A Theory of Local Resource Allocation with Electoral Constraints

Bethany Shockley
Texas A&M University
Prepared for EITM at the University of Houston
June 2013
Overview of Presentation

- Dissertation Overview
- Game Theoretic Model
  - Complete information (2 specifications)
  - Incomplete information possibilities
- Empirical Implications and Hypotheses
- Data and Measurement
- Conclusions
How do institutional shifts shape mass and elite political behavior?

More specifically:

• How do decentralization reforms impact representation at the local level of government?

• Two perspectives
  • Citizens
  • Elected officials (mayors and councilors)
The Dissertation Overview

1) Mass behavior

• Does decentralization shape citizen participation in and perceptions of local government?

• Data: Mass survey data (Americas Barometer)
2) Elite behavior

- How do decentralization and local politics constrain the strategic choices of elected mayors?

- Data: Elite survey and interviews from Ecuadorian counties
3) Assessing representation

• How can we assess the quality of local representation and its relationship to decentralization?

• Data: Elite and mass survey data from Americas Barometer and Ecuador
The Dissertation Overview

1) Mass behavior
   • Does decentralization shape citizen participation in and perceptions of local government?
   • Data: Mass survey data (Americas Barometer)

2) Elite behavior
   • How do institutions and politics constrain the strategic choices of mayors?
   • Data: Elite survey and interviews from Ecuadorian counties

3) Assessing representation
   • How can we assess the quality of local representation and its relationship to decentralization?
   • Data: Elite and mass survey data from Americas Barometer and Ecuador
Elite Behavior: EITM Approach

- Theoretical model:
  - Decision making
- Statistical model
  - Discrete choice
- Theoretical analogue:
  - Utility maximization (game theory)
- Statistical analogue:
  - Logistic regression
Decentralization Background

- Political
  - Local elections
  - Party and electoral competition
- Administrative
  - “Competencies” or responsibilities for the provision of public goods
- Fiscal
  - Transfer or own source revenue

*Given fiscal decentralization, how does political decentralization shape administrative decentralization (public goods provision)?
Mayors have two representational roles
• 1) Administrators – produce public works
• 2) Politicians – get re-elected
• Resource allocation is an administrative task with political implications

How do politics shape and constrain administrative behaviors?
• Case of resource allocation
  • Investment of fiscal resources (transfers or own source revenue) in either private or public goods
Resource Allocation

- **Discretionary Funds**
  - Own source revenues or non-targeted transfers

- **Public Goods**
  - Basic services (water, sanitation, solid waste)
  - Education and health care (supportive role)
  - Transportation (streets, car registration)
  - Sidewalks, parks, and public spaces

- **Private Goods**
  - Jobs and contracts
  - Audiences and access
  - Tangible assistance—food, shelter, medicine
Theory: Intuitions

- Elections are a mechanism of accountability
- Mayors care about getting re-elected
- Citizens care about receiving benefits from either public or private goods
- Capacity matter (personal and situational)
- Political preferences matter (to a certain extent)
Maximize utility over payoff parameters

- The value of holding office: $\lambda_M$
- The administrative and personal cost of providing a public or private good is inversely related to capacity: $1/\delta_M$ where ($i=$ public and $j=$ private)

Choice Set:

- Invest one additional unit into providing a public good or a private good
- Note: The mayor’s capacity to deliver the public good ($\delta_{Mi}$) can differ from the private good ($\delta_{Mj}$)
Theory: The Voter

Maximize utility over payoff parameters:
- The benefit to the citizen of the public good: $\theta_{vi}$
- The benefit to the citizen of a private good: $\theta_{vj}$
- The multipliers for the capacity of the mayor to provide the good: $\delta_{Mi}$ and $\delta_{Mj}$
- The status of the citizen as in (or out) of the mayor’s support coalition: $l_v = \{-1, 1\}$
- The percentage of goods remaining: $\phi_v$

Choice Set:
- The voter (pivotal voter) chooses whether to retain or replace the current mayor
Complete Information Game

- **Players:**
  - A mayor (M) and the pivotal voter (V)

- **Actions:**
  - M: \{private, public\} where the mayor chooses to invest one additional unit in either public or private goods
  - V: \{retain, replace\} where the voter chooses whether to retain or replace the mayor
Game Tree

M: $\lambda_{\beta}^{-1}/\delta_{M} + \alpha_{M}$
V: $l_{v} + \delta_{M} \theta_{vi}$

M: $-\lambda_{\beta}^{-1}/\delta_{M} + \alpha_{M}$
V: $-l_{v} + \delta_{M} \theta_{vi} \phi_{vi}$

M: $\lambda_{\beta}^{-1}/\delta_{M_{j}}$
V: $l_{v} + \delta_{M_{j}} \theta_{vj}$

M: $-\lambda_{\beta}^{-1}/\delta_{M_{j}}$
V: $l_{v} + \delta_{M_{j}} \theta_{vj} \phi_{v_{j}}$
Assumptions

- “Perfectly crass politicians”
  - Mayors do not have a personal preference between private and public goods—expect related to capacity and administration

- “Equally crass voters”
  - Voters only care about policy in so much as they approve of the mayor
  - Incorporating spatial components?

- Complete Information
  - Both mayor and voter know each other’s payoffs
Equilibria Cases

- If $l_v=1$ (median voter supports mayor)
  - Voter will choose to retain the mayor (dominant strategy)
  - Mayor will choose between public and private goods based on how their capacity and administrative reward

- If $l_v=-1$ (median voter opposes mayor)
  - Voter will choose to replace the mayor if
    - $\phi_v < (2/\delta_M \theta_v)-1$
  - Voter will choose to retain the mayor if
    - $\phi_v > (2/\delta_M \theta_v)-1$
The Unpopular Mayor

- When the voter is clearly not a part of the mayor’s coalition \( l = -1 \):
  - Equilibrium strategy is to replace him/her
  - Except in the case where the Mayor provides either a public good or a private good with high capacity
  - Private goods to non-coalition members?

*Providing goods can overcome unpopularity*

*Can doing nothing overcome popularity?*
The Administrative Mayor

- In equilibrium, the mayor’s strategy depends on his/her capacity for providing the good.
- Specifically, the mayor chooses public when
  - $a > (1/d) - (1/v)$
  - Administrative incentives change the decision calculus for the mayor away from just doing whatever is easiest.

Implications for the impact of decentralization on responsiveness?
The Clientelistic Mayor

- Administrative rewards deter the provision of private goods, but not always.
- The cost of providing the private good relative to the public good is sufficiently low.

This happens when:

- Low capacity of the mayor
- Low administrative reward
  - Amazonian counties
Incomplete Information

- **States:**
  - State 1: $b > c$
  - State 2: $c > b$

- **Beliefs:**
  - M assigns some probability $p$ to being in State 1 of the world where $b > c$ and $1 - p$ to being in State 2 of the world.
  - V knows the true state of the world in which the game is being played.
Incomplete Information Alternative

State 1
\( b > c \)
- \( M: \lambda_M^{-1}/\delta_M + \alpha_M \)
- \( V: l_v + \delta_M \theta_{vi} - \delta_{Mj} \theta_{vj} \)
- \( \text{retain} \)
- \( \text{replace} \)

State 2
\( c > b \)
- \( M: \lambda_M^{-1}/\delta_M + \alpha_M \)
- \( V: l_v + \delta_M \theta_{vi} \phi_{vi} \)
- \( \text{retain} \)
- \( \text{replace} \)

Public
- \( M: \lambda_M^{-1}/\delta_M + \alpha_M \)
- \( V: l_v + \delta_M \theta_{vi} \phi_{vi} \)
- \( \text{retain} \)
- \( \text{replace} \)

Private
- \( M: \lambda_M^{-1}/\delta_M + \alpha_M \)
- \( V: l_v + \delta_M \theta_{vi} \phi_{vi} \)
- \( \text{retain} \)
- \( \text{replace} \)
Other Theoretic Modifications

- Voter is uncertain
  - Uncertainty about the mayor’s capacity
  - Uncertainty about the future of good’s provision

- Unite the utility of the voter with the utility of the mayor
  - Decision theoretic model that accounts for the capacity of the challenger to the mayor
  - Spatial model for mayor and voter
Empirical Implications

- The probability that the mayor provides a public (or private) good is positively related to his/her capacity for providing that type of good.
  - *It is less costly for mayors who are trained engineers or lawyers to provide public goods.* (Teodoro forthcoming, Avellaneda 2012)
  - *The capacity to provide private goods is related to membership in the landed elite or a major party* (Faust and Harbers 2012)
Hypotheses

Capacity

- H1a: Mayors with great capacity for providing public goods will have an increased probability of investing in public goods.
- H1b: Mayors with great capacity for providing private goods will have an increased probability of investing in private goods.

Clientelism

- H2: Mayors with small administrative rewards will be more likely to provide the private goods (and vice versa)
Hypotheses

- Unpopular mayor
  - Electoral success of the mayor increases as the amount of goods provided increases.
  - Mayors that are unpopular have an increased probability of continuing in office if they are capable and provide goods.

- Administrative mayor
  - Mayors with any (non-zero) capacity for providing a public good will have an increased chance of doing so as the rewards for doing so increase.
Local officials (mayors and vice-mayors) in Ecuador

- Moderately decentralized as a whole
- Reputation for clientelism / private goods
- Variation in capacity and level of administrative decentralization

Types of Data

- Interview (Semi-structured)
- Survey data (closed-ended)
- County-level budgetary data (income & expenditure)
Mapa Político de Segundo Orden (cantonal) del Ecuador
Interview and Survey Data
Operationalization

- **Dependent variable**
  - **Concept:** Do investments in public goods exceed investments in private goods?
  - **Data:** Budgetary options (investment/payroll expenditures)

- **Independent variables**
  - Desire for office—answer to interview question
  - Capacity—occupational and party proxies
  - Mass preference for public goods—survey data
  - Mayor’s coalition—survey data
Estimation Strategy

\[ Y_{Pr(Public)} = \beta(\text{holding office}) + \beta(\text{public goods capacity}) + \beta(\text{private goods capacity}) + \beta(\text{administrative incentives}) + \epsilon \]

\[ Y_{Pr(Retain)} = \beta(\text{mayor’s coalition}) + \beta(\text{value of public goods} \times \text{public capacity}) + \beta(\text{value of public goods}) + \beta(\text{public capacity}) + \beta(\text{private goods valuation} \times \text{private capacity}) + \beta(\text{value of private goods}) + \beta(\text{private capacity}) + \epsilon \]
Statistical Backwards Induction (SBI) or Quantal Response Equilibrium (QRE)

- Bas et al (2008)
- Signorino (1999)

Discrete choice modeling that incorporates the strategic interaction

- SBI is for recursive extensive for games
Conclusions

- Future of project
  - Fine tune empirical model
  - Estimation of empirical model

- Future research
  - What the implications of the model for government responsiveness at the local level?
  - Implications for mass preferences
  - Mayoral re–election
Thank you!