the cost of attention rises, the equilibrium moves closer to the bliss point of the group with more extreme preferences (here group 3).

Small groups:

Corollary

Let $m^1 > m^2$, then the distance between equilibrium policy and bliss-point of the smaller group $|\hat{q}^* - t^2|$ is decreasing in $\hat{\lambda}$.

App 1: Implications

- Extremist voters are more:
  - *informed* - evidence on US Presidential elections, Palfrey-Poole 1987
  - *attentive* - evidence on media exposure, Ortoleva-Snowberg 2014
- Minorities are more informed (Carpini & Keeter 1996)
- Small groups matter more (e.g., Stigler 1971)
- Negatively skewed distributions of $t^J : \lambda > 0$ shifts q^* left
  - Higher λ (less transparency) $=>$ stronger effect
- Obscure vs Established candidate $\lambda_A > \lambda_B$:
  - Less attention to A ($\xi_A^J < \xi_B^J$ all J)
  - But drop in attn to A is smaller for more extremist voters
  - Policy divergence: Obscure candidate A chases more extremist voters, while B pursues centrist policies
  - Obscure candidate A less likely to win: $p_A < p_B$,
  - Evidence: weaker candidates go more extreme; Fiorina (1973), Ansolobehere et al. (2001).

App2: Targeted transfers and public good provision 1/3

$$U^J = c^J + H(g),$$

consumption c^J, public good g, (H concave and increasing).
Government spending financed through:

- targeted lump sum tax (transfer if <0), b^J
- Uniform distorting tax, τ
- Non observable (distorting) source of revenue, s.

Private and government budget constraints:

$$\begin{aligned} g &= \sum_J b^J + N\tau + s \\ c^J &= y - b^J - T(\tau) - S(s)/N. \end{aligned}$$

y is personal income, $T(\cdot)$ and $S(\cdot)$ capture inefficient sources of finance (both increasing and convex), $S(0) = T(0) = 0, S'(0) = T'(0) = 1$.

App2: Targeted transfers and public good provision 2/3

Socially optimal policy:

- eliminates all distorting taxes, $s = \tau = 0$,
- sets public good to satisfy the Samuelson condition, $H'(g) = 1/N$,
- public good financed via targeted lump sum taxes (indeterminate allocation).

With electoral competition and RI:

- $\zeta_J^J > \zeta_{-J}^J > \zeta_T^J = \zeta_g^J = \zeta_0$ (only pay attention to controversial policies, where stakes are higher)
- $\hat{s}^*, \hat{\tau}^* > 0$, reliance on inefficient sources of revenues
- $H'(\hat{g}^*) > 1/N$, under-provision of the public good
- Lower targeted taxes, possibly < 0 (fiscal churning)

App2: Targeted transfers and public good provision 3/3

Consistent with evidence on focus of electoral campaigns and of Congressional debates

- Fragmentation of policy can be bad (constitutional implications?)
- Congress: more effort to divisive issues before election (Morelli et al.)
- Campaigns focus disproportionately on "wedge issues" (Hillygus & Shields)
  - "Most citizens want a secure country, a healthy economy, safe neighborhoods, good schools, affordable health care, and good roads, parks, and other infrastructure. These issues do get discussed, of course, but a disproportionate amount of attention goes to issues like abortion, gun control, the Pledge of Allegiance, medical marijuana, and other narrow issues that simply do not motivate the great majority of Americans." Fiorina 2006, p. 202, quoted by Morelli et al.
- If $U(c^J)$ concave: $y \downarrow => $ attention $\uparrow => $ smaller distortions (Reforms in crisis, Kingdon 1984, OECD 2012)
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App 2: Managing Distortions 4/4

Decentralization of responsibility

Cost of information:

Corollary

The equilibrium is less distorted, i.e., b^J and g increase, τ and s fall, if (i) the cost of information on instruments targeted at others (λ^J_{-J}) falls or (ii) the cost of information on instruments targeted at themselves (λ^J_J) increases.

Granularity of information (bin $b^J..b^{J+(k-1)}$ together):

Corollary

As k increases (i.e., granularity decreases) the equilibrium becomes less distorted, i.e., b^J and g increase while τ and s fall, if. It reaches the social optimum when $k = N$ (i.e., information is the least granular).

Summary

- Attention and information are key determinants of public policy
- But Attention is endogenous, and related to:
  - policy stakes
  - cost of attention
- RI amplifies political effects of preference intensity
  - Minorities / extremists more attentive + influential
- RI can lead to Pareto inefficient policies
  - Divisive issues receive more attention
  - Distortions are dampened by crisis
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Next steps

- Competition for Attention
  - Role for Primaries and other attention grabbing strategies
- Emergence of new policy issues: which ones receive priority in the electoral process?
- Role of social networks in spreading attention
  - Attention can be observed in social network? Test implications
- Information supply: Role of Media, of Lobbies
  - Purposeful supply of information
- Retrospective voting
  - Which sufficient statistics for performance do rationally inattentive voters use?
  - How does incumbent manipulate attention?