14.75: Voting in Practice

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Voting In Practice

- In our models of voting so far, we've considered voters who vote based on their preferences
  - Preferences for policies (Median voter model)
  - Preferences for politician quality (Agency models)
- But in practice – particularly in developing countries – people vote for other reasons. People's votes are influenced by
  - Money (vote buying)
  - Coercion (violence and intimidation)
- We'll discuss both of these in this lecture

Vote Buying

- Selling your vote makes a lot of sense. Why?
- Suppose my utility function is

$$u_i = -\alpha \left(g - b_i\right)^2 + m$$

So I have single peaked preferences over the public policy (g). I also care about money m. α says how much I care about public policy relative to money

- Suppose there are two candidates with positions 0 and 1. (Let's assume we're not in the Median voter world, for whatever reason, so preferences are different)
- My bliss point is 0.
- The person supporting party 1 offers me p to vote for 1 instead of 0. Should I do it? How do I think about this?

The Paradox of Voting

- The key question is: what's the probability my vote affects the outcome?
- Suppose that there are $1,000,000$ other people voting in the election
- Suppose that the electorate is exactly balanced, so that each person votes for candidate 0 with probability $\frac{1}{2}$
- My vote matters only if the votes are *exactly* tied.
  - That is, if it turns out that there are $500,000$ votes for candidate 1 and $500,000$ votes for candidate 0, then my vote gets to decide the election
  - If there are $499,998$ for candidate 1 and $500,502$ for candidate 0, then my vote doesn't matter, and I might as well sell it, collect the money m, and enjoy the fact that candidate 0 will win anyway

Will I be the pivotal voter?

- It is very unlikely to be pivotal
- For example, if $n = 1,000,000$ (e.g. House of Representatives) then the probability that there are exactly $500,000$ votes for each candidate is

$$\binom{n}{k} p^k (1-p)^{n-k}$$
$$= \binom{1,000,000}{500,000} \frac{1}{2}^{1,000,000}$$
$$\sim 0.0008$$

or about 1 in 1200

Will I be decisive?

- If the vote shares are even a little off, the probability gets much lower.
- So if people vote for candidate 1 with probability 0.51 then the probability votes are exactly equal is

$$\binom{n}{k} p^k (1-p)^{n-k}$$
$$= \binom{1,000,000}{500,000} 0.51^{500,000} 0.49^{500,00}$$
$$\sim 1.06 \times 10^{-90}$$

or about 1 in 9×10^{89}, or, about 0

Should I sell my vote?

- So should I sell my vote? If my utility function is

$$-\alpha \left(g - b_i\right)^2 + m$$

then I should sell my vote if

$$\alpha P \left(pivotal\right) < m$$

- In the case where I'm decisive with probability 0.0008, then I'll sell my vote if

$$m > \alpha \times 0.0008$$

Plausibly, if I care a lot about policy, maybe I won't

- But in the case where I'm decisive with probability 1.06×10^{-90}, then yes I will sell my vote almost for sure!

What are these probabilities in practice?

- What are these probabilities in practice?
  - In US presidential elections, on average the probability of being pivotal is about 1 in $60,000,000$
  - In US state elections, with much smaller districts, it's between 1 in $15,000$ and 1 in $100,000$

The Paradox of Voting

- The paradox of voting is as follows. Suppose there is some cost to voting c.
  - E.g., it takes an hour of your time.
- By the same logic as before, you'll only vote if

$$\alpha P\left(pivotal\right) > c$$

- Suppose that $c = \$10$ and $P\left(pivotal\right) = 0.0000001$ (1 in 10 million).
- Then you'll only vote if $\alpha > 1,000,000$.
  - i.e. you would pay $1,000,000 to have the outcome of the election be different
- For many elections, you may not care that much, and so the "paradox of voting" is that many people vote anyway
- Many theories try to explain why people vote anyway, but they all come down to the idea that I like the act of voting, not just voting itself

Vote-buying

- Since the probability of being pivotal is so small, it's not surprising that people are often willing to sell their vote, and not surprising that candidates are willing to pay

- This is particular likely to be a problem in developing countries where enforcement is weak
  - In Thailand in 1996, $\frac{1}{3}$ of households were offered vote-buying, with an average offer of $27
  - In Nicaragua in 2008, 24 percent of voters were offered cash or services in exchange for votes
  - In Paraguay, $23 - 31$ percent of voters experienced vote-buying

Secret ballot

- The challenge in vote buying is the secret ballot
  - Parties can observe whether you voted, but not who you voted for
  - So what is to stop you from telling candidate 1 that you'll vote for him in exchange for cash, taking the money, and voting for candidate

- Explanations:
  - *You buy turnout.* You can observe who voted. So identify voters who likely sympathize with your party and pay them to turn out.
  - *Reciprocity.* Some voters are "reciprocal" and return favors. So you buy those voters.

Turnout buying vs. vote buying

- Suppose there are two parties, with fixed policy positions p_j.
- An individual i who votes for party j receives utility

$$U\left(x_i, c_i\right) = -\left|p_j - b_i\right| + \frac{1}{2} - c_i + m$$

  if he chooses to vote for party j and 0 if he does not vote.
- Note that this utility function is different from the utility function we've used before. How?
    - Here the utility comes from the act of voting and who you vote for – it doesn't depend on who actually wins
    - Given that the probability of being pivotal is so small, this may be closer to the truth
    - (It's also easier to work with as a model)
    - I also made the single-peaked functions in absolute value, rather than quadratic, just to make things easier
- Within the electorate, the cost of voting c_i and policy preferences x_i are independently distributed $Uniform\left[0, 1\right]$. m is money.

Candidates

$$U\left(x_i, c_i\right) = -\left|p_j - b_i\right| + \frac{1}{2} - c_i + m \text{ if vote, 0 otherwise}$$

- Suppose that $p_1 = \frac{1}{4}$ and $p_2 = 1$.
- Suppose there is no vote-buying. What happens in this model?
- Some people vote. Conditional on voting, you vote for your most preferred candidate. So conditional on voting, those with $b_i < \frac{5}{8}$ vote for candidate 1 and those with $b_i > \frac{5}{8}$ vote for candidate 2
- Some people just stay home. Who will stay home?
- Vote (as opposed to stay home) if

$$-\left|p_j - b_i\right| + \frac{1}{2} - c_i < 0$$

Three Cases

$$U(x_i, c_i) = -|p_j - b_i| + \frac{1}{2} - c_i + m \text{ if vote, 0 otherwise}$$

- Case 1:
  - Suppose you have $b_i < \frac{1}{4}$. If you vote, you vote for candidate 1.
  - You will vote if
  $$-\left(\frac{1}{4} - b_i\right) + \frac{1}{2} - c_i > 0$$
  Or if $b_i - c_i + \frac{1}{4} > 0$
  - This is a line with intercept at $b_i = 0, c_i = \frac{1}{4}$ that peaks at $b_i = \frac{1}{4}$, $c_i = \frac{1}{2}$

Three Cases

$$U(x_i, c_i) = -|p_j - b_i| + \frac{1}{2} - c_i + m \text{ if vote, 0 otherwise}$$

- Case 2:
  - For people between $b_i = \frac{1}{4}$ and $b_i = \frac{5}{8}$, they will vote if

  $$\frac{3}{4} - c_i - b_i > 0$$

  - This is a line that peaks at $b_i = \frac{1}{4}$, $c_i = \frac{1}{2}$ and slopes down to $b_i = \frac{5}{8}, c_i = \frac{1}{8}$
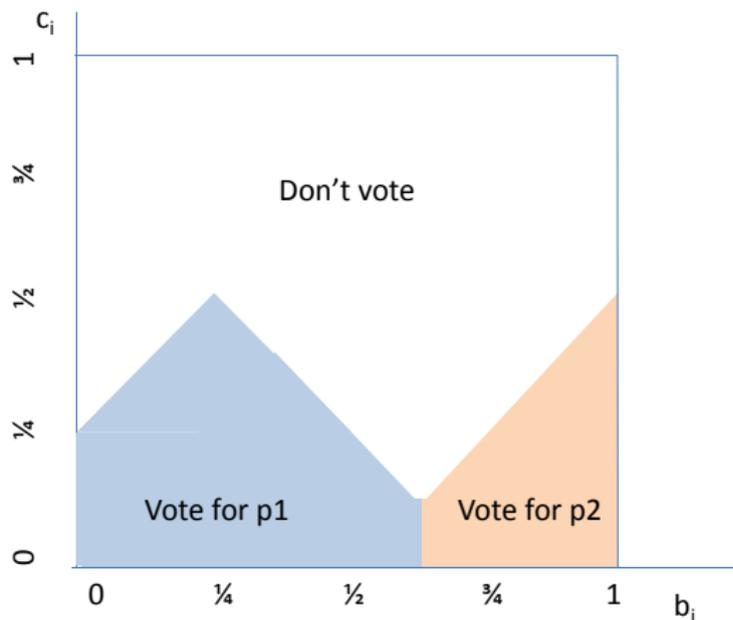- Case 3:
  - For people between $b_i = \frac{5}{8}$ and $b_i = 1$, they will vote if

  $$b_i - c_i - \frac{1}{2} > 0$$

  - This is a line that peaks at $b_i = 1$, $c_i = \frac{1}{2}$ and slopes down to $b_i = \frac{5}{8}, c_i = \frac{1}{8}$

Equilibrium with no vote-buying

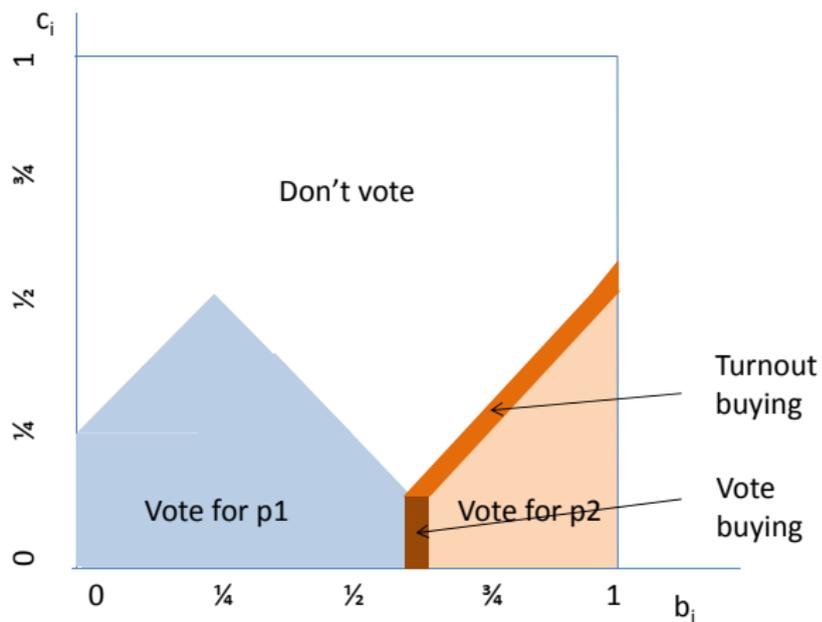This is what the equilibrium looks like:

- Who will win?

Vote buying

- Now suppose party p_2 can buy votes, and they can verify that people voted for who they said they voted for. No secret ballot. Who will they buy?

- They will buy the people who are cheapest to convert. Two categories:
  - Vote buying: People who are voting for p_1 but are close to indifferent – i.e., people who are voting and are close to $b_i = \frac{5}{8}$
  - Turnout buying: People who prefer p_2 but aren't bothering to vote.

Equilibrium with vote buying
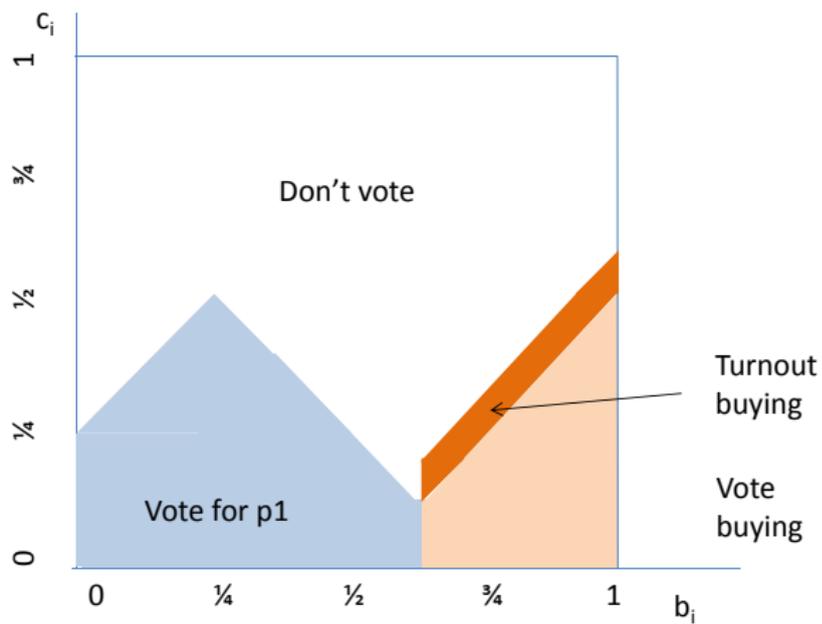
- The new equilibrium looks like this:

Secret ballot

- Now suppose party p_2 can buy votes, but there is a secret ballot, so they cannot verify that people voted for who they said they voted for. Who will they buy?
    - Turnout buying only.

Equilibrium with secret ballot

- The new equilibrium looks like this:

Empirical evidence on turnout buying
Nichter (2008): "Vote buying or turnout buying?"

- Idea:
  - The idea of the model is that vote-buying would target marginal individuals
  - But turnout-buying would target the most committed individuals
    - If we extend the model so that which way you vote has some noise, then turnout voting will target the most committed voters first, since we know with greater likelihood which way they will vote
  - So examine the correlates of who reports vote-buying with strength of support for a party
- Setting: Argentina
- Results:
  - Strong supporters more likely to receive rewards than weak supporters
- Reminiscent of how political machines in US worked as well

Image removed due to copyright restrictions. See: Simeon. "Vote Buying or Turnout Buying?
Machine Politics and the Secret Ballot." *5a Yf]Wb Dc`]h]WU GW]YbWY F Yj]Yk* 102, no. 1 (2008).
Table 1. Logit Model Estimations of Electoral Mobilization Using Rewards

Reciprocity
Finan and Schecter (2009): "Vote-buying and reciprocity"

- Idea: Test whether vote-buying is sustained through reciprocity
- Setting: Paraguay
- Measurement of reciprocity:
  - Survey which asks whether you'd put someone in a difficult situation if they did the same to you
  - Reciprocity in trust game. What is this?

Trust games

- The trust game
  - Two players.
  - Player 1 gets $X. Can decide to send s to player 2 and keeps $X - s$ for himself.
  - Whatever is sent is tripled, so player 2 receives $3s$.
  - Player 2 can then return whatever he wants back to player 1 (r) and keeps the rest ($3s - r$).
- The socially efficient outcome is: $s = X$.
  - Why? That maximizes the total amount for both players.
  - If 2 could commit to return $r = \frac{3}{2}s$, then everyone would be better off by playing $X = s$

Trust games

- The Nash equilibrium is: $s = 0$.
  - Why?
  - Once player 2 receives the money, he has no incentive to send anything back. So he will always keep it all ($r = 0$)
  - Anticipating this, player 1 will never send anything
- In practice, usually $s > 0$.

Reciprocity

- The authors measure reciprocity as follows:
  - They play the game.
  - Before finding out actual amount sent, they ask how much player 2 would return for different values of s
  - If they are altruistic, they will always send back a lot
  - If they are reciprocal, they will send back a lot only if they were sent a lot. So $\frac{\partial r}{\partial s} > 0$.
  - They define reciprocity as the amount returned when s is high divided by the amount returned when s is low.

Reciprocity

- Survey-based measurement of vote-buying:
    - 33 percent of respondents offered something in exchange for a vote (including "solving a problem")
    - 26 percent of respondents offered something in exchange for a vote (not including "solving a problem")
    - Mean value of transfer = 48 dollars (= 12 days agricultural wage)

Images removed due to copyright restrictions. See: Finan, Frederico and Laura Schechter.
"Vote-Buying and Reciprocity." *9Wtbca Yhf]W* 80, no. 2 (2013): 863-81.
Table 3: Vote-buying and Reciprocity

Intimidation

- The flip-side of vote-buying is violence and intimidation
  - General violence to diminish turnout
  - Specific intimidation at supporters of specific parties

Intimidation
Hsieh, Miguel, Ortega, and Rodriguez (2009): "The Price of Political Opposition: Evidence from Venezuela's Maisanta"

- How large an economic effect can political intimidation have?
- Hsieh et al study an example from Venezuela:
  - Over 20% of the Venezuelan electorate signed a petition to remove Chavez from office
  - Chavez explicitly threatened that people who signed the petition would be made public and face retaliation
  - The Chavez government compiled the names of these people into a handy computer database that everyone could check
- Hsieh et al match the database to household surveys to examine the impact of signing the anti-Chavez petition

The Software

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14.75 Political Economy and Economic Development
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