How Electoral Rules Affect Incentives to Represent Low-Income Citizens

Karen Long Jusko*

Department of Political Science
University of Michigan
and
Center for the Study of Democratic Politics
Princeton University

5 May 2007

*Prepared for presentation at the Conference on Political Competition and Government Policy. An earlier version was presented at the 2007 National Conference of the Midwest Political Science Association, April 12-15 2007, Chicago, IL. The material presented in this discussion contributes to my larger project, "The Political Representation of the Poor." Comments most welcome: kjlong@umich.edu.

Abstract

How do electoral rules affect the representation of low-income citizens? How well do the policies of elected governments represent low-income citizens' preferences? When do parties have an incentive to seek the support of the low-income citizens? These questions motivate a larger, broadly comparative empirical study of how legislators' incentives to be responsive to low-income citizens are structured by the rules governing their re-election. In this discussion, I present the theoretical foundations of this project, using a formal-theoretic model of electoral politics, and identifying the conditions under which legislators are most likely to craft policy that is responsive to the poor, and when parties are likely to cultivate a partisan constituency among low-income citizens.

1 Research Questions

How do electoral rules affect the representation of low-income citizens? How well do the policies of elected governments represent low-income citizens' preferences? When do parties have an incentive to seek the support of the low-income citizens? This discussion presents the theoretical basis of an election-motivated account of antipoverty policy. Presenting a series of formal-analytic examples, I demonstrate how the electoral rules create incentives for legislators to seek low-income citizens' support, and that differences in electoral rules therefore contribute to cross-national variance in antipoverty policy. In future research, the insights gained from these examples guide the empirical analysis that is the main contribution of this research.

Earlier accounts of redistributive policy emphasize a stark division between multi-member district (MMD) electoral rules and single-member district (SMD) rules (e.g., Iversen & Soskice 2006, Persson & Tabellini 2000). Persson & Tabellini (2006), for example, make a representative claim:

> The winner-takes-all property of plurality rule reduces the minimal coalition of voters needed to win the election, as voter for a party not obtaining plurality are lost. With single-member districts and plurality, a party thus needs only 25% of the national vote to win: 50% in 50% of the districts. Under full proportional representation[1] it needs 50% of the national vote. Politicians are thus induced to internalize the policy benefits for a larger proportion of the population, leading to the prediction of larger broad spending under proportional representation.

These accounts, however, miss the important modifying effect of electoral context – specifically, the geographic distribution of citizens of different types – on the effect of electoral rules in structuring legislators' policy-making incentives.[2] This discussion demonstrates how and why the geographic distribution of voter types matters, especially low-income citizens and for the effect on redistributive policy.[3] Put more concretely, this analysis is motivate by the question, given a specific geographic distribution of low-income citizens, which electoral rules are most favorable to low-income citizens?

2 A Simple Model of Electoral Politics

Electoral politics can be characterized by a two-stage game: An election campaign is held in which parties propose policies in anticipation of voter decision-making. Then, in a second stage, elections

[1] In the language used here, Persson & Tabellini's (2006) proportional representation (PR) system corresponds to a national MMD. Similarly, the plurality rules correspond to system in which all legislators are elected in SMDs. Note that any PR rule applied to a SMD system yields the same result as a plurality rule.

[2] Previous analysis explicitly assumes either complete segregation of voter types (e.g. Persson & Tabellini 2000) or an even geographic distribution where all types of voters are evenly distributed throughout the country (e.g. Milesi-Ferretti, Perotti & Rostagno 2002).

[3] While this analysis presents a standard tax and transfer model of electoral politics, the larger project is more interested in transfers targeted towards low-income citizens explicitly, and therefore has a slightly different dependent variable than other election-motivated accounts of redistributive policy: I concentrate exclusively on distributions made to low-income citizens.

are held, some citizens vote. In this analysis, voters cast a single (closed party list) ballot, and seats are allocated to parties according to a historically determined electoral rule. Governments are formed, and the proposed policies of the governing party or coalition are perfectly implemented.[4]

2.1 Citizens

Following much of the previous literature (s Iversen & Soskice 2006, Milesi-Ferretti, Perotti & Rostagno 2002, Persson & Tabellini 2000)uppose that there are three types of citizens, defined by their income: there are low-income citizens (L), middle-income citizens (M), and high-income citizens (H).[5]

$$y_L < y_M < y_H \tag{1}$$

Then, a citizen's indirect utility function is defined by the following expression,

$$V_i(p_i) = y_i - T_i + B_i = y_i + p_i \tag{2}$$

for types $i \in \{L, M, H\}$, and where y_i reports the earnings income, T_i reports taxes assessed for each citizen type, and B_i reports any benefits that are distributed to citizens of type i. Thus, p_i reports the net benefits of redistributive policy.

Suppose, as well, that there are some factors, exogenous to electoral competition that prevent some citizens from voting, and that low-income citizens feel the effects of these factors more frequently than middle-income and high-income citizens.[6]

Thus, let π_i define the proportion of voters of type i in the electorate, and assume that

$$\pi_L < \pi_M < \pi_H \tag{3}$$

in the national electorate, although citizen types exist in equal proportions within the national population.[7]

Citizens may vote strategically. That is, they may vote for the party other than the party that offers their most preferred policy (i.e. by type), in order to ensure a more favorable policy outcome. As we shall see, strategic voting important implications for the incentives parties face to be responsive to different types of citizens.

[4] As the model presented here builds especially on Iversen & Soskice (2006), wherever possible, I have maintained their original assumptions. I do, however, depart from Iversen & Soskice's (2006) analysis in important ways, and these differences are noted as they arise.

[5] As will become evident, relative (not absolute) poverty is applicable to this research. Thus, in the empirical analysis that follows, 'low-income citizens' are defined as those with incomes in the poorest third.

[6] See Wolfinger & Rosenstone (1980).

[7] Iversen & Soskice (2006) assume, instead, that "the voting population is equally divided between the three groups."

2.2 Parties and Election Campaigns

Parties are groups of citizens who together stand for election: party **L**, party **M**, and party **H**. Thus, party utility is defined by Eq. (13). (Assume that there are no costs or benefit to office-holding beyond influence in policymaking.) Parties that expect to hold the majority of seats in the assembly propose their most preferred policy. Here, policy proposals take the form of vectors, $\mathcal{P} = (p_L, p_M, p_H)$, that describe tax and transfer policies. Following Iversen & Soskice (2006), proposals are subject to several constraints: First, no group can be taxed at a rate beyond their capacity.

$$T_i \leq y_i \text{ for all } i \tag{4}$$

Also, tax policy must be (weakly) progressive, and redistribution must be (weakly) non-regressive.[8]

$$0 = T_L \leq T_M \leq T_H, \tag{5}$$

$$p_L \geq p_M \geq p_H. \tag{6}$$

Finally, the government's budget must be balanced.

$$\sum_i p_i = 0. \tag{7}$$

Let $\mathcal{P}_i^*$ for each $i \in \{\mathbf{L,\ M,\ H}\}$ denote each party's most preferred policies, subject to the constraints described above. These most preferred policies are given by the following vectors:

$$\begin{aligned} \mathcal{P}_L^* &= (y_M + y_H, -y_M, -y_H) \\ \mathcal{P}_M^* &= (\frac{y_H}{2}, \frac{y_H}{2}, -y_H) \\ \mathcal{P}_H^* &= (0, 0, 0) \end{aligned} \tag{8}$$

That is, L would tax M and H at their full capacities, and distribute benefits exclusively among low-income citizens. M would tax the high-income citizens at their capacity, and share the benefits with the low-income citizens. Finally, H prefers that no redistribution occurs.

Parties campaign by (simultaneously) proposing a policy that is expressed a function of its own preferences. For example, a party may propose a coalition $\{\mathbf{I,\ J}\}$ and a compromise policy $\mathcal{P}_{ij} = k_{ij}\mathcal{P}_i^* + (1 - k_{ij})\mathcal{P}_j^*$, with $k_{ij} \in [0, 1]$, and where $\mathcal{P}_i^*$ and $\mathcal{P}_j^*$ are the preferred policy vectors described in Eq. (8).[9] The coalition that secures the support of the majority of voters will then

[8] Iversen & Soskice (2006) assume, instead, that $0 = T_L < T_M < T_H$: they do not allow for the case in which no redistribution occurs.

[9] This set-up is similar to the process by which Irish Labour and Fine Gael entered into their current pre-electoral coalition: In May 2005, Labour announced its decision to join Fine Gael in an electoral coalition, and shortly afterward, the parties released a joint policy statement, entitled "The Buck Stops Here."

This framework, however, is slightly different from Iversen & Soskice's (2006) set-up: Iversen & Soskice apply a Rubinstein bargaining framework, and find that parties in coalition would meet at the midpoint between their most

Table 1: Citizen Voting Rules Under Different Policy Proposals

Party or Coalition	Citizen Type		
	H	M	L
L, **M** or **H**	**H**	if $0 \leq p_M \Rightarrow$ **M** if $0 > p_M \Rightarrow$ **H**	if $\frac{y_H}{2} \leq p_L \Rightarrow$ **L** if $\frac{y_H}{2} > p_L \Rightarrow$ **M**
{H, L}	**H**	if $k_{HL} = 1 \Rightarrow$ **M** if $0 \leq k_{HL} < 1 \Rightarrow$ **H**	if $0 \leq k_{HL} \leq \frac{2y_M+y_H}{2(y_M+y_H)} \Rightarrow$ **L** if $\frac{2y_M+y_H}{2(y_M+y_H)} < k_{HL} \leq 1 \Rightarrow$ **M**
{H, M}	**H**	if $0 \leq k_{HM} \leq 1 \Rightarrow$ **M**	if $k_{HM} = 0 \Rightarrow$ **L** if $0 < k_{HM} \leq 1 \Rightarrow$ **M**
{L, M}	**H**	if $0 \leq k_{LM} \leq \frac{y_H}{2y_M+y_H} \Rightarrow$ **M** if $\frac{y_H}{2y_M+y_H} < k_{LM} \leq 1 \Rightarrow$ **H**	if $0 \leq k_{LM} \leq 1 \Rightarrow$ **L**

NOTE. This Table reports the criterion under which each type of voter (columns) would support a policy proposal made by each party or legislative coalition (rows). The policy proposals are summarized by $k_{ij} \in [0, 1]$, such that the policy compromise is represented by $\mathcal{P}_{ij} = k_{ij}\mathcal{P}_i + (1 - k_{ij})\mathcal{P}_j$, where $\mathcal{P}_i$ and $\mathcal{P}_j$ are the preferred policy vectors described in Eq. (8).

implement the policy $\mathcal{P}_{ij} = (p_L^{ij}, p_M^{ij}, p_H^{ij})$. If a party expects to form the government on its own, then it simply proposes $k_{ij} = 1$, and implements its most preferred policy.

Note that parties may use k_{ij} to induce strategic voting, and attain a better policy outcome. Citizen voting rules, therefore, can be summarized in terms of values of k_{ij}, and are reported in Table 1. Here, the rows identify the proposing party, and the columns report the response of voters. Intuitively, k_i reports the extent to which party i is willing to compromise its policy in order to form a coalition with another party. To illustrate, consider L's voting rules: In the left-most cell of the top row of Table 1, low-income citizens, L, will vote for the low-income party, **L**, unless doing so will result in a policy that leaves L worse off than would be implemented under a government formed by the middle-income party, **M**. In this case (i.e. when $\frac{y_H}{2} > p_L$), L will vote strategically for **M**. (L never has an incentive to vote strategically for **H**.) This same decision rule – that L will

preferred policies. This framework assumes that the coalition partners are equally impatient, and that there is no delay between offers. Instead, with my assumption of complete information, parties anticipate voter reactions to their proposals, and thus will compromise according to their interests.

vote by type if $p_L \geq \frac{y_H}{2}$, and vote strategically for **M** otherwise – is used to determine L's voting behavior for each possible coalition. This exercise is then repeated for each citizen type, and viable coalitions are determined by compatible values of k_{ij}.

3 Equilibrium Concept

Suppose that citizens and parties know the distribution of types within the electorate, the policies that will be implemented by the parties and coalitions that form the government, and the electoral rules that govern the distribution of seats within districts. Thus, parties take voter decision-making into account when deciding whether or not to propose an electoral coalition, and which compromise policy to propose. The appropriate equilibrium concept, therefore, is subgame perfection with weakly-undominated voting strategies. Subgame perfection implies that the policies proposed by parties are optimal given voter decision-making. Weak dominance requires that voters do not support a party that will implement a policy that is contrary to their interests. In equilibrium, therefore, parties propose a policy that is a best response given citizen voting strategies, and voters support parties according to the proposed policy outcome.

4 The Geographic Distribution of Voter Types

Here, we are interested in whether and how the geographic distribution of voter types moderates legislators' incentives to be responsive to different groups in society, created by electoral rules.[10] Therefore, without changing the national distribution of voter types (each group is approximately one-third of the population), imagine three archetypal countries in which the geographic distribution of voter types varies in the following ways:

COUNTRY E. (Even Distribution). Voter types are evenly and equitably distributed through Country E. To incorporate a minimal turnout bias, let ϵ denote a very small number such that $\epsilon \to 0$ as $n_d \to \infty$, where n_i is the number of voters in district d. Then, consider an electorate in which

$$\pi_H = \frac{1}{1-\epsilon}\pi_M = \frac{1}{(1-\epsilon)^2}\pi_L. \tag{9}$$

Thus, when the electorate is sufficiently large, the citizen types comprise approximately equal proportions within the electorate of every district.

COUNTRY R. (Rural Poverty). Suppose that income is correlated with population density, such that, although Eq. (9) characterizes the national population (i.e., although turnout bias

[10] Earlier versions of this paper also considered a case in which voters were evenly distributed across geographic regions of the country, but in which turnout bias was severe, and high-income voters substantially out-numbered low- and middle-income voters together. In this case, electoral rules did not make any difference in policy outcomes: The high-income voters' preferences prevailed. For clarity, I've limited this discussion to variance in the geographic distribution of low-income voters, leaving turnout bias to be taken up in future research.

remains, citizens types exist in approximately equal proportions in the national electorate), citizen types are concentrated in the different regions in the following way:

$$\begin{aligned} \pi_H^U > \pi_L^U > \pi_M^U = 0 \\ \pi_M^S > \pi_L^S > \pi_H^S = 0 \\ \pi_L^R > \pi_H^R > \pi_M^R = 0 \end{aligned} \tag{10}$$

Thus, the high-income voters live predominantly in urban districts (denoted by the superscript U), the middle-income voters comprise the largest share of the suburban districts (S), and the low-income voters are the largest group of rural districts (R).

COUNTRY U. (Urban Poverty). Suppose now that income is negatively correlated with population density, such that, although Eq. (9) characterizes the national population (i.e., although turnout bias remains, citizens types exist in approximately equal proportions in the national electorate), citizen types are concentrated in the different regions in the following way:

$$\begin{aligned} \pi_L^U > \pi_H^U > \pi_M^U = 0 \\ \pi_H^S > \pi_M^S > \pi_L^S = 0 \\ \pi_M^R > \pi_H^R > \pi_L^R = 0 \end{aligned} \tag{11}$$

Thus, low-income voters live exclusively in urban districts (U), high-income voters comprise the largest share of the suburban electorates (S), and the middle-income voters form the largest group in rural districts (R).

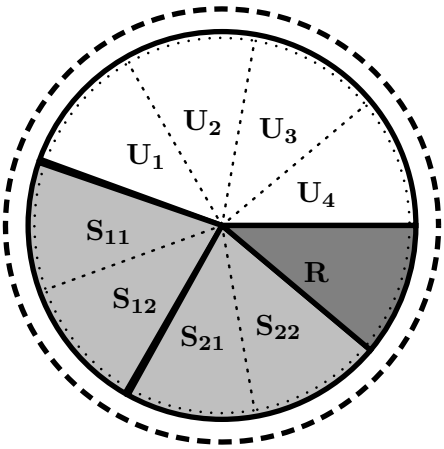
These countries represent, then, the three major classes of the geographic distribution of low-income citizens: In Country E, low-income citizens are evenly distributed throughout a country. In Country R, low-income citizens are over-represented in rural areas. Finally, in Country U, low-income citizens are over-represented in urban regions. The research question, then, is clarified: Given each of these geographic distribution, which electoral rules generate optimal policy outcomes for low-income citizens?

5 Three Hypothetical Electoral Systems

To investigate the effect of electoral rules on policy outcomes for the poor, I consider three hypothetical electoral systems that represent well the main differences between SMD and MMD systems:

Assembly S. (Single-member Districts) Nine legislators are elected in 9 single-member districts.

Figure 1: District Structure Under Different Electoral Rules



NOTE. This Figure reports the nested structure of the electoral districts of Assemblies S (denoted by dotted lines), N (denoted by the dashed line), and V (denoted by solid lines). $\mathbf{U_i}$, $\mathbf{S_i i}$ and $\mathbf{R}$ denote a legislators elected in urban, suburban, and rural areas, respectively.

Assembly N. (National District) Nine legislators are elected in a national nine-member district.

Assembly V. (Varying District Size) Four members are elected in a (perhaps urban, denoted U_i) four-member district, 4 members elected in two two-member (suburban, denoted S_{ii}) districts, and one member is elected in a single-member (rural, denoted R) district.

Assume that all seats are allocated according to the simple Largest Remainder (Hare Quota) within each district, and under all sets of rules.[11]

Note that assemblies S, N and V vary in two dimensions: First, the assemblies vary in the average number of legislators elected in each district. Second, the assemblies differ in the variance of legislators elected across districts.[12] These dimensions are evident in Figure 1, which summarizes district structures associated with assemblies S (denoted by the interior dotted lines), N (denoted by the exterior dashed line), and V (denoted by the solid lines).

[11]This choice of formula is largely inconsequential, but offers the greatest advantage to smaller parties among the largest remainder methods. In the context of this example, then, the Hare Quota is most favorable to the party preferred by low-income citizens. To be clear, seats are allocated in the following way: First, the quota Q_d is calculated as $Q_d = N_d/S_d$, where N_d is the number of voters in district d, and S_d is the number of seats to be allocated in the district. Then, each party P is allocated n_P seats, where $n_P \leq \frac{V_d^P}{Q_d} \leq n_P + 1$, V_d^P is the number of votes cast in favor party P in district d, and $n_P \in \mathbb{N}$. Finally, any remaining seats are allocated according to the values of the remainder for each party, or $V_d^P - n_P \times Q_d$. Note that when applied to a single member district, the Largest Remainder (Hare Quota) allocation yields the simple plurality rule result.

[12]This research owes much to Monroe & Rose (2002): They argue that there exists a variance effect, such that greater cross-district variance, particularly when combined with low magnitude districts, results in the under-representation of urban interests.

Then, using the geographic distribution described in the previous section, and the simple model of electoral politics described above, the application of each of these rules to a particular country can be evaluated in the policies implemented.

6 Policy Outcomes under the Rules of Assembly N

Because the national distribution does not change with the geographic distributions of voter types – all citizen types exist in approximately equal proportions – the rules governing Assembly N yield the same policy outcome for each country case. When the different groups of citizens comprise approximately equal shares of the electorate, the parties can expect to hold equal shares of seats in the assembly: **H**, **M** and **L** will each hold three seats. Thus, in order to form a government, parties must propose coalitions and compromise policies. To determine viable coalitions and compromise policies, then, we need only identify optimal proposals through backwards induction from citizen voting rules (described in Table 1) and electoral responses. This analysis can be summarized with the following claims:

Proposition. ***H*** *is never a coalition partner.*

To see this, notice that there is no value of k_H that **H** can propose to sustain a **H, L** coalition. Any value of $k_H > \frac{2y_M+y_H}{2(y_M+y_H)}$ will not maintain the support of L, who will vote strategically for **M**, and any value of $k_H < 1$ will not maintain the support of M, who will vote strategically for **H**. Furthermore, any **H, L** proposal weakly dominates any {**H, M**} proposal that **H** can make: Any $k_H > 0$ will allow **M** to form the government, and impose $p_H = -y_H$, which is the same policy that $k_H = 0$ implies.

Corollary. *The only sustainable governing coalition is* {***M, L***}.

Note that L will vote by type for any value of k_L that ensures that L will do at least as well under a {**M,L**} coalition as by voting strategically for **M** . Thus, **L** need only to ensure that its policy proposal maintains the support of M, or that $p_M \geq 0$, which is what M can secure by voting strategically for **H**. Thus, L must propose $k_L \leq \frac{y_H}{y_H+2y_M}$. The compromise policy, is therefore, defined by the vector:

$$\mathcal{P}_{ML} = \big(y_H, 0, -y_H\big). \tag{12}$$

To summarize, when no party expects to hold the majority of seats in the legislature, all voters vote by type, and a **L**-**M** coalition will form the government, tax H at full capacity, and distribute the benefits entirely among low-income citizens. With no incentive to moderate its policy, **H** proposes $\mathcal{P}_H = \mathcal{P}_H^*$. When different income groups form approximately equal proportions

of the electorate, and election are contested within a single national district (i.e. are perfectly proportional), then, we can expect governments to represent well the preferences of low- and middle-income citizens, and policy to target benefits to low-income citizens.

7 Policy Outcomes in Country E.

In most countries, however, elections are not contested in a single national district, and the interaction of the electoral rules and the geographic distributions of low-income citizens structure have important effects on legislators' incentives to seek the support of low-income citizens. In this section, and the two that follow, I consider the relationship between electoral rules and redistributive policy outcomes in countries with different geographic distributions of low-income citizens. As a benchmark example, I consider first Country E, in which all income groups are evenly distributed throughout the country.

Assembly S. Consider electoral politics in the case where elections are contested in SMDs throughout the country: Although voters of each type exist in roughly equal proportions in each district, there are slightly more high-income voters than either middle- or low-income voters. Thus, if all citizens vote by type, **H** will win in every district, and implement its most preferred policy, $\mathcal{P} = \mathcal{P}_H^*$; see Eq. (8). Note, however, that L has an incentive to vote strategically: L strictly prefers the policy proposed by **M** to that which **H** proposes. Therefore, all parties propose $\mathcal{P}_i = \mathcal{P}_i^*$, **M** wins the election with the support of L, without any compromise in policy, and implements $\mathcal{P} = \mathcal{P}_M^*$. H cannot improve this policy outcome by voting strategically.[13]

Assembly V. Now consider the case in which elections are contested in districts of varying size: Again, type H voters constitute a slightly larger share of the electorate in each district, and if citizens vote by type, **H** can expect to win 2 of the urban seats, 2 suburban seats, and the rural seat. **M** will win 1 urban seat, and 2 suburban seats. **L** will win 1 urban seat. Thus, **H** can implement $\mathcal{P} = \mathcal{P}_H$ without moderation. However, as before, L can improve this outcome by voting strategically for **M**. Note that **M** can be assured of L's support, without any moderation of M's preferred policy.

[13]Suppose, instead that **H** can propose a policy that does not encourage L to vote strategically. Specifically, suppose that **H** can propose $\mathcal{P} = (\frac{y_H}{2}, 0, -\frac{y_H}{2})$, such that L is indifferent between a government formed by **H**, and a government formed by **M**. Note that there is no policy that **M** can propose that leaves M better off. To see this, suppose that **M** and **H** were competing for L's support. Both **M** and **H** would have to propose $\mathcal{P} = \mathcal{P}_L = (y_H, 0, -y_H)$. As this outcome would leave M no better off, and as there are no benefits derived from office holding beyond the policy outcome, **M** has no incentive to make this proposal. Also, H strictly prefers this outcome to what would result from L's strategic voting: A government formed by **M** would impose $p_H^M = -y_H$. Thus, by conceding $-\frac{y_H}{2}$, and preventing P from voting strategically for **M**, **H** has secured a better policy outcome than what could be achieve otherwise. Therefore, in equilibrium, citizens will vote by type, **H** will form the government, and will implement the policy $\mathcal{P} = (\frac{y_H}{2}, 0, -\frac{y_H}{2})$. From the perspective of the low-income citizens, this policy is equivalent to the equilibrium outcome described in the text.

Although more discussion of this point will be offered in the summary section, it is worth noting here that when income groups are evenly distributed throughout the country, low-income citizens do no better when elections are contested in MMDs of varying size, than when elections are contested in SMDs. (Note as well, however, that the policy that results when elections are contested in single national district leaves low-income citizens better off than under the rules of either Assembly S, or Assembly V.)

8 Policy Outcomes in Country R.

Consider, now, the country case in which low-income citizens are over-represented in rural regions [14]: Which electoral rules generate the best policy outcome for low-income citizens in this case?

Assembly S. Note that if citizens vote by type, **H** will win 4 urban seats, **M** will win the 4 suburban seats, and **L** will win the rural seat. Thus, no party holds the majority of seats in the assembly, and parties must negotiate a governing coalition and a compromise policy. As we saw in the case of Assembly N, the only viable governing coalition is formed by **L** and **M**, which will implement the policy $\mathcal{P}_{ML} = \big(y_H, 0, -y_H\big)$.

Assembly V. Under the a fairly equitable distribution of types within each district that meets the criterion listed in (10),**H** can expect to be elected to 2 urban seats, **M** will win 2 suburban seats, and **L** will win 2 urban seats, 2 suburban seats, and 1 rural seat. Thus, **L** forms the government, and implements $\mathcal{P} = \mathcal{P}_L^*$ without compromise. Note that M cannot improve this outcome by voting strategically for **H**: M does not comprise a sufficiently large share of the electorate in any district to change the allocation of seats.

Unlike the previous country case of Country E, when the electoral rules of Assembly S, and Assembly V did not yield different policy outcomes, these different electoral rules generate an important difference in policy outcomes when low-income voters are geographically concentrated in rural areas: Transfers to low-income citizens are considerably larger when elections are contested in MMDs of varying sizes, than in SMDs or a single national district.

9 Policy Outcomes in Country U.

Finally, we consider the case in which low-income citizens are concentrated in urban regions. [15]

Assembly S. When elections are contested in SMDs, if all citizens vote by type, **L** can expect to win 4 urban seats, **H** will win the 4 suburban seats, and **M** will win the rural seat. As in

[14] One distribution that meets the criteria in (10), and maintains a fairly equitable national distribution lets $\pi_H^U = 0.62, \pi_M^S = 0.74,$ and $\pi_L^R = 0.51$.

[15] A distribution that meets the criteria in (11), and maintains a fairly equitable national distribution lets $\pi_L^U = 0.74, \pi_M^S = 0.65,$ and $\pi_W^R = 0.66$.

the case above, no party will hold the majority of seats in the assembly, and parties must negotiate a governing coalition and a compromise policy prior to the election. Again, **H** is not a viable coalition partner for either **M** or **L**. Therefore, an {**M, L**} coalition will form the government and implement the policy $\mathcal{P} = \mathcal{P}_{ML}$, with $p_L = y_H$.

Assembly V. When elections are contested in MMDs of varying size, **L** will be elected to 2 urban seats, **M** wins 2 suburban seats, and **H** wins 2 urban seats, 2 suburban seats, and 1 rural seat. Then, **H** forms the government, and implements $\mathcal{P} = \mathcal{P}_H^*$ without compromise. Note that L cannot improve this outcome by voting strategically for **M**: M and L do not comprise a sufficiently large share of the electorate in any district to change the allocation of seats.

As we saw in the case of Country R, the interaction of electoral rules, and the geographic distribution of low-income citizens in Country U generate quite different policy outcomes: Low-income citizens are much better off under the rules governing Assembly S, than under the rules governing Assembly V. Note that this finding cuts against the conventional wisdom regarding the relationship between electoral rules and redistributive policy: When low-income citizens are concentrated in urban districts (i.e. districts that elect a large number of legislators when elections are contested in MMDs), SMD rules create incentives for more extensive redistributive policy than exist under MMD (with varying district size) rules.

10 Summary: Evaluating Representation

Suppose that cross-national differences can be summarized by a electoral concentration index,

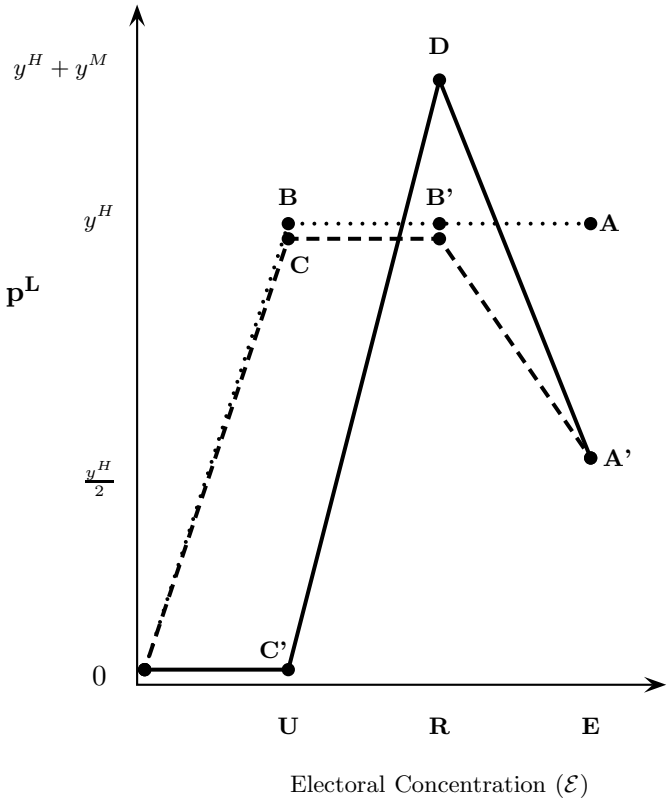
$$\mathcal{E}_i = 1 - \sqrt{\sum_{d=1}^{D} \frac{n_d}{N} \left(\pi_d^i - \frac{n^i}{N}\right)^2} \tag{13}$$

where $d = 1...D$ denotes each electoral district, n_d reports the number of citizens residing in district d, N reports the number of citizens in the national electorate, n^i reports the number of type i citizens, and π_d^j reports the proportion of type j citizens residing in district d. This electoral concentration index, $\mathcal{E}$, will equal one when type j citizens exist in proportions equal to their national proportion in every electoral district (i.e. for Country E), and decreases as type j citizens become geographically concentrated and under-represented in district electorates.[16]

Figure 2 reports the benefits distributed to the low-income citizens (p_L), under each set of electoral rules, for each of the country cases considered here. The horizontal axis reports estimates of $\mathcal{E}$ for each of the country cases considered here, and the vertical axis reports p_L for each set of electoral rules, for each country. By summarizing the results of this analysis in Figure 2, the important modifying effect of the geographic concentration of low-income citizens becomes quite

[16] For the geographic distributions used in this analysis, $\mathcal{E}_L^R = 0.91$, and $\mathcal{E}_L^U = 0.63$.

Figure 2: Summary: Policy Outcomes Under Different Electoral Rules



NOTE. This Figure describes reports policy outcomes under different electoral rules, Assembly S (dashed line), Assembly N (dotted line), and Assembly V (solid line), for the different country cases. The horizontal axis reports the degree to which low-income citizens are geographically concentrated, with higher values indicating a more even distribution.

clear: Notice, first, that much of the previous literature compares policy outcomes in national MMDs and SMDs, which correspond to points **A** and **A'** in Figure 2. As we have come to expect, distributions to low-income citizens are greater when elections are contested in a national MMD, than under SMD rules when low-income voters are evenly distributed throughout the country (Country E). However, when MMDs of varying sizes, and different geographic distributions of voter types are taken into account, the conventional wisdom – that MMDs create incentives for more extensive redistributive policy – is not very informative. Notice, for example, that when low-income citizens are geographically concentrated (as in Countries R and U), for example, SMD rules yield the same policy outcomes as elections contested in a national MMD (see points **B** and **B'** in Figure 2). Further, note how SMDs and MMDs of varying sizes affect policy when low-income citizens

are concentrated in urban regions (Country U; points **C** and **C'**): Contrary to the conventional wisdom, in this case SMDs rules yield more extensive redistributive policy than MMDs of varying sizes.[17] Finally, note that when low-income citizens are concentrated in rural regions (Country R), and elections are contested in MMDs of varying sizes (though not a in national MMD), policy is perfectly responsive to low-income citizens.

11 Guideposts for Empirical Research

To summarize the analytic examples presented in this chapter in more general terms, if elections are not contested in a national MMD, there exists a curve (or, more likely when the number of legislators elected in each district is large, a set of curves) that defines the relationship between a group's geographic concentration and the incentives for legislators to be responsive to that group. The shape of this geographic-responsiveness curve, and in particular, the level of geographic concentration that induces maximum responsiveness (where the curve peaks), is determined by the electoral rules. Thus, to see how electoral incentives affect antipoverty policy in a particular setting, we ought to be conscious of both the extent to which low-income citizens are geographically concentrated (our location across the horizontal axis), and how electoral rules favor or inhibit the representation of geographically concentrated interests (the shape of the curve).

In other research, I use focused case studies to investigate these different components of electoral incentives: Italian election reform replaced a system in which all members were elected in MMDs of varying sizes (like the rules governing Assembly V), with a system in which most members were elected in SMDs (similar to Assembly S). Thus, the process of Italian election reform replaced one geographic-responsiveness curve with another, while maintaining the pre-reform geographic distribution of voter types. In Germany, by contrast, reunification did not change the electoral rules (i.e. the shape of the geographic-responsiveness curve), but rather the geographic distribution of low-income citizens (or, the position on the horizontal axis). In both of these case, the changes in electoral rules and context strengthened legislators' incentives to be responsive to low-income citizens, and shifts in antipoverty policy track these changes quite well.

The insights gained through the formal-analytic examples presented in this discussion are also guide useful in thinking about cross-national analysis. In particular, these examples have important implications for how the geographic concentration of low-income citizens, and antipoverty responsiveness ought to be measured: In evaluating the affect of electoral rules on redistributive policy, what matters is the distribution of voter types within and across electoral districts, as well the number and allocation of seats within in each district.

[17] Indeed, contrary to Rodden's (2005) account, but following Monroe & Rose (2002), MMD rules dilute the electoral strength that comes with geographic concentration, and ultimately result in no redistribution of income.

References

Alesina, Alberto & Edward L. Glaeser. 2004. *Fighting Poverty in the US and Europe*. New York: Oxford.

Barr, Nicholas. 2004. *The Economics of the Welfare State*. London: Oxford UP.

Bartels, Larry. 2002. "Economic Inequality and Political Representation." Paper prepared for presentation at the Annual Meeting of the American Political Science Association.

Bartels, Larry. 2003. "Partisan Politics and the U.S. Income Distribution." Unpublished manuscript. Princeton University.

Esping-Anderson, Gosta. 1990. *The Three Worlds of Welfare Capitalism*. Cambridge: Polity.

Franzese, Robert. 2005. "Political Participation, Inequality, and the Social Safety Net: Multiple Equilibria, Endogeneity, and Empirical Estimation.".

Franzese, Robert & Karen Long Jusko. 2006. Political-Economic Cycles. In *Oxford Handbook of Political Economy*, ed. Donald Wittman Stokes & Barry. New York: Oxford UP.

Gilens, Martin. 2004. "Inequality and democratic responsiveness: Who gets what they want from Government?" Unpublished manuscript. Princeton University.

Huber, Evelyne & John D. Stephens. 2001. *Development and Crisis of the Welfare State: Parties and Policies in Global Markets*. Chicago: University of Chicago Press.

Iversen, Torben & David Soskice. 2006. "Electoral Institutions, Parties, and the Politics of Class: Why Some Democracies Redistribute More than Others." *American Political Science Review* 100.

Lizzeri, A. & N. Persisco. 2003. "The Provision of Public Goods Under Alternative Electoral Incentives." *American Economic Review* 91.

Milanovic, Branko. 2000. "The median-voter hypothesis, income inequality, and income redistribution: an empirical test with the required data." *European Journal of Political Economy* 16:367–410.

Milesi-Ferretti, Gian, Roberto Perotti & Massimo Rostagno. 2002. "Electoral Systems and Public Spending." *Quarterly Journal of Economics* 117(2):609–58.

Moene, Karl Ove & Michael Wallerstein. 2001. "Inequality, Social Insurance and Redistribution." *American Political Science Review* 95(4):859–874.

Monroe, Burt & Amanda G. Rose. 2002. "Electoral systems and unimagined consequences: Partisan effects of districted proportional representation." *American Journal of Political Science* 46(1):67–89.

Persson, Torben & Guido Tabellini. 2000. *Political Economics: Explaining Economic Policy*. Cambridge: MIT Press.

Persson, Torben & Guido Tabellini. 2003. *The Economic Effects of Constitutions*. Cambridge: MIT Press.

Persson, Torben & Guido Tabellini. 2006. Electoral systems and economic policy. In *Oxford Handbook of Political Economy*, ed. Donald Wittman & Barry Weingast. New York: Oxford UP.

Rodden, Jonathan. 2005. "Red States, Blue States, and the Welfare State: Political Geography, Representation, and Government Policy around the World.".

Roemer, J. 1999. "The democratic political economy of progressive income taxation." *Econometrica* 67.

Romer, Thomas. 1975. "Individual Welfare, Majority Voting and the Properties of a Linear Income Tax." *Journal of Public Economics* 14.

Tufte, Edward R. 1978. *Political Control of the Economy*. Princeton, New Jersey: Princeton UP.

Wolfinger, Raymond E. & Steven J. Rosenstone. 1980. *Who Votes?* New Haven: Yale University Press.