14.75: Selection, Moral Hazard, and Voting

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Voting and Agency

- The voting literature we talked about last time was all about the *policy* dimension of a politician's stated positions
  - e.g., some politicians will implement more spending and some will do less
  - e.g., some will implement pro gay-marriage policies and some will not
- In that model politicians don't have quality. Their are all the same.
- In the next few lectures, we'll consider what happens when politicians vary in quality
  - e.g., some politicians are incompetent and some are competent
  - e.g., some politicians are corrupt and others are honest

Voting and Agency

- We'll talk about two ways this heterogeneity can come about:
    1. *Selection.* Politician quality is a fixed characteristic, and the voters are learning about it. I try to figure out who is good, and re-elect the good ones.
    2. *Moral hazard.* Politicians can choose whether to be good or bad. They choose to behave well because voters may punish them (by not re-electing them) if they are behave badly.

- For a lot of applications, it doesn't matter whether it's #1 or #2, but we'll see if we can tease out whether some aspect of both are going on

Outline

- A basic agency model that incorporates both selection and moral hazard
- Evidence
  - Do politicians reward good politicians
    - For passing out goodies (e.g. delivering programs)
    - For being good types (e.g. not being corrupt)
  - Do politicians respond to these incentives by becoming more honest?
    - Can we distinguish moral hazard from selection?

Model 1: Moral Hazard

- Suppose that a politician likes being re-elected
  - If re-elected, gets benefit B. If not, gets 0
  - e.g., perks of being in office, etc
- While in office (before re-election), politician has a choice of actions, $a \in [0, 1]$.
  - $a = 0$ is preferred by the politician. He gets benefit b from choosing $a = 0$.
  - $a = 1$ is preferred by the voters.
- What is a?
  - *Effort*. e.g., passing a new bill takes a lot of work. He'd prefer to play golf.
  - *Lack of corruption*. Politician prefers to steal, but public doesn't want him to
  - *Lack of crony capitalism*. Politician prefers to give jobs
- Denote $\Pr(reelect \mid a)$ is the probability of re-election conditional on the action a.

Moral Hazard

- If voters reward politicians for good actions, then

$$\Pr\left(\text{reelect} \mid a = 1\right) > \Pr\left(\text{reelect} \mid a = 0\right)$$

  - This is the idea that voters reward politicians for good behavior.
- The incumbent will therefore chose a when

$$B\Pr\left(\text{reelect} \mid a = 1\right) \geq B\Pr\left(\text{reelect} \mid a = 0\right) + b$$

which we can rewrite as

$$B\left[\Pr\left(\text{reelect} \mid a = 1\right) - \Pr\left(\text{reelect} \mid a = 0\right)\right] \geq b$$

- What does this imply?
  - The greater the temptations of slacking off in office (the greater the b), the more likely he will chose the low action anyway
  - What happens if we impose term limits? Then we get low action for sure. This will be the empirical test we'll use to see whether politicians respond in this way.

Selection

- Next question: how do voters choose $\Pr\left(reelect \mid a\right)$?
- Imagine there are three types of politicians in the world, good types, opportunistic types, and bad types
    - Good types always choose $a = 1$.
    - Bad types always choose $a = 0$.
    - Opportinistic types will do whatever they think is optimal, as above.
- Suppose that the population consists of
    - Good types (proportion α)
    - Bad types (proportion β)
    - Opportunistic types (proportion $1 - \alpha - \beta$).

Timing

- There are two periods.
- First period.
    - Politician chosen from the distribution. Good with probability α. Bad with probability β. Opportunistic with probability $1 - \alpha - \beta$.
    - He chooses an action a.
    - Voters observe a signal (more about this in a moment).
    - Voters decide to re-elect him or not. If they don't re-elect him, the new politician is a random draw from the population with same proportions.
- Second period.
    - No more re-election.
    - Good types choose $a = 1$.
    - All else chose $a = 0$. (Why?)

Signals

- After the first period, voters receive a signal $s \in \{0, 1\}$ about the action of the politician.
    - If politician chooses $a = 1$, then voters get $s = 1$ with probability $\frac{1}{2}$ and $s = 0$ with probability $\frac{1}{2}$.
    - If politician chooses $a = 0$, then voters get $s = 1$ with probability 0 and $s = 0$ with probability 1.
- What is a signal? What might this look like in reality?
- What's going to happen?
    - Voters will vote to re-elect if they see $s = 1$ and not to re-elect if they see $s = 0$.
    - Why?

Signals

- Suppose I see $s = 1$. What is the probability the politician is a good type?
  - We use Bayes' Rule. Recall that in general, Bayes' Rule says that

$$P(B \mid A) = \frac{P(A \mid B) P(B)}{P(A)}$$

  - So in this case

$$
\begin{aligned}
P(good \mid s = 1) &= \frac{\frac{1}{2}\alpha}{\frac{1}{2}\alpha + \frac{1}{2}(1 - \alpha - \beta) a} \\
&= \frac{\alpha}{\alpha + (1 - \alpha - \beta) a}
\end{aligned}
$$

- If $a = 0$, then

$$P(good \mid s = 1) = 1$$

- If $a = 1$, then

$$P(good \mid s = 1) = \frac{\alpha}{1 - \beta}$$

Signals

- Having seen $s = 1$, should I re-elect this guy?

    - In the second period, he'll perform the good action if he's a good type.
    - If I don't re-elect him, he'll be a good type with probability α. Why? Random draw from the population.
    - If I do re-elect him, then conditional on seeing $s = 1$, I'll re-elect him if

    $$P\left(good \mid s = 1\right) = \frac{\alpha}{\alpha + (1 - \alpha - \beta)\, a} > \alpha$$

    - It's easy to see that

    $$\frac{\alpha}{\alpha + (1 - \alpha - \beta)\, a} > \alpha$$

    so the probability he's good having seen that $s = 1$ is greater than the probability he's good if I redraw from the population.
    - Intuition: if I see $s = 1$, then I know at least he's not a bad type!
    - So if I see the high-signal I re-elect him.

Signals

- Suppose I see $s = 0$. What is the probability the politician is a good type?

    - By the same logic,

$$P(B \mid A) = \frac{P(A \mid B) P(B)}{P(A)}$$

    - So in this case

$$P(good \mid s = 0) = \frac{\frac{1}{2}\alpha}{\frac{1}{2}\alpha + (1 - \alpha - \beta)\left(1 - \frac{a}{2}\right) + \beta}$$

- Will I vote to re-elect this guy? No. Why?

Signals

- Suppose I don't re-elect. Probability I get a good type next period is α.
- What if I re-elect him? Well,

$$P\left(good \mid s = 0\right) = \frac{\frac{1}{2}\alpha}{\frac{1}{2}\alpha + \left(1 - \alpha - \beta\right)\left(1 - \frac{a}{2}\right) + \beta}$$

- Is this less than α?
- Suppose $a = 1$. Then

$$
\begin{aligned}
P\left(good \mid s = 0\right) &= \frac{\frac{1}{2}\alpha}{\frac{1}{2}\alpha + \left(1 - \alpha - \beta\right)\left(1 - \frac{a}{2}\right) + \beta} \\
&= \frac{\frac{1}{2}\alpha}{\frac{1}{2}\alpha + \left(1 - \alpha - \beta\right)\frac{1}{2} + \beta} \\
&= \frac{\alpha}{1 - \beta + 2\beta} \\
&= \frac{\alpha}{1 + \beta} < \alpha
\end{aligned}
$$

Signals

- Suppose $a = 0$. Then

$$
\begin{aligned}
P\left(good \mid s = 0\right) &= \frac{\frac{1}{2}\alpha}{\frac{1}{2}\alpha + (1 - \alpha - \beta)\left(1 - \frac{a}{2}\right) + \beta} \\
&= \frac{\frac{1}{2}\alpha}{\frac{1}{2}\alpha + (1 - \alpha - \beta) + \beta} \\
&= \frac{\frac{1}{2}\alpha}{1 - \frac{\alpha}{2}} \\
&= \frac{\alpha}{2 - \alpha} < \alpha
\end{aligned}
$$

- So likewise, I don't want to re-elect him.

Signals

- Intuition for what's going on:
  - Since good types always give the good signal, and bad types always give the bad signal, if I see a good signal it's slightly more likely he's the good type, and if I see the bad signal, it's slightly more likely he's the bad type

- So the bottom line is:
  - Vote to re-elect if $s = 1$, since there's a higher chance he's a good type.
  - Vote not to re-elect if $s = 0$, since there's a higher chance he's a bad type.

- Given this, the opportunistic type is more likely to behave well in the first period, since he is more likely to get re-elected if he behaves well.

Interpretation

- This model has elements of selection and moral hazard:
  - *Selection*: I vote for the types for whom I get good signals because I think they are more likely to behave well in the future (i.e. because they are more likely to be good types)
  - *Moral hazard*: Because voters reward good behavior, opportunistic politicians behave better.

- Some notes about this model
  - By behaving well in period 1, he's "fooling" the electorate into thinking maybe he's the good type that will behave in the second period.
  - You can extend this model to multiple periods and get similar results.
  - Behavior is also not all or nothing. A similar logic applies to continuous actions.

Types

- Why are the types important in this model?
- Suppose there were no good types, i.e. $\alpha = 0$.
    - Then all types will chose $a = 0$ in the second period.
    - Voters therefore don't care whether to re-elect or not.
    - Therefore the opportunistic types have no incentive to be good.
    - A key driver in the model is that by working harder, opportunistic types look more like good types, and are more likely to get reelected

Types

- Suppose there were no bad types, i.e. $\beta = 0$.
    - This is trickier.
    - Opportunistic types still have an incentive to be good, because they can pretend to be good types.
    - So suppose they chose $a = 1$. So they behave just like good types.
    - Then the voter doesn't really get any information from the signal – this is a "pooling model" – since the signal contains no information. Why?
    - Recall that
    $$P\left(good \mid s = 1\right) = \frac{\alpha}{\alpha + (1 - \alpha - \beta)\, a}$$

    With $\beta = 0$ and $a = 1$ this simplifies to

    $$P\left(good \mid s = 1\right) = \frac{\alpha}{\alpha + (1 - \alpha)} = \alpha$$

    So I learn nothing from receiving a good signal. Likewise for a bad signal.
    - So voters are indifferent.

Types

- I put the bad types in the model so that the signal always contains information (i.e. if we get the good signal, we know you're not a bad type), so voters strictly prefer to use the information in their signal.
- Note, though, that we really need only a small amount of the types for the model to work.

Agency in Practice

- We'll examine several aspects of the agency idea:
- From the voters side:
  - Do voters reward politicians who appear to do better? I.e., do voters reward politicians when they get directly get benefits from government? What are the implications for policy?
  - Do voters reward politicians who are better types when they observe a signal of type directly?
- From the politician's side:
  - Do politicians behave worse when they don't face re-election incentives?

Do voters reward politicians who appear to do better?

De La O (2010): "Do Conditional Cash Transfers Affect Electoral Behavior? Evidence from a Randomized Experiment in Mexico"

- Setting:
  - Mexico
  - A program called Progresa gives cash to women in exchange for enrolling their children in schools and health services

- Empirical strategy
  - The program was run as a randomized experiment
  - 505 villages were randomly treated either 21 months, or 6 months, before the 2000 Mexican presidential election
  - Examines the impact on electoral turnout and vote for the incumbent

Specification

- Progressa randomizes villages
- Votes are reported in precincts
- So she defines *dosage* to be the share of precinct's voters in a randomized village
- Then runs the regression

$$\Delta y = \theta + \beta_1 \, treatment + \beta_2 \, dosage + \beta_3 \, treatment \times dosage + \varepsilon$$

  where *treatment* is a dummy variable that is 1 if you received the program for longer.
- How do we interpret this equation? What is the impact of having your entire village be treated?
    - In that case *dosage* is 1
    - So impact is $\beta_1 + \beta_3$
- Note that this regression has Δy as the dependent variable. Why might you want to do this?

De La O, Ana L. "Do Conditional Cash Transfers Affect Electoral Behavior? Evidence From a Randomized Experiment in Mexico." *5a Yf]Wb`>ci fbU`cZ Dc`]h]WU`GW]YbW* 57, no. 1 (2013): 1-14.

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Table 3: The Impact of Early versus Late Treatment on Turnout

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Another example
Manacorda, Miguel, and Vigorito (2010): Government Transfers and Political Support

- Setting:
    - Uruguay PANES, a large anti-poverty program
    - 190,000 people applied
    - They were then visited and received a survey
    - 102,000 eventually become program beneficiaries – around 10% of all household
- How did they decide who should receive the program?
    - They would have liked to do a means-test (i.e.g, based on income), but they didn't observe that (too easy to lie to government)
    - Instead, the did what's called a "Proxy Means Test
    - In a survey, they ran a regression of

$$income = \alpha + \beta X + \varepsilon$$

    where X is a large number of household characteristics that are hard to lie about (housing characteristics, etc)
    - They looked at $\widehat{income}$, which is predicted income from that regression
    - All households with $\widehat{income} < cutoff$ received the program

Predicted income and program receipt

How to use this to estimate the impact on political support

- Given this, how do they estimate the impact on political support?
- This is a natural example of a regression discontinuity!
    - They look above and below the cutoff line and look for changes in political support
    - Measure this using a household survey
    - We can see the results in pictures

Bottom line from these two papers

- Bottom line from these papers:
  - People reward politicians for channeling support to them
  - Particular impact through turnout
- Thinking back to the model, this says that

$$\Pr\left(reelect \mid a = 1\right) > \Pr\left(reelect \mid a = 0\right)$$

- If this is true, then what are the implications for politician behavior?
  - Suggests incumbents will work harder to get programs through ($a = 1$)
  - But opposition parties may try to block these types of programs because they are too popular! This has happened in Indonesia.
  - Suggests they will target programs to those people who are likely to be marginal in turnout
  - Politicians tend to rebrand programs to try to get credit (Progresa was rebranded Oportunidades by the new administration – same program, new name)
- We don't have a lot of evidence yet on how these things feed back into policy, but these implications seem intuitive

Competence

- A second idea we had in the model is that there are types of politicians
  - Good (competent, honest) types
  - Bad (incompetent, dishonest) types
- In the model, when voters learn about a politician's types, it affects their voting behavior
- Is this true in practice?

Does the electorate respond to information about corruption?

Ferraz and Finan (2008): "Exposing Corrupt Politicians: The Effects of Brazil's Publicly Released Audits on Electoral Outcomes"

- Setting: municipal governments in Brazil
- Empirical idea:
    - Starting in 2003, the central government randomly selected 26-60 municipalities each month for audits, the results of which were made publicly available
    - Examine the results of the audits to construct an 'objective' measure of corruption
    - Compare 2004 election results of those audited before vs. after the election conditional on level of corruption
        - Is this plausible? What are the threats to identification? What would you want to know to be convinced?
    - They then show that the effects are bigger if the media is stronger, so the information is more likely to get out

Balance tests

- Show that overall corruption levels look similar before and after election:

Results by corruption level

- Why might the results differ depending on corruption level?
- The idea is that if you are not corrupt, we don't learn much. If you're very corrupt, we probably knew that already
- So we are only getting new information if you're in the intermediate part of corruption

A second example
Banerjee, Kumar, Pande and Su (2010): "Do Informed Voters Make Better Choices? Experimental Evidence from Urban India"

- Setting: Elections in Delhi
  - Delhi, India's capital city, is home to roughly 15 million inhabitants a quarter of whom live in slums
  - State legislators can play an important role in providing slum-dwellers access to public goods and private transfers
  - Three major parties contested - each (in different ways) targeted the urban poor and campaigning was widespread
  - Campaigning involved door to door campaigning and party rallies. Both of these were often accompanied by gift-giving (liquor, clothes, food). In addition, more targeted cash-based vote-buying also reported. (We'll talk about vote-buying in a few lectures)
- They use the Indian freedom of information laws to obtain information about politician's performance, as well as their income, education, and criminal charges
  - 60% of incumbents and 25% of challengers had pending criminal charges (!!!)

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Experimental Design

- Sample was drawn from ten jurisdictions with high slum density and where incumbent was standing for re-election
    - Unit of randomization was polling station; of a sample of 775 polling stations 200 (20 per jurisdiction) were selected for treatment
- Protocol in treatment polling stations
    - Three days before newspaper release, the NGO team visited households and gave them a pamphlet that described the importance of informed voting and told them when they will get the newspaper
    - Roughly ten days before the election, the newspaper carried report card on the jurisdiction candidates. The NGO team delivered a copy of the newspaper to every household in the polling station in the morning
    - Within 48 hours of newspaper delivery the NGO conducted a public reading of the newspaper
- Use data on polling station returns, observations of election, household survey, and how legislator actually spent the money

- The point though is not how if affects voting overall. What should it affect?
- The key is it should be differential depending on incumbent performance, i.e. an interaction.
- Estimate

$$Y_{sj} = \alpha_j + \beta_1 T_{sj} + \beta_2 X_j \times T_{sj} + \varepsilon_{sj}$$

where X_j are legislator specific qualities

Bottom line from these papers

- These papers show that voters – when given information about politician's performance (e.g., corruption, showing up at work) – vote accordingly

- Do you view these as different from the papers on cash transfers? How?

The final step
Ferraz and Finan (2011): "Electoral Accountability and Corruption: Evidence from the Audits of Local Governments"

- The final step in our analysis was whether politicians behave differently, given that voters reward them for good behavior
- In the model, this was the condition that they'd behave well if

$$B \Pr\left(reelect \mid a = 1\right) \geq B \Pr\left(reelect \mid a = 0\right) + b$$

- This paper answers this question by asking: are politicians less corrupt if they are up for re-election?
- Setting: same municipal elections in Brazil
- Empirical idea:
  - Mayors in Brazil have a two-term limit
  - Compare first-term mayors (who face re-election) with second term mayors (who don't). Convincing?

Improving identification

- To gain better identification:
  - Compare second term mayors with first-term mayors who subsequently win re-election
  - Compare second term mayors who run for higher office
- Do these strategies help?

So what have we learned

- Basic agency model:
  - Voters vote to re-elect candidates based on signals of their performance
  - This induces politicians to behave better

- Evidence?
  - Voters more likely to vote to re-elect candidates if they personally receive government benefits
  - Voters more likely to re-elect candidates if they receive information that they are either working hard or likely to be good types
  - And politicians behave better (e.g. less corrupt) when they are up for re-election, as compared to when they face term limits

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