Political Economy Lecture Notes

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Econ 437: Political Economy - Lecture Notes

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Contents

Introduction

Given that this is a course on political economy, I guess we have to start by asking: *What is political economy?*

Here is the easy answer: *Political economy is the subfield of economics that studies politics.*

This includes the study of:

- choice of policies by society,
- voting behavior,
- politician behavior,
- political institutions,
- how media & judiciary interacts with above,
- ...

This differentiates political economy from other subfields, making it more general and less focused on the subject matter (not necessarily a good or bad thing). For instance,

$$\underbrace{\text{public finance}}_{\text{characterization of an optimal policy}} \neq \underbrace{\text{political economy}}_{\text{when/how a policy can be implemented, and if not, why?}}$$

Okay, but this easy answer brings up another question: *Why is political economy ≠ political science?*

Admittedly, the line is blurrier (we will read a bunch of political science papers!)

My preferred answer emphasizes our methodology: we work with economic models (i.e, a set of agents, each with their preferences, taking some actions in line with those preferences, while facing some rules, and the interaction of

their choices results in equilibrium), and use econometric techniques to test our models (i.e., focusing on identifying causal relations, that is, how X affects Y).

To be honest, I am still not sure how far this takes us away from PoliSci. They also use econometric techniques, and there's a field called "Formal Theory" which is basically what we would call game theory applied to political situations... So PoliSci still uses all the modeling techniques above. But, as far as paradigmatic definitions go, this is the best I can do.

Anyway, we are off to some start: An economic model has: agents + their preferences, and...

Politics = choosing a policy = aggregating the preferences.

So, let's start with the obvious question.

Is there a good way to aggregate preferences, i.e., choose policies?

Spoiler alert: The answer is no, because otherwise we would not have to study politics. But, let us formalize it.

Chapter 1

Collective Decision-Making

In this chapter, we will see:

- Arrow's Impossibility Theorem: "There is no good way to aggregate preferences"
- Gibbard - Satterthwaite Theorem: "There is no good way to choose a policy"
- Median Voter Theorem: "When preferences are structured in a certain way, it is possible to make choices"

Let X be a set of policies, with $|X| \geqslant 3$.

Example 5.1 $X = \{\text{low tax, medium tax, high tax}\}$

Example 5.2 $X = \{(\text{low tax, no immigration}), (\text{low tax, high immigration}), (\text{high tax, no immigration}), (\text{high tax, high immigration})\}$

Example 5.3 $X = \{A, B, C, D\}$ is the set of candidates who will implement their policies.

Note that we can list all possible contingencies in X, so this model is pretty rich.

Suppose there are n individuals in a society, and each individual has a strict ranking over X (i.e., each individual has preferences).

Example 5.4

$$X = \{x, y, z\}.$$

$$\begin{aligned} \text{3 individuals: } & x \succ_1 y \succ_1 z \\ & z \succ_2 x \succ_2 y \\ & y \succ_3 z \succ_3 x. \end{aligned}$$

We will try to aggregate these individual preferences into a social ranking. Here is the formalization.

Definition 6.1 *A preference aggregation rule is a machine that takes* $(\succ_1, \succ_2, \ldots, \succ_n)$ *and produces a (strict) social ranking* $\succ$ *over* X.

Example 6.1 (Dictatorial rule) $\succ = \succ_i$ for some pre-specified individual i.

Example 6.2 (Imposed rule) $\succ$ is fixed no matter what the preferences are.

Example 6.3 (Simple majority rule) For each $x, y \in X, x \succ y$ if majority has $x \succ_i y$. Wait... this is actually not an aggregation rule, because it is not guaranteed to yield a ranking. As an example, see Example 5.4. $x \succ y \succ z \succ x$. This is called a **Condorcet Cycle**.

A side note: whenever there is not a Condorcet cycle, there exists a **Condorcet winner**[1] and there are good reasons to pick it as the social policy. Keep this in mind, we will return later.

Example 6.4 (Borda Rule) Each individual ranks alternatives, we add the rankings, and construct $\succ$ based on the number obtained.

Example 6.5 $X = \{w, x, y, z\}$ and $n = 3$

$$\begin{aligned} & w \succ_1 x \succ_1 y \succ_1 z \\ & y \succ_2 z \succ_2 x \succ_2 w \\ & z \succ_3 y \succ_3 w \succ_3 x \end{aligned}$$

[1] Also, when $|X| = 2$, there exists a Condorcet winner.

$$
\begin{aligned}
w \text{ gets } &: \quad 1+4+3=8 \\
x \text{ gets } &: \quad 2+3+4=9 \\
y \text{ gets } &: \quad 3+1+2=6 \\
z \text{ gets } &: \quad 4+2+1=7
\end{aligned}
$$

then, $y \succ z \succ w \succ x$.

Note: what I describe here is the most primite form of Borda rule. There are variants of it (e.g., each individual gets different numbers, the number that the second alternative gets is 4 x the number that first alternative gets...), so we can indeed talk about a **Borda family** rather than a single Borda rule. All members of this family are based on the idea of (i) converting ordinal rankings into cardinal ones, (ii) adding up the cardinal rankings, (iii) converting back to ordinal.

Ok ... what is a "good" aggregation rule? Some desirable properties we expect:

1. Non-dictatorial. (It should be democratic)
2. Paretian: if $x \succ_i y \; \forall i$, then $x \succ y$. (It should respect preferences)
3. Satisfies Independence of Irrelevant Alternatives (IIA): If individuals keep their ranking between w and x the same, but change their ranking between other alternatives, the social ranking between w and x should stay the same.

Note:

- Dictatorial rule is Paretian and satisfies IIA, but fails to be non-dictatorial.
- Imposed rule is nondictatorial and satisfies IIA, but fails to satisfy the Paretian requirement.
- Borda rule is non-dictatorial and Paretian, but fails to satisfy IIA. [**HW Exercise!**].

  (Intuitively, IIA = ruling out "cardinality" i.e. discarding how strongly individuals prefer x over y. This is why Borda rule fails, because it has a built-in cardinality.)

Now, to the big reveal:

Theorem 7.1 [**Arrow's Impossibility Theorem (Arrow, 1951)**] *There is no aggregation rule that satisfies 1, 2, and 3, simultaneously.*

Very depressing! but also, makes sense? (If there was a good aggregation rule, we would have used it since Ancient Greeks.)

I will ask an exercise due to Austin-Smith & Banks-I as a homework question. Full proof is beyond our scope.

Hmm... you may say, "Why do we need an aggregation rule? Don't we just need to choose a policy? Why do we need to find a full ranking over X?" This is a very reasonable question, but unfortunately this path does not take us too far, either.

Definition 8.1 *A collective choice function is a machine ϕ that takes $(\succ_1, \ldots, \succ_n)$ as an input and chooses a policy $\phi(\succ_1, \ldots, \succ_n) \in X$.*

Example 8.1 Dictatorial rule: $\phi(\succ_1, \ldots, \succ_n)$ is the most-preferred policy of a pre-specified individual i.

We want our collective choice function to be non-manipulable. Formally,

Definition 8.2 *ϕ is manipulable if an individual i can make ϕ choose a better alternative by submitting/declaring a "fake" preference $\succ_i'$. That is, ϕ is manipulable if there is an individual i, a preference profile $(\succ_1, \ldots, \succ_i \ldots, \succ_n)$ and a preference $\succ_i'$ such that*

$$\phi(\succ_1, \ldots, \succ_i' \ldots, \succ_n) \ \succ_i \ \phi(\succ_1, \ldots, \succ_i \ldots, \succ_n).$$

Theorists call this "strategy-proofness".
We also want our collective choice function to be somewhat responsive to preferences. (It would be a very easy way out to have an imposed collective choice function that always chooses a fixed policy x no matter what the preferences are.) To this end, I will require ϕ to be rich enough, i.e., $Range(\phi)$ has a large enough cardinality. That is, the following is true for at least for at least three alternatives: there is a preference profile that makes sure that alternative is chosen.

Theorem 8.3 [Gibbard-Satterthwaite Theorem, (Gibbbard 1973 Ecma, Satterthwaite 1975 JET)] *There is no collective choice function ϕ with $|Range(\phi)| \geqslant 3$ such that ϕ is non-dictatorial and non-manipulable.*

This implies Borda fails because people try to manipulate it... Why is manipulation possible? Because Borda switches back and forth between ordinal and cardinal rankings. (If I realize my favorite alternative will not be chosen but I still find my second alternative is sufficiently desirable, I might lie and push my first alternative down in the rankings, in the hope that my second alternative

will be chosen.)

This also implies the pairwise sequential voting of alternatives fail because people try to manipulate it. (If two of my best alternatives are going up against each other and I foresee that my favorite alternative will lose in the future rounds, I may lie.)

Comments:

- Is it maybe IIA or non-manipulability too strong?
- Arrow and Gibbard-Satterthwaite are close cousins. For a proof of both, see Reny (2001, Economics Letters).

So, how do we go from here?

- Relax IIA? There is a very deep literature in here! For a recent example, see Maskin (2022).
- OR, put some restrictions on preferences so that there are no Condorcet cycles? This is the approach we will take.

We will work with a domain where preferences are restricted in a certain way, so that Condorcet cycles do not arise.

Definition 9.1 *Suppose the policy space is ordered so that*

$$X = \{x_1, \ldots, x_r\}$$

ranks like: $x_1 < x_2 < \ldots < x_{r-1} < x_r$.
A preference $\succ_i$ *is single-peaked (with respect to the order on the policy space) if and only if there exists* $t \in \{1, \ldots, r\}$ *such that:*

$$x_t \succ_i \quad x_{t-1} \quad \succ_i \quad \ldots \quad \succ_i x_1, \text{ and}$$
$$x_t \succ_i \quad x_{t+1} \quad \succ_i \quad \ldots \quad \succ_i x_r.$$

In words: there exists a "most preferred policy" $x_t \in X$ such that i prefers that are "further away" from x_t less.

Note: It is crucial to have an order of policies to be able to define single-peakedness. This is because we are relying on the sense that a policy gets "further apart". Without such a sense, we would not be able to define single-peakedness.

Now, suppose the policy space is ordered, and each individual has single-peaked preferences (with respect to the order on the policy space). Let:

x^1 : individual 1's most-preferred policy

x^2 : individual 2's most-preferred policy

$\vdots$

x^n : individual n's most-preferred policy

and let x^* :median of set $\{x^1, x^2, \ldots, x^n\}$.

Theorem 10.1 [Median Voter Theorem] *If the policy space is ordered and each individual has single-peaked preferences (with respect to the order on the policy space), then,*

- *a Condorcet winner exists; and,*
- *it coincides with x^*.*

(i.e., for any other policy $x \in X \backslash \{x^*\}$, a majority of individuals prefer $x^* \succ_i x$.)

Proof. A homework question. □

A couple of notes.

1. Is single-peakedness a reasonable restriction? It requires an order on policy space (so that everybody agrees on what is the leftmost policy, what is the rightmost policy...) **and** it requires everyone's preferences to be single-peaked. It is up to you to decide, but... there are some applications where it seems to be a natural restriction (e.g., taxation, public goods provision). I will ask a homework question about a taxation example.

2. There is another restriction called "single-crossing preferences" that also yields a version of Median Voter Theorem. In the interest of time I will not cover it, but you could check:

   - Osborne, Chapter 1.5.2.
   - Gans and Smart (1996 JPubE), and Roberts (1977 JPubE), even though the latter does not use the term "single-crossing".

   as a mental note, remember that single-crossing is neither stronger nor weaker than single-peakedness.

Okay, so we have shown that: when preferences are single-peaked, there is a Condorcet winner. As I referred before, when there is a Condorcet winner, there are good reasons to choose it.

1. Normative: It looks like a "good" policy?

2. Positive: If the society chooses another policy, the majority would object...

So, the median voter's most preferred policy seems to be a decent alternative.

Note: The median voter's most preferred policy does not have to be chosen by the Borda rule, example as a homework question.

So far, we have established:

When preferences are single-peaked, the society can choose a policy.

Next: How can the society choose it? Do elections work? That would be the focus of our next chapter, electoral politics.

Chapter 2

Electoral Politics

2.1 Downsian Electoral Competition[1]

We finished our previous chapter by observing:

single-peaked preferences $\implies \exists$ a Condorcet winner
$= x^*$ (median among most-preferred policies)

Question: If individuals are not choosing policies directly (i.e., if they're only voting for candidates) does the society choose x^* ?

Answer: Yes!

Suppose:

- There are two candidates A and B.
- They choose policies $x_A \in X$ and $x_B \in X$, simultaneously. (Once they choose policies, their choices are observable and voters know that they cannot back away from these policies.)
- There are n voters, each with single-peaked preferences.
- Each voter i votes sincerely, i.e., if they choose between $x_A, x_B \in X$ they vote for the candidate choosing their more preferred policy.

  [Sincere: not thinking about how others vote and who will win the election.]

[1] Due to Downs (1957, JPE).

i.e.,

$$\begin{aligned} x_A \succ_i x_B &\Rightarrow \text{ vote for } A \\ x_B \succ_i x_A &\Rightarrow \text{ vote for } B \\ x_A = x_B &\Rightarrow \text{ randomize with 50\% probability each.} \end{aligned}$$

- Let $W^A(x_A, x_B)$ be the expected number of votes A receives when policies are (x_A, x_B). Let $w^B(x_A, x_B)$ be the expected number of votes B receives.

  (For instance if $x_A = x_B$, $W^A(x_A, x_B) = W^B(x_A, x_B) = \frac{n}{2}$.)

  (For instance, if $x_A = x^*$ and $x_B \neq x^*$, $W^A(x_A, x_B) > W^B(x_A, x_B)$.)

- Candidates are office-motivated, i.e., they only care about winning the election. If a candidate wins, she receives a payoff of $R > 0$.

  Therefore, payoff functions are:

$$u_A(x_A, x_B) = \begin{cases} R, & \text{if } W^A(x_A, x_B) > W^B(x_A, x_B) \\ R/2, & \text{if } W^A(x_A, x_B) = W^B(x_A, x_B) \\ 0, & \text{if } W^A(x_A, x_B) < W^B(x_A, x_B) \end{cases}$$

  and symmetric for $u_B(x_A, x_B)$.

So, we have a strategic-form game played between A and B (we have the set of players, set of actions, and the payoff functions). Question: What is the Nash equilibrium (x_A^*, x_B^*)?

Answer:

Theorem 14.1 [Downsian Policy Convergence Theorem] *In the Downsian Competition Model, the unique Nash equilibrium is* (x_A^*, x_B^*) *such that*

$$x_A^* = x_B^* = x^*.$$

Proof. First, we claim: $x_A^* = x_B^*$ in any Nash equilibrium. Suppose not, i.e., suppose $x_A^* \neq x_B^*$. Then, there are three possibilities:

1. $W^A\left(x_A^*, x_B^*\right) > W^B\left(x_A^*, x_B^*\right)$. In this case B gets 0. B can deviate to x_A^* and receive $\frac{R}{2} > 0$. So, B is not best responding. So this cannot be a Nash equilibrium.

2. $W^A\left(x_A^*, x_B^*\right) < W^B\left(x_A^*, x_B^*\right)$. Same, A can deviate to x_B^*.

3. $W^A\left(x_A^*, x_B^*\right) = W^B\left(x_A^*, x_B^*\right)$. Because $x_A^* \neq x_B^*$, it must be the case that

$$x_A^* \neq x^*$$
$$x_B^* \neq x^*$$

(Otherwise votes would not be equal, because x^* is the Condorcet winner.) In this case both candidates get $R/2$. Either of them can deviate to x^* and receive $R > R/2$. So, they're not best responding. Thus, this cannot be a Nash equilibrium.

Therefore, $x_A^* = x_B^*$ in any Nash equilibrium.

Next, we claim that $x_A^* = x_B^* = x^*$. Suppose not, i.e., suppose $x_A^* = x_B^* \neq x^*$. In this case, both candidates get $R/2$. Either candidate can deviate to x^* and receive $R > R/2$. Therefore they are not best responding. So the is not a Nash equilibrium.

Finally, we argue that $x_A^* = x_B^* = x^*$ is a Nash equilibrium. Suppose $x_B = x^*$.

If A chooses $x_A \neq x^*$, she gets 0 . if A choses $x_A = x^*$, she gets $R/2 > 0$. $\Rightarrow A$'s best response is $x_A = x^*$. Similarly for B.

Therefore, $x_A^* = x_B^* = x^*$ is a Nash Equilibrium. □

Some notes about Downsian Policy Convergence Theorem:

1. This is really just Hotelling (1929, EJ) applied to elections.
2. Very striking implication! No matter who the candidates are, they just cater to the median voter.

   (Also kind of optimistic, "no polarization","moderate policies" ... + "Condorcet winner", i.e. a desirable policy in a certain sense is implemented).

   Is the result robust to:

   (i) Policy-motivated, instead of office-motivated candidates?
   Surprisingly, yes! See Wittman (1977, JET), but also a homework question.

   (ii) Strategic instead of sincere voting? Since there is no cost of voting, yes, but things would change if there was a cost (we will see it later).

   With strategic voting, other equilibria may arise, so one needs to assume that voters play weakly undominated strategies to retain uniqueness.

(iii) More than two candidates? Things get messy with three candidates, but also in the type of elections we consider here (single-member, plurality-rule elections), there is a very strong tendency of electoral systems to produce two dominant parties. This is called Duverger's Law (after French sociologist Maurice Duverger; see Riker, 1982, APSR).

(iv) Full information of voter's preferences? If voter preferences are uncertain, this may "smooth out" the best response functions and lead to some separation. The uncertainty is typically modelled through a " valence" parameter that is random and uncorrelated to policy (think of it as the candidate's charisma, etc.). These are called probabilistic voting models, see Persson-Tabellini Ch.3.4 if you are interested.

(v) Candidates' ability to commit policies? If we want to relax this, we need to specify why a candidate would want to back out. Maybe their identities matter? We will discuss more.

2.2 Empirical Tests of Downsian Competition

What are the testable implications of the Downsian electors competition model?

1. Full policy convergence ← very strong, does not really hold in reality

2. Implemented policies cater to media voter, i.e.,

Policies respond to the composition of electorate.

This is a weaker implication, but it is still testable. We need a (plausibly exogenous) change in the composition of the electorate.

Some instances where this happened: Disfranchisement/enfranchisement of certain groups, i.e.,

- blacks: Naidu (2012) and Cascio and Washington (2014, QJE)
- women: Miller (2008, QJE), Kose et al. (2021, AEJ: Policy)
- poor: Fujiwara (2015, Ecma).

General idea: study an episode where electorate changes, see if the implemented policies change.

2.2.1 A Brief Detour on Econometrics

We are trying to do causal inference, i.e., we will engage in causal identification.

In a nutshell, we are trying to answer the question: "what's the causal effect of D (e.g., enfranchising a group, typically a binary variable) on Y (e.g., implemented policies)?"

Let i be a generic unit (country, state, city, county, ...) Suppose we have a dataset that looks like:

$$(Y_i, D_i, X_i)_i$$

where $D_i \in \{0, 1\}$ is a binary variable, and X_i are the conrols. The most straightforward thing to do is to run a regression of the form:

$$Y_i = \alpha + \beta D_i + \gamma X_i + \varepsilon$$

and β as "the effect of turning D_i on". In other words, we interpret β as:

$$\beta = \mathbb{E}\left[Y_i \mid D_i = 1, X_i\right] - \mathbb{E}\left[Y_i \mid D_i = 0, X_i\right]$$

However, how can be ensure that what we estimate is really β? We claim that our estimate is the "effect of enfranchisement, compared to a world where enfranchisement did not occur (i.e., a counterfactual world)."

Here is the issue, however: if $D_i = 1$ is observed in the data set, we do not observe the counterfactual of $\mathbb{E}\left[Y_i \mid D_i = 0, X_i\right]$ (i.e., we do not observe what happens if enfranchisement never occurred).

The key here is to find another unit j such that $D_j = 0$ is observed in reality, and:

$$\mathbb{E}\left[Y_j \mid D_j = 0, X_j\right] = \mathbb{E}\left[Y_i \mid D_i = 0, X_i\right] \tag{17.1}$$

In econometrics lingo, we call units with $D_i = 1$ "treatment group" and units with $D_i = 0$ "control group". The analogy with medical trials is a useful one.

Equation 17.1 is the assumption of "no selection bias", i.e., it is the assumption that the treatment group would have identical outcomes as the control group if it was not treated. In other words, the treatment group is not fundamentally different than the control group, i.e., it is not selected based on anything (and hence there is no selection bias).

Once we find a control group that satisfies the no selection bias assumption, we can compare outcomes in i and j. That comparison will yield an estimate of

$$\beta = \mathbb{E}\left[Y_i \mid D_i = 1, X_i\right] - \mathbb{E}\left[Y_i \mid D_i = 0, X_i\right] = \mathbb{E}\left[Y_i \mid D_i = 1, X_i\right] - \mathbb{E}\left[Y_j \mid D_j = 0, X_j\right].$$

Roughly speaking,

Definition 17.1 *An* **identification strategy** *is finding a setting where there are plausible candidates for control groups that satisfy the "no selection bias" assumption.*

Think about the medical trials, again. Or the science experiments you made in high school (putting a plant in a dark room, other in a light room, making sure everything else is equal and comparing outcomes).

Example 18.1 Randomized controlled treatment (RCT) is an identification strategy. The experimenter randomly chooses the control group, which ensures that there is no selection bias.

You can read "Mastering 'Metrics" by Angrist and Pischke for more.

2.2.2 Enfrenchisement of Blacks

Naidu (2012)

Episode: in 1870-1920, states in U.S. South introduced poll taxes ($ 1-2 to vote) and literacy tests (reading a section from the constitution). These effectively disenfranchised blacks.

Identification idea: states did not implement these policies at once, they were staggered. See Figure 1.

To identify a causal effect: we need a control group. Naidu uses county pairs that fall on different sides of the border. See Figure 2.

Suppose, at a given point in time, the state of County A implements poll tax + literacy test but the state of County B has not. Then, compare policies implemented in A and B.

Estimate the following equation (page 22):

$$y_{p(c),c,s,t} = \beta \cdot \left(D^P_{s,t} + D^L_{s,t}\right) + \text{controls} + \epsilon_{p(c),c,s,t}$$

where

c : county
$p(c)$: pair of county

s : state of county
t : year
$D^P_{s,t}, D^L_{s,t}$: dummies for poll tax and literacy test.

Results: Look at Table 4a. When y is the log(Teacher/Child Ratio in Black Schools), $\beta = -0.232$. This means the teacher/child ratio decreases by %23 due to a poll tax/literacy test. In Table 4b, you can see there is no effect on white schools.

So, implemented policies change when blacks are disenfranchised: blacks schools receive fewer resources.

Cascio and Washington (2014, QJE)

Episode: Voting Rights Act (VRA) of 1965. Dismantled literacy tests, which, as seen above, were an obstacle on black participation. Notably, VRA was a federal acts, which means it was binding on all states at once

But... identification idea: some states still had literacy tests in place in 1965, whereas others did not. So VRA was binding for some states and not binding for others. So, compare the states with literacy tests in effect in 1965 with those who don't.

Estimate Equation (1). For each year t around 1965:

$$\log(y_{cst}) = \text{controls} + \beta_t(D_c \times \%bl_c) + \epsilon_{cst}$$

where

c: county
D_c: dummy, 1 if the state of county c has literacy test at 1965
$\%bl_c$: percentage of blacks in county c

So β's are estimated separately for each election year, and they estimate the effect of "removing literacy tax in counties where the black population is higher".

Results: Look at Figure II. Counties with higher black population have higher turnout in presidential elections after 1965 (i.e, blacks are indeed enfranchised), and, they receive higher transfers from the state after 1965 (i.e., politicians care more about these counties).

2.2.3 Enfrenchisement of Women

Miller (2008, QJE)

Episode: Woman's suffrage (voting rights) movement in the U.S.

Identification idea: states did not pass suffrage laws at once. Adoption was staggered in early 20th century. So, Miller compares states with suffrage laws with those who don't in a given election year.

Estimate Equation (1). For each year t:

$$\log(y_{st}) = \alpha + \beta D_{st} + \text{controls} + \varepsilon_{st}$$

where

s: state
D_{st}: dummy, 1 if the state s has suffrage law at time t

The control groups are those without suffrage laws. Do you think this is a strong identification strategy?

Results: Look at Figure II. After the suffrage law, there is higher spending on health and sanitation. Look at Figure IV: public health outcomes improve after suffrage law (fewer children die in early age).

Kose, Kuka, and Shenhav (2021, AEJ:Policy)

Episode: suffrage laws. The authors study whether the suffrage laws had an impact on people's education and labor market outcomes.

The "treatment group" are the individuals who were children (age <15) when the suffrage law passed in their state. The "control group" are those with age > 15 when the suffrage law passed.

Results: Look at Figure 2. Blacks benefit from suffrage law by receiving more education, whites do not.

But... Look at Table 4. It looks like if you are a white in south, exposure to suffrage increased your earnings by 22%. If you are a black in south, your earnings were negatively impacted (statistically insignificant). This means blacks' gains in education did not translate to gains in labor market. Why? Check the paper if interested.

2.2.4 Enfrenchisement of the Poor

Fujiwara (2015, Ecma)

Fantastic paper!

Episode: In 1998, Brazil introduced electronic voting (EV).

Look at Figure 1. Previously, you had to write a number of the candidate's name. This effectively disenfranchised the illiterate, who tend to be poorer. Under EV, you can dial a number & confirm your candidate. This enfranchises the poor & less educated!

Identification idea (also fantastic):

- in 1994, no EV anywhere.
- in 2002, EV everywhere.
- But ... in 1998, EV was used only in municipalities with > 40.500 voters

So ... compare municipalities of = 40.501 voters with those of $\approx 40,499$ voters.

This is a very popular identification strategy! It's called a regression discontinuity design - RDD. Why is it called "discontinuity"? See Figure 2. (A lot of researchers would dream of having such a figure in their papers.)

Fujiwara looks at the changes in outcomes

$$1994 \rightarrow 1998$$

$$1998 \rightarrow 2002$$

If a municipality has $> 40,500$ voters in 1998; the first one should be stronger. If it has $< 40,500$ voters in 1998, the second one should be stronger.

Results: Look at Table 4. EV increases the number of valid votes, increases share of spending in health care, increases prenatal visits to doctors, and decreases the number of low-weight births. So, following the enfranchisement of the poor, public health outcomes improve!

2.3 Citizen-Candidates

So far, we have seen one model of electoral competition (Downsian competition) where:

- the number of candidates is fixed (i.e., no entry decision),
- candidates fully commit to policies they offer.

Now, we will study another model of electoral competition where:

- the entry decision is strategic.
- candidates cannot offer any policy; the only credible policy they can offer is their own favorite policy.

In a sense, this is a model of citizens each deciding whether to enter politics or not (i.e., if they are elected, they will implement their favorite policy). Due to this, the model is known as the **Citizen-Candidate Model**.

In a nutshell,

	Downsian	**Citizen-candidate**
Entry	No entry decision	Strategic
Policy	Strategic	No policy decision

We will see that the implications are different.

	Downsian	**Citizen-Candidate**
Policies offered in equilibrium	Full convergence	Possibly some separation
Testable implications	Composition of electorate matters (e.g., Naidu, Cascio-Washington, Miller, Fujiwara...)	Political identities matter (e.g., Chattopadhyay-Duflo, Levitt, Lee-Moretti-Butler...)

2.3.1 Citizen-Candidate Model

The main models are first studied in:

- Osborne and Slivinski (1996, QJE) — Sincere voting
- Besley and Coate (1997, QJE) — Strategic voting

which were developed independently. Here, we will follow Osborne-Slivinski & assume sincere voting. Indeed, my treatment is closest to Osborne's book, chapter 10.4. Also see, Gehlbach's book ch. 1.4.3.

Suppose:

- There are n citizens, with n sufficiently large.
- Each citizen i has single-peaked preferences with a peak at $x_i \in X$.

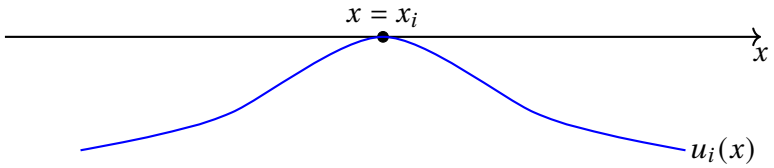
  Moreover, suppose citizen i's preferences are symmetric around x_i. This means citizen i's preferences over X are represented by a utility function

  $$u_i : X \to \mathbb{R}$$

  such that, for any $x \in X$,

  $$u_i(x) = u(|x_i - x|)$$

  where $u(\cdot)$ satisfies: $u(0) = 0$ and $u(\cdot)$ is decreasing.



- Each citizen can run for office. If she runs, she pays a cost of $c > 0$.

  If she runs & wins, she obtains a benefit $b > 0$.

  If a citizen i runs & wins, she implements x_i. (Why? Because everybody knows that this is her favorite policy.)

- Citizens vote sincerely: among the citizens who run, they vote for the candidate who is closest to them.

  (If indifferent, they randomize, just like in Downsian competition.)

- The winner is determined according to pluralistic voting (whoever gets the highest number of votes wins).

Timing:

1. Each citizen i simultaneously decides to run or not. If citizen i runs, she pays c.
2. Citizens cast votes for the candidates who run.
3. Winner receives benefit b, implements x_i.

   If nobody decides to run, a terrible outcome occurs and every citizen receives $-L < 0$.

Assume:

1. $b > c > 0$.
2. $-L < 0$.
3. n is large enough, so that for each citizen i, there is another citizen j with $x_j = x_i$.

So, citizen i's payoff is:

$$v_i = \begin{cases} -L, & \text{if nobody runs.} \\ u_i(x), & \text{if } i \text{ doesn't run, someone else runs and implements } x. \\ u_i(x) - c, & \text{if } i \text{ runs and loses, someone else implements } x. \\ u_i(x_i) + b - c, & \text{if } i \text{ runs and wins.} \end{cases}$$

Clearly, the interesting strategic decisions occur in the entry stage. This is a strategic-form game among n players.

Question: What is the Nash Equilibrium? Who enters and who wins?

Sadly, the analysis is not super straightforward. There are possibly multiple equilibria. We will investigate in a case-by-case basis. First, some basics.

Lemma 24.1 *There is no Nash Equilibrium where nobody chooses to run.*

Proof. Suppose nobody else runs. If i doesn't run, $v_i = -L$. If i runs, $v_i = b - c$ with $b - c > -L$. So, not running cannot be a best response. □

We will next study:

- 1-candidate equilibria (i.e., Nash Equilibrium where only one citizen runs.)
- 2-candidate equilibria (i.e., Nash Equilibria where two citizens run.)

1-candidate Equilibrium

Let x^* be the median among the set of most preferred policies. (Recall by Median voter theorem, that this is the Condorcet winner.)

Lemma 24.2 *There is no Nash Equilibrium where a candidate i with $x_i \neq x^*$ is the only entrant.*

Proof. Suppose there is such an equilibrium. Consider citizen m with $x_m = x^*$ when only $i \neq m$ enters and nobody else does. If m does not enter, $v_m = v_m(x_i) < 0$. If m enters, she wins (because x^* is the Condorcet winner) so if m runs, $v_m = 0 + b - c \geqslant 0$. Therefore, m is not best responding $\Rightarrow$ this cannot be a Nash Equilibrium. □

Lemma 25.1 *Suppose $b < 2c$. Then, there is a Nash Equilibrium where the only entrant is citizen m with $x_m = x^*$.*

Proof. First, we show that m is responding optimally given the others' strategies. Suppose nobody else runs. If m doesn't run, $v_m = -L$. If m runs, $v_m = b - c$. Since $b - c > 0 > -L$, running is a best response for m.

Next, we show that other citizens are responding optimally, given m's strategy.

(a) Consider another citizen i with $x_i \neq x^*$. Suppose only m runs and nobody else runs. If i doesn't run, $v_i = u_i(x_m)$. If i runs, she loses (because x^* is the Condorcet winner, so it wins against any $x_i \neq x^*$). So, if i runs, $v_i = u_i(x^*) - c$. Since $c > 0$, not running is the best response.

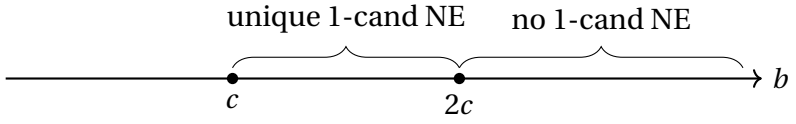
(b) Consider another citizen i with $x_i = x^*$. (Recall that n is sufficiently high, so there are such citizens.) If i doesn't run, $v_i = 0$. If i runs, she wins with $\frac{1}{2}$ probability. So if i runs, $v_i = 0 + \frac{1}{2}b - c$. But since $b < 2c$, $\frac{b}{2} - c < 0$, and not running is the best response.

□

Lemma 25.2 *Suppose $b > 2c$. Then, there is no 1-candidate Nash Equilibrium.*

Proof. We already showed that there is no Nash equilibrium with $x_i \neq x^*$ as the only entrant. Suppose there is a Nash equilibrium with $x_m = x^*$ as the only entrant. Consider another citizen i with $x_i = x^*$ (who exists because n is sufficiently large). If i doesn't run, $v_i = 0$. If i runs, she wins with $\frac{1}{2}$ probability. So if i runs, $v_i = 0 + \frac{1}{2}b - c$. Since $b > 2c$, $\frac{1}{2}b - c > 0$, so i is not best responding $\Rightarrow$ this cannot be a Nash equilibrium. □

OK... so (with large enough n):



2-candidate Equilibria

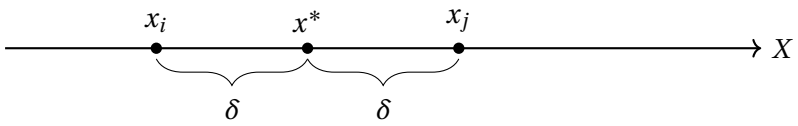
Lemma 26.1 *There is no Nash Equilibrium where two citizens i and j, with $x_i = x_j$, and $x_i \neq x^*$, are the only entrants.*

Proof. (Informal) If that was the case, m with $x_m = x^*$ would enter and win. □

Lemma 26.2 [Informal] *Suppose the citizens' preferences are "dispersed" enough. Then, there is no Nash Equilibrium where two citizens i and j, with $x_i = x_j = x^*$, are the only entrants.*

Proof. (Informal) If that was the case, k with $x_k = x^* + \epsilon$ could enter and receive approximately half of the votes, whereas i and j would receive $\approx \frac{1}{4}$ each. So, k would win. □

So... we conclude that, if there were any 2-candidate Nash Equilibria with i and j as entrants, it would have: $x_i \neq x_j$. But... in equilibrium, they must be winning with equal probability. (Otherwise the loser would not be running.) So, any 2-candidate Nash equilibria must feature $x_i = x^* - \delta$ and $x_j = x^* + \delta$.



- If i doesn't run: $v_i = u(2\delta)$
- If i runs: $v_i = \frac{1}{2}(u(2\delta) - c) + \frac{1}{2}(0 + b - c) = \frac{1}{2}u(2\delta) + \frac{b}{2} - c$.

So, in any Nash equilibrium, the necessary condition is:

$$\frac{1}{2}u(2\delta) + \frac{b}{2} - c \geqslant u(2\delta) \Rightarrow b - 2c \geqslant u(2\delta)$$

If $b > 2c$, this is already satisfied. If $b < 2c$, δ cannot be too low. So, in any 2-candidate Nash equilibrium, δ cannot be too low, there has to be some separation!

But also... it cannot be too high, because then a new candidate with $x_m = x^*$ would enter. So... in any 2-candidate Nash Equilibrium, the candidates are neither too close nor too far apart.

This is all I want to say, even though it is possible to characterize the 2-citizen Nash equilibrium if you are willing to put more structure on the model. (See Osborne's book if interested.)

Note: the analysis with strategic voting is not strikingly different, but it turns out that some higher values of δ are sustainable with strategic voting.
Main takeaways from the citizen-candidate model:

1. One-candidate and two-candidate equilibria may co-exist.
2. Two-candidate equilibria generate policy separation.

2.3.2 Empirical Tests of the Citizen-Candidate Model

What is the testable implication?

> Changing the set of candidates who can run for office leads to a change in implemented policies.

(Compare with the testable implications of Downsian competition: "Changing the electorate $\Rightarrow$ change in implemented policies.")

Supporting evidence comes from Chattopadhyay and Duflo (2004, Ecma).

- Episode: a constitutional amendment in India in 1992 mandated reservations for women in rural village councils.
- Terminology:
  - **Gram Panchayat (GP)** = a collection of villages (5-15 villages, $\sim$10k people).
  - **Pradhan** = chief of Gram Panchayat ($\sim$ "muhtar").
  - **Gram Sansad** = council meetings (2 per year) where voters can participate, complain & request.
- Reservations for women: in West Bengal (a state in India), beginning in 1998,
  - 1/3 of Pradhan positions are reserved for women.
  - Moreover, the GPs with reservations are selected randomly ($\sim$gold standard).

So, Chattopadhyay & Duflo compare:

- GPs with women Pradhans in 2000

- GPs without women Pradhans in 2000.

They run a survey in West Bengal to:

- conduct interviews with Pradhans.
- conduct interviews with villagers to see what type of public goods received more investment.

They also have data on Gram Sansads, to see who participated & complained about what.

Estimate Equation (1). For each outcome of interest i and GP j:

$$Y_{ij} = \beta_1 + \beta_2 \cdot R_j + \beta_3 \cdot D_i \cdot R_j + \text{controls} + \varepsilon_{ij}$$

where

R_j: dummy, 1 if GP i is reserved for a woman
D_i: difference between fraction of requests about good i from women and from men (i.e., higher if this is a good women care about more than man)

We are most interested in β_3: when there is a woman Pradhan, are implemented policies more aligned with women's preferences?

Results: First of all, reservations make a huge difference. See Table I. In reserved GPs % 100 of Pradhans are women (not surprising, this is the meaning of *reservation*), wheeras in unreserved GPs only % 6.5 of Pradhans are women.

See Table II: reservations are truly randomized. No systematic difference between reserved and unreserved GPs.

See Table III: Having a female GP leads to more political participation by woman. On average, the fraction of women among participants of Gram Samsad increase by % 2.92.

Most importantly, see Table IV Column (1): $\widehat{\beta_3} = 1.63$. Women Pradhans' public good provision is more aligned with women's preferences. (+ it's not because women care more about women per se, see the paper.)

2.4 Affect versus Elect

We now have two competing models of electoral politics with two different insights:

- Downsian competition → voters *affect* policies.
- Citizen-candidate → voters *elect* policies.

As we have seen, there is supporting evidence in favor of both.
The reality, probably, lies somewhere in between:

$$\text{implemented policies} = \underbrace{\text{voter preferences} + \text{politician preferences}}_{\text{Can we decompose these two?}}$$

In these section, we will cover two empirical papers that conduct this decomposition (in the U.S. setting):

1. Levitt (1996, AER): "How Do Senators Vote? Disentangling the Role of Voter Preferences, Party Affiliation, and Senator Ideology."
2. Lee, Moretti, Butler (2004, QJE): "Do Voters Affect or Elect Policies? Evidence from the U.S. House."

Note:

- Pettersson-Lidbom (2008, JEEA) conducts a similar analysis in the Swedish setting.
- Mian, Sufi, Trebbi (2010, AER) look at the episode of 2008 financial crisis and how politicians respond to it.

Check if interested!

Levitt (1996, AER)

Setting: U.S. Senators (1970-1990) and their voting records.

Side note: the US has a bicameral system with two assemblies:

1. Senate (100 senators, 2 from each state)
2. House of Representatives (435 representatives, the number of representatives from each state depends on the population. California has 52, Vermont has 1.)

Paper's main idea:

Take senator i, let V_{it} be the senator i's voting record in senate at time t. Estimate:

$$V_{it} = \alpha \cdot S_{it} + \beta \cdot C_{it} + \delta \cdot P_{it} + (1 - \alpha - \beta - \delta) \cdot Z_i$$

where
S_{it}: the preference of voters in state that senator represents,
C_{it}: the preferences of senator's constituency,
P_{it}: the preferences of senator's party,
Z_i: senator's ideology.

Data used:

- V_{it} is the senator's ADA rating in a year (a rating of "democrativeness").
- S_{it} is the average ADA rating of the state's house delegation in a year.
- C_{it} is the average ADA rating of the among members of senator's state and party.
- P_{it} is the average ADA rating of the senator's party members.
- Can't measure Z_i directly, but can estimate $\hat{\alpha}, \hat{\beta}, \hat{\delta}$ and then calculate $1 - \hat{\alpha} - \hat{\beta} - \hat{\delta}$.

Issues:

- Any issues about S_{it} and C_{it}? They're definitely not exogenous...
- Is $1 - \hat{\alpha} - \hat{\beta} - \hat{\delta}$ the "Solow residual"?

Results: See Table 3.

$$\hat{\alpha} = 0.13$$
$$\hat{\beta} = 0.13$$
$$\hat{\delta} = 0.14$$
$$1 - \hat{\alpha} - \hat{\beta} - \hat{\delta} = 0.60$$

A senator's ideology has 60% weight on his behavior!!!

Questions that come to mind:

- Are we mismeasuring something?
- Maybe senators are delivering something beyond their voting behavior in senate?

Lee, Moretti, and Butler (2004, QJE)

Setting: U.S. House of Representatives (1946-1995) and their voting records.

This is a fantastic paper with a very interesting identification strategy! Very briefly, it can be explained in three figures:

1. Figure I. Electing a Democrat to Congress, rather than a Republican, leads to a 21.2 point increase in ADA score in the **next** term.

   Identification: Close election RDD! [Comparing districts with 51% Democrat vote with 49% Democrat vote — a very popular identification strategy.]

   The result is partly expected, because electing a Democrat this term increases the likelihood of electing a Democrat next term. But we are looking for a larger effect, because a Republican candidate should also behave more like a Democrat.

2. Figure IIa. Electing a Democrat to Congress, rather than a Republican, leads to a 47.6 point increase in the ADA score in the **same** term.

   Note: This figure is itself the proof of "No Downsian Convergence", but it is not enough for the decomposition.

3. Figure IIb. Electing a Democrat to Congress, rather than a Republican, leads to a 46% increase in the likelihood of electing a Democrat in the next term.

   This is the "incumbency effect": if a politician gets elected, she enjoys an advantage in the next election. [See Lee (2015, Journal of Econometrics) if interested]

So... if a district elects a Democrat by chance, in the next term, the expected rise in ADA score is:

$$\underbrace{0.46}_{Pr(\text{choose democrat})} \times \underbrace{47.6}_{\text{ADA increase if choose dem.}} = 21.84$$

But the effect we observe is: 21.2 anyway!

(If the number we calculated was larger than 21.2, we would attribute the difference to some changes in the underlying fundamentals between the two terms. But it looks like "the effect of selecting a Democrat" fully explains the behavior of politicians.)

The authors conclude: all we see is voters electing politicians and politicians behaving in their own ways, i.e., voters do not affect policies.

Overall... The evidence we see across board paints a consistent picture of electoral politics where

- Voters merely elect some candidates.

- Politician behavior is almost entirely driven by their ideology.

(Not so grim, to be honest... There is some evidence of "affect". For instance, Mian, Sufi & Trebbi (2010, AER) provides some evidence that representatives' votes align with their districts' economic conditions.)

2.5 Information Aggregation in Elections

So far, the basic premise of our models was: "individuals have different preferences over policies." This probably makes sense in a setup where policies are: taxation, public good provision...

Under this premise, we investigated how well voting aggregates preferences.

However, sometimes individuals have same preferences, but different information.

Example 32.1 Consider trade liberalization. If it is good, we all want it; if it is bad, none of us wants it. The issue is: we do not know if it is good or bad; we just have different bits of information about the desirability of trade liberalization, e.g., from talking to friends, anecdotal evidence, reading news...

This is called a **common values** setup (Osborne calls it "shared values", see Chapter 7.)

Luckily, the theory of games of incomplete information has given us the necessary tools to describe & analyze the strategic interactions where people have different bits of information. Here, "strategic" is the key: unlike sincere behavior, people should realize that their actions matter, they should also be able to figure out when their actions matter, and how to act in these situations.

In other words, we will mainly focus on analyzing the optimal behavior of voters in strategic situations, and how the equilibrium looks like (or, *should* look like, if people were strategic).

We will cover two theoretical papers in this vein:

1. "Convincing the Innocent" by Feddersen & Pesendorfer (APSR, 1998)
2. "Swing Voter's Curse" by Feddersen & Pesendorfer (AER, 1996)

(We will also cover some empirical tests.)

But without further ado, let's talk about theory...

2.5.1 The Jury Problem[2]

"The Jury Problem" – a particular instance where people vote.

How juries in the U.S. judicial system work:

- 12 people go in a room,
- each vote "convict/acquit",
- the defendant is convicted if **all 12 people** vote for conviction.

Figure 33.1: 12 Angry Men (1957), great movie.

Suppose:

- $n = 12$ voters.
- all have the same preference:

  if defendant is guilty $\Rightarrow$ convict

  if defendant is innocent $\Rightarrow$ acquit

- However, they don't know if the defendant is actually guilty...
- They only have incomplete information: each has seen the trial and saw a signal that is informative about whether the defendant is guilty or not...

Formally,
Model:

- State of the world $\theta \in \{I, G\}$.

  if $\theta = I$, defendant innocent.

  if $\theta = G$, defendant guilty.

[2] Feddersen and Pesendorfer (APSR, 1998).

Suppose $\theta = \begin{cases} I, & \text{with probability } \frac{1}{2}, \\ G, & \text{with probability } \frac{1}{2}. \end{cases}$

(results would generalize to other probabilities).

- n jurors, each juror j receives a signal

$$s_j \in \{i, g\}$$

where s is i.i.d. conditional on state and distributed according to:

$$\text{if } \theta = I \Rightarrow s_j = \begin{cases} i, & \text{with probability } p, \\ g, & \text{with probability} 1 - p. \end{cases}$$

$$\text{if } \theta = G \Rightarrow s_j = \begin{cases} i, & \text{with probability } 1 - p, \\ g, & \text{with probability } p. \end{cases}$$

Where $\frac{1}{2} < p < 1$, so that the signal is informative but not fully revealing.

In other words,

$$\Pr(s_j = i \mid \theta = I) = p,$$
$$\Pr(s_j = g \mid \theta = G) = p.$$

- Each juror j observes s_j, votes $v_j \in \{c, a\}$ where $v_j = c$ is conviction and $v_j = a$ is acquittal.

Final verdict $v \in \{c, a\}$ such that

$$v = \begin{cases} c & \text{if } v_j = c \text{ for all } j, \\ a & \text{otherwise.} \end{cases}$$

- Each juror j has the preference utility function $u(v, \theta)$ where:

$$u(v, \theta) = \begin{cases} -z & \text{if } \theta = I \text{ and } v = c \\ 0 & \text{if } \theta = I \text{ and } v = a \\ 0 & \text{if } \theta = G \text{ and } v = c \\ -(1 - z) & \text{if } \theta = G \text{ and } v = a \end{cases}$$

where $z \in [0, 1]$.

Note: Let $\hat{\pi} = \Pr(\theta = G | \text{information})$.

$v = c$ gives an expected payoff of:
$$(1 - \hat{\pi}) \cdot (-z) + \hat{\pi} \cdot (0) = -(1 - \hat{\pi})z$$

$v = a$ gives an expected payoff of:
$$(1 - \hat{\pi}) \cdot (0) + \hat{\pi} \cdot (-(1 - z)) = -\hat{\pi}(1 - z)$$

Hence, a jury wants to convict if and only if:

$$-(1-\hat{\pi})z \geqslant -\hat{\pi}(1-z) \iff \hat{\pi} \geqslant z$$

In other words, iff:

$$\Pr(\theta = G|\text{information}) \geqslant z$$

Here, $z \in [0,1]$ is "the threshold of reasonable doubt". The jury prefers to convict if and only if the defendant is guilty beyond the reasonable threshold.

Typically, z is very high and close to 1. We really hate convicting an innocent person? That is also a reason why conviction requires unanimous verdict.

Figure 35.1: In US courts, the judge shows this chart to jurors.

According to Lord Devlin, "Trial by jury is not an instrument of getting at the truth; it is a process designed to make it as sure as possible that no innocent man is convicted" (Klaven and Zeisel 1966, 190). It is commonly thought that requiring juries to reach a unanimous verdict is exactly the mechanism that protects innocent defendants and that this protec-

Figure 35.2: From Feddersen and Pesendorfer, 1998.

The question is: does the jury system really work in minimizing the probability of $v = c$ when $\theta = I$? The answer is yes when jurors act sincerely, but not so much when jurors are strategic.

The Sincere Voting Benchmark

Suppose each juror j simply acts in the following manner, without any strategic considerations:

$$s_j = i \implies v_j = a, \quad s_j = g \implies v_j = c$$

Question: Suppose we see a defendant being convicted. What is the probability that the defendant is innocent?

Answer:

$$\Pr(\theta = I \mid v = c) = \frac{\Pr(\theta = I, v = c)}{\Pr(v = c)}$$

Applying Bayes' rule:

$$\Pr(\theta = I \mid v = c) = \frac{\Pr(v = c \mid \theta = I) \cdot \Pr(\theta = I)}{\Pr(v = c \mid \theta = I) \cdot \Pr(\theta = I) + \Pr(v = c \mid \theta = G) \cdot \Pr(\theta = G)}$$

Simplifying further:

$$\Pr(\theta = I \mid v = c) = \frac{\Pr(v = c \mid \theta = I) \cdot \frac{1}{2}}{\Pr(v = c \mid \theta = I) \cdot \frac{1}{2} + \Pr(v = c \mid \theta = G) \cdot \frac{1}{2}}$$

Now, note:

$$\begin{aligned}
\Pr(v = c \mid \theta = G) &= \Pr(v_j = c \text{ for all } j \mid \theta = G) \\
&= \Pr(s_j = g \text{ for all } j \mid \theta = G) \quad \text{(sincere voting)} \\
&= \Pr(s_1 = g \mid \theta = G) \cdots \Pr(s_n = g \mid \theta = G) \quad \text{(i.i.d signals)} \\
&= p \cdot \ldots \cdot p = p^n.
\end{aligned}$$

Similarly,

$$\begin{aligned}
\Pr(v = c \mid \theta = I) &= \Pr(s_j = i \mid \theta = I) \cdots \Pr(s_n = i \mid \theta = I) \\
&= (1 - p) \cdot \ldots \cdot (1 - p) \\
&= (1 - p)^n.
\end{aligned}$$

Therefore,

$$\begin{aligned}
\Pr(\theta = I \mid v = c) &= \frac{(1 - p)^n \cdot \frac{1}{2}}{(1 - p)^n \cdot \frac{1}{2} + p^n \cdot \frac{1}{2}} \\
&= \frac{\left(\frac{1-p}{p}\right)^n}{\left(\frac{1-p}{p}\right)^n + 1}.
\end{aligned}$$

Recall that $\frac{1}{2} < p < 1 \implies \frac{1-p}{p} < 1$. This implies:

$$\lim_{n\to\infty} \left(\frac{1-p}{p}\right)^n = 0,$$
$$\implies \lim_{n\to\infty} \frac{\left(\frac{1-p}{p}\right)^n}{\left(\frac{1-p}{p}\right)^n + 1} = 0.$$

Therefore,

$$\lim_{n\to\infty} \Pr(\theta = I \mid v = c) = 0.$$

If there are a sufficient number of jurors, almost all convicted defendants are guilty.

So... if people pool information (by voting sincerely), the law of large numbers does its magic and information is aggregated well. “Wisdom of Crowds"!!! This point was first made by Condorcet (and hence known as “Condorcet’s Jury Theorem").

But what if jurors don’t vote sincerely? The key here is the following: “If you are a juror, the only instance where your vote makes a difference is when all other jurors vote for conviction. But then... it means all other jurors believe the defendant is guilty! That is a lot of signals to overturn!” So a juror may refrain from voting $v_j = a$ even when $s_j = i$. Sincere voting may fail.

Strategic Voting

Following up with the reasoning above, a strategic juror should condition his action on being pivotal (i.e., on the event that her vote matters). So, given $s_j \in \{i, g\}$, she should vote $v_j = c$ if:

$$\Pr(\theta = G \mid s_j, j \text{ is pivotal}) \geqslant z.$$

Question: Can sincere voting, i.e., voting such that

$$s_j = i \implies v_j = a, \qquad s_j = g \implies v_j = c$$

be an equilibrium?

Answer: Suppose everyone else is voting like this, and juror j receives $s_j = i$. Then,

$$
\begin{aligned}
&\Pr(\theta = G \mid s_j = i, j \text{ is pivotal}) \\
&\quad = \Pr(\theta = G \mid s_j = i, v_k = c \text{ for all } k \neq j) && \text{(unanimous verdict)} \\
&\quad = \Pr(\theta = G \mid s_j = i, s_k = g \text{ for all } k \neq j) && \text{(everyone else voting sincerely)} \\
&\quad = \frac{(1-p)\cdot p^{n-1}\cdot 1/2}{(1-p)\cdot p^{n-1}\cdot 1/2 + p\cdot(1-p)^{n-1}\cdot 1/2} && \text{(Bayes' Rule)} \\
&\quad = \frac{\left(\frac{p}{1-p}\right)^{n-1}\cdot\frac{1-p}{p}}{\left(\frac{p}{1-p}\right)^{n-1}\cdot\frac{1-p}{p}+1}
\end{aligned}
$$

with $p > 1/2$, this goes to 1 as $n \to \infty$. So,

$$\lim_{n\to\infty} \Pr(\theta = G \mid s_j = i, j \text{ is pivotal}) \geqslant z.$$

implies a juror with $s_j = i$ votes: $a_j = c$. Therefore, sincere voting fails.

So, what do we do? We look for an equilibrium, namely the **Bayesian Nash Equilibrium (BNE)**.

Following the logic above, let's look for a symmetric BNE (symmetric = each juror uses the same strategy) where:

$$s_j = g \implies v_j = c, \qquad s_j = i \implies v_j = \begin{cases} c, & \text{with prob. } \sigma \\ a, & \text{with prob. } 1-\sigma \end{cases}.$$

The BNE must be such that any juror who receives $s_j = i$ is indifferent between $v_j = c$ and $v_j = a$. That is, in a symmetric BNE, we need:

$$\Pr(\theta = G \mid s_j = i, j \text{ is pivotal}) = z,$$

implies

$$\Pr(\theta = G \mid s_j = i, v_k = c \text{ for all } k \neq j) = z.$$

By applying the Bayes' Rule to the left hand side of the equation:

$$
\begin{aligned}
&\Pr(\theta = G \mid s_j = i, v_k = c \text{ for all } k \neq j) \\
&= \frac{\Pr(s_j = i, v_k = c, \forall k \neq j \mid \theta = G)\cdot \Pr(\theta = G)}{\Pr(s_j = i, v_k = c, \forall k \neq j \mid \theta = G)\cdot \Pr(\theta = G) + \Pr(s_j = i, v_k = c, \forall k \neq j \mid \theta = I)\cdot \Pr(\theta = I)}.
\end{aligned}
$$

Now, since we have assumed i.i.d. signals,

$$
= \frac{\Pr\left(s_j = i \mid \theta = G\right)\cdot\left(\Pr\left(v_k = c \mid \theta = G\right)\right)^{n-1}\cdot \Pr(\theta = G)}{\Pr\left(s_j = i \mid \theta = G\right)\cdot\left(\Pr\left(v_k = c \mid \theta = G\right)\right)^{n-1}\cdot \Pr(\theta = G) + \Pr\left(s_j = i \mid \theta = I\right)\cdot\left(\Pr\left(v_k = c \mid \theta = I\right)\right)^{n-1}\cdot \Pr(\theta = I)}.
$$

Here observe that

- If $\theta = G$, then
$$v_k = \begin{cases} c, & \text{with prob. } p + (1-p)\sigma \\ a, & \text{with prob. } (1-p)(1-\sigma) \end{cases}$$
- If $\theta = I$, then
$$v_k = \begin{cases} c, & \text{with prob. } (1-p) + p\sigma \\ a, & \text{with prob. } p(1-\sigma) \end{cases}$$

Thus,

$$= \frac{(1-p)\cdot(p+(1-p)\sigma)^{n-1}\cdot 1/2}{(1-p)\cdot(p+(1-p)\sigma)^{n-1}\cdot 1/2 + p\cdot(1-p+p\sigma)^{n-1}\cdot 1/2},$$

So, in a symmetric BNE, we need:

$$\frac{(1-p)\cdot(p+(1-p)\sigma^*)^{n-1}}{(1-p)\cdot(p+(1-p)\sigma^*)^{n-1} + p\cdot(1-p+p\sigma^*)^{n-1}} = z.$$

One can calculate σ^* based on this equation as a function of p, z and n. Then, one can calculate the probability of convicting an innocent defendant in equilibrium:

$$\Pr(v = c \mid \theta = I) = \Pr(v_j = c, \forall j \mid \theta = I)$$
$$= \left((1-p) + p\cdot\sigma^*\right)^n.$$

Feddersen and Pesendorfer (1998, APSR) does exactly this: See Figure 1 in the paper that plots $\Pr(v = c \mid \theta = I)$ in equilibrium as a function of n when $p = 0.7$, $z = 0.5$. The probability remains bounded away from zero, even as $n \to \infty$. Indeed, $\Pr(v = c \mid \theta = I)$ converges to 0.22. That is, innocent defendants have 22% to be convicted. Wisdom of crowds fails with strategic voting. Sad. :(

The more concrete policy proposal of Feddersen and Pesendorfer is using a non-unanimity rule, but that is less important for our purposes. At the moment, I want you to keep two main takeaways in mind:

1. A strategic voter should condition her actions on being pivotal.
2. Being pivotal is information in itself! When people take this information into account, information aggregation may fail and inefficiencies arise.

The idea that being pivotal, in itself, contains valuable information also drives the next paper we will discuss.

2.5.2 Swing Voter's Curse[3]

The title is a wordplay! It is a reference to the "Winner's Curse" in auction theory.

Winner's Curse: In a common value auction (i.e., in an auction where every bidder has the same valuation, such as the sale of an oil plot), winning an auction is bad news! This is because if you win, that means you offered the highest bid, which means every other bidder offered lower, which means all their estimates were lower than yours, which means you were too optimistic.

Similarly,

Swing Voter's Curse: In a common value election with some informed and some uninformed voters, being an uninformed pivotal voter is bad news! This is because if you are uninformed pivotal, this means there are not many informed voters around. Consequently, you should make sure your vote doesn't count. How? You should abstain.

A side note: The literature on common value auctions and common value elections have lots of conceptual overlap. For example, in a common value auction, bidders should condition on winning. In a common value election, voters should condition on being pivotal. It is no wonder that Pesendorfer also wrote a much of very influential papers on auction theory.

Going back to Swing Voter's Curse, the model is very similar to the jury model, with three important modifications:

1. This is a model of plurality voting between two alternatives (i.e., the alternative with higher number of votes wins).
2. Voters can be uninformed (i.e., not everyone receives a signal).
3. Voters can abstain (i.e., they don't have to vote).

The overarching conclusion is: uninformed voters, in equilibrium, abstain from voting and leave the decision to informed voters. We will not fully describe the model and analysis (a homework question walks you through it), but here are the main elements:

The (Simplified) Model

- n voters, voting between two candidates (A and B)

[3] Feddersen and Pesendorfer (1996, AER).

- State of the world $\theta \in \{A, B\}$.

  if $\theta = A$, candidate A is better.

  if $\theta = B$, candidate B is better.

  Suppose $\theta = \begin{cases} A & \text{with probability } \alpha, \\ B & \text{with probability } 1 - \alpha \end{cases}$ $\qquad 0 \leqslant \alpha \leqslant 1.$

- A voter i learns the true state of the world

  with probability p, in which case voter i is *informed*,

  with probability $1 - p$, voter i remains *uninformed*.

- After voter i receives information (if any), she chooses an action $a_i \in \{A, B, \varnothing\}$, where

  - $a_i = A$ (vote for A),
  - $a_i = B$ (vote for B),
  - $a_i = \varnothing$ (abstain).

  The candidate who receives more votes from voters who do not abstain wins. (If there is a tie, each wins with $\frac{1}{2}$ probability.) Let $W \in \{A, B\}$ denote the winner.

- Each voter i has preference $u(W, \theta)$ (common preferences) such that

$u(W, \theta) =$

	$\theta = A$	$\theta = B$
$W = A$	1	0
$W = B$	0	1

Analysis

Feddersen and Pesendorfer have to do some legwork to make sure unpleasant things do not happen (e.g., to ensure that at least one person votes). For our purposes, let's not worry about them for now. Suppose:

- all informed voters vote in line with their information,
- there is always at least one person who votes.

The interesting bit is about the strategy of an uninformed voter. As discussed before, an uninformed voter i should condition her action on being pivotal. When is i possibly pivotal? Only three cases:

1. Without i's vote, there is a tie.

2. Without i's vote, A is one vote behind.

3. Without i's vote, A is one vote ahead.

An easy result:

Lemma 42.0 *There cannot be a Bayesian Nash Equilibrium where all uninformed voters vote for A with probability one.*

Proof. (Informal) Suppose there is. Consider an uninformed voter i who votes for A. When is she pivotal, i.e., when does her vote for A change the outcome? Only two cases:

(1) Without i's vote, there is a tie.

(2) Without i's vote, A is one vote behind.

In both cases, B receives some votes. Because all uninformed voters vote for A, B must be getting votes from informed voters. But then, $\theta = B$, and voter i should vote for B instead. So there cannot be a BNE. □

Similarly,

Lemma 42.1 *There cannot be a Bayesian Nash Equilibrium where all uninformed voters vote for B.*

For an uninformed voter, let:

- $\mathbb{E}\,\mathrm{U}(A)$: expected payoff from voting for A,
- $\mathbb{E}\,\mathrm{U}(B)$: expected payoff from voting for B,
- $\mathbb{E}\,\mathrm{U}(\varnothing)$: expected payoff from abstaining.

The two lemmas above show that: We cannot have

$$\mathbb{E}\,\mathrm{U}(A) > \max\{\mathbb{E}\,\mathrm{U}(B), \mathbb{E}\,\mathrm{U}(\varnothing)\},$$

$$\mathbb{E}\,\mathrm{U}(B) > \max\{\mathbb{E}\,\mathrm{U}(A), \mathbb{E}\,\mathrm{U}(\varnothing)\}.$$

in a BNE. The next result is the crucial one that establishes why an uninformed voter should abstain.

Proposition 42.2 *In any symmetric BNE, if* $\mathbb{E}\,\mathrm{U}(A) = \mathbb{E}\,\mathrm{U}(B)$*, then* $\mathbb{E}\,\mathrm{U}(\varnothing) > \mathbb{E}\,\mathrm{U}(A) = \mathbb{E}\,\mathrm{U}(B)$.

If an uninformed voter is indifferent, she should rather abstain.

Proof. (Informal) Some notation. Denote the following probabilities without i's vote:

Probability	**When $\theta = A$ (happens w.p. α)**	**When $\theta = B$ (happens w.p. $1-\alpha$)**
of a tie is:	$\pi_t(A)$	$\pi_t(B)$
that A is behind one vote is:	$\pi_A(A)$	$\pi_A(B)$
that A is ahead one vote is:	$\pi_B(A)$	$\pi_B(B)$

One can indeed calculate these probabilities but it requires some effort and some knowledge of combinatorials; not super relevant for our purpose. Now, the only thing you need to remember is:

($\star$) $\pi_A(A) < \pi_B(A)$: in state A, candidate B is more likely to be behind,

and,

($\star\star$) $\pi_B(B) < \pi_A(B)$: in state B, candidate A is more likely to be behind.

Why ($\star$) and ($\star\star$)? Because informed candidates vote in line with their information, so the "good" candidate is more likely to be ahead. Now, suppose $\mathbb{E}\,U(A) = \mathbb{E}\,U(B)$. Note that:

$$\begin{aligned}\mathbb{E}\,U(B) - \mathbb{E}\,U(A) &= \text{expected payoff from voting for } B \text{ rather than } A \\ &= (1-\alpha)\cdot\left[\pi_t(B) + \frac{1}{2}\pi_A(B) + \frac{1}{2}\pi_B(B)\right] - (\alpha)\cdot\left[\pi_t(A) + \frac{1}{2}\pi_A(A) + \frac{1}{2}\pi_B(A)\right].\end{aligned}$$

If $\mathbb{E}\,U(A) = \mathbb{E}\,U(B)$, then; $\mathbb{E}\,U(B) - \mathbb{E}\,U(A) = 0$ implies:

$$\begin{aligned}(\star\star\star)\quad (1-\alpha)\pi_t(B) - \alpha\cdot\pi_t(A) \\ = \alpha\cdot\left[\frac{1}{2}\pi_A(A) + \frac{1}{2}\pi_B(A)\right] - (1-\alpha)\cdot\left[\frac{1}{2}\pi_A(B) + \frac{1}{2}\pi_B(B)\right].\end{aligned}$$

Next, note that:

$$\begin{aligned}
\mathbb{E}\,U(B) - \mathbb{E}\,U(\varnothing) &= \text{expected payoff from voting for B rather than abstaining} \\
&= (1-\alpha)\cdot\left[\frac{1}{2}\pi_t(B) + \frac{1}{2}\pi_B(B)\right] - (\alpha)\cdot\left[\frac{1}{2}\pi_t(A) + \frac{1}{2}\pi_B(A)\right] \\
&\text{(rearrange)} \\
&= \frac{1}{2}\cdot[(1-\alpha)\pi_t(B) - \alpha\pi_t(A)] + \frac{1}{2}\cdot[(1-\alpha)\pi_B(B) - \alpha\pi_B(A)] \\
&\text{(substitute } (\star\star\star)\text{)} \\
&= \frac{1}{2}\cdot\left[\begin{array}{l}\alpha\cdot\left[\frac{1}{2}\pi_A(A) + \frac{1}{2}\pi_B(A)\right] - (1-\alpha)\cdot\left[\frac{1}{2}\pi_A(B) + \frac{1}{2}\pi_B(B)\right] \\ + \frac{1}{2}\cdot[(1-\alpha)\pi_B(B) - \alpha\pi_B(A)]\end{array}\right] \\
&\text{(rearrange)} \\
&= \frac{1}{2}\cdot\left[\begin{array}{l}\frac{1}{2}\alpha\pi_A(A) + \frac{1}{2}\alpha\pi_B(A) \\ -\frac{1}{2}(1-\alpha)\pi_A(B) - \frac{1}{2}(1-\alpha)\pi_B(B) \\ \quad + (1-\alpha)\pi_B(B) - \alpha\pi_B(A)\end{array}\right] \\
&= \frac{1}{2}\cdot\left[\begin{array}{l}\frac{1}{2}\alpha\pi_A(A) - \frac{1}{2}\alpha\pi_B(A) \\ + \frac{1}{2}(1-\alpha)\pi_B(B) - \frac{1}{2}(1-\alpha)\pi_A(B)\end{array}\right]
\end{aligned}$$

Thus,

$$\mathbb{E}\,U(B) - \mathbb{E}\,U(\varnothing) = \frac{1}{4}\left[\alpha\underbrace{\pi_A(A) - \pi_B(a)}_{<0 \text{ by } (\star)} + (1-\alpha)\underbrace{(\pi_B(B) - \pi_A(B))}_{<0 \text{ by } (\star\star)}\right] < 0.$$

Therefore, $\mathbb{E}\,U(\varnothing) > \mathbb{E}\,U(B) = \mathbb{E}\,U(A)$. □

So, we have shown a intuitive result:

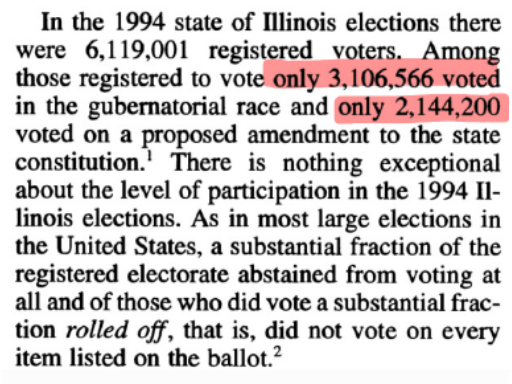
"If you don't know what you are voting for, you should stay out of the decision process."

This should ring a bell... Ever been in such a situation? (Was there an occasion where you and your friends were debating which restaurant to go to, and you had never been to one of those restaurants? What would you do?)

In the rest of the paper, Feddersen and Pesendorfer show that: with enough voters, in equilibrium, the "correct" alternative is elected. $\Longrightarrow$ With the possibility of abstention, elections indeed aggregate information!

2.5.3 Empirical Tests of Swing Voter's Curse

Do the predictions of Feddersen and Pesendorfer hold in practice? Some anecdotal evidence from the paper:



In the 1994 state of Illinois elections there were 6,119,001 registered voters. Among those registered to vote only 3,106,566 voted in the gubernatorial race and only 2,144,200 voted on a proposed amendment to the state constitution.[1] There is nothing exceptional about the level of participation in the 1994 Illinois elections. As in most large elections in the United States, a substantial fraction of the registered electorate abstained from voting at all and of those who did vote a substantial fraction *rolled off*, that is, did not vote on every item listed on the ballot.[2]

Figure 45.1: Some voters go to the voting booth, but still not vote for some items on the ballot.

For more concrete evidence, let us move to the next paper.

Battaglini, Morton, and Palfrey (2010, REStud)

"Swing Voter's Curse in the Laboratory". The authors test these predictions in a controlled lab environment.

Setting: Groups of $n = 7$ voters vote for whether a jar contains red or yellow balls. Some voters are informed (i.e., with probability $p = 0.25$ they observe the color of the ball), others are uninformed.

To recall theoretical predictions, see Table 1. (The authors use π instead of our α.) Look at the row with $m = 0$. Strategic uninformed voters should always abstain, and sincere voters should abstain when $\alpha = 1/2$. However, a sincere voter would keep voting when $\alpha \neq \frac{1}{2}$.

Results: see Table 3, rows with $m = 0$. When $\alpha = 1/2$, 91% of uninformed voters abstain. Moreover, when $\alpha = \frac{5}{9}$, 73% of uninformed voters abstain!.

Overall, with $\alpha = \frac{1}{2}$, there is a lot of abstention. With $\alpha \neq \frac{1}{2}$, less so... (Not surprisingly, as the equilibrium logic of abstention is quite sophisticated.)

Battaglini, Morton, and Palfrey (2008, AEA P & P)

The authors run lab experiments with larger $n(n = 17, n = 21)$. For result, see Table 1, rows with $m = 0$. $83\% - 88\%$ of uninformed voters abstain!

So... in lab environments we see some evidence supporting the view that people understand the "Swing Voter's Curse".

All in all, this is all I wanted to say about common value elections. Again, keep in mind that:

1. Voters should condition on being pivotal,
2. Being pivotal contains some information.

Next, we will start a new chapter called "Voter Preferences and Behavior." We will start by analyzing how and why people vote (so you may imagine the idea of pivotality will arise again).

This is all for electoral politics!

Next: voters.

Chapter 3

Voter Preferences and Behavior

A short recap: in this course so far, we covered:

1. Collective Decision Making: "Is It Possible to Aggregate Preferences?"
    - Impossibility Theorems
    - Median Voter Theorem
2. Electoral Politics: "How Elections Work"
    - Downsian competition
    - Citizen-candidate models
    - Information aggregation

Now, we are starting:

3. How Voters Behave: This part will be more practical and applied compared to previous parts. We will cover:
    - Why & how people vote:
        - Do they act strategically? To what extent? **[How?]**
        - What explains the turnout? **[Why?]**
    - What voters prefer:
        - How are political preferences formed?
        - Why do some people prefer more redistribution & others less redistribution?
    - Clientelism, patronage, and vote-buying:
        - How do small groups secure favors from politicians?
        - Why do some people sell their votes?
    - Populism
        - What are the reasons behind the rise of populist politics?

In a way, this chapter is an investigation of "how politics work in real life, and how they fail". More succinctly: "electoral politics gone wrong".

3.1 How Do People Vote?

Let's just assume that you somehow ended up in the voting booth (later, we will also think about what drives people to the voting booth...) How do you cast your vote? Sincerely or strategically?

A voter's incentives to act strategically, to some extent, rely on the electoral system.

- If the voting system is "first-past-the-post" (i.e., if the winner takes all & loser goes home, such as most presidential systems), incentives to strategize are much higher.
- If the voting system is "proportional representation", every vote counts, and there are fewer incentives to strategize.

Even in a first-past-the-post system, strategic behavior depends on the details.

- In a "single-round" election (e.g., municipality elections in Turkey), you have to be strategic. You have to think: does it make sense to vote for a candidate who is expected to come 3rd?
- In a "multi-round" election (e.g., presidential elections in Turkey), you have more freedom to be sincere in the first round: the election will go to a second round anyway.

NOTE: Indeed, single-round first-past-the-post systems tend to produce only two parties in the long run precisely due to this reason. This is the famous "Duverger's law."

The next two papers leverage the variation in electoral systems to understand whether voters indeed respond to these incentives. Broadly speaking, comparison of various electoral systems is a subject matter of **comparative politics**, a subfield of political science. We will not get into a very deep discussion here on comparative politics; that deserves to be a separate course.

3.1.1 Single-Round FPTP versus Multi-Round FPTP

Fujiwara (2011, QJPS) finds a very nice setting to test the idea that:

- single-round $\implies$ more strategic voting, less vote for 3rd (or lower placed) candidates

- multi-round $\implies$ less strategic voting, more vote for 3rd (or lower placed) candidates.

Setting: Brazilian mayoral elections in 1996-2008.[1]

Identification strategy: relies on the idea that:

- in municipalities with $< 200,000$ voters: single-round elections,
- in municipalities with $> 200,000$ voters: multi-round elections.

So, what do we do? RDD (regression discontinuity design), of course.

Critical figure: See Figure 1. The discontinuous jump in the vote share of 3rd or lower placed candidates must be due to the multi-round election.

Results: See Table 1 and the discussion below. (Fujiwara calls single-round *SB – single ballot* and multi-round *DB – dual ballot*.) "DB increases voting for the third (and lower) candidates by roughly 50%." Overall, this is strong evidence that at least some voters are acting strategically.

Anagol and Fujiwara (2016, QJE) also provide some insights on how voters strategize in FPTP systems. Using RDD design in Brazil, India and Canada, they show: coming in second in an election (rather than third) increases the chances of running and winning in future elections. Why? Name recognition, which help with coordination. In other words, voters tend to coordinate on the candidate who came up second in the previous elections.

Question: Can we measure the fraction of voters who act strategically?

Answer: See the next paper.

3.1.2 FPTP versus PR

Spenkuch (2018, JPubE) is a brilliant paper based on a brilliant idea.

Setting: *Bundestag* (lower house) elections in Germany, 2005-2009. Each voter casts two votes:

1. Vote for a constituency representative, single representative for each of 299 districts. First-past-the-post (FPTP).
2. "List votes" for a party, for 598 seats at national level, proportional representation (PR).

[1] We have already seen a paper already, but you will realize later as well that Brazil has so many tweaks in its electoral system that it is a fantastic lab to test theories!

as you may recall/imagine, in FPTP, incentives to vote strategically are much higher compared to PR.

Consider a voter who likes party A, but party A's representative candidate in the district is expected to lose.

- If this voter is strategic, she should cast her list vote to party A (it still counts under a PR system) but she should vote for another candidate in the representative election.
- If this voter is sincere (Spenkuch calls her "expressive"), she should vote for Party A in both elections.

This implies, the vote gap between list vote and representative vote for candidates who came in after third in representative elections must be coming from strategic voters.

For an overview of the theory, see the upper row of Figure 1. Consider a party whose candidate is expected to lose. Suppose we plot the list vote in the x-axis and the candidate vote in the y-axis. If every voter was expressive, we should see the 45-degree line (i.e., line with slope 1). If every voter was strategic, we should see a horizontal line (i.e., line with slope 0). If λ fraction of voters are expressive, we should see a line with a slope of λ.

The results: See Figure A.2 in the Online Appendix. He fits a curve to the data, which turns out to be an amazing fit. It very much looks like a line, with an estimated slope of $\widehat{\lambda} = 0.613$. That is, 61% of voters are expressive!

See Table 2 for regression estimations. Across various specifications, it looks like 61-68 % of voters are expressive/sincere.

Overall, when we look at the data, we see some evidence of strategic behavior. But... it also looks like the typical voter is acting sincerely.

A **side note** before we proceed: A FPTP electoral system (e.g., UK) seems bad for representation compared to a PR system (e.g., Netherlands) but it has the advantage of making it easy to keep politicians accountable... So there is a representation-accountability trade-off. We will talk about accountability later on.

3.2 Why Do People Vote?

We now take a step back and ask the following: "What takes voters to the voting booth in the first place?"

3.2.1 The Paradox of Voting

An idea we explored earlier is that the voters should condition on being pivotal, which still applies here.

Here is the issue, though: A (rational) voter realizes that she has a tiny probability of being pivotal. Almost surely her vote will not change the outcome. Given this observation, the real question is why do people vote at all, i.e., why is there turnout in elections? This is what is known as the "Paradox of Voting." (You may not be surprised to hear that Condorcet was the first person who wrote down it.) There is a vast literature on voting that formalizes this notion, see Feddersen (2004, JEP) for a broad discussion. (He calls it *Paradox of Not Voting*, tomayto/tomahto).

The Theory

Palfrey and Rosenthal (1985, APSR) is the workhorse model, which is too complicated for the purposes of this course, but the main idea is simple:

> "If there is even a tiny bit of cost of voting, we should expect very low turnout rates, especially in large elections."

What do we mean by voting costs? They include the opportunity cost of voting (e.g., work, childcare, leisurely activities) and the direct costs (e.g., the cost of going to the voting booth). For instance, Cantoni (2020, AEJ:Applied) shows that the distance to voting booth is a significant factor that impacts turnout. Using a very nice identification strategy that relies on comparing households on different sides of the precinct boundary, he shows that a quarter-mile increase in distance reduces turnout by 2 to 5 percent.

Going back to the theory, in a nutshell, Palfrey and Rosenthal model is as follows:

- n voters
- Choosing between two alternatives: $P \in \{A, B\}$
- T_1 voters prefer A, their policy payoff is: $v_i = \begin{cases} 1, & \text{if } P = A \\ 0, & \text{if } P = B \end{cases}$

  T_2 voters prefer B, their policy payoff is: $v_i = \begin{cases} 0, & \text{if } P = A \\ 1, & \text{if } P = B \end{cases}$

  where $T_1 + T_2 = n$.

- Policy is determined according to plurality voting. Let n_A be the number of votes A gets. Let n_B be the number of votes B gets. Now,
  - If $n_A > n_B$, then $P = A$ is chosen.
  - If $n_A < n_B$, then $P = B$ is chosen.
  - If $n_A = n_B$, then suppose A is chosen (this is not super important for results).
- Each voter i has a cost of voting $c_i \geqslant 0$, where $c_i \sim_{iid} F(.)$ is private information.

Suppose each voter decides whether to vote or not (i.e., $a_i \in \{\text{vote, abstain}\}$). If i votes, she votes sincerely.

For a voter i who prefers A, payoffs:

	$a_i = \text{vote}$	$a_i = \text{abstain}$
$n_A \geqslant n_B$	$1 - c_i$	1
$n_A < n_B$	$-c_i$	0

For a voter i who prefers B, payoffs:

	$a_i = \text{vote}$	$a_i = \text{abstain}$
$n_A \geqslant n_B$	$-c_i$	0
$n_A < n_B$	$1 - c_i$	1

Solution concept: Bayesian Nash Equilibrium (BNE).

Result: There is a BNE where: $a_i^* = \text{vote}$ if and only if $c_i \leqslant c_i^*$. Letting $n_{A,-i}$ denote the number of votes A gets from voters excluding i, and $n_{B,-i}$ denote the number of votes B gets from voters excluding i,

For a voter i who prefers A,

$$c_i^* = \Pr(n_{A,-i}^* = n_{B,-i}^* - 1)$$

For a voter i who prefers B,

$$c_i^* = \Pr(n_{A,-i}^* = n_{B,-i}^*)$$

Moreover,

$$\lim_{n\to\infty} c_i^* = 0. \implies \text{In words, as } n \text{ grows, turnout} \to 0.$$

Overall, it is unreasonable to expect any predictive power from a pivotal voter model, for large n. What about small n?

The Empirics

Coate, Conlin, and Moro (2008, JPubE) "The performance of pivotal-voter models in small-scale elections" tests the pivotal-voter model in a setting with small n.

Setting: liquor referendums in Texas, 1978-1996. These are elections where people vote on whether a certain type of alcoholic beverage should be legal to sell in the county. (So, these are kind of low-stakes, low-salience elections.)

Coate, Conlin, and Moro have data on 366 elections. The average number of voters $n = 370$. They run some simulations, varying the size of groups (T_1, T_2) and benefits of policy to see if the model fits the data.

Where the model succeeds: see Table 5. By playing around with parameters of the model, they can get turnout rates that are very close to what we see in the data.

Where the model fails: See Figure 3. The model predicts much, much lower voting margina than what is observed. That is, if we want to have a pivotal-voter model that explains the turnout, we should expect to see very close elections.

My two cents are: pivotal-voter models are pretty much like Downsian competition models... everybody knows them and treats them as a benchmark, but we also know that they probably do not explain the real life.

To explain the "Paradox of Voting", we need to turn to alternative explanations:

1. Maybe people just enjoy voting? This can be incorporated into our models by allowing for $c_i < 0$, i.e., voters derive some direct utility from voting.
2. Habit formation?
3. Maybe people are subject to social pressure?
4. Voting is a "civic duty"?

To be frank, it is very difficult to disentangle these alternative theories. Theoretically, it is difficult to argue why habit formation and escaping social pressure is not a form of "enjoyment". Nevertheless, let's look at some experimental evidence.

3.2.2 Do People Enjoy Voting?

If so, small interventions that lead to turnout should have long-term effects. Let's start by talking about those "small interventions".

Gerber and Green (2000, APSR)

Gerber and Green run a field experiment where they reach out to people to mobilize them using three methods:

1. canvassing (i.e., knocking on doors),
2. phone calls,
3. mails.

People are randomly assigned into these treatments (+ there is a control group).

Setting: New Haven, Connecticut before 1998 elections. (Note: They can see if those people voted or not, based on public records!)

How canvassing works: see page 656. Each canvasser is given a script that goes like "Hi, this is a reminder that there is an upcoming election." In addition to this *neutral* treatment,

1. In *civic duty* treatment, canvasser says "reminder that voting is a civic duty."
2. In *close election* treatment, canvasser says "your vote can change the outcome."
3. In *neighborhood solidarity* treatment, canvasser says "if our neighbor votes, politician will care about it."

Experiment results: first, see Table 5. Canvassing has a significant effect, while phone and mail does not.

Now, see Table 3. Among those successfully contacted in person (i.e., those who open the door among the treatment group), the turnout rate is 59%. Among those not contacted (i.e., those in control group, or those who do not open the door among the control group), the turnout rate is 44.5%.

You may be tempted to say: "Effect of canvassing is $59 - 44.5 = 14.5\%$". But that would overestimate the effect, because those who do not open the door are not a good comparison group to those who open the door. In other words, we are running into the issue of selection bias.

An Aside on Instrumental Variables Suppose we would like to estimate the effect of X on Y:

$$\beta = \mathbb{E}[Y_i|X_i = 1] - \mathbb{E}[Y_i|X_i = 0]$$

but we are running into the issue of selection bias. What to do?

A very popular identification strategy is **instrumental variables (IV)**, which relies on finding a variable D_i that satisfies two conditions:

1. D_i affects X_i, and,
2. D_i does not directly affect Y_i. In other words, D_i only affects Y_i through its effect on X_i. (This is called the **exclusion restriction**.)

Graphically, we are looking into set of relations that look like:

$$D_i \xrightarrow{\alpha} X_i \xrightarrow{\beta} Y_i$$

where, most crucially, there must **not** be a separate arrow from D_i to Y_i (exclusion restriction).

If these conditions are satisfied, D_i is an **instrument** for X_i. We can play with this instrument to find an estimate of β. How? Intuitively, we can change D_i a bit. This will change X_i a bit (**first stage**). That will, in turn, change Y_i a bit, so that we will have an overall change in Y_i when we change D_i (**reduced form**). The effect of X_i on Y_i is reduced form divided by first stage.

For instance, suppose one unit increase in D_i leads to 2 units increase in X_i, and 10 units increase in Y_i. What is the effect of one unit increase in X_i on Y_i? $\frac{10}{2} = 5$ units. In the graph above, first stage is $FS = \alpha$ and reduced form is $RF = \alpha \cdot \beta$. Thus, $\beta = \frac{RF}{FS} = \frac{\alpha \cdot \beta}{\alpha}$.

More formally, if D_i and X_i are binary variables,

$$\begin{aligned} \text{Reduced Form} &= \mathbb{E}[Y_i|D_i = 1] - \mathbb{E}[Y_i|D_i = 0] \\ \text{First Stage} &= \mathbb{E}[X_i|D_i = 1] - \mathbb{E}[X_i|D_i = 0] \end{aligned}$$

Then,

$$\beta = \frac{\text{Reduced Form}}{\text{First Stage}} = \frac{RF}{FS} = \frac{\mathbb{E}[Y_i|D_i = 1] - \mathbb{E}[Y_i|D_i = 0]}{\mathbb{E}[X_i|D_i = 1] - \mathbb{E}[X_i|D_i = 0]}$$

Illuminated by this discussion of IV, let's revisit Table 3. Let:

- Y_i: turnout,
- $X_i = 1$ if i was successfully contacted, $X_i = 0$ if not,
- $D_i = 1$ if i is in the treatment group, $D_i = 0$ if i is in the control group.

What Table 3 says is that:

$$\mathbb{E}[Y_i|X_i = 1] = 59\%$$
$$\mathbb{E}[Y_i|X_i = 0] = 44.5\%$$

But as we have already discussed, $\mathbb{E}[Y_i|X_i = 1] - \mathbb{E}[Y_i|X_i = 0]$ is **not** a causal estimate of the effect of X_i on Y_i due to selection bias.

The bottom part of Table 3 shows:

$$\mathbb{E}[Y_i|D_i = 1] = 47.2\%$$
$$\mathbb{E}[Y_i|D_i = 0] = 44.8\%$$

therefore, $RF = 47.2 - 44.8 = 2.4\%$. Moreover,

$$\mathbb{E}[X_i|D_i = 1] = 27.8\%$$

and $\mathbb{E}[X_i|D_i = 0] = 0$ by design; therefore $FS = 27.8\%$. We conclude the effect of contact on turnout is:

$$\beta = \frac{RF}{FS} = \frac{2.4}{27.8} = 8.7\%$$

which is huge! (Recall that the baseline turnout is less than 45%.)

See Table 4: It looks like the *close election* treatment is more effective than others! So, maybe there is some merit to pivotal voting models?

Concluding note: Gerber and Green (2000, APSR) is very seminal.

- It started the "turnout" literature.
- It significantly affected the structure of political campaigns! Nowadays, they are less about "persuading voters" and more about "mobilizing voters".

But... I want to point out that what works in New Haven (or, in general, US) may not work elsewhere. The next paper is a canvassing experiment in another setting.

Baysan (2022, AER)

Setting: Turkey before the 2017 constitutional referendum. As you recall, this was a very salient referendum on increasing executive power. The government was in favor of the "yes" vote and the opposition was supporting the "no" vote.

Baysan runs a canvassing experiment in collaboration with the opposition. The experiment involves providing information in favor of the "no" vote.

Results: See Table 2. There seems to be no effect on turnout.

See Figure 2. No effect on the vote share. But this null result is masking some heterogeneity. In particular, in the neighborhoods where the opposition is already strong (Q4), canvassing increases the vote share for "no". In the pro-government neighborhoods (Q1), canvassing decreases the vote share for "no". In other words, canvassing reinforces and deepens the existing inclinations. It *polarizes* voters with no overall impact on turnout and vote share.

Baysan also looks at the subsequent 2018 presidential elections and 2019 mayoral elections, and the polarizing effects of canvassing persists.

Why is Baysan finding different results than Gerber and Green? One possibility is that the turnout in Turkey is already very high, so there is not much wiggle room. Another possibility (favored by Baysan) is that the executive power is already a divisive issue that people have fundamental disagreements on. This is unlike the congressional elections in New Haven, where people may still disagree but the nature of disagreement is different.

In any case, Baysan (2022, AER) gives us a lot to think about. It is a cautionary tale that the external validity of canvassing experiments in the US should not be taken for granted.

3.2.3 Habit-Forming

Going back to the idea of "enjoying voting"... Perhaps what's more striking is the follow-up study:

Gerber, Green and Shachar (2003, AJPS)

Setting: The authors follow the same people as in Gerber and Green (2000, APSR) a year later, in November 1999 mayoral elections.

Results: see Table 2. Canvassing in 1998 still has impact on turnout in 1999.

Run the regression:

$$\text{Turnout}_{1999,i} = \beta \cdot \text{Turnout}_{1998,i} + X_i\beta + \varepsilon_i$$

where: instrument $\text{Turnout}_{1998,i}$ with canvassing in 1998.

See Table 4. Estimated $\widehat{\beta} \approx 0.5$. That means voting in 1998 increases the chances of voting in 1999 by 50% ! Huge effect. Once you vote, you keep voting.

So... there's some evidence that suggests the effect of canvassing persists, which speaks to the idea that people may be enjoying voting.

Fujiwara, Meng, and Vogl (2016, AEJ:Applied)

Setting: US presidential elections from 1952-2012.

Run the same regression (Equation 6 in the paper): for each county c,

$$\text{Turnout}_{c,t} = \beta \cdot \text{Turnout}_{c,t-1} + \varepsilon_{ct}$$

but instrument turnout in period $\text{Turnout}_{c,t-1}$ with the rainfall in $t-1$.

- Is this a sensible instrument? Seems so. (i) rainfall affects turnout, and, (ii) plausibly, rainfall in election day has no direct impact on future elections. To be frank, using rainfall as an instrument is a brilliant idea in many settings.
- Let me point out that **rainfall instrument** was extremely popular for a long time... So much so that the tide may have started turning against it: see Sarsons (2015, JDE) "Rainfall and Conflict: A Cautionary Tale".

3.2.4 Social Pressure

Nickerson (2005, APSR)

The author runs canvassing experiments in Denver and Minneapolis in 2002. He finds that canvassing affects other people who live in the same household (spouses, partners, roommates).

See Table 3: Effects of canvassing on canvassed is 9.8%. Effect of canvassing on the other party who shares the house in 6.0%. This is huge!

What is going on?

1. Maybe this is mechanical (your partner goes to the voting booth already and you catch the ride)?

2. Maybe the "Enjoyment from voting" is contagious?

3. Maybe the other party feels responsible or has some "image concerns"?

The last one speaks to the idea that "voters may not feel direct enjoyment – but they feel compelled to vote, because if they don't vote other people will shun them". See Gerber, Green, and Larimer (2008, APSR) for an investigation of this idea. Another very creative paper that investigates this idea is the following.

DellaVigna, List, Malmendier, and Rao (2017, REStud)

Setting: survey in Chicago, **after** 2010 elections.

Before showing up, they leave a flyer declaring that they will show up. To some people, they also declare that the survey will be about the 2010 elections. They give some people the opportunity to opt out.

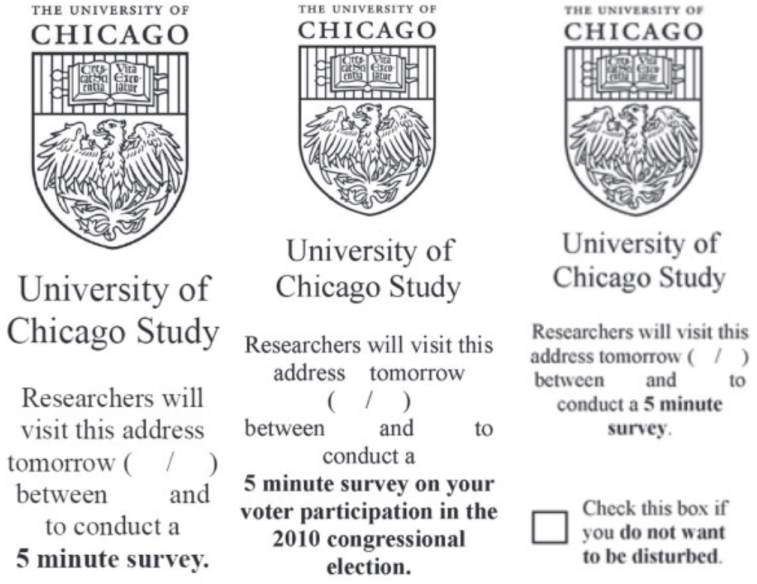


Figure 59.1: Example of flyers. From left to right: "flyer", "flyer-election", "opt-out". There are "no flyer" and "election-opt-out" treatments.

Note: The authors have access to people's voting records, so they know if participants voted or not in 2010.

Idea: If people are ashamed of not voting, the opt-out rate should be higher among non-voters, especially when the election is mentioned.

Results: See Figure 5. Let's compare "opt-out" versus "election-opt-out". For voters, opt-out rate should be similar in these treatments. For non-voters, opt-out rate should be higher in "election-opt-out". The results are in line with this.

They also have a treatment with monetary payments, and they estimate a value of $\sim$ 15\$ of "voting to tell others".

3.2.5 What Else?

We already mentioned "civic duties", but it is very difficult to test empirically, and it is more difficult to set up an economic model along those lines. If interested, see Alger and Laslier (2021) "Homo Moralis Goes to the Voting Booth".

In a separate line of work, Washington (2006, QJE) shows that a Black candidate $\Longrightarrow$ 2-3% increase in turnout in the US. Why? Maybe "identity politics", which is, honestly, an under-explored area. We will briefly touch upon it when we talk about clientelism. But if you are interested in a theoretical model of identity politics and citizens choosing identities, check out:

- Shayo (2009, APSR) "A Model of Social Identity with an Application to Political Economy: Nation, Class, and Redistribution"
- Shayo (2020, AnnuRevEcon) "Social Identity and Economic Policy"
- Gennaioli and Tabellini (2023) "Identity Politics"

You can also check the book "Democracy for Realists" by Achen & Bartels, which is not directly about identity politics but still insightful.

To recap, we have found:

- The "pivotal voting" benchmark is not a great way to explain "the paradox of voting",
- Simple interventions like canvassing can increase turnout (and can do so persistently!),
- People are ashamed of not voting, which may be a driver of turnout.

3.3 Forming Political Preferences

Now that we discussed:

- behavior people exhibit at the voting booth,
- what takes people to the voting booth...

it is time to take a step back further and question: What do voters prefer?

Admittedly, this is a tough question, because the tools of economics are kind of ill-equipped to address it. We tend to just take preferences as given, rarely questioning how they are formed... (Recall Econ 101, where we literally started by talking about how an economic agent is defined by her preferences and constraints?) So the literature on studying what people prefer (and why so) does not run as deep as it should.

The existing literature points to a common direction, though: individual experiences and context matters in shaping preferences. Let me give you three examples.

3.3.1 Past Experiences Matter

Do you remember the Chattopadhyay and Duflo paper from Section 2.3.2? Beaman, Chattopadhyay, Duflo, Pande, and Topalova (2009, QJE) follows the same setting and is based on the idea that: some Indian villagers are randomly exposed to women leaders whereas others did not. The research question is: does exposure to women leaders reduce bias against women in leadership positions?

The interesting bit in this paper, among many others, is the measurement of bias. The authors go to the villages and run some Implicit Association Tests. This is a test developed by psychologists to measure how biased a subject is, based on how quickly the subject can associate two categories with each other. We will run an illustration in class with playing cards. You can take a test at `https://implicit.harvard.edu/implicit/takeatouchtestv2.html` yourself!

Results: See Table II. For males, exposure to a female Pradhan reduces the bias against females in leadership positions. If a voter sees a female leader in his lifetime, he is less biased against females in leadership positions!

If you are looking for evidence that REPRESENTATION MATTERS, this is it.

Also: Alesina and Fuchs-Schündeln (2007, AER) looks at a survey in Germany and finds that people growing up in East Germany (a communist state) are more likely to believe that the state is responsible for citizens if they are unemployed, sick, old etc. Overall, this is another bit of evidence consistent with the hypothesis that individuals' part experiences matter in formation of their political preferences.

3.3.2 Current Context Matters

Cantoni and Pons (2022, AER) look at all the voters in the US in 2008-2018. This is a huge data set: See Table 1. Among these voters, more than 14 million of them changed states (due to finding a job, marriage, education...) In addition to addresses, they can observe voters' party registration and their turnout in elections.

The question the authors ask is the following. Consider a voter who moves from an overwhelmingly Republican state to an overwhelmingly Democratic state. Is this voter more likely to be registered as a Democrat *after* the move?

See Figure 2, Panel D. x-axis is (Democratic party affiliation in the destination) - (Democratic party affiliation in the origin). y-axis is the change in the mover's affiliation towards Democratic party. If the only thing that matters is individual characteristics, we should not see a change in individual party affiliation, and the slope would be 0. If the only thing that matters is the context (i.e., where you live and whom you interact with), we should see every such mover changing registration, and the slope would be 1. They find that the slope is 0.35, and conclude that roughly 30-40% of political preferences can be explained through context.

The authors conduct a much more complicated decomposition exercise; check it out if you are interested. For our purposes, this paper provides evidence consistent with the hypothesis that individuals' current experiences matter in formation of their political preferences.

3.4 Preferences on Redistribution

We focus on preferences on redistribution (arguably the most important piece of policy-making).

As we have seen in Problem Sets 1 and 2, poorer people are expected to support redistribution for obvious reasons. To formulate this idea, suppose the income (y) in a society is distributed according to a probability distribution function

$$y \sim g(.).$$

In this case, the average income is:

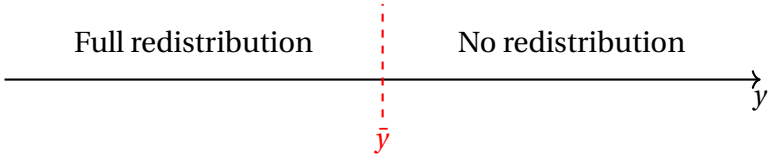
$$\bar{y} := \mathbb{E}_{y\sim g}[y] = \int y \cdot g(y)\, dy.$$

For simplicity, suppose there are only two policies:

$$X = \{\text{no redistribution, full redistribution}\}$$

- Under no redistribution, each citizen stays with her income y.
- Under full redistribution, each citizen's income is equalized at $\bar{y}$.

Clearly, any citizen with income $y < \bar{y}$ supports full redistribution, and, any citizen with income $y > \bar{y}$ supports no redistribution. The citizen with average income $y = \bar{y}$ is indifferent between these two policies.



In many societies the income distribution has a long right tail, which means the average citizen is richer than the citizen with median income. So... median citizen supports full redistribution $\Longrightarrow$ electoral politics tell us that we should see a lot of redistribution. However, in reality, we do not see a lot of redistribution. Why?

In general, theory predicts that the citizen with income $\bar{y}$ should be indifferent between supporting redistribution or not. However, the **puzzle** is: in reality, the average citizen does not support redistribution. Indeed, many poorer-than-average citizens do not support redistribution... typically, the citizen who is indifferent is much poorer than average!

Example 63.1 (From Benabou and Ok (2001, QJE)) *For instance, Okun [1975, p. 49] relates that: "In 1972 a storm of protest from blue-collar workers greeted Senator McGovern's proposal for confiscatory estate taxes. They apparently wanted some big prizes maintained in the game. The silent majority did not want the yacht clubs closed forever to their children and grandchildren while those who had already become members kept sailing along."*

So, what explains this puzzle?

3.4.1 Expected Mobility

Benabou and Ok (2001, QJE) "Social Mobility and the Demand for Redistribution: The POUM Hypothesis" puts forward an explanation:

"The poor may be poor today, but they expect to get richer in the future (i.e., they expect upward mobility). They do not want to be bound with redistribution later."

This is called the "Prospect of Upward Mobility (POUM)" Hypothesis. Benabou and Ok has a simple model to explain POUM. Suppose income mobility is given by a function $f : \mathbb{R} \to \mathbb{R}$ in the following sense. If a citizen has an income y today, she will have income $f(y)$ tomorrow. Therefore, the average income tomorrow will be:

$$\mathbb{E}_{y\sim g}[f(y)] = \int f(y) \cdot g(y)\, dy$$

Suppose individuals choose between

$$\{\text{no redistribution, full redistribution}\}$$

which will come into effect tomorrow. So,

- under no redistribution, a citizen with income y today has $f(y)$ tomorrow.
- under full redistribution, each citizen has $\mathbb{E}_{y\sim g}[f(y)]$ tomorrow.

Therefore, a citizen with income y supports no redistribution if:

$$f(y) \geqslant \mathbb{E}_{y\sim g}[f(y)]$$

In particular, today's average citizen (i.e., citizen with income $\bar{y}$) supports no redistribution if:

$$f(\bar{y}) \geqslant \mathbb{E}_{y\sim g}[f(y)]$$

Substituting $\bar{y} = \mathbb{E}_{y\sim g}[y]$,

$$f(\mathbb{E}[y]) \geqslant \mathbb{E}[f(y)]$$

But... this is true for any concave function f (Jensen's Inequality). So, as long as f is concave, the average citizen opposes redistribution. Indeed, if f is concave, there is an agent with income y who is indifferent between the two policies (i.e., $f(y^*) = \mathbb{E}[f(y)]$). Benabou and Ok show:

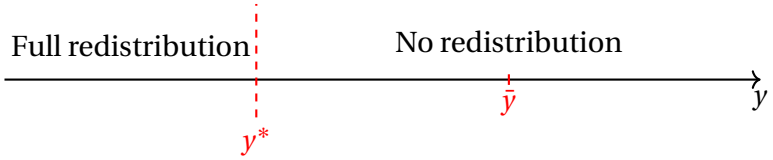
Proposition 64.1 *f is concave if and only if:*
There exists an indifferent individual with income y such that:

(i) $y^* < \bar{y}$

(ii) Those with $y < y^*$ support full redistribution.

(iii) Those with $y > y^*$ support no redistribution.

In a picture:



Formally, see Proposition 1 in the paper.

Moreover, considering a longer horizon (i.e., iterated applications of f) make the mobility function more concave and exacerbate this (i.e., y^* decreases).

Comments:

1. Is concave f reasonable? [Check Figure 65.1]

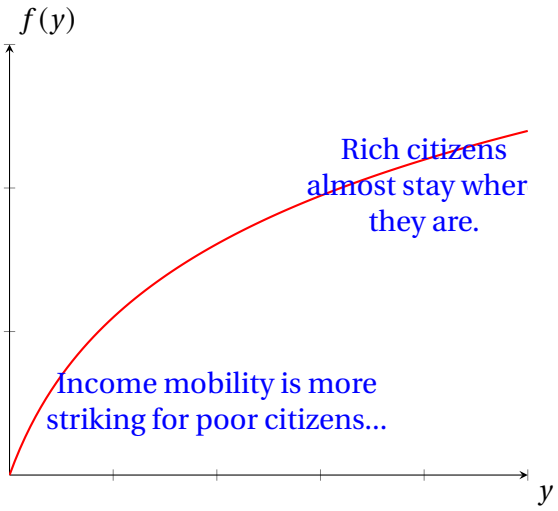


Figure 65.1: Is concave f reasonable?

   It's up to you to decide, but mobility tends to work this way... so that f is not totally unreasonable in my view.

   Check out Figure IV, Panel A of Balboni, Bandiera, Burgess, Ghatak, and Heil (2022, QJE). The authors make some asset transfer to people in extreme poverty in Bangladesh (by giving them cows) and see their assets some years later. It looks like *beyond a certain threshold* the transition function is concave.

2. Does the idea that "poor people don't want redistribution because they expect to get richer" make sense? Let's check some empirics.

   An empirical implication of POUM is: "people who expect higher mobility support redistribution less."

   Alesina and La Ferrara (2005, JPubE) investigate exactly this. They look at survey data (General Social Survey - GSS) and income data (Panel Study

of Income Dynamics - PSID), where GSS involves questions such as (paraphrasing):

- "do you support redistribution?"
- "what is your occupation and what was your father's occupation?"
- "do you expect a better life?"

From PSID, they calculate the probability that an individual will end up in 70th percentile or above within the next year (based on past mobility data of individuals with similar characteristics).

Results: See Table 6. An individual is less likely to support redistribution if:

- She is rich.
- She is employed.
- She has higher future prospects.
- She has a more prestigious occupation than her father.
- She has higher education than her father.

Overall, beyond current context, **experienced mobility** and **expected mobility** both reduce support for redistribution.

We have seen that expectations of mobility is a determinant of support for redistribution. What about experienced mobility?

3.4.2 Experienced Mobility

Piketty (1995, QJE) "Social Mobility and Redistribution Politics" is a lovely, lovely paper that sets up a theoretical model to study the effect of experienced mobility.

In the vein of Alesina and La Ferrara, Piketty begins with the observation that not only current income, but also experienced social mobility matters for attitudes towards redistribution. See Table 1. Not only the current income, but also parents' income is an important determinant of support for redistribution'! Why? do people learn something from their experiences?

Piketty's starting observation: People's attitudes towards redistribution depend on how distortionary taxes are. (i.e., if they reduce effort a lot.) But then, their attitudes towards taxes are shaped by "How important effort is", which has no objective answer. People have to rely on their beliefs and experiences.

Setup:

- An economy with infinite number of periods, indexed by t. In each period there are many agents, and each agent lives for one period (and has a child who lives in the next period.)
- There are two possible income levels, y_1 and y_0,

$$y_1 > y_0.$$

  Fix $y_1 = 1$ and $y_0 = 0$. (They can be interpreted as "success" or "failure".)

An individual who lives in period t has income $y_t \in \{0, 1\}$. y_t is random, but the probability of ending up with $y_t = 1$ depends on two things:

1. Parents' income, $y_{t-1} \in \{0, 1\}$
2. The effort of individual e_t.

Suppose:

$$\Pr(y_t = 1 | e_t, y_{t-1} = 0) = \pi_0 + \theta \cdot e_t$$
$$\Pr(y_t = 1 | e_t, y_{t-1} = 1) = \pi_1 + \theta \cdot e_t$$

where $\pi_1 \geqslant \pi_0$. Here, θ is the importance of "hard work," and $\pi_1 - \pi_0$ is the importance of "inheritance".

Note: given parent's income $y_{t-1} \in \{0, 1\}$ and effort e_t, expected income is: $(1 - y_{t-1}) \cdot \pi_0 + y_{t-1} \cdot \pi_1 + \theta \cdot e_t$.

Let average income be Y, and consider a tax rate $\tau \in [0, 1]$. So, individual's consumption is:

$$c_t = (1 - \tau) \cdot y_t + \tau \cdot Y$$

Individual's utility: $u(c_t, e_t) = c_t - \frac{1}{2} \cdot (e_t)^2$. An individual chooses e_t to maximize her expected utility:

$$\begin{aligned} e^* \in \underset{e}{\operatorname{argmax}} \quad & \mathbb{E}[c_t] - \frac{1}{2}(e)^2 \\ & = \mathbb{E}[y_t(1 - \tau)] + \tau \cdot Y - \frac{1}{2}e^2 \\ & = ((1 - y_{t-1}) \cdot \pi_0 + y_{t-1} \cdot \pi_1 + \theta \cdot e) \cdot (1 - \tau) \\ & \quad + \tau \cdot Y - \frac{1}{2}e^2 \end{aligned}$$

Taking first-order condition:

$$e^* = \underbrace{\theta}_{\text{If "hard work" is important, work more.}} \cdot \underbrace{(1 - \tau)}_{\text{If taxes are high, work less.}}$$

Suppose there are H individuals with rich parents and $(1-H)$ individuals with poor parents. Under tax rate τ, the average income is:

$$\begin{aligned} Y &= H \cdot \left(\pi_1 + \theta \cdot e^*\right) + (1-H) \cdot \left(\pi_0 + \theta \cdot e^*\right) \\ &= (H\pi_1 + (1-H)\pi_0) + \theta \cdot e^* \\ &= H\pi_1 + (1-H)\pi_0 + \theta \cdot (\theta(1-\tau)) \\ &= H\pi_1 + (1-H)\pi_0 + \theta^2(1-\tau) \end{aligned}$$

The expected utility of an individual born to poor parents is:

$$\begin{aligned} &(1-\tau) \cdot \left(\pi_0 + \theta \cdot e^*\right) + \tau \cdot Y - \frac{1}{2}\left(e^*\right)^2 \\ &\quad = (1-\tau)\left[\pi_0 + \theta^2(1-\tau)\right] + \tau\left[H\pi_1 + (1-H)\pi_0) + \theta^2(1-\tau)\right] - \frac{\theta^2(1-\tau)^2}{2} \\ &\quad = \tau \cdot H \cdot \pi_1 + (1-\tau H) \cdot \pi_0 + \frac{\theta^2}{2}\left(1-\tau^2\right) \end{aligned}$$

At each period, individuals choose a tax rate. To give the model as much power as possible, suppose individuals are not selfish: they are "Rawlsians" who want to maximize the expected utility of an individual born to poor parents. Then, the most preferred tax rate is:

$$\tau^* \in \arg\max_{\tau} \quad \tau \cdot H \cdot \pi_1 + (1-\tau H) \cdot \pi_0 + \frac{\theta^2}{2}(1-\tau^2)$$

First-order condition:

$$H \cdot \pi_1 - H \cdot \pi_0 + \theta^2(\tau^*) = 0 \Rightarrow \tau^* = \frac{\overbrace{(\pi_1 - \pi_0)}^{\text{If "inheritance" is important, tax more.}}}{\underbrace{\theta^2}_{\text{If "hard work" is important, tax less.}}} \cdot H$$

Let

$$\tau^{eq}(\pi_0, \pi_1, \theta) := \frac{(\pi_1 - \pi_0) \cdot H}{\theta^2}.$$

Most substantially, the setup which Piketty interested in is a world where individuals do not know the real values of (π_0, π_1, θ). Instead, they have beliefs about them: $(\tilde{\pi}_0, \tilde{\pi}_1, \tilde{\theta})$. Our analysis so far still applies, so:

$$\begin{aligned} e^*(\tau^*, \tilde{\theta}) &= \tilde{\theta} \cdot (1-\tau^*) \\ \tau^* = \tau^{eq}(\tilde{\pi}_0, \tilde{\pi}_1, \tilde{\theta}) &= \frac{(\tilde{\pi}_1 - \tilde{\pi}_0) \cdot H}{(\tilde{\theta})^2} \end{aligned}$$

Those who believe in "hard work" work hard, want low taxes, and those who believe in "inheritance" want high taxes.

Next question: Suppose the "true" values are: $(\pi_0^*, \pi_1^*, \theta^*)$. How can an individual believe in $(\tilde{\pi}_0, \tilde{\pi}_1, \tilde{\theta})$?

Answer: As long as the overall "transition probabilities" are consistent, i.e.:

$$\pi_0^* + \theta^* \cdot e^*(\tau^*, \tilde{\theta}) = \tilde{\pi}_0 + \tilde{\theta} \cdot e^*(\tau^*, \tilde{\theta})$$

$$\pi_1^* + \theta^* \cdot e^*(\tau^*, \tilde{\theta}) = \tilde{\pi}_1 + \tilde{\theta} \cdot e^*(\tau^*, \tilde{\theta})$$

where

$$\tau^* = \tau^{eq}(\tilde{\pi}_0, \tilde{\pi}_1, \tilde{\theta})$$

Indeed, one can find many $(\tilde{\pi}_0, \tilde{\pi}_1, \tilde{\theta}) \neq (\pi_0^*, \pi_1^*, \theta^*)$ that satisfy these equations. So, a society can get "stuck" in "wrong" beliefs.

To see the intuition why "wrong" beliefs may persist, consider the extreme where everyone believes $\tilde{\theta} = 0$ (i.e., effort doesn't matter). Then, society will choose $\tau^* = 1$ (full redistribution) and everyone will choose $e^* = 0$ (nobody works). Therefore, the society will never learn the true value of θ^*. In general, other values of $(\tilde{\pi}_0, \tilde{\pi}_1, \tilde{\theta})$ may persist. For instance, see the following figure replicating Figure I of the paper.

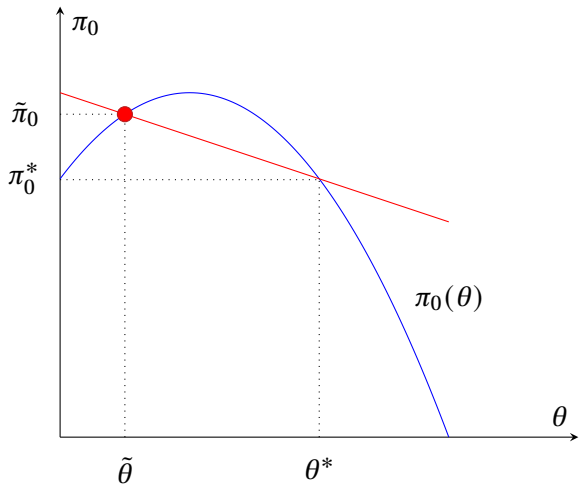


Figure 69.1: The "red point", $(\tilde{\theta}, \tilde{\pi}_0)$, pair may persist.

Based on these results, it could be argued:

- U.S. is an equilibrium where people believe: $\tilde{\theta}$ is high, τ^* is low, e^* is high.

- Europe is in an equilibrium where people believe: $(\tilde{\pi}_1 - \tilde{\pi}_0)$ is high, τ^* is high, e^* is low.

None of them are "irrational".

See Figure 1 from Alesina and Angeletos (2005, AER). Across countries, "Percentage who believe that luck determines income" is strongly positively correlated with "Social spending as percentage of GDP."

Note: Piketty allows for existence of heterogeneous beliefs within a population as well, and derives a result that "explains" his motivating evidence. Even within a society, those who believe luck is important will support high taxes. See Table 2 from Alesina and Angletos (2005, AER). Across individuals, "Individual belief that luck determines income" is a very strong predictor of being left on the political spectrum.

Overall, we have seen:

- expected mobility, and,
- experienced mobility

affect preferences for redistribution, possibly affecting policy and generating interesting feedback loops. Of course, there are many other drivers of preferences on redistribution. This is a rich topic, and deserves more investigation!

3.5 Clientelism, Patronage, and Vote-Buying

We will now turn to a discussion about "electoral politics gone wrong". To this end, we will talk about why electoral politics fail to deliver the type of "nice" policies favored by the median voter. Two salient failures of electoral politics seem to be **clientelism** and **vote-buying**, and they attracted a lot of attention in the literature.

Upfront warning: there is a bit of confusion in the literature about the definition of clientelism and vote-buying. So, let me begin by clearing the air to the best of my ability. (These definitions are not necessarily adopted by all the studies, but at least we will have some clarity.) In my mind,

Definition 70.1 Clientelism *the practice of receiving votes through promising policies that support a narrow group.*

Relatedly, "a clientele" roughly means "group of supporters", so clientelism is promising policies that favor the clientele as opposed to policies that favor everyone.

In general, you may think of clientelism as **targeted redistribution** as opposed to general redistribution.

Definition 71.1 Vote-buying *is offering transfers in exchange of votes.*

So it looks like both clientelism and vote-buying are "offering something in exchange of votes". What is the difference?

In my mind,

> clientelism ↔ promises delivered *after* the election.
>
> vote-buying ↔ transfers made *before* the election.

However, these things are always interlinked, especially when there are repeated interactions... but this is a starting point.

3.5.1 The Theory

Clientelism versus Vote-Buying

Dekel, Jackson, & Wolinsky (2008, JPE) has a similar categorization to what I have. They set up a theoretical model to compare outcomes under:

1. Clientelism (they call this "campaign promises")
2. Vote-buying (they call this "up-front vote buying")

Read the paper if you're interested, but broadly speaking:

- Two candidates, A and B, compete for votes. There are n voters, voter i has payoff: u_i^A if A wins and u_i^B if B wins.
- Suppose A wins if she gets m votes ($m \leqslant n$), otherwise B wins.
- Let w^A be A's payoff from winning and w^B be B's payoff from winning.
- Let $u_i = u_i^A - u_i^B$, and order the voters so that u_i is decreasing in i.
- Let $k = \max\{i : u_i > 0\}$ be the voter with the highest index who votes for A without clientelism/vote buying.

  Note that k is the number of votes A gets without clientelism/vote buying and suppose $k \geqslant m$, so A wins without clientelism/vote buying.
- Finally, let $\bar{u} = \sum_{i=m}^{k} u_i$ be the minimal sum B has to promise to win the election, a measure of A's "electoral advantage".

Under **clientelism**, candidates offer payments to each voter which will be paid if they win.

Suppose A promises c_i^A to voter i and B promises c_i^B to voter i. Voter i votes for A if and only if

$$c_i^A + u_i^A \geqslant c_i^B + u_i^B \iff u_i + c_i^A \geqslant c_i^B$$

The main result is:

> In any equilibrium, B wins if and only if $w^B \geqslant w^A + \bar{u}$.

Under **vote-buying**, candidates make upfront payments before the election.

Suppose A pays p^A and B pays p^B. Voter i votes for A if and only if

$$\begin{gathered} p^A + \Pr(A \text{ wins} | \text{vote for } A) \cdot u_i^A + \Pr(B \text{ wins} | \text{vote for } A) \cdot u_i^B \\ \geqslant \\ p^B + \Pr(A \text{ wins} | \text{vote for } B) \cdot u_i^A + \Pr(A \text{ wins} | \text{vote for } B) \cdot u_i^B. \end{gathered}$$

With many voters, the probability of being pivotal is approximately 0, so i votes for A if and only if $p^A \geqslant p^B$. The main result is:

> In any equilibrium, B wins if and only if $w^B \geqslant w^A + \epsilon$ for some arbitrarily small ϵ, and total payments are at most ϵ.

So... ex ante vs. ex post payments make a difference, and vote-buying hurts voters more than clientelism. But is clientelism (targeted redistribution) bad?

Question: What is inherently bad about targeted redistribution?

Answer: Let's see the following model.

Why is Clientelism Bad?

Lizzeri and Persico (2001, AER) "The Provision of Public Goods under Alternative Electoral Incentives."

Suppose there are two candidates, A and B, and a continuum of voters $V = [0,1]$. Each voter has \$1. There are two policies candidates can offer:

1. Public good: Costs \$1 to produce (which needs to be financed through taxing every voter by \$1), gives a benefit of $G > 1$ to all voters.

2. Targeted transfers: Politician can offer money to some voters, which need to be financed through taxing other voters. Formally, a redistribution scheme is a function $\Phi : V \to [-1, \infty)$ such that

$$\int_0^1 \Phi(v)\, dv = 0$$

(budget balance condition).

Voter v's utility from a candidate is linear in money and public good:

$$\begin{cases} G, & \text{if candidate offers public good} \\ \Phi(v) + 1, & \text{if candidate offers redistribution scheme } \Phi. \end{cases}$$

Voters vote for the candidate who offers higher utility; the candidate with more votes wins.

Note: Because $G > 1$ and utility is linear in money (i.e., redistribution does not generate welfare, it only reallocates), the utilitarian efficient thing to do is to offer the public good.

But do candidates offer the public good in equilibrium?

Results:

1. If $G > 2$, in the unique equilibrium, both candidates offer the public good.

   To see why, suppose A offers the public good. If B also offers the public good, they tie; if B offers redistribution, they cannot offer more than $G-1$ to more than half of voters, and thus lose.

2. However, if $1 < G < 2$, there is no equilibrium in pure strategies. That is, there is no equilibrium where candidates only offer public goods or only offer redistribution. Instead, both candidates mix between offering public goods and redistribution.

   To see why, suppose A offers a public good with probability 1. B can offer more than $G - 1$ to more than half of the voters by fully taxing the rest.

   Suppose A offers a redistribution scheme Φ_1. B can find a set of voters V_1, small enough and $\Phi_1(v) > -1$ for all $v \in V_1$. Then, B can offer $\Phi_2(v) = -1$ for all $v \in V_1$ and $\Phi_2(v) = \Phi_1(v) + \epsilon$ to the rest.

   In either case, B can win for sure. Thus this cannot be an equilibrium, because there must be a tie in equilibrium.

Overall, when $1 < G < 2$, public goods are efficient, but they are not always offered by parties because targeted redistribution is more effective in getting votes.

This model is the formulation of the "classical argument" on why targeted redistribution/clientelism is bad: it can crowd away public goods.

3.5.2 Do Voters Expect Clientelism?

Clientelism in Benin

Question: Do voters expect clientelist behavior from politicians? After all, we are covering "voter preferences and behavior", so we have to ask this question.

Answer: Yes, at least in Benin, according to the following papers.

Wantchekon (2003, World Politics) is a seminal paper. Setting: 2001 Presidential Elections in Benin. Wantchekon convinced the presidential candidates to offer "public policy" platforms in some villages & "clientelist" platforms in others, before the election. Messages delivered by campaign workers.

Example of a clientelist platform: see the paper, page 410.

> A clientelist meeting took place in Tissierou on February 2, 2001. The meeting started with the following introduction by our local team: "We are the representatives of the candidate Saka Lafia, who is running for president in the March 3, 2001, election. As you know, Saka is the only Bariba candidate, actually the first since 1960. Saka is running because the northeast region, Borgou-Alibori, is very underdeveloped: low literacy rates, poor rural infrastructure and health care, etc .... If elected, he will help promote the interests of the Borgou-Alibori region, by building new schools, hospitals, and roads and more importantly, hiring more Bariba people in the public administration."

Example of a public policy platform: see the paper, page 411.

> The following day, the team went to Alafiarou and held the public policy meeting: "We are representative of Saka Lafia, our party the UDS stands for democracy and national solidarity. Saka is running the opposition candidate in the North. If elected, he will engage in a nationwide reform of the education and health care system with emphasis on building new schools, new hospitals, and vaccination campaigns. In conjunction with other opposition leaders, we will fight corruption and promote peace between all ethnic

groups and all the regions of Benin." The introductory statement was followed by a discussion period during which detailed explanations were provided on the public policy or clientelist platforms of the parties.

Note: perhaps most impressive thing about this paper of that Wantchekon convinced the presidential candidates to go along with it... This was because the experiment was mostly run in the districts where a candidate was supposed to win comfortably. This does not invalidate the results, of course, but we have to be careful before generalizing them.

Outcome: After the election, they ran a survey in the villages exposed to messages.

Results: See Table 2 and Table 3.

- Clientelist platforms "work" in garnering votes.
- In general, public policy platforms are punished (even more in regions where the candidate is incumbent & is a local), and clientelist platforms are rewarded (more when delivered by opposition).

Bottom line: Voters expect clientelism from politicians, especially from local ones.

Fujiiwara and Wantchekon (2013, AEJ:Applied) is a follow-up paper. The authors run a comparable experiment in Benin before the 2006 elections where candidates deliver public-policy messages, with two differences:

1. They hold "town-hall meetings" in villages,
2. At the end of the meeting, concrete proposals were made.

Results: See Table 2 and Table 3.

- Clientelist behavior is reduced!
- First candidate loses votes, others gain.
- The dominant candidate loses votes if he delivers a public policy message.
- Non-dominant candidate gains votes.

Overall, the picture is consistent, with a little nuance added: voters expect clientelistic behavior from strong candidates and punish them when they do not.

Why strong candidates? Maybe strong candidates are more "credible" in targeting redistribution, or maybe public deliberation generates information and electoral competition, which hurts them.

So, we established that voters expect clientelism in Benin. Is this because there is something specific about Benin? Probably not (it is indeed one of the most functional democracies in Africa), but it is true that support for clientelism depends on the general context. For an example, let us see the following paper.

Clientelism in Brazil

In Bobonis, Gertler, Gonzales-Navarro, and Nichter (2022, AER), the authors randomly reduce some people's vulnerability (through a randomized treatment where they build water cisterns in Brazil) and show:

Reduced vulnerability $\implies$ decrease in requests for private goods from politicians and decrease in vote share for incumbents.

But also, it should be noted that clientelism is very prevalent in richer societies as well. For instance, consider the following paper.

Clientelism in the US

Folke, Hirano and Snyder (2011, APSR) consider a particular form of clientelism in the US: "patronage jobs", which are civil service jobs primarily offered to the clientele as a reward. This was a very widespread practice in the first half of the 20th century, until the passage of civil service laws (which offer job protection to civil service workers, make firing/hiring more difficult and thereby reducing clientelism).

The authors show: after the passage of a civil service law, incumbency advantage reduces (i.e., party in power is less likely to win elections in the next cycle), which is an electoral cost of not having access to clientelist policies.

3.5.3 Clientelism and Patronage

Question: How does clientelist exchange of votes & favors work in practice?

Answer: It holds to reason that when policies are easier to target, clientelism should prevail. Moreover, policies are easier to target in more hierarchical societies, where one person can control many and deny favors as he desires.

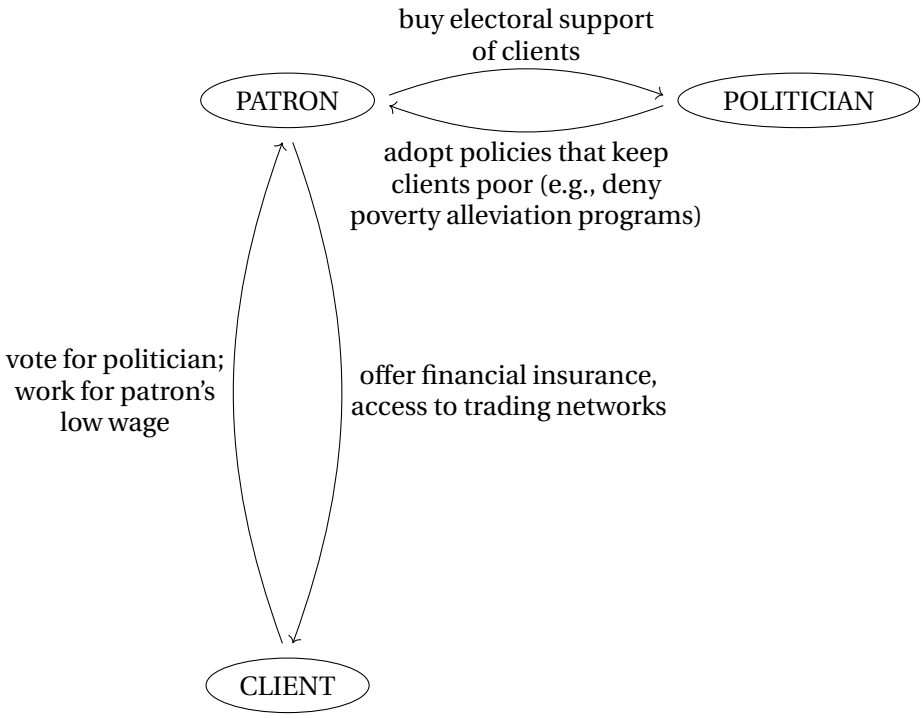
Clientelism and Patronage in India

Anderson, Francois, and Kotwal (2015, AER) is a fantastic paper where the authors run some surveys in India and show that: clientelism works through patron-client networks in rural India.

Here, **patrons** are elite landowners who have access to political connections and financial capital. **Clients** are non-elite peasants who are in the majority.

(Perhaps this is not the perfect analogy, but think of "ağalık" in Turkey.)

Anderson, Francois & Kotwal demonstrate the existence of the following network:



Overall, such **patronage networks** seem to be an important device upon which clientelism exists.

Patronage in Chile

A similar story on patronage networks & clientelism appears in Baland and Robinson (2008, AER). The authors study such a network in Chile, before and after the 1958 electoral reform that introduced secret ballot.

Before 1958, patrons could easily monitor who voted for what party (most importantly, they could make a peasant's life much more difficult if they didn't vote for the landlord's favorite party). But, after 1958 they could not.

See the extremely striking Figure 1. ("inquilinos" = a worker working on a farm owned by a landowner.) After 1958, patron-client networks do not predict right-wing vote share!

For another (perhaps even more) striking figure, see Figure 1 and 2 in Baland & Robinson (2012, AJPS). After the reform, land prices drop! (Land becomes less valuable, because it does not grant political power any more.)

3.5.4 Vote-Buying

Ok... so long with clientelism and patronage. What about vote-buying?

As you have seen, some of the patronage politics really rely on vote-buying, so it is impossible to make a clear distinction – we already covered vote-buying a bit. Still, to elaborate a bit more, let us continue with the following set of papers.

Vote-Buying in Argentina

Stokes (2005, APSR) runs a survey in Argentina about voters' experience in 2002 elections. (Context: the Peronist party [founded in 1940s] has a strong clientelist network.) See the following excerpt from page 318 in the paper:

> **Husband**: Here it's different than in Córdoba [the nearest big city]. Here they know everyone. And they know whom everyone is going to vote for.
> **Author**: When people come and give things out during the campaign, are they people whom you know?
> **Husband**: Yes, they're people from here, they're neighbors. Here everyone knows each other. "Small town, big hell." (Pueblo chico, infierno grande.)
> **Author**: Do they know how you voted?
> **Husband**: For many years we've seen, people will say, "So-and-so voted for so-and-so." And he wins, and they come and say, "You voted for so-and-so." I don't know how they do it, but they know.
> **Wife**: We were at the unidad básica [a neighborhood Peronist locale] and they say to me, "[Your cousin] voted for Eloy" [the given name of a Radical-party candidate]. And I asked my cousin, "did you vote for Eloy?" And she said "yes"! They knew that my cousin had voted for Eloy!

Results: See Table 3. Peronists target:

- poor people,
- less educated,
- people in smaller regions (presumably because monitoring is easier).
- and... Peronist sympathizers?
  - Why would you buy the vote of someone who is already supporting you? Maybe because the party imperfectly targets voters, maybe because voters have motivated beliefs...

Nichter (2008, APSR) has another idea: maybe the Peronist party does not buy votes... it just buys turnout (i.e., it targets "mild Peronists" who may not go to voting booth without payment, but if they go, they vote for the Peronist party).

This makes sense, because turnout is much, much easier to monitor than vote. Turnout buying results in Peronists receiving payments from the Peronist party. See Figure 5 in the paper, which shows supporters are much more likely to receive rewards than opposers.

Vote-Buying versus Turnout-Buying

Gans-Morse, Mazzuca, and Nichter (2014, AJPS) offers a general framework to incorporate vote-buying and turnout-buying. The following Table is their Figure 1.

		Political Preference of Recipient vis-à-vis Party Offering Goods	
		Indifferent or Favors Opposition	**Favors Party**
Recipient Inclined to Vote or Not Vote	**Inclined Not to Vote**	Double Persuasion	Turnout Buying
	Inclined to Vote	Vote Buying, Abstention Buying	Rewarding Loyalists

Table 79.1: Strategies for Distributing Targetable Goods

They have a very nice simple model where citizens vary

1. in their intensity of preferences,

2. in their cost of voting.

In the absence of transfers, Figure 2 happens. A transfer increases the payoff of voting for M (party with machine politics), shifting a voter to the right in this graph. See Figure 3.

The authors use this framework to study what happens under different environments, such as: "What happens if secret ballot is introduced?" See Figure 4.(b). Vote-buying decreases: This is consistent with Baland & Robinson.

Vote-Buying in Paraguay

The general insight from vote-buying literature is: given that the transfers are made before, vote-buying is difficult. There is always a risk that the voter receives the payment and then reneges.

However, we still see a lot of vote-buying in practice... How do parties manage to garner support?

1. Small, hierarchical networks.
2. By having local "political middlemen/brokers" choose who to target.

Finan and Schechter (2012, Ecma) studies such people in Paraguay, in a fantastic paper titled "Vote-buying and Reciprocity".

In 2002, they go run a survey in villages, ask people questions, and make them play trust games to measure their reciprocity.
Trust game:

- First mover is given 8000, can send a fraction to second mover.
- Whatever first mover sent to second mover is tripled.
- Second mover can keep all or return some.

Second movers who send back more when first mover sends a lot are the **reciprocal people**.

In 2007, the authors ask the same people about voting and vote-buying.

In 2010, they interview the middlemen (village leaders).
Main Findings:

1. Table II: Middlemen know the villagers remarkably well.

2. Table III: Middlemen target reciprocal people. 1 standard deviation increase in reciprocity $\implies$ 9.6 percentage points increase (42.1% increase) in the likelihood of being targeted.

   Why? Because reciprocal people are less likely to renege, especially when they already received a transfer.

What did I say? Fantastic paper.

3.5.5 Taking Stock

All in all,

- There are theoretical reasons to expect that clientelism and vote-buying leads to inferior political outcomes (by crowding out public goods).
- Still, they exist and are sustained by intense patronage networks or by political middlemen who exploit social networks,
- People expect clientelist policies from politicians.

What can be done to overcome such practices?

- Public deliberation (Fujiiwara and Wantchekon 2013)
- Alleviating poverty (Bobonis et al. 2022)
- Reducing monitoring power of patrons (Baland and Robinson 2008)

  ⋮

- Schechter and Vasudevan (2023, JDE) show: in 2014 Indian elections, simple interventions like radio campaigns was effective in convincing voters to move away from vote-buying.

  Simple information interventions is also the focus of Cruz, Keefer and Labonne (2021, EJ). The authors show, via two experiments in Philippines, that information campaigns help the voters keep the politician responsible, **but** the politicians can counteract this force by intensifying their vote-buying. So, we have to be careful in designing interventions.

  We will revisit the issue of "informing voters" later in Section 4.2.

3.6 Populism

Before we wrap up our discussion on voter behavior, I would like to discuss one last topic on why electoral politics can go wrong.

It is a very timely and trendy topic: Populism!

All around the world, we see the rise of populist politicians, especially after the 2008 economic crisis. Consequently, it has also been a very popular research topic. See, e.g.:

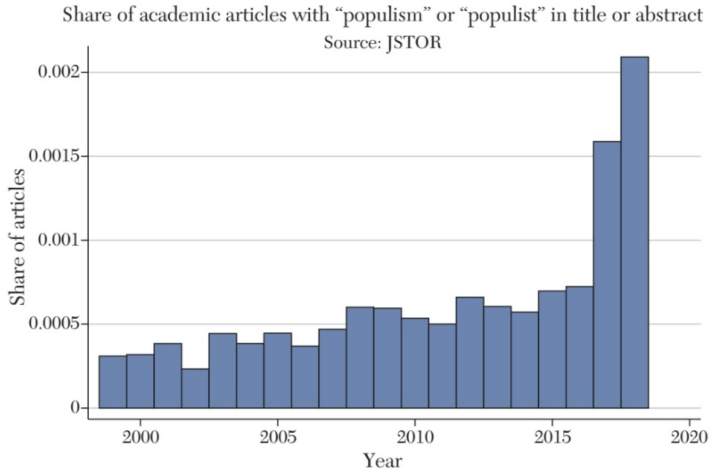


Figure 82.1: Mentions of Populism over Time in Academic Research, Figure 2 from Guriev and Papaioannou (2020, JEL)

To be honest, "political economy of populism" is a topic that deserves its own course. I am not sure if I will ever be able to do it justice here. If you are interested, Guriev and Papaioannou (2020, JEL) is an excellent review article.

Here, we will briefly discuss what makes a populist politician "populist", and what drives voters into supporting populist politicians—even though it may not be in their best interests. We will also discuss some key insidents in the rise of the populist right.

But let's begin with a definition... **What is populism**?

To be honest, it is not easy to define populism in a satisfactory manner:

1. It is an "umbrella" term that includes:
    - left-wing populists (Chavez, Peron, Tsipras, Sanders...)

- right-wing populists (Trump, Orban, Boris Johnson...)
- +
- (sometimes) anti-immigrant sentiments (Le Pen...)
- (sometimes) conservativism
- (sometimes) extreme liberalism (Wilders...)
- (most times) authoritarianism

Here's the best definition in my opinion (from Guriev and Papaioannou 2022, p. 757):

> Our preferred definition of populism is the one introduced by Cas Mudde. Mudde (2004, 2007) and Mudde and Rovira Kaltwasser (2017) define populism as a "*thin-centered ideology*" that considers society to be ultimately separated into two homogeneous, antagonistic groups: "*the pure people*" and "*the corrupt elite*'.

So,

Definition 83.1 *Populism is the discourse of relying on the "morally superior, pure people versus corrupt elites".*

This brings us to the second reason why it is difficult to define populism.

2. It is a reactionary ideology: it is defined as the negation of something (elites, immigrants, EU, ...).

   Reactionary implies "thin centered": it is difficult to write a manifesto of populism without referring to the context. (For example, think of "Make America Great Again"... it does not make a lot of sense out of context.)

   Also, the reactionary nature of populism explains why it rises after

   - economic crises
   - big immigration waves
   - huge economic shocks (trade shocks, automation ...)
   - wars

     ⋮

However, note: this "people vs. elites" narrative is the core part of left-wing vs. right-wing populists. (It is maybe the only thing Sanders and Trump have in common.)

In left-wing (Latin America style) populism, this sentiment is coupled with huge redistribution policies, at the expense of almost any other economic activity. In right-wing (US / Trump-style) populism, it is coupled with anti-immigrant policies.

3.6.1 Why Do Voters Vote for Populist Politicians?

Let's talk about left-wing populism a bit. Here is a more "old school" definition from Guriev & Papaioannou, p. 758:

> Economic Populism. - These definitions differ substantially from the one that has been used in economics until recently. As formulated by Dornbusch and Edwards (1991), populism is "an approach to economics that emphasizes growth and income redistribution and de-emphasizes the risks of inflation and deficit finance, external constraints and the reaction of economic agents to aggressive nonmarket policies." This definition described well the pro-redistribution Latin American populist movements dating back to Juan Peron in Argentina and Getúlio Vargas in Brazil. This vintage has not disappeared, as the recent examples of Nestor and Christina Kirchner, Chavez, Morales, and Correa illustrate. But this paradigm has not been very successful electorally in Western economies, except for SYRIZA in Greece.

Note, however, that these policies typically go "too left". From Acemoglu, Egorov, and Sonin (2013, QJE, p.772):

> Given the high levels of inequality in many of these societies, political platforms built on redistribution are not surprising. But populist rhetoric and policies are frequently to the left of the median voter's preferences, and such policies may arguably harm rather than help the majority of the population. In the context of macroeconomic policy, Rudiger Dornbusch and Sebastian Edwards (1991) emphasized this "left of the median" aspect of populism and wrote:
>
> > Populist regimes have historically tried to deal with income inequality problems through the use of overly expansive macroeconomic policies. These policies, which have relied on deficit financing, generalized controls, and a disregard for basic economic equilibria, have almost unavoidably resulted in major macroeconomic crises that have ended up hurting the poorer segments of society. (p. 1)

So the question is: **Why do voters vote for populist politicians** (especially if they offer policies different than the median voter's policy)? Given our discussion so far, the "people vs. elites" dichotomy should be a part of the answer.

Acemoglu, Egorov, & Sonin (2013, QJE) crafts a nice narrative. In a nutshell, their theory is: Politicians prove they are not a part of the elite by adopting policies far away from the elites' preferred policies.

To be clearer, Acemoglu, Egorov, & Sonin's definition is:

Definition 85.1 *Populism is adopting a policy to the left of median voter's ideal policy, but still popular.*

The Model

- Two periods: $t \in \{1, 2\}$
- One-dimensional policy space: $\mathbb{R}$

Voters

- Two groups of voters:
  1. Majority (poor), most preferred policy: $\gamma^p = 0$ (can allow heterogeneous preferences with median voter at 0.)
  2. Minority (elite), most preferred policy: $\gamma^r = r > 0$
- Voters only care about policy.
- Suppose (x_1, x_2) is implemented in periods $t = 1, 2$. Then, voter with most preferred policy γ gets:

$$u(x_1, x_2) = -(x_1 - \gamma)^2 - (x_2 - \gamma)^2$$

Elections

- Elections are decided by median voter, who is poor.

Politicians

- Two types of politicians:
  1. Share μ has $\gamma = 0$ ("moderate")
  2. Share $1 - \mu$ has $\gamma = r$ ("right-winger")

  Type not observable to voters.

- Politician with most preferred policy γ, if policy x is implemented in a period, gets:
$$v = -\alpha \cdot (x - \gamma)^2 + W \cdot \mathbf{1}_{\{\text{in office}\}}$$

Timing

1. Politician chooses $x_1 \in \mathbb{R}$.
2. Voters observe noisy signal $s = x_1 + z$.
3. Median voter decides whether to replace current politician with a random one drawn from the pool.
4. The second-period politician (incumbent or new one) chooses $x_2 \in \mathbb{R}$.
5. Everyone observes (x_1, x_2), gets payoffs.

Equilibrium

- Perfect Bayesian Nash Equilibrium in pure strategies.

  (because politician types and policies are not observed, this is an incomplete information game)

Suppose: noise z is drawn from:

$$z \sim f, \text{ with support on } (-\infty, \infty) \text{ with cdf } F.$$

$f(z)$ is symmetric around 0, $f'(z) < 0$ for all $z > 0$.

Analysis

In period 2, because there is no follow-up, each politician chooses her favorite policy:

- moderate $\Rightarrow x_2 = 0$
- right-wing $\Rightarrow x_2 = r$.

Foreseeing this, median voter likes to have a moderate politician in period 2.
$\Longrightarrow$ incumbent is reelected if and only if

$$\Pr(\text{incumbent is moderate} \mid s) \geqslant \mu.$$

Now, let's go to period 1. Suppose, in equilibrium:

- moderate $\Rightarrow$ chooses $x_1 = a^*$
- right-wing $\Rightarrow$ chooses $x_1 = b^* > a^*$.

(In the paper they show this is always the case.)
Under these strategies, if the median voter gets signal s, her posterior is:

$$\Pr(\text{incumbent is moderate} \mid s) = \Pr(x_1 = a^* \mid s)$$

Using Bayes' rule:

$$\begin{aligned}
&\Pr(\text{incumbent is moderate}|s) \\
&\qquad = \frac{\Pr(s|x_1 = a^*) \cdot \Pr(x_1 = a^*)}{\Pr(s|x_1 = a^*) \cdot \Pr(x_1 = a^*) + \Pr(s|x_1 = b^*) \cdot \Pr(x_1 = b^*)} \\
&\qquad = \frac{\Pr(z = s - a^*)\mu}{\Pr(z = s - a^*)\mu + \Pr(z = s - b^*)(1 - \mu)} \\
&\qquad = \frac{f(s - a^*) \cdot \mu}{f(s - a^*) \cdot \mu + f(s - b^*) \cdot (1 - \mu)}
\end{aligned}$$

Let

$$\hat{\mu} := \frac{\mu \cdot f(s - a^*)}{\mu \cdot f(s - a^*) + (1 - \mu) \cdot f(s - b^*)}.$$

Recall: median voter reelects incumbent if and only if $\hat{\mu} \geqslant \mu$, i.e., if and only if:

$$\frac{\mu \cdot f(s - a^*)}{\mu \cdot f(s - a^*) + (1 - \mu) \cdot f(s - b^*)} \geqslant \mu$$

Given the symmetry of f, this is true if and only if $s < \frac{a^* + b^*}{2}$.

So... suppose the median voter expects a:

- Moderate politician to choose $x_1 = a^*$.
- Right-wing politician to choose $x_1 = b^*$.

  $\implies$ she reelects if and only if $s = x + z < \frac{a^* + b^*}{2}$.

Then, if a politician chooses $x \in \mathbb{R}$, the reelection probability is:

$$\Pi(x) := \Pr\left(x + z < \frac{a^* + b^*}{2}\right) = \Pr\left(z < \frac{a^* + b^*}{2} - x\right) = F\left(\frac{a^* + b^*}{2} - x\right).$$

Then, if a moderate politician chooses $x \in \mathbb{R}$, she gets:

$$W - \alpha \cdot x^2 + W \cdot \Pi(x) - (1 - \mu) \cdot \alpha \cdot r^2 \cdot (1 - \Pi(x))$$

where

- W is first period office payoff,
- $-\alpha \cdot x^2$ is first period policy payoff,

- $W \cdot \Pi(x)$ is second period office payoff (if reelected),
- and $-\alpha \cdot r^2 \cdot (1 - \Pi(x))$ is second period policy payoff ($\neq 0$ if and only if a right-wing politician is elected).

Similarly, if a right-wing politician chooses $x \in \mathbb{R}$, she gets:

$$W - \alpha \cdot (x - r)^2 + W \cdot \Pi(x) - \mu \cdot \alpha \cdot r^2 \cdot (1 - \Pi(x))$$

Given the behavior of median voter, moderate politician chooses:

$$\max_x \{-\alpha \cdot x^2 + W \cdot \Pi(x) - (1 - \mu) \cdot \alpha \cdot r^2 \cdot (1 - \Pi(x))\}$$

The first order condition is:

$$-2\alpha x - W \cdot f\left(\frac{a^* + b^*}{2} - x\right) - (1 - \mu)\alpha r^2 \cdot f\left(\frac{a^* + b^*}{2} - x\right) = 0.$$

In equilibrium, this must hold when $x = a^*$, so we need:

$$-2\alpha a^* - f\left(\frac{b^* - a^*}{2}\right) \cdot (W + (1 - \mu) \cdot \alpha \cdot r^2) = 0 \tag{88.1}$$

Equation 88.1 yields a as a function of b, i.e., a curve like $a(b)$. See Figure 88.1.

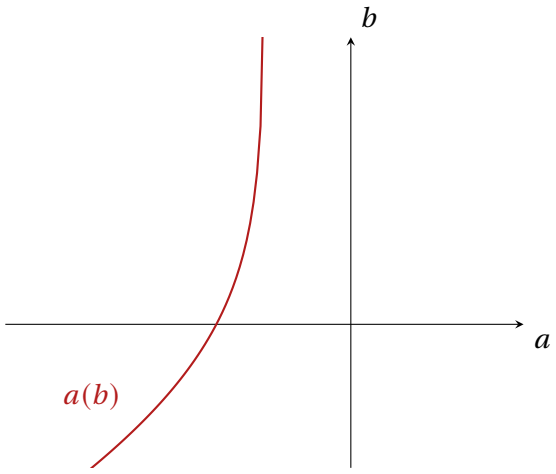


Figure 88.1: Figure of $a(b)$.

Similarly, right-wing politician chooses:

$$\max_x \{-\alpha \cdot (x - r)^2 + W \cdot \Pi(x) - \mu \cdot \alpha \cdot r^2 \cdot (1 - \Pi(x))\}$$

So, the first order condition is as follows:

$$-2\alpha \cdot (x - r) - W \cdot f\left(\frac{a^* + b^*}{2} - x\right) - \mu \cdot \alpha \cdot r^2 \cdot f\left(\frac{a^* + b^*}{2} - x\right) = 0$$

In equilibrium, this must hold when $x = b^*$, so we need:

$$-2\alpha(b^* - r) - f\left(\frac{a^* - b^*}{2}\right) \cdot \left[W + \mu \cdot \alpha \cdot r^2\right] = 0 \tag{89.1}$$

This Equation 89.1 gives us the $b(a)$ curve. See Figure 89.1.

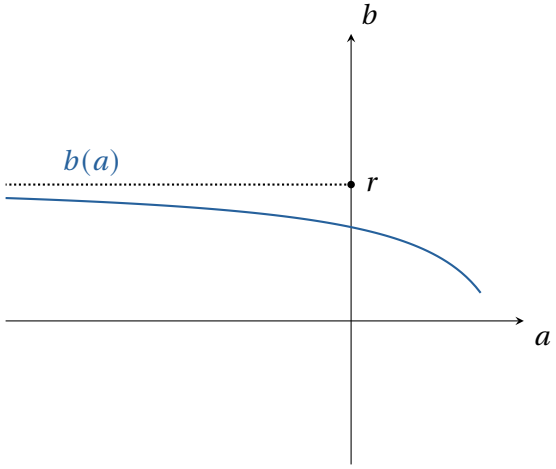


Figure 89.1: Figure of $b(a)$.

Now, by putting Figure 88.1 and Figure 89.1 together, we obtain Figure 90.1.

Note: In equilibrium,

- $a^* < 0 \Rightarrow$ moderate politician chooses a policy that is to the left of the median voter.

  Intuition: choosing $x_1 < 0$ rather than $x_1 = 0$ reduces policy payoff (second order) but increases reelection chance (first order).

- $b^* < r$ due to the same reason. So, this also moves a^* further left.

Basically, politicians adopt further left policies to avoid seeming right-wing.

Note: This argument is true even if $W = 0$ (reelection is still valuable to influence second period policy), but the bias becomes more severe with high W.

Equilibrium shifts left if W increases (with large enough W, we may even have $b^* < 0$.) As you can see, one can conduct comparative statics exercises with

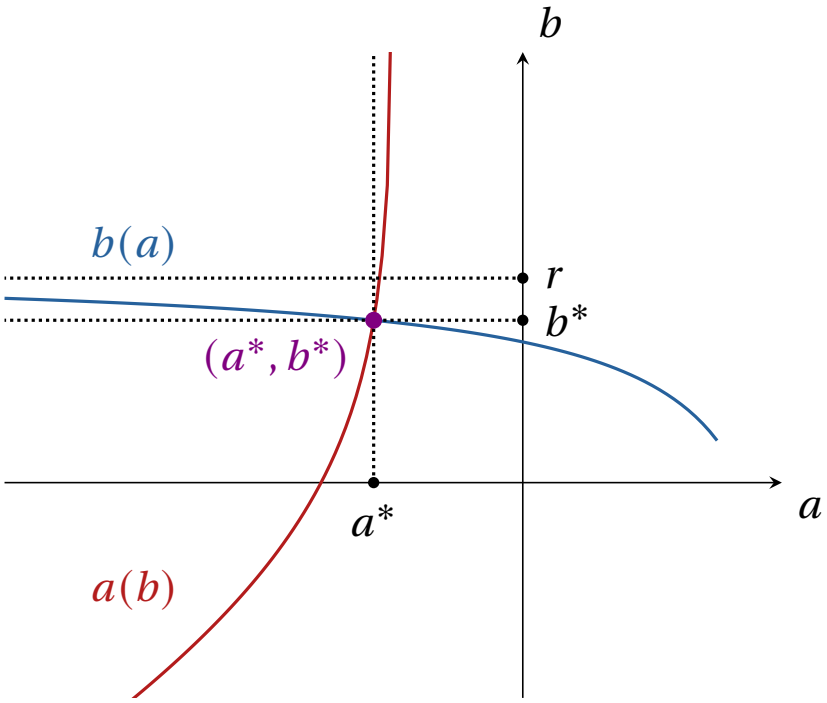


Figure 90.1: Figure of $a(b)$ and $b(a)$ combined. (a^*, b^*) is the equilibrium.

this model.

Acemoglu, Egorov, & Sonin show:

- As W increases, populist bias increases. (high office rents ...)
- As α decreases, populist bias increases. (costlessly adapting position ...)
- As μ decreases, populist bias increases. (rare occurrence of moderate politicians ...)
- (under additional conditions on F) As r increases, populist bias also increases. (polarization ...)

  All lead to populist bias!

Okay... this was a cute model to discipline our thinking on left-wing populism. How about right-wing populism? This is a growing area that is still ripe, because we need good models to understand "identity politics". Recall the discussion in Section 3.2.5.

Instead of going into the details of theory, I want to talk about an interesting empirical paper on a recent, influential right-wing populist movement in the

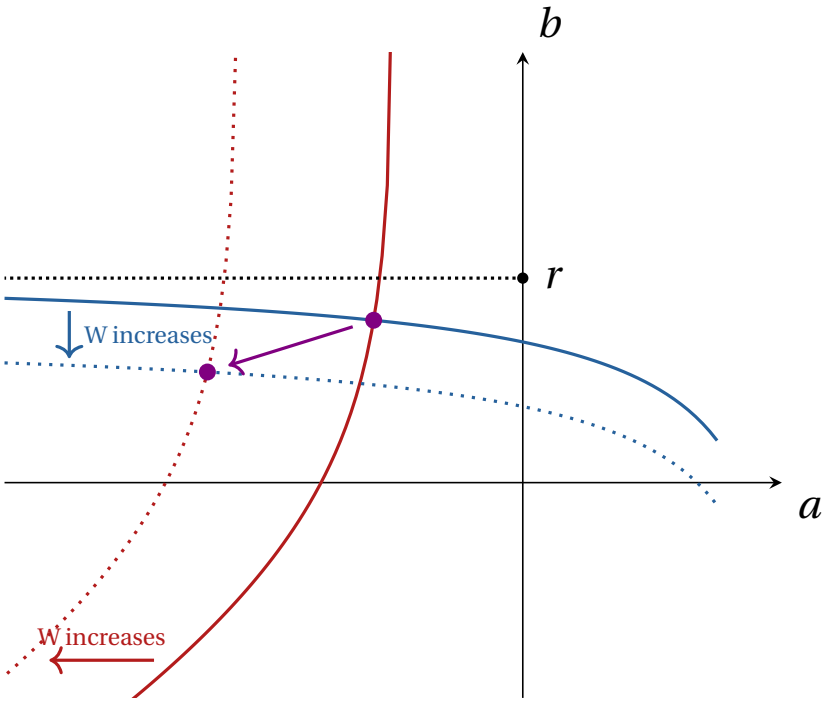


Figure 91.1: Higher W increases populist bias.

US: the "Tea Party" movement. As you recall, Tea Party is a conservative-populist movement that started out in 2009 and gained significant traction. The 2016 election of Trump is linked to the rise of this movement.

3.6.2 How Do Populist Movements Grow?

In Madestam, Shoag, Veuger, and Yanagizawa-Drott (2013, QJE) the authors try to understand how Tea Party movement gained influence in the US politics.

In particular, on April 15, 2009, Tea Party organized coordinated rallies across the country (there were more than 700 rallies on that day, see Figure I in the paper).

Question: how does participation of rallies impact political outcomes? (i.e., if a city has more participation, does it have more conservative policies adopted later on?)

The challenge, of course, is that participation is endogenous; more conservative cities tend to have more participation. So... one needs to find an instrument for rally participation.

$$\underbrace{D}_{\text{instrument}} \rightarrow \underbrace{X}_{\text{participation}} \rightarrow \underbrace{Y}_{\text{political outcomes}}$$

Here, D should not affect Y directly, only through X (exclusion restriction).

The authors use the "rainfall instrument" which you should recall from Section 3.2.3. The idea is: in some cities, there was rain on April 15, 2009. Arguably, this affected participation. But also arguably, this doesn't affect political outcomes directly.

Some results:

- See Table II. Rainfall in 2009 is indeed "random"; it is not related with political outcomes in 2008.
- See Table III. Rainfall reduced participation in rallies.
- See Table VI. Rainfall had an impact on voting outcomes!
- The authors estimate:
  - 0.1 percentage point increase in population protesting $\implies$ 1.9 percentage points increase in Republican vote share (huge multiplier!)
  - See Table VII. Rainfall also impacted adopted policies!

As I said, populism is a very fresh and rapidly growing study area. See the JEL paper and the references therein if interested, and also see Danieli, Gidron, Kukuchi, and Levy (2022) "Decomposing the Rise of the Populist Radical Right".

Next up: politicians and policy-making. (To be honest, Acemoglu-Egorov-Sonin paper was already an intro to that.)

Chapter 4

Politicians and Policy-Making

4.1 Political Agency

So far in this class, we talked about representation (elections as preference-aggregating machines/mechanism to choose policies). Now, it is time to talk about accountability (elections as a mechanism to discipline politicians).

This literature tends to think of:

- Voters as principals (bosses)
- Politicians as agents (workers)

The terminology is borrowed from mechanism design literature. Hence the title: "political agency". In my opinion, the best resource on the theoretical treatment of political agency is the (now canonical) book:

- Besley (2006), "Principled Agents? The Political Economy of Good Government"
- But also see: Chapter 12 in Gehlbach and Chapter 4 in Persson-Tabellini.

Another way to think about political agency is to think of it as the study of "post-election politics": we study what happens after a politician spends time in office.

- Do the voters "punish" the politicians?
- When/how?

These models rely on the idea of "retrospective voting" (as opposed to "prospective voting"): Voters vote based on past performance, rather than electoral promises. This necessitates the use of dynamic models with multiple periods... So our models will be slightly more complicated.

4.1.1 Barro-Ferejohn Model[1]

This is the workhorse model of political agency, named after independent papers by Barro and Ferejohn. What we are about to cover is much closer to Ferejohn (1986).

The math idea of Barro-Ferejohn model is simple: it is a "moral hazard" model.

- Current leader has power today. So she can allocate resources as she wishes, allowing her to extract rents.
- But... citizens can kick the politician out in the next election, giving them some control over politics even though they cannot directly control policies.
- In equilibrium, citizens provide just enough rent to the politician so that the threat of being kicked out is effective. Thus, she doesn't misbehave too badly.

The Model

- Infinite horizon: $t = 0, 1, 2, \ldots$
- Discount factor $\delta \in (0, 1)$.
- One (representative) citizen, one politician per period.
- Each period:
  1. Output y produced.
  2. Incumbent politician decides how much output to devote to public good g.

     Politician payoff: $y - g + R$

     (R is office rent, which is exogenous. $y - g$ is the politician consumption, which is endogenous rent, think of this as the resources embezzled by the politician for her own projects).
  3. Citizen observes g, decides whether to re-elect incumbent for next period or choose new leader (who has identical preferences, suppose a replaced incumbent never comes back).

We will look for a Subgame Perfect Nash Equilibrium (SPNE) of this game.

[1] Due to Barro (1973, Public Choice) and Ferejohn (1986, Public Choice).

Analysis

Observation: An incumbent can always grab entire output today and (at worst) get fired. Therefore, an incumbent can guarantee a payoff of $R + y$; at least this much rent must be left to the politician. So, an upper bound on citizen's lifetime payoff is:

$$\underbrace{\frac{1}{1-\delta}(R+y)}_{\text{the "total surplus" in this economy}} - \underbrace{(R+y)}_{\text{rent that must be left}} = \frac{\delta(R+y)}{1-\delta}.$$

Another upper bound on citizen's lifetime payoff:

$$\underbrace{\frac{1}{1-\delta}y}_{\text{if the politician never embezzled}}.$$

Thus, overall upper bound on citizen's lifetime payoff:

$$\frac{1}{1-\delta}\min\{\delta(R+y), y\}$$

Barro & Ferejohn's contribution is constructing a simple SPNE where the citizen receives the best possible payoff. Consider the following strategy by the citizen:

"I will only consider what you have done in the most recent period (retrospective voting).

- if $g \geqslant g^* := \min\{\delta(R+y), y\}$, I will reelect.
- if $g < g^*$, I will replace you."

The politician's best response to this strategy is choosing $g = g^*$ every period. Why?

Choosing $g = g^*$ every period gives:

$$\frac{R+y-g^*}{1-\delta}$$

Is there a profitable deviation? By the "one-shot deviation principle" (remember your game theory class), it is sufficient to check one-shot deviations.

1. $g > g^*$ and revert back? $\implies$ lower payoff.
2. $g < g^*$ and revert back? $\implies$ given she will be fired anyway, best she can do is $g = 0$, which gives $R + y$.

So, for the politician to choose $g = g^*$, we need:

$$\frac{R+y-g^*}{1-\delta} \geqslant R+y \iff \frac{g^*}{1-\delta} \leqslant \frac{\delta}{1-\delta}(R+y)$$
$$\iff g^* \leqslant \delta \cdot (R+y)$$

which holds by definition. Moreover, as long as each politician chooses $g = g^*$ every period, clearly, the citizen is best-responding. So, there is a SPNE where politician delivers $g = g^*$ every period. In this SPNE, citizen's lifetime payoff is:

$$\frac{1}{1-\delta} g^* = \frac{1}{1-\delta} \min\{\delta(R+y), y\},$$

which is the best she could hope for!

Comparative Statics: in the best SPNE, citizen's per-period payoff g^*:

- increases in δ (more patient/forward-looking)
- increases in R (more rent means politician cares more)
- increases in y.

Note: Ferejohn considers a model where the cost of providing public good is private info of the politician... I will ask it as a homework question.

The good thing about the Barro-Ferejohn model: it captures the essence of the issue (in equilibrium, some rent should be allowed to keep politicians from stealing everything).

But... there are some unsatisfactory aspects.

- There are many equilibria of this game, how can we make sure best SPNE prevails?
- What if politician reneges and steals more than says: "sorry, just reelect me, I promise to behave well in the future"... the next politician would then extract $R + y - g^*$ anyway.

  This is especially a problem if there is a cost $\epsilon > 0$ of replacing a politician... the equilibrium would break down, because the threat of replacement is not credible.

  (A)fter all, all politicians in this model are equally bad, so the citizen does not "gain" anything by bringing a new one.)

Besley (2006) solves these issues by introducing a model that has "good" politicians ("Principled Agents") and "bad" politicians. The book contains a series of models; here, I will discuss a simple one.

4.1.2 Introducing Politician Types

This is a simple version of the Besley model, close to the one adopted by Ferraz and Finan (2011, AER). Afterwards, we will also discuss the empirical part of Ferraz and Finan.

The Model (you will see that this resembles Acemoglu-Egorov-Sonin model of Section 3.6.1):

- 2 periods: $t \in \{1,2\}$. No discounting.
- 2 types of politicians (not observable to voters)

  Fraction π is non-corrupt (nc)

  Fraction $1-\pi$ is corrupt (c)

- In period t, elected politician takes action $a_t \in \{0,1\}$, where 0 is the "bad (corrupt)" action, where as 1 is the "good" action.
- Representative voter's payoff: $a_1 + a_2$.
- Non-corrupt politician always takes $a_t = 1$.
- Corrupt politician gets 0 for $a_t = 1$, gets r_t for $a_t = 0$, where $r_t \geqslant 0$ is private information. $r_t \sim_{iid} F(\cdot)$.

Timing

- $t = 1$:
  1. A random politician is in office.
  2. Corrupt politician observes r_1.
  3. Politician chooses a_1.
  4. Representative voter chooses to reelect or not. If not, a new random politician is chosen.
- $t = 2$:
  1. If politician in office is corrupt observes r_2.
  2. Politician chooses a_2.

We will consider a Perfect Bayesian Nash Equilibrium (PBNE) of this game.

Analysis

In $t = 2$, corrupt politician always chooses $a_1 = 0$. Non-corrupt politician always chooses $a_1 = 1$. So, given this, voter reelects politician if and only if

$$\Pr(\text{incumbent is non-corrupt}|a_1) \geqslant \pi,$$

where π is Pr(a newly elected politician is non-corrupt).

What is Pr(incumbent is non-corrupt$|a_1$)? Clearly, if $a_1 = 0$, Pr(incumbent non-corrupt$|a_1 = 0) = 0$ (because non-corrupt politicians always take $a_1 = 1$). However, if $a_1 = 1$, by Bayes' rule,

$$\begin{aligned}&\Pr(\text{incumbent is non-corrupt}|a_1 = 1)\\ &\quad = \frac{\pi}{\pi + (1-\pi)\Pr(a_1 = 1|\text{incumbent corrupt})} \geqslant \pi.\end{aligned}$$

Thus, for a corrupt politician,

$$\begin{aligned}a_1 = 0 &\implies \text{no reelection},\\ a_1 = 1 &\implies \text{reelection}.\end{aligned}$$

Corrupt politician's payoff from:

$$\begin{aligned}a_1 = 0 &\to r_1 + 0 = r_1\\ a_1 = 1 &\to 0 + \mathbb{E}[r_2]\end{aligned}$$

So... in equilibrium, a corrupt politician takes $a_1 = 0$ if and only if $r_1 \geqslant \mathbb{E}[r_2]$. (Intuition: If rents in this period are low, corrupt politician "behaves well" and gets reelected, she waits for her opportunity in the next period.)

Question: is corruption higher in period 1 or period 2? Define

$$\lambda = \Pr(r_1 \leqslant \mathbb{E}[r_2]),$$

which is the "disciplining effect". Then,

$$\begin{aligned}\Pr(a_1 = 0) &= (1-\pi)(1-\lambda),\\ \Pr(a_2 = 0) &= (1-\pi)\lambda + (1-\pi)(1-\lambda)(1-\pi).\end{aligned}$$

Then, $\Pr(a_1 = 0) \leqslant \Pr(a_2 = 0)$ if and only if:

$$\begin{aligned}(1-\pi)(1-\lambda) \leqslant (1-\pi)\lambda + (1-\pi)(1-\lambda)(1-\pi) &\iff (1-\lambda)\pi \leqslant \lambda\\ &\iff \frac{\lambda}{1-\lambda} \geqslant \pi.\end{aligned}$$

If the disciplining effect is large relative to the proportion of honest politicians, corruption is more prevalent when it is the politician's last term in office.

The general insight of the model is: "Politicians are more likely to behave well earlier in their tenure, because the prospect of reelection disciplines them."

How can we test this hypothesis?

4.1.3 Empirical Tests of the Accountability Models

Besley and Case (1995, QJE)

This paper studies US governors in 1950-1986. They compare governors who face a binding term limit (cannot get reelected) to those who do not.

Main Findings: See Table IV. In the "last period" politicians spend more and tax more!

- Question: Are "high expenditures / taxes" = corruption?

  Not necessarily.

- Question: Is this the right control group?

  Maybe the mayors who face their final term are structurally a different group... they are elected many times, maybe because they spend more?

The next paper addresses these questions in a more credible empirical setup.

Ferraz and Finan (2011, AER)

Setting:

- Mayors in Brazil.
- Up until 1997, incumbents were not allowed to run.
- 2000: first elections where incumbent could run (73% do so, 40% win), you could get elected at most two consecutive terms.
- In 2003 & 2004, random audits by central government.

  Some of these audits were on first-term mayors, and others were on second-term mayors.

  So, Ferraz and Finan compare their audit outcomes.

Timeline: See Figure 1.

Main Results: See Table 4.

- First-term mayors engage in less corruption.
- See Figure 2: The results are not driven because note corrupt mayors know how to be reelected. Even a barely re-elected second term mayor engages in more corruption.

So... takeaways:

- Elections are important tool in disciplining politicians and limiting their rent extraction.
- The incentive of re-election forces politicians to "behave well" early in their tenure.

There is also evidence for Argentina that politicians who face long terms exert more effort. See Dal Bó and Rossi (2011, REStud).

4.2 Do Voters Know What They Need to Know?

In the previous section, we explored the mechanisms through which the prospect of accountability keeps politicians disciplined.
In these models:

accountability = politician is punished if she fails to deliver her promises.

But... how do voters know if politicians kept their promises? If they know, do they really process information and use them?

The key observation here is that media plays a crucial role in the accountability channel. Some seminal work:

1. In U.S.: Snyder and Strömberg (2010, JPE). Check out the amazing Figure 1. Also, Campante and Do (2014, AER).
2. In India: Besley and Burgess (2002, QJE). See Table III: the governments provide relief when there is flood damage (thus, governments are "responsive"). But, see Table IV: governments are *more* responsive in regions with higher newspaper circulation!
3. In Brazil: Ferraz and Finan (2008, QJE) provide a very interesting empirical investigation. The setting is the same as their 2011 AER paper discussed in 4.1.3. See Figure III: Releasing an audit before the election has a very significant impact on reelection rates!

On the experimental side, for examples of how providing information can affect electoral behavior of voters:

1. Banerjee, Kumar, Pande, and Su (2011) "Do Informed Voters Make Better Choices? Experimental Evidence from India".
2. Cruz, Keefer, Labonne, and Trebbi (2022) "Making Policies Matter: Voter Responses to Campaign Promises".
3. Garbiras-Díaz and Montenegro (2022, AER): "All Eyes on Them: A Field Experiment on Citizen Oversight and Electoral Integrity"

The bottom line is that information campaigns seem to work, but we also need to keep the caveats we saw in Section 3.5.5 in mind.

4.3 Policy-Making

We now switch gears to talk about "how policies are made". To this end, we will rely on the apparatus of bargaining. So, a refresher about the canonical bargaining model is in order.

4.3.1 A Refresher on Alternating-Offers Bargaining[2]

Setup:

- 2 players, dividing \$1.
- $t = 0, 1, 2, \ldots$
- discount factor $\delta \in (0, 1)$
- Period t
    1. $i \in \{1, 2\}$ is the proposer.
    2. Proposer offers a split (x_i, x_j) where $x_i + x_j = 1$.
    3. $j \neq i$ accepts or rejects.
    4. If accept, game ends.
    5. If j rejects, move to $t + 1$ where $j \neq i$ is the proposer.

Remarkably, this game has a unique SPNE where

proposer gets: $\frac{1}{1+\delta}$

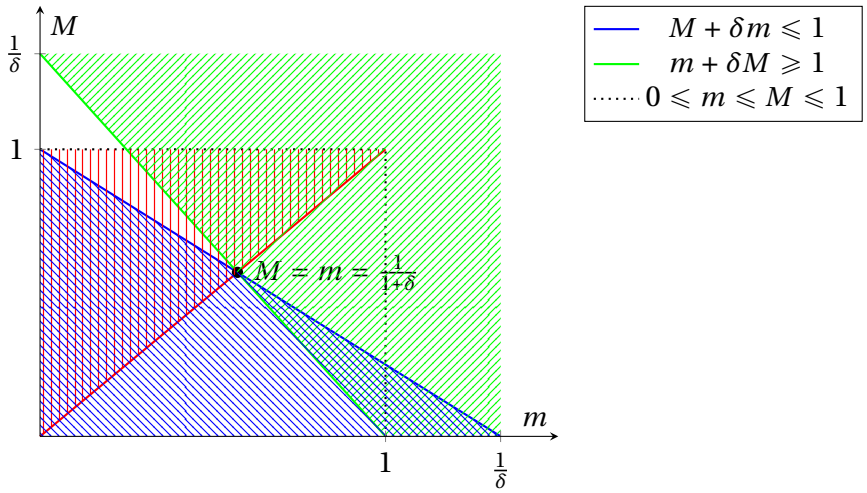
responder gets: $\frac{\delta}{1+\delta}$

[2] Rubinstein (1982, Ecma).

How to derive the equilibrium? Let M be the highest payoff the proposer can get in any SPE. Moreover, let m be the lowest payoff. Then:

1. $0 \leqslant m \leqslant M \leqslant 1$
2. $M \leqslant 1 - \delta m$. Proposer has to leave δm to responder, who will get at least m in next period.
3. $m \geqslant 1 - \delta M$. The proposer can always offer $\delta M + \epsilon$ and get accepted.

Then,



The SPNE: each period, the proposer offers to get $\frac{1}{1+\delta}$, and leaves $\frac{\delta}{1+\delta}$. The responder accepts if and only if she gets something $\geqslant \frac{\delta}{1+\delta}$.

Is this an equilibrium? If the responder rejects, in the next period she gets $\frac{1}{1+\delta}$, which is not profitable. If proposer offers something less than $\frac{\delta}{1+\delta}$, she gets rejected, and gets $\frac{\delta}{1+\delta}$ in the next period, which is not profitable.

Note: In SPNE, proposer gets more, but so the reponder as δ converges to 1, we observe equal sharing.

4.3.2 Legislative Bargaining[3]

This is an extension of the Rubinstein model to $n \geqslant 2$ players.

- Each period, proposer is drawn at random.
- if majority (including the proposer) accepts, the proposal goes through.

[3] Baron and Ferejohn (1988, APSR).

- Otherwise, $t+1$.

Here is a result from the paper (Proposition 2):

Theorem 103.0 *If $\delta \geqslant \frac{n+2}{2(n-1)}$ and $n \geqslant 5$, then for any split x, there is a SPNE where the first proposer proposes x and and everyone accepts.*

Proof idea: can "exclude" the deviator in future rounds.

So... To be able to make some predictions, we will focus on Stationary Subgame Perfect Equilibrium (SSPE) where each i accepts if and only if $x_i \geqslant m_i$ each period. Here is a result (Proposition 3):

Theorem 103.1 *There exists a unique SSPE where*

- *The proposer offers $\frac{\delta}{n}$ to each of $\frac{n-1}{2}$ responders chosen at random.*
- $m_i = \frac{\delta}{n}$.

Proposter's payoff: $1 - \frac{\delta}{n}\frac{n-1}{2}$. As $\delta \to 1$ we observe his payoff $\approx \frac{1}{2}$. Half of responders share the remaining surplus.

Baron and Ferejohn rely on random proposer. How about deterministic order?

Ali, Bernheim, and Fan (2019, REStud) shows, with deterministic order:

Theorem 103.2 *Suppose each t, there exists a majority who are certain not to be next proposer. Then, in any SSPE the proposer gets the entire surplus.*

Proof idea: Suppose the order goes like A, B, C. If A is the proposer and B is the next proposer, then A proposes to get everything and C approves.

The bottom line is: the outcome of a detail like random proposer versus fixed order can drastically change the results. **Institutional details matter.** In this vein, also see Ali, Bernheim, Bloedel, and Battilana (2023, AER).

4.3.3 Executive Constaints

Persson, Roland, and Tabellini (1997, QJE) provides a model of executive constraints. To be honest, the model is too contrived to be covered here, but the basic ideas is as follows.

Consider the Barro-Ferejohn model of political agency. The leader receives $y - g$, citizen gets g.

Augment it such that there are two agents: legislative (l) and executive (x). Each period:

1. Legislative chooses budget r, people get $y - r$.
2. Executive allocates $r = x + l$.

In equilibrium, $r = 0$, because any profits would go to x.

Once again we end up with the idea that institutional details matter in policy making. This is perhaps a good time to transition to the next topic: Institutions.

Chapter 5

Institutions

In the previous chapter, we concluded that "institutional details matter": they are crucial to provide right incentives to politicians to achieve "good" outcomes.

In this chapter, we will elaborate on this observation and discuss:

- Do institutions really matter? how?
- How do institutions form/evolve?
- What are some challenges for designing "good" institutions?

But first...

Question: What are "institutions"?
Answer: According to Douglass North (1991, JEP):

> Institutions are the humanly devised constraints that structure political, economic, and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights).

Notably institutions ("rules of game") are:

1. devised by humans.
2. constraints $\implies$ shape incentives.

A very, very good resource for what I am about to discuss is Chapter 1 of the Acemoglu lecture notes.

To give a brief overview:

5.1 Do Institutions Really Matter?

By institutions, we mean formal institutions (democracy/autocracy, electoral laws, contracting environment...) as well as informal (trust, mobilization capacity...).

Previously, we have seen that formal institutions make a difference (electoral laws, term limits, media...). On a broad scale, see Acemoglu, Naidu, Restrepo, and Robinson (2019, JPE) for evidence that democracy matters for growth.

Importantly, informal institutions also matter; they determine the consequences of "trying to violate the rules of the game". This is one reason why Latin American democracy is different than US democracy, even though they have similar formal institutions.

Acemoglu, Ch.1 (and Levitsky and Ziblatt, 2018) has an interesting anecdote about this. In Argentina:

- In 1946, Supreme Court resisted Perón by ruling some of his attempts unconstitutional.
- In response, Perón impeached 3/5 members.
- New norm established: whenever a political transition took place, the incoming regime replaced (impeached) Supreme Court.
- In 1970, Menem complained about the Supreme Court, expanded it to 9 members.

In the US:

- Starting 1935, Supreme Court resisted Roosevelt by ruling key elements of New Deal unconstitutional.
- Roosevelt proposed a "judicial reform" which mandated judges with age >70 to retire.
- Roosevelt had huge majorities in both houses, but was not successful.

Why? Informal institutions matter. To see more evidence that informal institutions ("culture") matter for economic development, see Tabellini (2010, JEEA). More fundamentally, Putnam's "Making Democracy Work" (1993) is a classic.

Below, we see more evidence on why institutions matter for economic outcomes.

Acemoglu, Johnson, and Robinson (2001, AER)

To begin, check out Figure 2 in the paper.

- "Protection against expropriation risk" = property rights.
- This is a very striking figure, but it is impossible to establish causality based on this alone. What if higher income $\Longrightarrow$ better property rights?

So, one needs to find a good instrument for the existence of "property rights." A-J-R's main contribution is coming up with an instrument for the existence of property rights: settler mortality.

Idea:

- After the "age of discoveries," Europeans started setting up colonies in the world.
- Some established "good institutions": lots of settlements, with trade infrastructure, investment opportunities, property rights...
- Some were "extractive institutions": they merely aimed to extract resources from the region.
- Was the choice of 'settlement' random? Not really, it was based on whether the colonizers saw the new location as permanent.
- What makes it permanent? The *disease environment*: if the disease in the region was not favorable to Europeans (malaria & yellow fever) they did not set up settlements.
- But...the disease environment is random, so A-J-R use it as an instrument for settlements ("good" institutions).

So... A-J-R's setup is:

- $$\begin{aligned}\text{settler mortality} &\Longrightarrow \text{settlements} \Longrightarrow \text{early institutions} \\ &\Longrightarrow \text{current institutions} \Longrightarrow \text{current performance.}\end{aligned}$$
- To see the link

  $$\text{settler mortality} \Longrightarrow \text{current performance (i.e., "reduced form"),}$$

  see Figure 1.

- To see the link

  $$\text{settler mortality} \Rightarrow \text{property rights (“first stage”)}$$

  see Figure 3.

- As you recall from Section 3.2.2, instrumental variable (IV) estimate is

  $$IV = \frac{\text{reduced form}}{\text{first stage}} = \frac{RF}{FS},$$

  so we have a causal estimate. See Table 4.

This is a pretty awesome paper, which paved the way for “empirical historical political economy” that would dominate the field in the 2000s. Next, we discuss another example of this literature.

Dell (2010, Ecma)

Idea:

- When the Spanish conquered Peru, they set up some extractive institutions called “mita”: a forced labor system to elect people to work in mines.

- This system was in effect from 1573 to 1812.

Using an RDD design for distance around mita boundaries, Dell shows: being within a mita district $\implies$ 25% lower household consumption today.

But why? Dell’s informal argument is:

- In non-mita regions people sell crops on the market.

- In mita regions they are subsistence farmers.

- To be more pedantic, there is a **Hacienda** (large landholding) system that is formed outside mitas. Owners of Haciendas were powerful settlers who could lobby for public goods/infrastructure.

  This is interesting? In early stages of development patronage seems to be helpful, but as we covered before, it has negative impacts on later stages?

Yet another example...

Michalopoulos and Papaioannou (2013, Ecma)

The authors show: in Africa,

$$\underbrace{\text{Pre-colonial ethnic political centralization}}_{\text{Based on ethnographic studies.}} \implies \underbrace{\text{today's regional development}}_{\substack{\text{To get a reliable estimate of this,}\\ \text{they use satellite light density}\\ \text{at night.}}}.$$

More developed regions have electricity, which means higher light density (it is a very popular measure of development).

Results: See Table II.

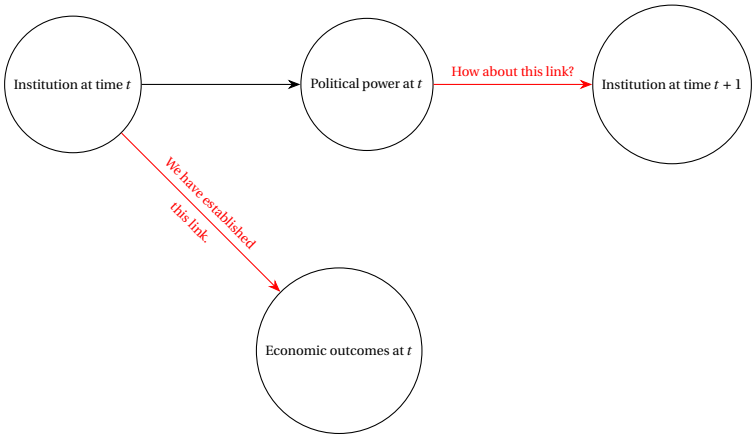
Why?

- Maybe the chiefs set up institutions for
  - Accountability channels
  - Bureaucracies
  - Legal institutions

  which then evolved into strong states and thus development.
- Or maybe these chiefs were also able to bargain with colonizers and obtain concessions?

In any way, it is clear that institutions matter for economic outcomes.

Moreover, institutions do not appear randomly; they are set up by people. Inspired by this observation, Acemoglu Ch. 1 propose a framework that goes like this:



5.2 How Do Institutions Form/Evolve Over Time?

We know, if a society somehow ends up with good institutions, it enjoys good economic outcomes. But, how do some societies end up with good institutions?

Related question: How are **strong states** formed? There are multiple answers.

5.2.1 Tilly Hypothesis

Historian/sociologist Charles Tilly once said,

> "War made the state, and the state made war."

The threat of war makes it necessary to invest in state capacity (to collect taxes), which then leads to development.

Besley and Persson (2009, AER)

The authors present a theoretical model along these lines and show some empirical evaluations.

See Table I.

- (Private credit to GDP = a measure of financial development).

Caveat: Osofa-Kwaako and Robinson (2013, Journal of Comparative Economics) "Political Centralization in Pre-Colonial Africa" shows that this idea has limited explanatory power in Africa.

5.2.2 Olson's Stationary Bandits

Partly based on Tilly, economist/political scientist Mancur Olson developed the theory of stationary bandits.
The gist of the idea:

- What is bad for the society is to have a number of bandits (i.e., armed forces) that go and rob citizens.

  Roving bandits will just extract everything they find.

- If instead there is a single bandit that stays around, this is not so bad.

  A stationary bandit will not steal everything, encourage investment and take moderate taxes.

  (to make sure there is something to steal next time they come.)

- Ultimately, a stationary bandit evolves into a state.

Do stationary bandits have incentives to establish institutions?

Sánchez de la Sierra (2020, JPE)

The author considers the armed actors in Democratic Republic of Congo (DRC) in the early 2000s. DRC has mines of coltan and gold, whose prices vary due to global demand.

- See Figure 1. 2000: Sony announced PS2, raising the demand for coltan. 2001: after 9/11, gold becomes a "safe haven" and the demand for gold rises afterwards.
- See Figure 3: When the price shock hits, violence increases first.
- But over time, this leads to the emergence of stationary bandits. See Table 1. (Note that coltan is mined in mines, and gold is traded in villages.)
- Also see Figure 4. Note that gold is easier to carry and conceal, so it does not make a lot of sense to form a stationary bandit in the mine. Instead, stationary bandits are formed in trade centers (villages).

5.2.3 The Issue of Commitment

The idea of a stationary bandit relies on **commitment**: a stationary bandit can make credible promises, because people know it expects to be around and has incentives to keep its promises. This is also the key idea behind democracy: the rulers can willingly commit themselves to generate credibility.

North and Weingast (1989, Journal of Economic History)

In this classical paper, the authors argue that credible commitments was the purpose of democracy.

- See Table 3: After the Glorious Revolution of 1688 in England, the government was able to borrow more.
- See Table 2: Before the revolution, it used forced loans.
- See Table 4: After the revolution, it borrowed from the market, at low interest rates (due to credibility).

Also see Acemoglu and Robinson (2000, QJE) "Why Did the West Extend the Franchise?" for a related argument.

However, the idea of the lack of commitment is also an enormous obstacle in front of designing institutions. This is because moving from a stationary bandit to a democratic state requires the bandit to willingly give up power, but then, there are few guarantees on that power not being used against the bandit. Here is a very simple illustration of that idea:

- Three possible institutions: absolutism (a), constitutional monarchy (c), democracy (d)
- Two agents: elite (E), middle class (M)
- In a, E decides. One the other hand, in c and d, M decides.
- Payoffs:
$$u_E(d) < u_E(a) < u_E(c),$$
and,
$$u_M(a) < u_M(c) < u_M(d).$$
Note: c Pareto dominates a!

If we start at a, a myopic elite would move to c. However, a far-sighted elite realizes: moving to c gives the power to the middle-class, which would then move to d (worst for elite). Foreseeing this, elites stay in a (an inefficient outcome).

See Acemoglu (2003, Journal of Comparative Economics) "Why Not a Political Coase Theorem?" if you are interested.

Takeaways:

- Institutions are rules of the game chosen by people.
- They matter for economic outcomes.
- Understanding historical evolution of institutions is important, but challenging.
- Also, institutions tend to be sticky and inefficient due to commitment problems.