AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

CIDER

CIDER WP 109

LIBRARY
WITHDRAWN
JAN 18 2000
GIANNINI FOUNDATION OF
AGRICULTURAL ECONOMICS

University of California Berkeley

CENTER FOR INTERNATIONAL AND DEVELOPMENT
ECONOMICS RESEARCH
Working Paper No. C99-109

Relative Capture of Local and Central Governments: An Essay in the Political Economy of Decentralization

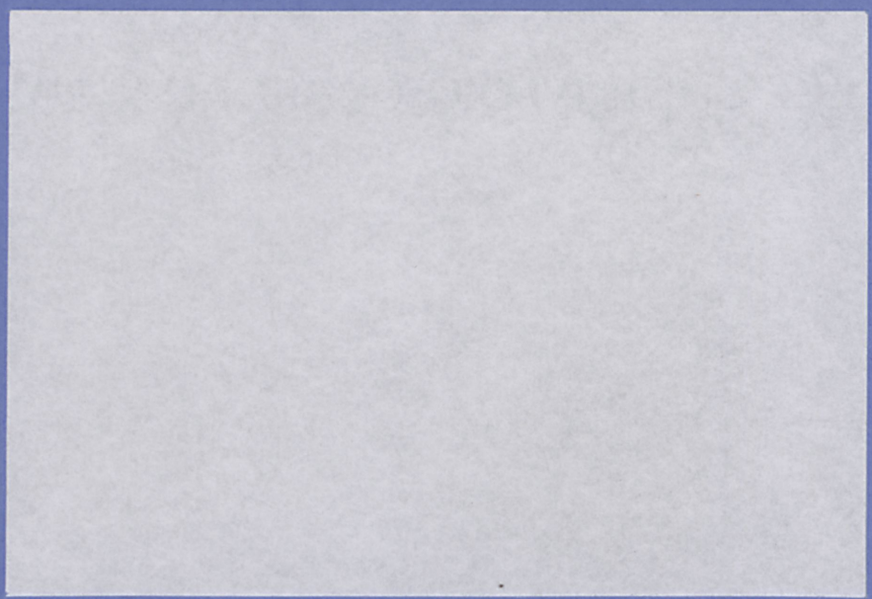
Pranab K. Bardhan
University of California, Berkeley
and
Dilip Mookherjee
Boston University

December 1999

Department of Economics

iber

CIDER



CIDER

CENTER FOR INTERNATIONAL AND DEVELOPMENT ECONOMICS RESEARCH

The Center for International and Development Economics Research is funded by the Ford Foundation. It is a research unit of the Institute of International Studies which works closely with the Department of Economics and the Institute of Business and Economic Research. CIDER is devoted to promoting research on international economic and development issues among Berkeley faculty and students, and to stimulating collaborative interactions between them and scholars from other developed and developing countries.

INSTITUTE OF BUSINESS AND ECONOMIC RESEARCH
Richard Sutch, Director

The Institute of Business and Economic Research is an organized research unit of the University of California at Berkeley. It exists to promote research in business and economics by University faculty. These working papers are issued to disseminate research results to other scholars.

Individual copies of this paper are available through IBER, 156 Barrows Hall, University of California, Berkeley, CA 94720. Phone (510) 642-1922, fax (510) 642-5018.

UNIVERSITY OF CALIFORNIA AT BERKELEY

Department of Economics

Berkeley, California 94720-3880

CENTER FOR INTERNATIONAL AND DEVELOPMENT ECONOMICS RESEARCH
Working Paper No. C99-109

Relative Capture of Local and Central Governments: An Essay in the Political Economy of Decentralization

Pranab K. Bardhan
University of California, Berkeley
and
Dilip Mookherjee
Boston University

December 1999

A shorter version of this paper will be presented at the AEA 2000 Session on Political Economy, Governance and Development. For comments and suggestions we are grateful to Roland Benabou, Sam Bowles, Gunnar Eskeland, Karla Hoff, Michael Wallerstein, Leonard Wantchekon, John Zaller and members of the Yale political economy workshop. A shorter and earlier version appeared as the Appendix to Bardhan and Mookherjee (1998).

RELATIVE CAPTURE OF LOCAL AND CENTRAL GOVERNMENTS

An Essay in the Political Economy of Decentralization[1]

Pranab Bardhan[2] and Dilip Mookherjee[3]

First Draft; November 30, 1999

Abstract

A common presumption is that decentralization is prone to a potential pitfall owing to the greater vulnerability of local governments to capture by local elites. We investigate the determinants of relative capture of local and national governments theoretically, in the context of an extended version of the Baron-Grossman-Helpman model of electoral competition with lobbying by special interest groups. A number of factors do provide support to the traditional presumption, such as reduced cohesiveness of interest groups, higher levels of voter awareness, and greater electoral competition at the national level. A number of other factors may, however, create an opposite tendency for *lower* capture at the local level. These include less electoral uncertainty at the national level, and a higher value of campaign funds in national elections owing to their fungibility across different districts. Relative capture also depends on heterogeneity across districts with respect to levels of local inequality and poverty: accordingly decentralization will tend to increase capture in high inequality districts and lower it in low inequality districts. Power-sharing between parties at the national level, due either to coalition governments or proportional representation, limits the extent of national capture. We conclude that empirical research is necessary to investigate the extent and determinants of relative capture.

---

[1]A shorter version of this paper will be presented at the AEA 2000 Session on Political Economy, Governance and Development. For comments and suggestions we are grateful to Roland Benabou, Sam Bowles, Gunnar Eskeland, Karla Hoff, Michael Wallerstein, Leonard Wantchekon, John Zaller and members of the Yale political economy workshop. A shorter and earlier version appeared as the Appendix to Bardhan and Mookherjee (1998).

[2]Department of Economics, University of California, Berkeley

[3]Department of Economics, Boston University

1 Introduction

The literature on public choice and political economy is characterised by numerous theoretical analyses of capture of the democratic process by special interest groups. It is surprising, therefore, that this literature rarely addresses the the question of relative capture at central and local levels of government. Yet there are some common presumptions on this matter in the general realm of public discussion. One is that the lower the level of government, the greater is the extent of capture by vested interests, and the less protected minorities and the poor tend to be. This has been quite common in the discussion of the need for federal intervention in the protection of minorities in the Civil Rights years in the United States, or of the putative regressive consequences of the movement in favor of 'state rights' in US history. It is also central to discussions of decentralized mechanisms of 'community targeting' in developing countries, in which responsibility for composition and delivery of public services and identification of local beneficiaries is transferred to local governments. If the conventional presumption is correct, the advantage of decentralizing delivery mechanisms to local governments with access to superior local information would be compromised by greater capture of these programs by local elites. The case for such forms of decentralization would then depend on the resulting tradeoff between these two effects.[4]

More than two centuries back, in the Federalist Papers (no. 10), James Madison expressed the view that local governments are more prone to capture:

> "The smaller the society, the fewer probably will be the distinct parties and interests composing it; the fewer the distinct parties and interests, the more frequently will a majority be found of the same party; and the smaller the number of individuals composing a majority, and the smaller the compass within which they are placed, the more easily will they concert and execute their plans of oppression. Extend the sphere and you take in a greater variety of parties

[4]Conning and Kevane (1999) describe numerous community targeting mechanisms that have been adopted in developing countries. Bardhan (1996) provides an overview of the relevant range of considerations in evaluating these mechanisms, while Seabright (1996) and Bardhan and Mookherjee (1998) present related theoretical models.

> and interests; you make it less probable that a majority of the whole will have a common motive to invade the rights of other citizens; or if such a common motive exists, it will be more difficult for all who feel it to discover their own strength and to act in unison with each other".

Similar views have been expressed in more recent times, in developed and developing countries alike. For instance, McConnell (1966, p.348) echoes Madison's arguments while pointing to the serious discriminatory effects of decentralized democratic politics in the US. Reservations about the effects of devolving authority to elected village governments in India have been expressed in terms of the oppressive power structure in many villages. Lieten (1996) and Mathew and Nayak (1996), for instance, describe the recent experience of certain local village governments in central India that have been subverted by local elites. In their view this experience vindicates the earlier pessimism of Babasaheb Ambedkar, one of the key designers of the Indian Constitution, concerning the prospects for local democracy in India.

Despite the importance of this issue, not much systematic empirical research effort appears to have been devoted to assessing the relative susceptibility of national and local governments to interest group capture. But what little evidence is available does not provide unqualified support to the presumption of greater capture of local governments. Galasso and Ravallion (1999) study targeting biases in schooling programs in Bangladesh, and find that intradistrict targeting failures were less severe than interdistrict targeting failures, suggesting that local governments exhibited stronger redistributive preferences than did the central government. The 1996 National Election Survey in India, involving nearly 10,000 citizens in 104 parliamentary constituencies in India, asked respondents whether they trusted national, state and local governments a great deal, somewhat, or not at all. Table 1 (taken from Mitra (1996)) reports the results at the all India level. The data are somewhat difficult to interpret, since expressed levels of trust (or lack of it) could be based on ignorance or traditional loyalties apart from perceptions of capture. For instance, voters may have a natural inclination to express greater trust in local governments owing to regional loyalties and lower levels of ignorance concerning affairs at the local level. To help interpret the data suitably, consider Table 2 which describes percent of respondents in different Indian

states expressing high levels of trust in local, state and national governments. The states are organized in order of increasing poverty rates.[5] Relative and absolute levels of trust in local government appear to be negatively related to poverty. Since ignorance and regional loyalties are likely to play a greater role in forming the attitudes of the poor, this lends credence to the notion that the expressed levels of trust in the survey were driven primarily by perceptions of capture. To the extent this is the appropriate interpretation, the data does not provide evidence in favor of the hypothesis that local governments are generally viewed as more susceptible to capture than governments at higher levels.

TABLE 1: Percent Voters Expressing Differing Levels of Trust in India

Level of Trust	In Central Govt.	In State Govt.	In Local Govt.
Great Deal	35	37	39
Somewhat	43	43	37
Not at All	22	19	23

TABLE 2: Percent Voters in Different Indian States Expressing High Trust

	Central	State	Local	Rural Poverty Rate
Bihar	30	30	30	63
Maharashtra	31	34	41	51
Tamil Nadu	29	37	40	42
Gujarat	23	22	40	42
West Bengal	36	41	51	32

The purpose of this paper is to develop an analytical framework that helps identify determinants of relative capture at different levels of government. We adapt the model of Baron (1994) and Grossman and Helpman (1996) of electoral competition subject to the influence of special interest groups. The model is characterised by Downsian competition between two parties whose policy platforms are influenced by campaign contributions from a lobby representing the interests of an elite. The behavior of voters is 'probabilistic', owing

[5]Rural Poverty Rate is the average poverty headcount rate from 1990-91 to 1993-94, taken from Parikh (1999, Table 3.2). While the table presents the rural poverty rates in the early 1990s, the ordering of the urban poverty rates is also similar.

to diversity of their party loyalties, and possible unpredictable 'swings' in these loyalties for exogenous reasons.[6] Voters in any district are divided into different socio-economic classes characterized by differing policy preferences and levels of political awareness. 'Aware' or 'informed' voters select which party to vote for, trading off party loyalties with an assessment of their respective policy platforms. The support of 'unaware' or 'uninformed' voters on the other hand is based on relative campaign spending of the two parties, besides their party loyalties. Awareness is positively related to socio-economic status, so a smaller fraction of low income minority groups are well informed, consistent with the empirical evidence of Delli Caprini and Keeter (1996) in the context of the US. The policies of the competing parties trade off the need to secure the votes of the informed voters, with the need to raise funds that help mobilize uninformed voters. They secure campaign contributions from interest group lobbies, assumed to represent only the interests of the rich, thus reflecting the pronounced asymmetry in political participation across different classes that has been documented in many countries (e.g., in the context of the US see Rosenstone and Hansen (1993)).

A convenient feature of this model is that it enables a precise and simple identification of the degree of capture of any level of government, thus allowing its determinants to be analysed. A bias of (average) voter loyalty in favor of a given party tends to make the electoral contest uneven, and reduces the need for the favored party to select policies that command support among informed voters. This causes policy platforms to diverge, and for the favored party to be more willing to accommodate the preferences of special interest groups. Increased asymmetry of party loyalties thus tends to reduce the intensity of electoral competition, and increase the level of capture of the party most likely to win. Consistent with the data in Table 2, the level of capture will also be positively related to the poverty rate, given the assumption that the poor tend to be less informed than the rest of the population. In addition, the model is consistent with the view that increased inequality will be associated with lower levels of political awareness in the population , and hence with

[6]Persson and Tabellini (1998) also develop a model based on probabilistic voting behavior. A comprehensive discussion of this class of models in the context of the recent literature on formal models of political economy is provided in Persson and Tabellini (2000).

higher levels of capture.

Applying the model to the question of relative capture, we identify a range of possible determinants, some of which provide support to the Madisonian presumption in favor of greater capture at the local level. For instance, special interest groups may face more daunting problems of coordinating and motivating their members to contribute to their respective lobbies, owing both to larger numbers and greater heterogeneity of their membership at the national level. This raises the effective cost of buying influence at the national level. This is reinforced if voter awareness tends to be higher in national elections, owing to greater media attention: by reducing the size of the uninformed voter population it tends to lower the value placed by political parties on campaign funds.

Other determinants of capture may, however, pull in the opposite direction. Consider for instance, the relative degree of electoral competition at the two levels, in a majoritarian electoral system. This turns out to depend on the degree of *ex ante* homogeneity of party loyalties in different districts. If these are subject to independent (but indentically distributed) swings in different districts, electoral competition will be less uneven at the local level. There is a greater probability of an upset victory of the less-favored party at the local level, reducing the inclination of the interest group to contribute to the funds of the favored party, and hence the level of capture. This can however get reversed with sufficient heterogeneity across districts in party loyalties: for instance, if they serve to make the outcomes of local elections more predictable than national elections. This is further reinforced if there are more parties competing at the national than local level.

An additional determinant of relative capture is the extent of heterogeneity among local districts with respect to intra-district inequality or levels of political awareness. Then local governments will differ in the extent of capture. Since the national level of inequality and of voter awareness is an average of these at the local levels, the extent of capture at the national level will tend to be intermediate between the extremes at the local level. On average, however, the national government could be more prone to capture, since the fungibility of campaign spending across districts implies that campaign funds can be deployed more effectively in a national campaign.

On the other hand, the tendency towards greater capture at the national level is attenuated in systems where the electoral process is modified from a majoritarian system to ensure representation of both parties in national policy-making. Such forms of minority representation could arise either from a system of proportional representation, a power-sharing coalition government, or independence of the national legislature from the executive. Under some additional assumptions on the structure of the policy space and the nature of policy preferences of different classes, the model predicts that policy at the national level will be less subject to capture than in the majority of local governments where the dominant party wins.

In light of the contrasting roles of the diverse factors identified by our analysis, therefore, one would not expect a universal tendency towards greater capture of local governments. The overall comparison would depend on the interplay between a large number of underlying institutional factors, such as relative degrees of voter awareness and cohesiveness of special interest groups, the extent of heterogeneity across districts, and the nature of the national electoral system. Whether or not local democracy is subject to greater capture may well turn out to be context- and system-specific. This creates the need for empirical research to identify the nature of relative capture in any given setting, in order to appraise the potential pitfalls of decentralization. We hope that the model analysed in this paper will provide a useful framework for such empirical work.

The rest of the paper is organized as follows. The model is presented in Section 2. Section 3 discusses a benchmark case where the outcomes of national and local elections exactly coincide. The analysis thereafter discusses deviations from this unrealistic benchmark case which cause local capture to deviate from capture of national governments. These include differences in interest group cohesiveness and voter awareness, which appear to underlie the arguments of Madison and others in favor of greater local capture. Section 4 considers differences in the nature of electoral competition at the national and local levels, and describes how the comparison could go either way. Section 5 studies the effects of heterogenous levels of poverty, inequality or voter awareness across districts. Section 6 considers the effects of coalition national governments. Finally Section 7 concludes by discussing a range of relevant factors that our paper abstracts from, and possible avenues for empirical research.

2 The Model

2.1 Voters

There are n districts each with an identical number of voters, divided into three classes: poor (p), middle income (m) and rich (r). Districts differ in demographic composition across the three classes: the proportion of the population of district i are denoted by β_p^i, β_m^i and $\beta_r^i = 1 - \beta_p^i - \beta_m^i$ respectively.

The policy space is a set P of possible policies π. The welfare level of any member of class $c = p, m, r$ is a function $U_c(\pi)$ of the policy choice π.

A fraction of citizens of each class is *informed* or politically aware, and turn out to vote for different parties partly on the basis of the levels of welfare they expect to achieve under their respective policies. The fraction of informed voters of each type are α_p, α_m and α_r, assumed the same in all districts. Political awareness is closely related to socioeconomic position and education level, so $\alpha_r \geq \alpha_m > \alpha_p$. Delli Carpini and Keeter (1996, Ch.4) present significant empirical evidence in support of this assumption for the United States.[7] An increase in the fraction of the population that is poor will accordingly imply a lower fraction of informed voters in the population as a whole. This will also be the result of increased inequality in general if political awareness is a 'concave' function of economic position, in the sense that $\alpha_r - \alpha_m \leq \alpha_m - \alpha_p$.[8] In other words, upward mobility at

[7]The most significant determinants of the distribution of political knowledge are education, income, race and gender. The most informed citizens were older males whose family incomes exceeded $50,000 annually. This group scored between 65-76% questions correct in the 1988 and 1989 Surveys of Political Knowledge. These scores were over two and a half times higher than those achieved by black women with family income less than $20,000 annually. High income groups are overrepresented in the top 20% informed group relative to their demographic weight by 25%, and middle income groups by 18%. Low income groups in contrast have been underrepresented in this group by 44%. These information gaps have remained stable over the last thirty to forty years.

[8]This assumption is also consistent with the results reported in Delli Carpini and Keeter (1996), Table 4.9, and Figures 4.1 and 4.2. For instance, the mean percentage of survey questions answered correctly in the 1989 survey was 39% in low income groups (defined as annual incomes below $20,000), 49% in middle income groups (defined as annual incomes between $20,000 and $50,000), and 57% in high income groups.

the lower end of the scale translates into a more significant enhancement of literacy and political participation than at higher levels. While the concavity condition is sufficient, it is not necessary for increases in inequality to reduce the fraction of informed voters.[9]

There are two parties, denoted A and B. Informed citizens engage in 'probabilistic voting', weighing policy preferences with an extrinsic (non-policy-based) preference or loyalty for one party over another. Informed voter j in district i has the following utility over the party-policy space:

$$U_{c(j)}(\pi) + a_{ij}I(A) \tag{1}$$

where $c(j)$ denotes the class that voter j belongs to, $I(A)$ is an indicator function taking the value 1 for party A and 0 otherwise, and a_{ij} represents the voter's preference for party A over party B. The underlying assumption here is that party loyalties do not depend on which class the voter belongs to: as discussed in the Conclusion this is one of a number of simplifying assumptions which would not materially affect the main qualitative results. The party preference can be decomposed into the sum of a nationwide preference a, a district-specific preference a_i and a voter-specific preference ϵ_{ij}:

$$a_{ij} = a + a_i + \epsilon_{ij} \tag{2}$$

We assume that these three components of party preferences are mutually independent, and that the number of voters in any given district is large enough to permit application of the law of large numbers. Without loss of generality, both district and voter-specific components have zero means, reepresenting deviations from the nationwide average. Moreover, the distribution of voter-specific preferences ϵ_{ij} within each district is uniform on the range $[-\frac{1}{2f}, \frac{1}{2f}]$. This assumption will imply that vote shares are linear functions of policy-based utility differences, which greatly simplifies aggregation across districts.

Vote shares within the district will also depend on the realization of $a + a_i$, the unpredictable swing in voter loyalties. The median of the distribution of $a+a_i$ thus represents the

[9]Suppose for instance that the rise in inequality occurs as a result of mean preserving transfers among the middle class, which reduce the size of this class, and increase the fraction of the population that is poor and rich. If these transfers transform $(m+1)$ middle class citizens into m poor and 1 rich citizens, then for m sufficiently large the effect will be to reduce the aggregate fraction of informed voters, irrespective of whether or not the concavity condition is satisfied.

party favored by the voters in district i, in the following sense (made more precise below). In the absence of any inter-party differences in policy platforms or campaign spending, the *ex ante* probability that party A wins the election in district i is greater than one half if the median of $a + a_i$ is positive, and less than one half otherwise.

For the time being we shall make no other distributional assumptions, except that the supports of a and a_i are bounded suitably relative to the support of the person-specific shocks, to enable us to avoid 'corner solutions' for vote shares. To this end it shall be assumed that the person specific shocks are widely enough dispersed, i.e., f is close to zero. Then for the range of relevant electoral strategies of the two parties, there will always be people in each district who will vote for any given party, thus ensuring 'interior' vote shares.

The party preferences of voters may arise from incumbency (e.g., if party A is currently in power, voters may be unwilling to experiment with an unknown party, or the existing government may be able to manipulate the electoral process to secure an unfair advantage), personal characteristics of candidates nominated by different parties, or random events that cause voters to evaluate past policy positions differently (e.g., events in foreign countries or in financial markets). These events occur between the time that parties formulate their electoral platforms, and the time that elections take place. Hence the voter swings cannot be predicted either by parties or lobbies when deciding on their policy platforms and campaign contributions. Moreover, they render election outcomes inherently uncertain, even after parties have deceided on their electoral strategies.

In the Downsian tradition, parties announce policies prior to the election, and are assumed to credibly commit to these once elected. An informed voter j in class c with preference a_{ij} for party B votes for party A if $U_c(\pi^A) - U_c(\pi^B) + a + a_i + \epsilon_{ij} \geq 0$. Hence (conditional on a, a_i) the fraction of class c informed voters in district i that vote for party A equals $\frac{1}{2} + f[a + a_i + \{U_c(\pi^A) - U_c(\pi^B)\}]$. Letting $W_I^i(\pi^k)$ denote $\beta_r^i \alpha_r U_r(\pi^k) + \beta_m^i \alpha_m U_m(\pi^k) + \beta_p^i \alpha_p U_p(\pi^k), k = A, B$, the total number of informed voters in district i that vote for party A reduces to $\frac{1}{2} + f[a + a_i + W_I^i(\pi^A) - W_I^i(\pi^B)]$.

Uninformed voters are swayed by relative campaign spending of the two parties. These may reflect the influence of election advertisements, or other efforts made to mobilize sup-

port (such as election rallies, door-to-door visits by campaign workers, and various carrots and sticks offered to voters to turn out and vote 'suitably'). We assume that an uninformed voter j will vote for party A as long as

$$h[C_i^A - C_i^B] + a + a_i + \epsilon_{ij} \geq 0. \tag{3}$$

Then the fraction of uninformed voters in district i voting for A will equal $\frac{1}{2} + f[a + a_i + h(C_i^A - C_i^B)]$, where $h > 0$ is a parameter reflecting the marginal effectiveness of campaign spending in securing votes from this group of the population.[10]

Conditional on a, a_i, the aggregate vote share of party A in district i is obtained by aggregating across informed and uninformed voters

$$\begin{aligned} s_i^A &= \frac{1}{2} + f[a + a_i + W_I^i(\pi^A) - W_I^i(\pi^B) + h\{1 - \beta_r^i\alpha_r - \beta_m^i\alpha_m - \beta_p^i\alpha_p\}\{C_i^A - C_i^B\}] \\ &= \frac{1}{2} + f[a + a_i + V^i(\pi^A, C_i^A) - V^i(\pi^B, C_i^B)] \end{aligned}$$

where $V^i(\pi^k, C_i^k) \equiv W_I^i(\pi^k) + \chi[1 - \beta_r^i\alpha_r - \beta_m^i\alpha_m - \beta_p^i\alpha_p]C_i^k$ denotes the net effectiveness of party k's electoral strategy, represented by the vector $(\pi^k, C_i^k$ in district i. Here χ denotes $h\{1 - \beta_r^i\alpha_r - \beta_m^i\alpha_m - \beta_p^i\alpha_p\}$, the weight on campaign spending relative to the support of informed voters. An increase in the fraction of uninformed voters in the district thus raises the premium on campaign finance.

Given the electoral strategies of the two parties, the *ex ante* probability that party A wins a majority in district i is given by

$$G^A(V^i(\pi^A, C_i^A) - V^i(\pi^B, C_i^B)) \equiv \text{Prob}[a + a_i + V^i(\pi^A, C_i^A) - V^i(\pi^B, C_i^B) \geq 0], \tag{4}$$

where G^A is the distribution function of $-a - a_i$, is a strictly increasing function of the difference in effectiveness of the respective electoral strategies of the two parties.

2.2 Electoral Competition and Lobbying in Local Elections

Consider first an election to a local government in the district i. The subscript i can be suppressed in the notation of this section. Each party's objective is assumed to be

[10] In Section 5 we shall allow support of uninformed voters to respond in a nonlinear fashion to campaign spending levels.

to maximize the probability of winning the local election. Parties are thus presumed to be purely opportunistic, and the rents from office are exogenously given. Equation (4) implies that each party has a dominant strategy: party k will select an electoral strategy (π^k, C^k) to maximize its own electoral effectiveness $V^i(\pi^k, C^k)$, no matter what the other party does. This simplifies the analysis considerably, as the actions of each party can be analysed independently of the other. Party k's behavior can be represented simply by the maximization of a weighted sum of informed voter welfare and campaign spending:

$$W_I(\pi^k) + \chi C^k \tag{5}$$

In the absence of any lobbying, there is a unique equilibrium characterized by 'Downsian' convergence: each party will choose the policy platform π^* that maximizes the welfare W_I of informed voters. Which party will win will depend entirely on the unpredictable swing factor $a + a_i$. Party A will be favored to win the election, in the sense that the probability of A winning the election $\bar{G}^A \equiv \text{Prob}[a + a_i \geq 0]$, greater than one half by assumption. Use $\bar{G}^B \equiv 1 - \bar{G}^A$ to denote the corresponding probability of party B winning.

The final assumption of the model is that there is a single organized lobby, comprised only of the rich.[11] An exogenous fraction l of the set of rich citizens in the district actively contribute financially to the lobby, while the remaining members of this class free-ride on the contributors. So l is a parameter representing the extent to which the rich are well organized as a special interest group.

The lobby contributes to the campaign finances of the two parties; these contributions are conditioned on their policy platforms: $C^A(\pi^A), C^B(\pi^B)$. The lobbying game is as follows: in the first stage, the lobby offers (nonnegative) conditional contributions

[11]Rosenstone and Hansen (1993, Table 8-2) present evidence that the propensity to contribute money, attend meetings and work on campaigns increases sharply with family income in the US between 1952-88. The purpose of this assumption is to capture the effects of this asymmetry. The set of lobbies is exogenous in the Grossman-Helpman framework; in their model there can be more than one lobby. Special interest capture results only of some voters are not represented by some lobby. So the interesting case is where at least one class of voters is not represented by any lobby. Allowing an additional lobby to represent the interests of the middle class would complicate the analysis without altering most of the qualitative results.

$C^A(\pi^A), C^B(\pi^B)$. Then at the second stage, each party selects a policy to maximize its vote share, i.e., party $k = A, B$ selects policy π^k to maximize $W_I(\pi^k) + \chi C^k(\pi^k)$.

Recall that in the absence of any lobbies, both parties would select the same policy π^* and party A would win with probability $\bar{G}^A$. If the lobby wishes to bias the policy choice of party k from π^* to π^k, it would have to contribute at least $\tilde{C}^k(\pi^k)$ which makes the party indifferent between the two options, i.e., such that

$$W_I(\pi^k) + \chi \tilde{C}^k = W_I(\pi^*),$$

so this minimum contribution is given by

$$\tilde{C}^k(\pi^k) = \frac{1}{\chi}[W_I(\pi^*) - W_I(\pi^k)] \tag{6}$$

If the participation constraints bind, the lobby contributes only to influence policy choices of each party, but not the relative probabilities of either party winning. Then *party A continues to win with probability $\bar{G}^A$, independent of the precise policies chosen*, since the loss of informed voters is exactly compensated by gain of uninformed voters. In this case, the lobby effectively purchases the policy platform of each party at a price given by (6) above. In equilibrium, it will induce policy choice π^k by party k which maximizes the net expected utility of a contributing member of the rich class $\bar{G}^k U_r(\pi^k) - \frac{1}{l\beta_r}\tilde{C}^k(\pi^k)$. In this case, therefore, the policy choice π^k of party $k = A, B$ is selected to maximize

$$l\chi\beta_r\bar{G}^k U_r(\pi^k) + W_I(\pi^k) \equiv \beta_p\alpha_p U_p(\pi^k) + \beta_m\alpha_m U_m(\pi^k) + \beta_r\{\alpha_r + l\chi\bar{G}^k\}U_r(\pi^k), \tag{7}$$

a linear quasi-utilitarian welfare function with a constant set of welfare weights. It turns out that a similar characterization of equilibrium policy choices holds even if the participation constraints do not bind:

Proposition 1 *In equilibrium the policy choice π^k of party $k = A, B$ maximizes*

$$\beta_p \alpha_p U_p(\pi^k) + \beta_m \alpha_m U_m(\pi^k) + \beta_r \{\alpha_r + l\chi G^k\} U_r(\pi^k) \tag{8}$$

given G^k, the equilibrium probability of party k winning. The probability p^A that party A wins the election equals $G^A(0)$ in the case that the participation constraints for both parties bind; otherwise it satisfies the first-order condition (using g to genote the density of G^A, and $\pi^k(p^k)$ the optimal policy choice of party k given the win probability p^k as described by (8)):

$$U_r(\pi^A(p^A)) - U_r(\pi^B(1-p^A)) \geq \frac{1}{\chi l \beta_r g(G^{A-1}(p^A))} \tag{9}$$

with equality if $p^A < 1$.

The proof is presented in the Appendix. In the case that the participation constraints do bind, the probability of the party A winning is given by $\bar{G}^A = G^A(0)$. Without loss of generality, suppose that voters are more loyal on average to party A, so it is more likely to win: $\bar{G}^A$ exceeds one half. As long as $\bar{G}^A$ strictly exceeds one half, the equilibrium policy platforms of the two parties must diverge. Party A wins more often, obtains larger campaign contributions (since the lobby is more willing to contribute to influence the platform of party A as it is more likely to form the government) and selects policies that cater more to special interest groups. The bias between the two parties depends entirely on the asymmetry of voters' party preferences in this case.

The divergence of policy platforms is further accentuated in the case where the participation constraints do not bind. It is easy to check that the participation constraint must bind for the less favored party B. It will not bind for party A if it pays the rich to contribute additionally to enhance its electoral prospect, i.e., if

$$g(0)\chi[U_r(\pi^{A*}) - U_r(\pi^{B*})] > \frac{1}{l\beta_r}. \tag{10}$$

where π^{k*} denotes the optimal platform of party k when the participation constraint for A binds. In this case, party A will win with an even higher probability, described by (9). The asymmetry between the two parties is then heightened further: party A leans further in

favor of the interests of the lobby group, receives larger campaign contributions, and wins more often, while the converse is true for party B.

The implicit welfare weights in expression (8) neatly summarize the effects of the political system. Consider first the case where all voters are informed: $\alpha_c = 1$, all c. Then (8) reduces to the expression for average (utilitarian) welfare, with voters in different classes receiving welfare weights that are proportional to the demographic weight of this class in the population. In this setting the welfare of the average citizen is maximized by the chosen policies of either party. This is the result of the 'smoothing' implied by probabilistic voting, which eliminates the classic distortion associated with deviations of the preferences of the median voter from utilitarian welfare. Income distribution will nevertheless have an effect on policy outcomes, by affecting the demographic weight on different classes. For instance, an increase in the fraction of the population that is poor will induce more pro-poor policies.

Now consider the 'distortions' arising from the existence of uninformed voters. In the absence of lobbying the implicit welfare weights of different classes are discounted by the fraction of each class that is 'informed'. The disparity in political awareness between the classes creates a bias against the interests of the poor. An additional distortion arises from lobbying, which provides an additional boost to the implicit welfare weight on the interests of the rich. We shall use the term 'capture' to denote the policy biases resulting from both sources.

The model thus identifies a number of determinants of the extent of capture.

(i) *Lack of Effective Electoral Competition:* resulting from loyalty biases in favor of one party, represented by a higher value of G^k for the favored party. This raises the capture of the favored party, while reducing it for the other party, so their platforms become more divergent. Since the outcome of the election is probabilistic, the extent of capture of the local government is uncertain, and depends on which party wins. Nevertheless, capture increases in the sense that it is higher for the party that is expected to win.

(ii) *Interest Group Cohesiveness:* represented by l, the fraction of the class of rich citizens

that contribute to their lobby.

(iii) *Average Level of Political Awareness:* represented by the parameter χ, which is an increasing function of the fraction of uninformed voters in the population.

(iv) *Disparity in Awareness Levels Across Classes:* represented by the disparity between fractions of voters α_c in different classes that are informed.

A factor of additional interest is the effect of *increased political uncertainty*, as will become evident in later sections. Suppose there is a mean-preserving increase in the spread of the swing factor $a + a_i$ in favor of party A. Will this increase or decrease the extent to which this party's policies are vulnerable to capture? There are two contrasting effects. One makes it less likely that A will win the election, e.g., when both parties select the same electoral strategy. This will reduce the willingness of the lobby to contribute to A's campaign funds, thus tending to reduce the extent to which it is prone to capture. On the other hand, the increased uncertainty may increase the value of campaign funds from the standpoint of party A, since it can no longer count on winning as easily as before. The latter effect will lower the effective 'price' at which it is willing to bend its policy platform in order to solicit campaign funds. The overall effect does turn out to be ambiguous in general. However, there is a tendency for the former effect to predominate, as described by the next proposition.

Proposition 2 *Suppose there is greater political uncertainty, represented by a mean-preserving increase in the spread (in the sense of Rothschild-Stiglitz (1970)) of the swing in favor of party A. Then the equilibrium probability that party A wins the election goes down, and hence also the extent to which it is subject to capture, if either:*

(i) the participation constraints bind in the equilibrium following the increase in uncertainty, **or**

(ii) the distribution functions G_l^A, G_h^A of the swing $-a - a_i$ against party A corresponding to low and high uncertainty respectively satisfy the property that

$$G_l^A(y_l) = G_h^A(y_h) \in (\frac{1}{2}, 1) \quad \textit{implies} \quad g_l(y_l) \geq g_h(y_h) \tag{11}$$

where g_l, g_h denote the corresponding density functions.

The distributional condition (11) is not always implied by a mean-preserving increase in spread. But it is a property that is satisfied by a number of common distributions, such as the uniform or normal distribution. For such distributions, the effect of increased uncertainty is to reduce capture, irrespective of whether or not the participation constraints bind. While the formal proof is in the Appendix, the reasoning behind the result is quite simple, as depicted in Figure 1. We know from Proposition 1 that the extent to which party A is prone to capture will decrease if and only if the equilibrium probability that it wins the election decreases. If the participation constraints bind after uncertainty increases, Figure 1 makes it evident that the probability that A wins must go down.[12] In general, the same is true for distributions satisfying condition (11). This is because the condition implies that at a commmon win probability for party A exceeding one half, the effectiveness of increased campaign spending on its win probability is greater when there is less uncertainty. This boosts incentives for the lobby to contribute additionally to boost the probability of party A winning, ensuring a higher equilibrium win probability.

Determinants (iii) and (iv) explain why literacy, poverty and inequality affect policy biases. Increased illiteracy and poverty causes the average fraction of uninformed voters in the population to rise. An increase in incomes of the rich at the expense of the poor can cause levels of education and political participation of the latter to fall, causing a greater disparity in awareness levels. Moreover, as discussed previously, increased inequality can increase the fraction of uninformed voters in the population.

This suggests that redistributive policy reforms can follow a dynamic process which is sensitive to historical levels of inequality. If initial inequality is sufficiently large, then the rich will have enough political clout to block any redistribution, which causes a high level of inequality to be perpetuated thereafter. But if an external shock happens to reduce initial

[12]If they bind both before and after the change, then the equilibrium win probability which corresponds to the value of the distribution function at 0 goes down. If they bind after but not before, then the equilibrium probability before the change must have been even higher to start with.

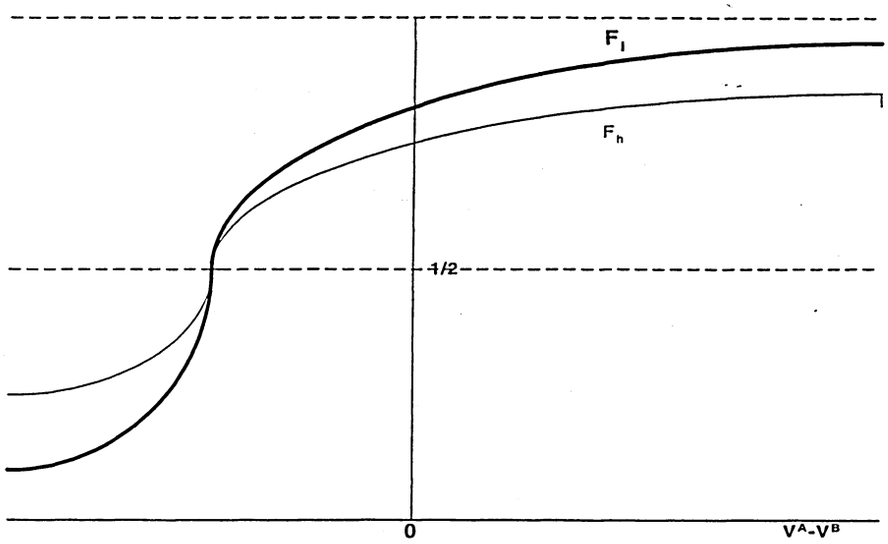


Figure 1: WIN PROBABILITIES WITH DIFFERING LEVELS OF POLITICAL UNCERTAINTY

inequality, it reduces the political power of the rich, inducing the adoption of redistributive policies. This reduces the level of inequality, which thereafter adds further momentum to the process. This observation suggests a reason why the level of inequality and of special interest capture may be subject to hysteresis, and in particular why different regions in the long run can be characterised by substantial cross-sectional differences in the level of inequality and capture of local governments. In turn this motivates our modelling of heterogeneity across districts in terms of underlying differences in inequality in subsequent sections.

2.3 National Elections

Turn now to electoral competition at the level of the national government. We suppose that the policy space is the same as at the local level. This may reflect the transfer of authority over a given set of policies from local to central governments. We shall assume that owing to reasons of horizontal equity, or to the lack of suitable information regarding differences across districts, national governments are constrained to select the same policy across all districts, i.e., $\pi_i^k = \pi^k$, all i. With decentralization to local governments, this constraint

no longer operates, allowing greater 'flexibility' with respect to local conditions.[13] This potential benefit has to be offset against the possibility of greater capture at the local level. In order to appraise the latter, we need to assess the extent of capture that national governments are prone to.

2.3.1 Majoritarian National Elections

The simplest case is one where the national election creates a single voting district for the entire country, so the party that wins a majority of the national vote wins the election. While this may be used in certain small countries (such as the Netherlands), it is rare in larger countries. Large countries with a parliamentary two party system typically elect representatives from each district on a 'first-past-the-post' system to a national assembly, and the party with a majority in the assembly forms the national government. This corresponds also to a Presidential system in which Presidential candidates of the two parties win districts on a first-past-the-post system, with the candidate winning a majority of districts becoming the President, who is subsequently not subject to significant restraints from an independently elected legislature.

The vote share of party A nationwide across all districts will be

$$\frac{1}{2} + f[a + \frac{1}{n}\Sigma_i a_i + \frac{1}{n}\Sigma_i\{V^{iA} - V^{iB}\}] \tag{12}$$

whereas in district i will be

$$\frac{1}{2} + f[a + a_i + V^{iA} - V^{iB}] \tag{13}$$

Hence with a single voting district, the probability that party A wins the national election is given by

$$g^A(\bar{V}^A - \bar{V}^B) \equiv \text{Prob}[a + \frac{1}{n}\Sigma_i a_i + \bar{V}^A - \bar{V}^B \geq 0] \tag{14}$$

where $\bar{V}^k \equiv \frac{1}{n}\Sigma_i V^{ik}$ denotes the average effectiveness of party k's strategy at the national level. So at this level party k's objective will be to maximize $\bar{V}^k$.

[13] Of course, no such constraint prevents political parties from varying levels of campaign spending across districts in national elections.

With a two stage majoritarian system, the objective function will be the same under the following additional assumptions. Suppose there are a finite number of *types* of districts, with a large enough number of districts within each type to permit application of the law of large numbers. Now use i to denote the type of the district, and let γ_i denote the fraction of all districts that belong to type i. Assume that all districts of the same type are *ex ante* homogenous with respect to party loyalties, in the sense that the swing in favor of party A in district d of type i is given by $a + a_i + a_d$, where a_d is independent and identically distributed across d, with zero mean. Moreover, the distribution of a_d is uniform on a wide enough range $[-\frac{1}{2m}, \frac{1}{2m}]$.

Then the probability that party A's candidate is elected from a district d of type i to the national assembly is Prob$[a + a_i + a_d + V^{iA} - V^{iB} \geq 0]$, and the fraction of districts of type i that party A will win equals $\frac{1}{2} + m[a + a_i + V^{iA} - V^{iB}]$. The overall fraction of all assembly seats won by party A equals $\frac{1}{2} + m[a + \Sigma_i \gamma_i a_i + \Sigma_i \gamma_i \{V^{iA} - V^{iB}\}]$, so the objective of party k will be to maximize $\bar{V}^k \equiv \Sigma_i \gamma_i V^{ik}$, the same as in the case of a single nationwide voting district.

2.3.2 Power Sharing or Proportional Representation

An alternative to the two systems described above is one where both parties share power in the elected government in proportion to their respective vote shares in the overall population. This could result from proportional representation of elected members of the national assembly in the national government. Since representatives of both parties will win some seats in the national assembly, this will ensure both parties are represented in the policy-making process. This may correspond alternatively to a system where the legislature is elected independently of the executive, and exercises strong checks and balances on the latter. This case is considered in more detail in Section 6 below.

3 Baseline Case: Identical Capture at Local and National Levels with Majoritarian Elections

In this section we provide a benchmark case under which the outcomes of national and local elections exactly coincide.

Proposition 3 *Suppose*

(a) all districts are ex ante as well as ex post identical; in particular, they have the same socio-economic composition and the swing in different districts are perfectly correlated;

(b) national elections are majoritarian;

(c) proportions of citizens in different classes are equally 'informed' in local and national elections; and

(d) the rich are equally well-organized at the national and local levels.

Then the outcome of local and national elections will exactly coincide, in terms of policy platforms, campaign spending and winning probabilities.

This follows directly from the observation that the objectives of the parties in elections at the two levels exactly coincide, and so do the incentives of the special interest group. With perfect homogeneity of all districts, the objective of party k at the national level is $\bar{V}^k$ reduces to $W_I(\pi^k) + \chi C^k$, where C^k denotes per district campaign spending, and W_I the average utility of informed voters in any given district. In particular, the allocation of campaign funds across different districts is irrelevant. Hence the party objective in local and national elections exactly coincide. Moreover, if party A wins in one district, it must win all others — this is the consequence of the assumption that the swing is perfectly correlated across all districts. Given assumptions (c) and (d), the function determining winning probabilities given the electoral strategies are the same at the two levels, and the special interest group has an identical incentive to donate to campaign funds. Hence the outcomes of national and local elections must be the same.

Corollary to Proposition 3. *Suppose the assumptions of Proposition 3 hold, except that* **either** *citizens are better informed at the national level,* **or** *the rich are less well organized at the national level. Then there will be less capture at the national level.*

The implications of relaxing assumptions (c) or (d) are straightforward. If political awareness is greater in a national election than in local elections, resulting in a uniformly larger fraction of informed citizens in all classes in a national election, there will be less capture at the national level. This may be the result, for instance, of greater media attention to national rather than local politics, resulting from the existence of scale economies in the media. The costs of investigative journalism are independent of the scale of the audience, which can be the source of such scale economies. In other contexts, however, in large countries of sufficient diversity, citizens may be more involved in the politics of their local region than of the country as a whole, in which case the result would go in the opposite direction.

Similarly, if special interest groups are better organized at the local rather than the national level, the extent of free-riding within their class on the common lobbying activities (l) is lower at the local level, resulting in greater local capture. This may result, for instance, from the factors that Madison alluded to: a smaller number of members of this class need to be mobilized and coordinated at the local level; the narrower geographical dispersion of the group reduces costs of communication, possible sources of heterogeneity and asymmetric information between members.

These two effects — of different levels of political awareness, and of the success of special interest groups in overcoming free-riding — are fairly obvious, and will apply to all other models that we consider below. For this reason, we shall abstract from them in what follows, so as to isolate and identify other determinants of relative capture. Assumptions (c) and (d) will be reimposed from this point subsequently.

4 Differential Capture Owing to Differences in Electoral Competition

4.1 *Ex Ante* Homogenous Districts

We start with the case where two parties contest both national and local elections, and independent district-specific swings may exist but are drawn from the same distribution across all districts. Moreover, the districts have the same socio-economic composition, so they are *ex ante* homogenous. The districts differ only with respect to their average *ex post* swing in favor of party A. These imply that the *ex post* outcomes of elections in different districts will not coincide, even if the parties select identical electoral strategies.

The existence of these district-specific swings implies a contrast between the vote share expressions for national elections (12) and local elections (13): the former depends on the average nationwide swing $\frac{1}{n}\Sigma_i a_i$, and the latter on a single district-specific swing a_i. The former has the same mean, but a lower variance. The result of the nationwide election will thus be more predictable than any local election. While the form of the objective function of each party is the same in the two kinds of elections, the equilibrium policy platforms will turn out to be different. The favored party is less likely to be 'upset' at the national level. Formally, the electoral uncertainty is greater at the local level in the sense of a mean-preserving increase in spread of the swing factor. Invoking our earlier result concerning the effect of increased uncertainty, it follows that in this case there will be less capture at the local level.

Proposition 4 *Assume all the conditions of Proposition 3 hold, except that i.i.d. district specific swings exist. Also assume that the conditions assumed in Proposition 2 hold, i.e., either participation constraints bind in local elections, or the distributional condition (11) is satisfied. Then there will be greater capture at the national level.*

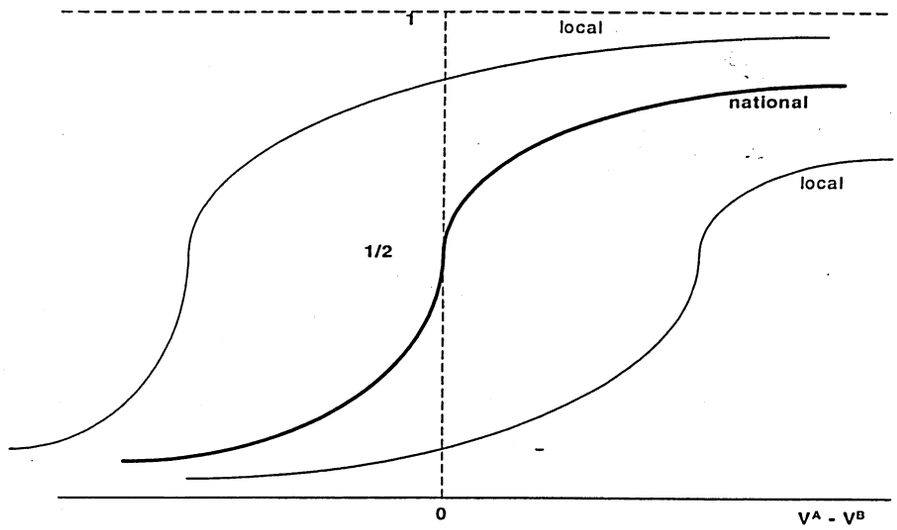


Figure 2: WIN PROBABILITIES AT LOCAL AND NATIONAL LEVELS WITH HETEROGENOUS PARTY PREFERENCES

4.2 *Ex Ante* Heterogenous Party Preferences Across Districts

The preceding results do rely sensitively on the assumption that the districts are *ex ante* homogenous in all respects. Consider for instance the effect of heterogeneous party loyalties. This can cause the result of Proposition 4 to be reversed. This is illustrated by the following example.

Suppose there are two types of districts, with sharply opposing party loyalties. Voters in the first type of district exhibit a marked preference for party A, while those in the second type favor B strongly. Local elections within these two types of districts will result in very uneven competition, with the contest being heavily weighted in favor of the locally favored party. The level of capture of local government will be high in both districts. If at the national level there are equal numbers of the two types of districts, the electoral competition will be substantially more even, and the outcome less certain. This is depicted in Figure 2. The result will be less capture at the national level.

4.3 Differing Number of Contesting Parties

Another source of differential capture may be differences in the number of competing parties at the national and local levels. This may result from the fact that national elections represent higher stakes, so the incentives for a party to participate in a national election are higher than in any given local election. It may result from interdistrict disparities in the strengths of different parties. For instance, elections in every district involve two contesting parties, but the contesting parties differ across districts. At the national level there can be three or more parties.[14]

Greater interparty competition is likely to imply less capture at the national level. Since any given party is less likely to form a majority at the national level, the incentive of the special interest group to contribute to its campaign finance will be reduced. Consider the following stylized example. Suppose there are three types of districts, and three parties A, B and C. Each party contests local elections in only two types of districts: in one type it is the *ex ante* dominant party; in the other it is the minority party. Let $G > \frac{1}{2}$ represent the probability that the dominant party in any given district wins the local election, and suppose that this is identical across all districts. Then the policy platform of a dominant party at the local level will maximize $W_I(\pi) + l\chi\beta_r G U_r(\pi)$, and a minority party will maximize $W_I(\pi) + l\chi\beta_r(1-G)U_r(\pi)$.

Assume that the three types of districts are equally represented in the country, and that all three parties contest the national election. Then it is unlikely that any given party will win a majority of seats in the national assembly, and a coalition national government will emerge. On average each party will win one third of the assembly seats. Assume also that two parties will eventually form a winning coalition on the basis of post-election negotiations, but which two parties will constitute the winning coalition cannot be predicted in advance. Suppose all three possible coalitions are considered equally likely by the special interest group. The government policy will be a compromise between the platforms of its constituent parties. For concreteness suppose that the policy space is Euclidean, and

[14] In Indian elections, the number of 'effective' contesting parties at the national level has consistently been higher than at the local level, as Yadav (1999, Table 2) reveals.

that the actual policy will represent a convex combination of the platforms, with weights proportional to the shares of assembly seats. If A and B form a coalition government, for instance, the government policy will be $\frac{1}{2}(p^A + p^B)$. Finally, suppose that rich voters are indifferent to risk.

Then equilibrium policy platforms at the national level will be chosen to maximize $W_I(\pi) + l\chi\beta_r\frac{1}{3}U_r(\pi)$. It follows that the level of capture at the national level will be less than that of any local government where the locally favored party wins. Interestingly, if the local contests are not too asymmetric, in the sense that the *ex ante* probability G that the favored party wins is less than $\frac{2}{3}$, the level of capture at the national level will be less than *every* local government, including those where the minority party wins against the odds. The same will be true in general if the degree of interparty competition at the national level is sufficiently greater than at the local level.[15]

5 Relative Capture with Heterogenous Communities

We now consider the effects of heterogenous socio-economic composition across districts. For simplicity consider the case where there are three types of districts: H,M and L. Districts of type H have the highest level of inequality, composed primarily of a few rich people and a large number of poor people, with a negligible middle class. A district of type L in contrast is primarily constituted of the middle class, while districts M lie in-between. The levels of inequality are Lorenz-ordered across the three types of districts: districts of type M (resp. L) emerge from districts of type H (resp. I) following a set of redistributive asset transfers from the rich to the poor, which reduce both the size of the rich and the poor classes, and increase the strength of the middle class. In this context, districts with greater inequality are characterized by a higher fraction of poor voters, as well as uninformed voters. Local governments in high inequality districts will therefore tend to be more subject to capture, consistent with the results of the Indian election survey presented in Table 2.

[15]In the above example, for instance, this would be true if a sufficiently large number of parties contesting with equal strength at the national level, relative to the number at the local level.

Assume that elections to the national government are majoritarian. As argued above, the same expression

$$g^A = \text{Prob}[a + \Sigma_i \gamma_i a_i + \Sigma_i \gamma_i \{V^{iA} - V^{iB}\} \geq 0] \tag{15}$$

for the Party A's win probability applies, irrespective of whether there is a single nationwide voting district, or a two stage majoritarian process. Hence party k will seek to maximize $\Sigma_i \gamma_i V^{ik} \equiv \Sigma_i \gamma_i [W_I^i(\pi^k) + \chi_i C_i^k]$, where $\chi_H > \chi_M > \chi_L$.

With differences in the effectiveness of campaign funds across districts, parties will now bias the allocation of campaign spending in favor of high inequality districts. Given a per district campaign budget of C^k in the national election, party k's electoral strategy consists of a platform π^k and an allocation of campaign spending across districts $C_i^k, i = H, M, L$ to maximize $\Sigma_i \gamma_i [W_I^i(\pi^k) + \chi_i C_i^k]$, subject to the budget constraint $\Sigma_i \gamma_i C_i^k \leq C^k$. It is evident that parties will concentrate their entire spending on the high inequality districts: $C_L^k = C_I^k = 0, C_H^k = \frac{1}{\gamma_H} C^k$. Such a 'corner' solution obviously rests on the assumption of constant marginal returns (in terms of voter support) with respect to campaign spending within any district. Later in this section we discuss how the results would be modified in a more realistic direction in the presence of diminishing returns.

The objective of party k at the national level then reduces to $\Sigma_i \gamma_i W_I^i(\pi^k) + \chi_H C^k$. In contrast its objective at the local level i is $W_I^i(\pi^k) + \chi_i C^k$. The result is that *capture at the national level rises to the highest level of capture across all local governments.* The reason is that in a national campaign, the fungibility of election funds implies that they can be deployed more effectively than in local elections. This raises the value of campaign finance in a national election, allowing lobbies to purchase influence at a 'cheaper' price.

It is interesting to note that this prediction is exactly in line with the patterns in the Indian voter survey described in Table 1. Voters in Bihar, one of the poorest states in India, express equally low levels of trust in local and central governments. In other states voters express greater trust in local government; both absolute and relative confidence in local government grows as the poverty rate falls.

Since voter surveys may not provide the most reliable evidence, further empirical verification could be based on observed policy biases, as in the analysis of Galasso and Ravallion

(1999). It is therefore to useful to derive the detailed implications for relative biases in policy choices at the two levels. The welfare function maximized by the selected policy of party A at the national level is

$$(\Sigma_i \gamma_i \beta_p^i)\alpha_p U_p + (\Sigma_i \gamma_i \beta_m^i)\alpha_m U_m + (\Sigma_i \gamma_i \beta_r^i)[\alpha_r + l\chi_H g^A]U_r \tag{16}$$

compared with

$$\beta_p^i \alpha_p U_p + \beta_m^i \alpha_m U_m + \beta_r^i [\alpha_m + l\chi_i G^A]U_r \tag{17}$$

at the local level. In high inequality districts, the level of capture is the same, so only the demographic effect comes into play. Since the country as a whole has fewer poor people compared with these districts, the national government will exhibit a stronger anti-poor bias *vis-a-vis* the middle class. The same is true for the rich as well. So national policy will have a pro-middle class bias relative to local governments in high inequality districts. The comparison between the welfare weights on the poor *vis-a-vis* the rich at the two levels depends entirely on the corresponding comparison between their relative demographic weights at the two levels. Since it is plausible that the demographic weight is skewed in favor of the poor at the local level, we conclude that decentralization will favor the poor relative to the rich (though the opposite is true relative to the middle class), owing solely to demographic reasons.[16].

In the other two types of districts, both demographic and capture effects come into play, making the comparison more complicated. But the following can be said for low inequality districts: the pattern of biases will be reversed; policies of local governments will be more biased in favor of the middle class. Both the demographic effect and the increased capture work to create this effect. And they will be less biased in favor of the rich, for the opposite reason. Hence decentralization will result in a shift in favor of the middle class *vis-a-vis* the rich. The effect on the poor is indeterminate, since the demographic and capture effects oppose each other.

Finally, for middle inequality districts the comparison is rendered more difficult because

[16]Note, however, that this result may be modified with diminishing returns to campaign spending, where national capture tends to be less than local capture in the most unequal districts. In that case the capture effect and demographic effects will run in opposite directions

the demographic effect is ambiguous, depending on the relative weight of the three kinds of districts in the country. If it is the case that there are equal number of districts of different types, the demographic effect vanishes for the middle inequality districts, and only the capture effect operates. In that case decentralization will favor the poor and the middle class in the intermediate inequality districts.

Before concluding this section, we note how the results would be modified in the presence of diminishing returns in terms of voter support with respect to increased campaign spending. Suppose our theory of behavior of uninformed voters is modified as follows. An uninformed voter j with intrinsic preference a_{ij} for party A votes for this party if

$$h(C_i^A) - h(C_i^B) + a_{ij} \geq 0, \tag{18}$$

where $h(.)$ is an increasing and concave function. Then the objective of party k in the local district i election is modified to

$$V_i^k(\pi_i^k, C_i^k) = W_I^i(\pi_i^k) + \chi_i h(C_i^K) \tag{19}$$

whereas in the case of the national election is

$$\bar{V}^k(\pi^k, \{C_i^k\}) = \Sigma_i \gamma_i W_I^i(\pi^k) + \Sigma_i \gamma_i \chi_i h(C_i^k). \tag{20}$$

The implicit welfare weights will no longer be constant in this setting. To simplify notation, let us fix a party k and drop k from the notation. The selected policy at the local level π_i^L will maximize

$$W_I^i(\pi) + \beta_r^i l G \chi_i h'(C_i^L) U_r(\pi) \tag{21}$$

assuming that h is everywhere differentiable, with C_i^L denoting the optimal campaign spending in the local election. Similarly, if C_i^N denotes the campaign spending in a district of type i in a national election, the party's national policy platform will maximize

$$\Sigma_i \gamma_i W_I^i(\pi) + \Sigma_i \gamma_i \beta_r^i l g \chi_i h'(C_i^N) U_r(\pi) \tag{22}$$

An interior optimal campaign spending allocation across heterogenous districts will result in equal marginal effectiveness of campaign funds:

$$\chi_i h'(C_i^N) = \chi_q h'(C_q^N) \tag{23}$$

across any pair of district types i, q. With sufficient diminishing returns to campaign spending, the party will allocate some campaign funds to all districts, but bias the allocation in favor of high inequality districts.

Abstracting from differences in win probabilities across the two levels (so $g = G$) as well as the demographic differences, a comparison of (21) and (22) reveals that the capture coefficient is higher in local government in district i compared with that of the national government if and only if the party spends less campaign funds in the district in a local (rather than national) election. In high inequality districts one would expect greater campaign spending in a national election: this would be the result for instance if per district campaign funds raised were the same in the two elections, since a larger fraction of these are allocated to the high inequality districts. This would be further accentuated if more campaign funds were raised (per district) in a national election, which appears likely owing to the greater average effectiveness of campaign finance in a national election due to their greater fungibility. Hence we would expect that our previous conclusions will be modified: there would be less national capture, compared with local governments in the high inequality districts. The opposite is likely to be true in low inequality districts. In other words, we expect that *national capture will be intermediate between the range of capture that local governments are subject to across districts of varying inequality.*

This conjecture can be verified in the following simple case of diminishing returns of an extreme variety: where the marginal returns to campaign spending are constant upto some level C^* in every district, and zero thereafter. Specifically, assume that

$$h(C) = h \min\{C, C^*\} \tag{24}$$

and that it is optimal for the party to spend exactly C^* in all districts in elections at all levels. In this case the policy choice at the local level will maximize the utility of a rich voter, subject to the constraint that

$$W_I^i(\pi) = W_I^i(\pi_i^*) - \chi_i C^* \tag{25}$$

whereas at the national level the corresponding constraint will be

$$\Sigma_i \gamma_i W_I^i(\pi) = \Sigma_i \gamma_i W_I^i(\pi^*) - \Sigma_i \gamma_i \chi_i C^* \tag{26}$$

with π_i^* and π^* denoting the policy choices in the absence of any lobbying. Ignoring differences in demographic composition, the level of capture in this setting is represented by the extent to which the welfare of informed voters is reduced as a result of the special interest lobby. At the national level the extent of capture $\Sigma_i \gamma_i \chi_i C^*$ lies between the extremes of the range of levels of capture $\chi_i C^*$ across diverse local governments: indeed the average levels of capture are exactly the same in this case. This confirms our belief that generally decentralization will tend to raise capture in high inequality districts, and lower it in low inequality districts.

6 Coalition National Governments Based on Power Sharing or Proportional Representation

We now discuss the implications of non-majoritarian national elections. Suppose the two parties share power in the national government based on their relative strengths in the national assembly, with every district electing one representative to the legislature on the basis of majority voting. Qualitatively similar results will obtain when power is shared on the basis of relative vote shares in the national population. Under either system members of the minority party are better represented in the executive arm of the government. With different parties selecting discrepant policy platforms, and the national government a coalition of these parties, the policy that will actually be followed by the government will represent a compromise between these platforms, depending on the relative numbers of these two parties in the government. As we shall see below, one advantage of this system will be to limit the extent to which the national government is prone to capture.[17]

We shall not model the process by which the policies actually followed by the government emerge as a result of bargaining between elected members of the two parties. Instead we shall black-box the outcome of this in the following *ad hoc* manner. Assume that the policy space

[17]Qualitatively similar properties are also likely to emerge in societies where the legislature is elected independently from the executive, and exercises strong restraining powers on the latter. There again members of the minority party will gain some control over the policy formation process, to a extent depending on their numerical strength relative to the majority party in the legislature.

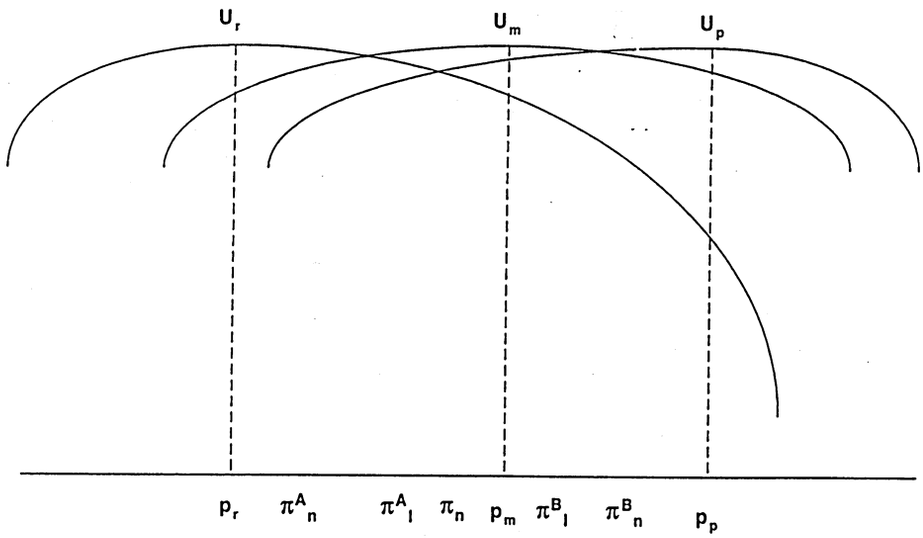


Figure 3: VOTER PREFERENCES AND ELECTORAL PLATFORMS WITH POWER-SHARING NATIONAL GOVERNMENT

is an interval of the real line, and the actual policy that emerges is a convex combination of the policy platforms of the two parties, with weights equal to relative strengths $g^A, 1-g^A$ of the two parties in the legislature:

$$\pi_n = g^A \pi^A + (1-g^A)\pi^B \tag{27}$$

In addition suppose that each class has a single-peaked, strictly concave utility function over the policy space, and the ideal points p_c of the three classes $c = p, m, r$ are ordered as follows (See Figure 3):

$$p_r < p_m < p_p \tag{28}$$

For instance, the policy in question may involve the size of a welfare program financed by property taxes.

For given policy platforms π^A, π^B it is evident that this system will move the government's policies away from that of the dominant party to the minority party: this itself is likely to reduce the level of capture. However, the system could alter the equilibrium policy

platforms. To examine this issue, let us assume that parties' objective in this system is to maximize the fraction of seats they win in the national legislature.

Each district still elects a representative on the basis of majority vote within the district. Assume that voters continue to vote in the same way as in the majoritarian system. Assume also that the districts are *ex ante* identical. Then it is clear from our previous analysis that the fraction of assembly seats won by any given party k is an increasing function of the difference between average effectiveness of its electoral strategy $\bar{V}^k$, and that of the other party. The objectives of the parties are thus exactly the same as in the majoritarian system: party k will seek to maximize $\bar{V}^k$, no matter what the other party does. In the absence of lobbying, then, power sharing will have no effect at all: each party will continue to select the same policy platform, that which maximizes the welfare of informed voters, and this in turn will constitute the resulting government policy.

With lobbying, however, power-sharing will lead to different policy outcomes, since it gives rise to different incentives for the special interest group to contribute to campaign funds. The expected payoff of a contributing member of the lobby is $U_r(g^A\pi^A + (1 - g^A)\pi^B) - \frac{1}{l\beta_r}[C^A + C^B]$. This is different from their objective in a local election because the predictability of the outcome could differ, and U_r is a strictly concave function. The effect of contributing to party A is more predictable, on the one hand, but this ends up having less of an impact on the ultimate policy since party A has to share power with party B.

Since each party's objective is still the same, the minimum contribution necessary to switch any party's policy is still given by (6). Assuming that the participation constraints bind, party A wins each district with probability $\bar{G}^A$, and this is also the fraction of seats in the national assembly it wins (i.e., $g^A = \bar{G}^A$). Then $\bar{G}^A$ is an exogenous parameter that the lobby does not try to influence. It selects policy platforms π^A, π^B to maximize $U_r(\bar{G}^A\pi^A + (1 - \bar{G}^A)\pi^B) + \frac{1}{l\chi\beta_r}[W_I(\pi^A) + W_I(\pi^B)]$, which reduces to the maximization of

$$W_I(\pi^A) + W_I(\pi^B) + l\chi\beta_r U_r(\bar{G}^A\pi^A + (1 - \bar{G}^A)\pi^B) \tag{29}$$

In contrast policies at the local level will be chosen to maximize

$$W_I(\pi^A) + W_I(\pi^B) + l\chi\beta_r\bar{G}^A U_r(\pi^A) + (1 - \bar{G}^A)U_r(\pi^B) \tag{30}$$

Proposition 5 *Suppose that the assumptions of Proposition 3 hold, except that the national government is based on proportional representation of different parties in the national legislature, with each district electing one member to the legislature on the basis of majority vote. Suppose also that the policy space is the real line, each class has strictly concave and single peaked utility functions over the policy choice, with ideal points satisfying (28). Then if the policy compromise between the platforms of the two parties of the government is given by (27), and participation constraints of the parties do not bind, the equilibrium policy platforms π_n^k at the national level relate to those at the local level in the following manner:*

$$\pi_n^A < \pi_l^A < \pi_n \equiv \bar{G}^A \pi_n^A + (1 - \bar{G}^A)\pi_n^B < \pi_l^B < \pi_n^B \tag{31}$$

i.e., policy platforms diverge more at the national than local level, but the resulting policy of the national government is less subject to capture by the rich than the majority of local governments where the dominant party A wins.

Figure 3 illustrates the corresponding array of electoral platforms and policies at the two levels. The level of capture of the national level will be intermediate between the range of levels of capture of different local governments, and will be smaller than the majority of local governments. While the result is eminently plausible, it should be emphasized that the argument underlying it does rest on the detailed assumptions concerning the structure of voter preferences.

7 Concluding Comments

In summary, the relative proneness to capture of local governments depends on a multitude of diverse factors. These include the extent and nature of heterogeneity across districts and voters, and the nature of the national electoral system. Different sources of heterogeneity have contrasting implications for relative capture. The size of the country could also be relevant, as this may affect relative levels of political awareness, the cohesiveness of interest groups, and the relative intensity of electoral competition at national and local levels. But the net effect of size on relative capture is difficult to predict: in larger countries levels of

political awareness at the national level may be low, and so may the cohesiveness of special interest groups. Simple generalizations about relative capture are therefore hazardous on the basis of theory alone; empirical research is necessary to identify the nature and degree of local capture. In particular, it is unlikely that local governments are universally prone to greater capture, as many influential thinkers have commonly presupposed. Recent empirical studies also cast doubt on the traditional presumption. To the extent that this presumption is mistaken, decentralization of authority to lower levels of government can potentially combine the advantages of greater utilization of local information without sacrificing accountability.

Moreover, the degree to which voters are politically aware in local elections may itself depend on the extent of decentralization. If local governments are not delegated much power, rational voters will not find it worthwhile to spend time and resources discussing or acquiring information about local politics. The effect of greater devolution of authority in stimulating political participation is documented in numerous Indian states.[18] In a centralized state the prediction that local governments are crippled by capture by local elites may well become a self-fulfilling prophecy.

We now discuss a range of issues ignored in our analysis. The common presumption in favor of greater capture at the local level may have been colored by salient historical instances of non-democratic oppression (of minorities in Southern USA or the poor in Indian villages). In contrast, our model presumes a functioning democracy at the local level, where members of all classes are eligible to vote, a condition progressively more relevant in both developed and developing countries.

Our model also ignored possible disparities in preferences of individual voters between local and national elections; the focus was instead on the aggregation biases of a given set of policy preferences of individual voters at different levels of government. It is plausible, for instance, that voters exhibit stronger redistributive preferences within their own neighborhoods, owing either to the operation of local altruism, or the public benefits of lower levels

[18]See, e.g., Isaac and Harilal (1997) and Isaac (1998) in the context of Kerala and Webster (1992) in the context of West Bengal. Crook and Manor (1998) study the same issue in a number of Asian and African countries and emerge with mixed conclusions.

of local poverty. This factor, however, would cause a greater bias in favor of redistribution at the local level. Another factor ignored concerns the possibility of inter-district mobility of residents, and the resulting competition among districts to affect such mobility patterns. This factor is stressed in the Tiebout (1956) hypothesis concerning local public goods, and in accounts of the 'race to the bottom' among districts in lowering tax rates and welfare benefits in order to attract the rich and repel the poor. Such forms of competition may cause the 'reduced form' preferences at the local level to be more biased against redistribution, compared with the national government. The evidence in favor of such mobility patterns is, however, not firmly established; moreover it is less likely to be relevant in developing countries.[19] In any case the factors that we focus on, concerning differences in 'structural' preferences for redistribution at the two levels are likely to be just as important in determining the effects of various forms of decentralization.

Our model made a number of simplifying assumptions concerning the nature of intrinsic party preferences: for instance, they do not differ across informed and uninformed voters, or across different socio-economic classes. Empirical evidence on US voter behavior in Presidential elections has traditionally supposed uninformed voters to be more unstable with respect to their party preferences. Zaller (1999) shows that the preferences of uninformed voters tend to respond systematically to events in the recent past, such as the occurrence of wars or economic conditions in previous administrations, while the preferences of informed voters are more sharply defined by ideology and are thus less mutable. Our analysis is consistent with the existence of 'retrospective voting' by the uninformed, since party preferences can be influenced by past events.[20] However, the empirical results do suggest greater instability in party preferences among the uninformed. This can conceivably modify

[19]For instance even in the context of the US, Hanson and Hartman (1994) find that disadvantaged individuals do not move from one state to another to receive higher benefit levels. Indeed, poor people hardly move from state to state. They argue that the number of families and individuals who move is so small as to have little impact on state welfare expenditures. Conning and Kevane's (1999) survey of the available empirical evidence also does not disclose strong welfare magnet effects, with the exception of early 19th century Britain where this issue played an important role in discussions involving the Poor Laws.

[20]Of course with retrospective voting parties are likely to be forward-looking with respect to the implications of current policy choices in future elections, a factor that our model ignores.

our prediction that a higher level of inequality will tend to increase capture, since a larger fraction of uninformed voters would increase electoral uncertainty and thus reduce the *ex ante* chances that the favored party will win. However, most of our analysis of relative capture at local *vis-a-vis* national levels would continue to be valid.

The presence of racial or ethnic heterogeneity may similarly affect party loyalties, and cause them to differ across socio-economic classes. Suppose, for instance, that a racial minority is disproportionately represented among the poor. For historical reasons, this minority may be biased in favor of party B because it has traditionally been less subject to capture by the rich, where the minority is less well-represented. For the oppposite reason, rich and middle class voters may exhibit a stronger preference for party A. The resulting party platforms will tend to diverge on both economic and racial issues: party B will espouse more pro-poor and pro-minority policies, thus reinforcing the polarization of voter preferences between the two parties in the long run. On the other hand, party A may be the historically dominant party, preferred by a majority of voters owing to its incumbency advantage. The existence of racial diversity would reduce the extent of capture. Comparing a racially homogenous society with a heterogenous one, the incumbency advantage of party A would be fragmented by the loss of support of poor racial minorities in the more heterogenous society. This can modify the effect of inequality on capture: for instance, districts with higher inequality may contain a larger fraction of the racial minority compared with the rest of the country, and local governments in such districts may be less subject to capture owing to the dilution of party A's incumbency advantage. Nevertheless, most of our analysis concerning relative capture will continue to be valid.

Our analysis also assumed that the policy space is the same between national and local levels. In practice this is rarely the case: the dimensionality of policy at the national level far exceeds that at the local level. Decisions concerning foreign policy, constitutional amendments, or monetary policy will rarely be made at the local level. The higher dimension of policies at higher levels of government create the possibility of compromises across policies in different dimensions: for instance, a pro-poor party may succumb to a compromise at the national level where it agrees to welfare cuts in exchange for a less aggressive foreign policy. Such a compromise is not possible if welfare policies are delegated to local governments. In

such cases, national policy may be subject to greater capture. This factor may, however, cut the other way too: a pro-rich party may agree to a bigger welfare program at the national level in exchange for a more hawkish foreign policy, a compromise not possible at the local level. It therefore seems difficult to generalize about the implications for relative capture.

We conclude by stressing the need for empirical research. Are local governments more subject to capture? What are the determinants of absolute and relative capture? Are assumptions and implications of our model validated by data? Perceptions of capture by voters may perhaps be elicited from careful design of voter surveys. Alternatively, the degree of capture can be inferred from past policies and their implementation, the approach followed by Galasso and Ravallion (1999). Evidence concerning the degree of targeting achieved, or the allocation of public spending between expenditures favored by different classes could be revealing in this respect. These may permit assessments of the degree of capture at any given level. Estimating *relative* capture at different levels is more challenging, since national and local governments typically make decisions about different dimensions of policy. In most developing countries, the bulk of tax revenues are collected centrally and distributed between different local governments, while the latter are empowered to allocate these funds across different projects and beneficiary groups within their respective jurisdictions. In such a system decisions made by different levels of government are mutually interacting, rendering hazardous inferences concerning relative capture. For instance, the central government may actually exhibit stronger redistributive preferences than the average local government, and yet appear to be less sensitive to the interests of the poor by allocating less funds to districts with high levels of poverty, owing to its expectation of high targeting failures in these districts.

Once measures of capture are available, it would be interesting to test predictions of our model concerning their determinants, such as literacy, inequality, other dimensions of voter heterogeneity, available measures of political awareness of voters, degree of interparty competition, dimensions of party preferences of voters (e.g., the role of incumbency or past records of contesting parties), and the nature of the electoral system (majoritarian versus proportional, fairness and transparency of elections). Other assumptions (e.g., concerning the variation of patterns of political awareness with socio-economic status) and predictions

(e.g., such as the allocation of campaign spending across different districts varying with respect to literacy and inequality) could also be tested with suitable data. Predicting the impact of decentralization must ultimately rest on such empirical assessments.

References

Pranab Bardhan, "Decentralised Development," *Indian Economic Review*, 31(2), 1996, 139-156.

Pranab Bardhan and Dilip Mookherjee, "Expenditure Decentralization and the Delivery of Public Services in Developing Countries," Working Paper, Department of Economics, University of California, Berkeley, 1998.

David Baron, "Electoral Competition with Informed and Uninformed Voters," *American Political Science Review*, 88, 1994, 33-47.

Jonathan Conning and Michael Kevane, "Community Based Targeting Mechanisms for Social Safety Nets," mimeo, Department of Economics, Williams College, 1999.

Richard Crook and James Manor, *Democracy and Decentralisation in South Asia and West Africa*, Cambridge: Cambridge University Press, 1998.

Michael Delli Carpini and Scott Keeter, *What Americans Know About Politics And Why It Matters*, New Haven: Yale University Press, 1996.

Emanuela Galasso and Martin Ravallion, "Distributional Outcomes of a Decentralized Welfare Program," Working Paper, World Bank, Washington D.C., October 1999.

Gene Grossman and Elhanan Helpman, "Electoral Competition and Special Interest Politics," *Review of Economic Studies*, 63, 265-286, 1996.

Russell L. Hanson and John T. Hartman, "Do Welfare Magnets Attract?", Institute for Research on Poverty, University of Wisconsin at Madison, 1994.

T.M. Thomas Isaac, "Decentralisation, Democracy and Development: People's Campaign for Decentralised Planning in Kerala," paper presented at International Conference on *Decentralisation: Devolution and Participation*, State Planning Board, Government of West Bengal, Calcutta, December 1998.

——— and K.N. Harilal, "Planning for Empowerment," *Economic and Political Weekly*, 53-58, January 4-11 1997.

G.K. Lieten, "Panchayats in Western Uttar Pradesh," *Economic and Political Weekly*, September 28 1996, 2700-2705.

George Mathew and Ramesh Nayak, "Panchayats at Work," *Economic and Political Weekly*, July 6 1996, 1765-1771.

Grant McConnell, *Private Power and American Democracy*, Vintage Books, 1966.

Subrata K. Mitra, "Making Local Politics 'Work' : Rural Elites, Political Conflict and Legitimacy in India", unpublished paper, South Asia Institute, University of Heidelberg, 1997.

Torsten Persson and Guido Tabellini, *Political Economics: Explaining Economic Policy*, forthcoming, MIT Press, 2000.

———————, "The Size and Scope of Government: Comparative Politics with Rational Politicians," Working Paper No. 6848, National Bureau of Economic Research, Cambridge, MA., 1998

Steven Rosenstone and John Hansen, *Mobilization, Participation and democracy in America*, New York: Macmillan, 1993.

Michael Rothschild and Joseph Stiglitz, "Increasing Risk I: A Definition," *Journal of Economic Theory*, 2, 1970, 225-243.

Paul Seabright, "Accountability and Decentralisation in Government: An Incomplete Contracts Model," *European Economic Review*, vol. 40.

Charles Tiebout, "A Pure Theory of Public Expenditure," *Journal of Political Economy*, 64, 1956.

Neil Webster, "*Panchayati Raj and the Decentralisation of Development Planning in West Bengal*, Calcutta: K.P. Bagchi and Co., 1992.

Yogendra Yadav, "Electoral Politics in the Time of Change: India's Third Electoral System 1989-99," *Economic and Political Weekly*, 2393-2399, August 21-28, 1999.

APPENDIX

Proof of Proposition 1 The problem faced by the rich lobby at the first stage of the game can be represented as follows: select policy platforms π^A, π^B to be induced by the two parties, and campaign contributions C^A, C^B to maximize the expected welfare of a contributing member of the lobby

$$G^A U_r(\pi^A) + (1 - G^A) U_r(\pi^B) - \frac{1}{l\beta_r}[C^A + C^B] \tag{32}$$

where the probability of A winning is given by

$$G^A(V^A - V^B) = \text{Prob}[a + a_i + V^A - V^B \geq 0] \tag{33}$$

and the participation constraints for either party are

$$V^k \equiv W_I(\pi^k) + \chi C^k \geq W_I(\pi^*), k = A, B. \tag{34}$$

We claim that the equilibrium policy platform of each party will maximize (7), with G^A, G^B replacing $\bar{G}^A, \bar{G}^B$ as the respective probabilities of winning the election (which are being taken as given). Suppose this claim is false, and there exists some other policy $\hat{\pi}^A$ for party A, say, which realizes a higher value of the objective function $W_I(\pi^A) + l\chi\beta_r G^A U_r(\pi^A)$.

First consider the case where this policy switch causes the welfare of informed voters to go down or remain unchanged. Then the lobby can switch its electoral strategy to the policy $\hat{\pi}^A$, and correspondingly modify its campaign contribution so that the linear sum $W_I + \chi C^k$ is unaffected. This involves a campaign contribution at least as large as formerly, so the nonnegativity constraint is preserved. Moreover, constraints (34) for both parties are preserved. So the variation is feasible, and can be verified to raise the expected utility of a representative lobby member, contradicting the premise that the status quo represented an equilibrium.

The same argument applies when the policy switch causes the welfare of informed voters to increase, but not by so much as to cause the resulting new campaign contribution to violate the nonnegativity constraint. In the case where the increase is sufficiently great to

cause this constraint to be violated, select a new campaign contribution exactly equal to zero, and then check that the same argument applies.

The problem faced by the lobby then reduces to selection of policy platforms π^A, π^B and campaign contributions C^A, C^B to maximize

$$p^A U_r(\pi^A) + (1 - p^A) U_r(\pi^B) - \frac{1}{l\beta_r}[C^A + C^B] \tag{35}$$

subject to

$$p^A = G^A(W_I(\pi^A) - W_I(\pi^B) + \chi[C^A - C^B]) \tag{36}$$

and the participation constraints $W_I(\pi^i) + \chi C^i \geq W_I(\pi^*), i = A, B$. It is evident that as long as $G^A(0) > \frac{1}{2}$, the participation constraint for party B must bind. Then the maximization problem can be reduced to the following two stage problem: first select $p^A \geq G^A(0)$, and then given this win probability select the policy platforms and campaign spending levels of the two parties. Solving backwards, the solution is as follows for given p^A. For party B select π^B, C^B to maximize $(1 - p^A) U_r(\pi^B) - \frac{1}{l\beta_r} C^B$ subject to $W_I(\pi^B) + \chi C^B = W_I(\pi^*)$, and let the resulting solution be denoted $\pi^B(p^A), C^B(p^A)$, and the maximized value of the objective function denoted $W^B(p^A)$. For party A the corresponding problem is to maximize $p^A U_r(\pi^a) - \frac{1}{l\beta_r} C^A$ subject to $p^A = G^A(W_I(\pi^A) + \chi C^A - W_I(\pi^*))$. Let the resulting solution be denoted $\pi^A(p^A), C^A(p^A)$, and the maximized value of the objective function by $W^A(p^A)$. Then at the first stage the lobby will select p^A to maximize $W^A(p^A) + W^B(p^B)$ subject to the participation constraint for party A, which reduces to $p^A \geq G^A(0)$. Now note that

$$\frac{\partial W^A}{\partial p^A} + \frac{\partial W^B}{\partial p^A} = [U_r(\pi^A(p^A)) - U_r(\pi^B(p^A))] - \frac{1}{l\beta_r g(G^{A^{-1}}(p^A))} \tag{37}$$

thus completing the proof of Proposition 1.

Proof of Proposition 2 Using the result of Proposition 1, the distributional condition (11) implies that an increase in uncertainty corresponds to a uniformly lower $g(G^{A^{-1}}(p^A))$ function. Since by Proposition 1 the policy functions $\pi^i(p^A)$ do not depend on the nature of uncertainty; it follows that increased uncertainty reduces the marginal value to the lobby of increasing the win probability p^A. By a standard monotone comparative static argument,

it follows that the equilibrium win probability p^A for the favored party A must fall with an increase in uncertainty.

Proof of Proposition 5 Equilibrium policy choices of the two parties at the national level satisfy the first order conditions

$$\begin{aligned} l\chi\beta_r\bar{G}^A U_r'(\bar{G}^A\pi_n^A + (1-\bar{G}^A)\pi_n^B) &= -W_I'(\pi_n^A) \\ l\chi\beta_r(1-\bar{G}^A)U_r'(\bar{G}^A\pi_n^A + (1-g_A)\pi_n^B) &= -W_I'(\pi_n^B) \end{aligned} \tag{38}$$

whereas policy choices at the local level satisfy

$$\begin{aligned} l\chi\beta_r\bar{G}^A U_r'(\pi_l^A) &= -W_I'(\pi_l^A) \\ l\chi\beta_r(1-\bar{G}^A)U_r'(\pi_l^B) &= -W_I'(\pi_l^B) \end{aligned} \tag{39}$$

These imply that

$$\frac{W_I'(\pi_l^A)}{W_I'(\pi_l^B)} = \frac{\bar{G}^A}{1-\bar{G}^A}\frac{U_r'(\pi_l^A)}{U_r'(\pi_l^B)}, \tag{40}$$

$$\frac{W_I'(\pi_n^A)}{W_I'(\pi_n^B)} = \frac{\bar{G}^A}{1-\bar{G}^A} \tag{41}$$

Moreover, $\pi_l^B > \pi_l^A$ since $\bar{G}^A > 1-\bar{G}^A$, and both π_l^B and π_l^A must lie to the right of the ideal point of the rich. So by concavity of U_r it follows that $U_r'(\pi_l^B) < U_r'(\pi_l^A) < 0$, i.e., $\frac{U_r'(\pi_l^A)}{U_r'(\pi_l^B)} \in (0,1)$. Therefore

$$\frac{W_I'(\pi_l^A)}{W_I'(\pi_l^B)} < \frac{\bar{G}^A}{1-\bar{G}^A} = \frac{W_I'(\pi_n^A)}{W_I'(\pi_n^B)} \ . \tag{42}$$

First we claim that $\pi_n^A < \pi_l^A$. Otherwise $\pi_n^A \geq \pi_l^A$, and (42) implies that $\pi_n^B > \pi_l^B$. Concavity of W_I implies that $W_I'(\pi_n^A) \leq W_I'(\pi_l^A)$, so the first order conditions (38, 39) imply that $-U_r'(\pi_n) < -U_r'(\pi_l^A)$. Then concavity of U_r implies $\pi_n < \pi_l^A$. On the other hand π_n lies in between π_n^A and π_n^B, both of which lie to the right of π_l^A, and we obtain a contradiction.

A similar argument establishes $\pi_n^B > \pi_l^A$.

Finally, $\pi_n^A < \pi_l^A$ implies $W_I'(\pi_n^A) > W_I'(\pi_l^A)$, and the first order conditions (38, 39) then imply that $-U_r'(\pi_n) > -U_r'(\pi_l^A)$, so $\pi_n > \pi_l^A$. A similar argument establishes $\pi_n < \pi_l^B$, concluding the proof of Proposition 5.

CIDER

Center for International and Development Economics Research

University of California, Berkeley

The Center for International and Development Economics Research is a research unit of the Institute of International Studies which works closely with the Department of Economics and the Institute of Business and Economic Research (IBER). Single copies are free to academics, corporate rate is $3.50 within USA and $7.50 international. All requests for papers in this series should be directed to IBER, F502 Haas Building, University of California at Berkeley, Berkeley CA 94720-1922; (510) 642-1922; email: bagdon@haas.berkeley.edu.

Updates to this list and papers marked with * are posted on the internet at http://haas.berkeley.edu/iber/wps/ciderwp.htm

C99-109 "Relative Capture of Local and Central Governments: An Essay in the Political Economy of Decentralization." Pranab Bardhan and and Dilip Mookherjee. December 1999.

C99-108* "Inequality, Market Imperfections, and Collective Action Problems." Pranab Bardhan and Maitreesh Ghatak. September 1999.

C99-107* "New Directions for Stochastic Open Economy Models." Maurice Obstfeld and Kenneth Rogoff. September 1999.

C99-106* "Internal Versus External Convertibility and Developing-Country Financial Crises: Lessons from the Argentine Bank Bailout of the 1930s." Gerardo della Paolera and Alan M. Taylor. August 1999.

C99-105* "Inflation and Its Variation: An Alternative Explanation." Petra M. Geraats. July 1999.

C98-104* "Expenditure Decentralization and the Delivery of Public Services in Developing Countries." Pranab Bardhan and Dilip Mookherjee. December 1998.

C98-103* "Does Mercosur Need a Single Currency?" Barry Eichengreen. October 1998.

C98-102* "International Economic Policy in the Wake of the Asian Crisis." Barry Eichengreen. August 1998.

C98-101* "EMU: Ready, or Not?" Maurice Obstfeld. July 1998.

C98-100* "Sovereign Debt as Intertemporal Barter." Kenneth M. Kletzer and Brian D. Wright. July 1998.

C98-099 "Foreign Resource Inflows, Saving, and Growth." Maurice Obstfeld. May 1998.

C98-098* "The Global Capital Market: Benefactor or Menace?" Maurice Obstfeld. May 1998.

C98-097* "Wealth Inequality, Wealth Constraints and Economic Performance." Pranab Bardhan, Samuel Bowles and Herbert Gintis. April 1998.

C98-096 "Regional Nonadjustment and Fiscal Policy: Lessons for EMU." Maurice Obstfeld and Giovanni Peri. March 1998.

C97-095 "Was the French Franc Crisis a Sunspot Equilibrium?" Olivier Jeanne and Paul Masson. October 1997.

C97-094 "Saving, Investment, and Gold: A Reassessment of Historical Current Account Data." Matthew T. Jones and Maurice Obstfeld. July 1997.

C97-093 "The Persistence of Unemployment Under a Fixed Exchange Rate Peg." Olivier Jeanne. July 1997.

C97-092 "Exchange Rate Stability and Financial Stability." Barry Eichengreen. June 1997.

C97-091* "European Monetary Unification and International Monetary Cooperation." Barry Eichengreen and Fabio Ghironi. June 1997.

C97-090 "The Marshall Plan Today." Barry Eichengreen. June 1997.

C97-089 "Finance and Development in an Emerging Market: Argentina in the Interwar Period." Gerardo della Paolera and Alan M. Taylor. June 1997.

C97-088 "Nonlinear Aspects of Goods-Market Arbitrage and Adjustment: Heckscher's Commodity Points Revisited." Maurice Obstfeld and Alan M. Taylor. May 1997.

C97-087* "Country Funds and Asymmetric Information." Jeffrey A. Frankel and Sergio L. Schmukler. May 1997.