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Do Multimember Districts Lead to Free-Riding?

We studied the effects of districting on intergovernmental aid by state governments to local governments in the United States. We found that metropolitan areas receive relatively more aid when represented in the state legislature by an at-large delegation than when divided into single-member districts. This suggests that the free-riding that may occur with at-large representation is more than counterbalanced by other factors. The estimated effects are robust to the effects of other confounding factors as well as the choice of estimators.

What effects, if any, do electoral institutions have on political representation and policy outcomes? This is a key question in political economy and political science, and it has been explored both theoretically and empirically by many scholars. For example, one significant body of research has explored the differences between plurality-rule and proportional-rule systems. Another has studied the effects of malapportionment. A third has focused on the special case of the U.S. presidential electoral college. A fourth has analyzed the differences between single-member and multimember districts.[1]

One of the main hypotheses in the literature on single-member districts (SMDs) versus multimember districts (MMDs) is that SMDs lead to closer ties between voters and their representatives, better electoral accountability, and, consequently, better performance by representatives. Consider a large city with, say, 15 state legislators. If these legislators are all elected from one at-large, 15-member district, then they will face a collective-action problem. It is difficult for voters to know whom to reward for bringing home the bacon, or whom to blame when no project appears. The result is low-powered incentives and the tendency for each of the city's representatives to shirk. The city may suffer and not obtain its fair share of state spending.

There is some empirical work supporting the free-riding hypothesis, but it is not overwhelming. Jewell (1969) and Cooper and Richardson (2006) have found that representatives elected from SMDs are more likely to describe their roles as "delegates," while those elected from MMDs are more likely to describe their roles as "trustees." Scholl (1986) has found a similar pattern in his survey of British (SMD) and French (MMD) members of the European Parliament: British members are more likely to emphasize constituency service and regional issues. Scholl has also found evidence of an effect on the percentage of regional projects passed, but since he does not report the sizes of these projects, it is difficult to draw firm conclusions. Freeman and Richardson (1996) report conflicting results about legislative roles: in their survey, legislators from MMDs claimed to spend more time performing constituency service than legislators from SMDs. Finally, a few papers on the incumbency advantage have provided indirect evidence about shirking and incentives—a smaller incumbency advantage, suggesting a weaker personal link with voters—but even these results are mixed.[2]

Moreover, several forces work in the opposite direction. We believe these forces have been underappreciated in the theoretical and empirical literature and deserve more attention.

First, if a city is cut up into a number of small districts, then many citywide projects will entail significant *externalities* from the point of view of each individual representative. Legislators who represent only a small fraction of the city's area and population have little incentive to work hard to obtain state aid for such projects—highways that connect different parts of the city, a highway that circles the city, or a citywide mass transit system. Public utilities—electricity, gas, water, and sewage—will also be unchampioned, since utilities tend to be citywide systems. Even school districts are typically citywide or countywide systems. State aid for education does not go to individual schools but to the school district as a whole; the allocation of the funds within the school district depends not only on legislative decisions but also on decisions by city or county officials.

Second, districting may introduce collective *choice* problems. What types of projects should a city seek from the state? Alternatively, why not seek tax cuts instead of projects? When all representatives from a city have the same geographic constituency, they will tend to agree on such questions, especially if they are all members of the same party, a common outcome with the nearly universal use of plurality rule. If the city is carved up into many small SMDs, however, then its representatives will have different and often conflicting interests. Some delegates will be from poorer parts of the city that seek basic services,

such as housing and health care; others will want more spending for education; others will be more interested in reduced spending and taxes, and so on.

Third, if a city's delegation votes as a bloc, then that delegation may wield power in the legislature that is disproportionate to its size. This is a standard prediction of "power indexes" such as the Shapley-Shubik index and the Banzhaf index (Banzhaf 1965; Shapley and Shubik 1954).[3] This disproportionate sway was also a common fear stated by state representatives from rural areas. Carving the city up into districts reduces the propensity of its delegation to act as a bloc and may thereby reduce its potential power in the state legislature.

Finally, one short-term factor governing state-to-local aid is turnover precipitated by a change in the districting system. The switch in districting may cause a large amount of turnover in a city's delegation. A short-term loss in seniority may cause a short-term loss of power in the legislature and a corresponding short-term loss of funds from the state government.[4]

Previous work has found anecdotal support for some of these factors. For example, Dauer (1966) studied attitudes toward Dade County (Miami), Florida, in the mid-1960s. Like all cities in Florida at the time, Dade's entire state legislative delegation was elected at-large. Many state legislators from *rural* areas wanted to divide the delegation:

> Reinforcing sentiment for [dividing Dade county] has been found among the small-county bloc in the Florida Legislature with the aim of diluting the influence of the largest metropolitan county. . . . When this program failed, the coalition of small counties then attempted to create districts within the large metropolitan counties, including Dade County, as a means of increasing the possible divisive sentiment of the urban area's representatives and changing the role of the urban legislator. (Dauer 1966, 622–23)

In contrast, "the Dade county delegation, in its role in the legislature, united in opposing this division" (622). The delegations from two other large metropolitan areas, Tampa and Jacksonville, had similar views:

> All of those questioned from these counties were unanimous in favoring election from the county at large, both for the House and the Senate. The reasons stated were comparable to those stated by the Dade County Delegation: the belief that there is less parochialism and the overriding necessity for unity in the delegation about matters pertaining to local bills affecting both the county and the cities within the county.[5] (Dauer 1966, 635)

In this article, we exploited a quasi-natural experiment to study the relative effect of MMDs and SMDs on distributive government spending. More specifically, we studied the shift from at-large MMDs to SMDs that occurred in a number of U.S. cities in the 1970s and 1980s, due mainly to pressure from federal and state courts. These were large changes, often involving delegations of 10 or more state representatives and, in some cases, as many as 20 (Table 2). We asked what effect these changes had on the ability of metropolitan areas to secure intergovernmental transfers from the state government.[6]

Our main finding is easily stated: During the period under study, metropolitan areas received significantly *more* money from the state government, on average, when represented by at-large delegations than when represented by delegations elected from single-member districts. The effects are noticeable. For example, our estimates suggest that switching from MMDs to SMDs in a typical large city would lead to a decline of nearly 10% in the amount of state aid.

Data and Specifications

Background Information

Until the 1970s, the use of MMDs in state legislative elections was quite common. As of 1962, 41 state houses and 30 state senates employed some form of MMDs (David and Eisenberg 1962). Table 1 shows the number of MMDs and SMDs in the early 1960s. Nearly half of the members of the lower houses and almost one-sixth of the members of the upper houses were elected from MMDs. The extensive use of MMDs was not a new phenomenon. According to Klain (1955), MMD systems have been historically more common in state legislative elections than SMDs.

Before the mid-1960s, a large number of states failed to redistrict, reapportion, or both on a regular basis. When states actually reapportioned their legislative districts, they often merely added more seats to counties that had had a population increase, in many cases because state constitutions prohibited the division of county boundaries when forming districts. The combined results were widespread and extreme population discrepancies across legislative districts and the creation of countywide MMDs with a large number of seats, especially in metropolitan and urban areas.

The size of some of the MMDs became increasingly enormous by the mid-1960s. Table 2 lists counties that selected their delegations to the lower houses in a large MMD (they usually employed MMD in

TABLE 1
State Legislative Districts (1962)

Size of District	No. of Districts		No. of Reps.		Total No. of	
	SMD	MMD	SMD	MMD	Districts	Reps.
	Lower Houses in 49 States					
Smaller than County	1,411	451	1,411	1,129	1,862	2,540
Identical to County	1,480	468	1,480	1,436	1,948	2,916
Multicounty	288	53	288	139	341	427
Totals	3,179	972	3,179	2,704	4,151	5,883
	Upper Houses in 50 States (including Nebraska Unicameral)					
Smaller than County	365	0	365	0	365	365
Identical to County	578	65	578	180	643	758
Multicounty	655	62	655	125	717	780
Totals	1,598	127	1,598	305	1,725	1,903

Note: Taken from David and Eisenberg 1962, 20.

the state senates, as well). Cuyahoga County (Cleveland), Ohio, elected at-large a 17-member delegation to the Ohio lower house, and Marion County (Indianapolis), Indiana, had 15 members elected at-large. Table 2 also lists the membership of the lower houses in each state. The delegations from these "mega" MMDs constituted a large group within the chamber.

Such extensive use of MMDs had declined rapidly by the mid-1970s, with a large number of states switching exclusively to SMD plans. The number of states that employed MMDs in their lower houses decreased from 41 in 1962 to 23 in 1974 and to 15 in 1984 (Niemi, Hill, and Grofman 1985). Table 3 shows the number of counties that employed MMDs between 1968 and 1984, by the size of districts.[7] The number of counties that used MMDs larger than three-member districts was 128 in 1968, but the number declined to 28 by 1987.

The movement toward SMDs was mainly attributable to two factors. The first factor was a wave of reapportionment triggered by *Baker* v. *Carr* (1962)—a decision by the Supreme Court that federal courts could assume jurisdiction over state legislative districting—and *Reynolds* v. *Sims* (1964), in which the Court ruled that districts in both houses of a state legislature must reflect population. The second factor, particularly important in the South, was the Voting Rights Act of 1965, which prohibited dilution of voting strength of minority voters.

TABLE 2
List of "Mega" Multimember State House Districts that Switched to SMDs or Small MMDs

State	County	City	Size of House	No. of Reps. (MMD)	No. of Dist. (MMD)	No. of Reps. (after)	No. of Dist. (after)	Year of Change
AL	Jefferson	Birmingham	105	20	1	18.8	21	1974
AL	Mobile	Mobile	105	10	1	10	11	1974
AR	Pulaski	Little Rock	100	13	1	15	3	1972
CO	Denver	Denver	65	18	1	18	18	1968
FL	Broward	Fort Lauderdale	120	8	1	12	12	1982
FL	Dade	Miami	120	22	1*	20	20	1982
FL	Duval	Jacksonville	120	11	1	7	7	1982
FL	Hillsborough	Tampa	120	8.95	1*	8	8	1982
FL	Pinellas	St. Petersburg	120	9	1	8	8	1982
IN	Lake	Gary, Hammond	100	10	1	11	6	1972
IN	Marion	Indianapolis	100	15	1	16	5*	1972
IA	Polk	Des Moines	100	11	1	11	11	1968
MS	Hinds	Jackson	122	12	1	12	12	1975
MT	Cascade	Great Falls	100	12	1	11.8	13	1974
MT	Yellowstone	Billings	100	12	1	12.5	13	1974
NC	Mecklenburg	Charlotte	120	8	1	7	7	1984
NJ	Essex	Newark	60*	12	1	12	6	1966
NJ	Hudson	Jersey City	60*	8	1	8	4	1966
NV	Clark	Las Vegas	42	16	1*	22	22	1972

(continued on next page)

TABLE 2
(continued)

State	County	City	Size of House	No. of Reps. (MMD)	No. of Dist. (MMD)	No. of Reps. (after)	No. of Dist. (after)	Year of Change
NV	Washoe	Reno	42	12	1*	10	10	1972
OH	Cuyahoga	Cleveland	99	17	1	17	17	1968
OH	Hamilton	Cincinnati	99	9	1	9	9	1968
OR	Multnomah	Portland	60	17	5	16	16	1972
SC	Charleston	Charleston	124	11	1	12	12	1974
SC	Greenville	Greenville	124	11	1	12	12	1974
SC	Richland	Columbia	124	10	1	11	11	1974
SC	Spartanburg	Spartanburg	124	8	1	8.8	8.8	1974
SD	Minnehaha	Sioux Falls	70	10	1	14	7	1984
TX	Bexar	San Antonio	150	10	1	12	11.1	1972
TX	Dallas	Dallas	150	15	1	18	18	1972
TX	Harris	Houston	150	19	3	24	23.3	1972
TX	Tarrant	Fort Worth	150	8	1	10	10	1972

Notes: Counties with more than 8 representatives elected at-large are listed. The size of the NJ General Assembly increased to 80 in 1966. See text for the method of calculating the number of representatives. Under the old plan, Washoe County, NV, shared an MMD with a small-sized Storey County, and Clark County, NV, had 5 districts (3 geographically defined districts electing 5 members, and 2 countywide districts with 11 members). Multnomah County, OR, had 5 geographically defined districts during the 1960s (1 at-large and 5 geographically defined districts after 1964). Marion County, IN, had 5 3-member MMDs and 1 SMD after 1974. Florida adopted a plan with small MMDs during the 1970s before switching to SMDs in 1982.
Sources: Legislative manuals, various years; Hardy, Heslop, and Anderson 1981; ICPSR Study No. 8907; National Municipal League 1967.

TABLE 3
Number of Counties with MMDs,
by Size of District (State House)

Year	2-Member	3-Member	4, 5, or 6	7 or more
1968	145	41	57	30
1974	91	28	38	7
1978	88	24	28	7
1984	78	6	19	3

Note: Year refers to the year of state legislative elections.
Source: ICPSR Study No. 8907.

Following the *Baker* decision, a large number of states decided to divide counties and introduce SMD plans in their efforts to comply with the equal-population requirements. By the 1966 elections, almost all states had undergone substantial reapportionment processes. By the end of the 1970s round of redistricting, a large number had switched to SMDs.

In the southern states, the dismantling of at-large or MMDs was largely due to the Voting Rights Act of 1965. Because it is difficult to elect minority candidates in at-large districts, such districts have been challenged on the ground that they dilute the voting strength of racial minorities, thereby violating the Voting Rights Act.

The use of MMDs is not unconstitutional. Nevertheless, the courts, including the U.S. Supreme Court, displayed a clear preference for SMD systems. Shortly after *Reynolds*, three federal courts ruled MMDs unconstitutional [*Drew* v. *Scranton* (1964), *Forstson* v. *Dorsey* (1965), *Burns* v. *Richardson* (1965)]. Beginning in the early 1970s, the Supreme Court discouraged the use of multimember district plans in court-ordered reapportionment plans [see, for example, *Connor* v. *Johnson* (1971)]. Lower federal courts also ruled against the use of MMDs [*Sims* v. *Amos* (1972), *White* v. *Regester* (1973), *Georgia* v. *United States* (1973)].

In addition, Section 5 of the Voting Rights Act required states and localities in the South with a history of discrimination to obtain prior approval from the Justice Department for any new or changed

voting-related statutes—including redistricting plans—before implementing them (the "preclearance" requirement). With this unprecedented power, the Justice Department objected to MMD plans submitted by the covered jurisdictions during the 1970s round of redistricting.[8] The persistent intervention by the Department of Justice as well as substantial litigation brought about by minority plaintiffs eventually led to the elimination of MMDs in the southern states.

Outside the South, the situation was more complicated, but the reapportionments dictated by *Baker*, *Reynolds*, and other court decisions were clearly among the driving forces in the shift from MMDs to SMDs. For example, the Iowa Supreme Court ruled in 1966 that subdistricting MMDs was necessary to comply with the federal rulings [*Kruidenier* v. *McCulloch* (1966)]. Thus, in 1967 the state assembly was forced to divide 18 MMDs in the lower house and 9 in the senate, including large MMDs in Polk County (Des Moines) and elsewhere. Another factor influencing the move to SMDs, it appears, was partisanship. In most states, the change to "one person, one vote" increased the legislative representation of metropolitan counties. If elected at-large, then these extra metropolitan seats would typically go to Democrats (at least, outside the South). Indiana, Ohio, and Oregon all changed from at-large MMDs to SMDs in the late 1960s and early 1970s, sometimes with an intervening step of cutting metropolitan counties into a number of small or medium-sized MMDs. In all cases, Republican legislators and judges supported the use of SMDs, while Democratic legislators, usually including those representing the affected urban areas, opposed the change. One of the Republicans' main goals was to create some suburban districts that Republican candidates could win. The alternative was a large, solidly Democratic delegation.[9]

These three factors—*Baker* and the subsequent court decisions, the Voting Rights Act, and partisan battles—contributed to the decline in the number of counties that used MMDs (Table 4).

The "mega" MMDs have been abolished and split into either SMDs or small-member MMDs (Table 2). The last column in Table 2 shows the year of the first election under new districting plans. The 17-member MMD in Cuyahoga County, Ohio, was split into 17 SMDs starting in the 1968 election. Polk County, Iowa, was split into 11 SMDs in 1968. In many cases, the number of delegations remained the same, and they were simply subdistricted into the same number of SMDs or small MMDs. This shift provides us with an ideal change: a switch in districting system, but no change in the number of delegations. We exploited these changes for the subsequent analysis.

TABLE 4
Changes from MMDs to SMDs or Small MMDs in State House Districts, 1960–85

State	Type of Change	Year	Reason
AL	MMD to SMD	1974	VRA
AZ	At-large to small MMD	1966	*Klahr* v. *Goddard* (1965)
AR	At-large to small MMD	1972	*Yancey* v. *Faubus* (1965) (reapportionment case), AG's preference to SMD
CO	MMD to SMD	1968	Constitutional amendment, *Lucas* v. *Co. Gen. Assembly* (1965)
FL	MMD to SMD	1982	Decennial redistricting
GA	MMD to SMD*	1974	VRA
IL	MMD to SMD	1982	Cumulative voting rejected by voters
IN	At-large to small MMD	1972	*Chavis* v. *Whitcomb* (1971)
IA	MMD to SMD	1968	*Kruidenier* v. *McCulloch* (1966)
LA	MMD to SMD	1972	VRA
MI	MMD to SMD	1964	*Scholle* v. *Hare* (1962, 1964) (reapportionment case)
MN	MMD to SMD	1972	*Beens* v. *Erdahl* (1972) (reapportionment case)
MS	MMD to SMD	1979	VRA
MT	MMD to SMD	1974	Decision of constitutional convention
NV	MMD to SMD	1972	Decennial redistricting
NJ	At-large to small MMD	1966	*Jackman* v. *Bodine* (1964) (reapportionment case)
NM	MMD to SMD	1966	Reapportionment following *Baker* v. *Carr*
NC	MMD to SMD/small MMD	1984	VRA, *Gingles* v. *Edmisten* (1984)
OH	MMD to SMD	1966	*Nolan* v. *Rhodes* (1964, 1966)
OK	MMD to SMD	1964	*Moss* v. *Burkhart* (1963), *Williams* v. *Burkhart* (1964)
OR	MMD to SMD	1972	Decennial redistricting
PA	MMD to SMD	1966	Court intervention after *Butcher* v. *Bloom* (1964) (reapportionment case)
SC	MMD to SMD	1974	VRA
TN	MMD to SMD	1972	Decennial redistricting
TX	MMD to SMD	1976	*White v. Regester* (1973), VRA (Sec. 5 coverage in 1975)
VA	MMD to SMD	1984	VRA

Notes: New England states and states that have used only SMDs or MMDs (with no district magnitude change) since 1960 are excluded. *Year* indicates the year of the first legislative elections under new district plans. *VRA* stands for the Voting Rights Act of 1965. Georgia's 1974 plan contained some small MMDs but largely SMDs.
Sources: Dixon 1968; Hardy, Heslop, and Anderson 1981; National Municipal League 1967; Niemi, Hill, and Grofman 1985.

Data

We merged legislative and financial data to create a dataset for this study. For the legislative data, we used state legislative election returns data provided by ICPSR. The dataset reports state legislative election results in all states (except for Vermont) between 1968 and 1989 at the legislative-district level. We also consulted the legislative manuals of various states to determine district information for elections before 1968. The unit of analysis in this study is county, so we aggregated the data up to the county level. The details of our procedure are described later in more detail. We only examined legislative districts in the lower house, mainly because MMDs were used more extensively in the lower houses (Table 1) and because MMDs with staggered terms, which are used extensively in the state senate, are similar to SMDs in nature. The time period for this study is 1968–1984. Most of the changes from at-large elections to SMDs happened during this period.[10] Note that the analysis is post-*Baker*, so we can mostly ignore the issue of reapportionment.[11]

The county-level financial data come from the Censuses of Governments.[12] The censuses are conducted every five years, and the censuses available for this study are 1972, 1977, 1982, and 1987. We examined the amount of transfers from the state government to all of the local governments inside a given county. "Local governments" include the county government itself, municipal governments, school districts, and special districts (such as water and sewer districts or transportation districts).[13] The dependent variable in this study is the relative amount of per capita transfers from the state government to counties. For each year, we calculated the relative amount of transfers as the amount of per capita transfers divided by the average amount of per capita transfers in each state.

To account for lags in budgeting processes, we merged the 1968 election data (therefore, 1969 assembly data) with the 1972 Census of Governments data. Similarly, the legislative data for 1974, 1978, and 1984 were merged with the Census of Governments data for 1977, 1982, and 1987, respectively.[14] Therefore, our panel dataset contains four time periods.

Specifications

We exploited the panel structure of the data as follows. Let S_{it} be per capita intergovernmental transfers to county *i* in year *t* relative to the statewide average in year *t*. Let M_{it} be the average district

magnitude (representatives per district) in county i in year t (later described in more detail), and let X_{it} be a vector of control variables, including partisan composition of the county delegation, per capita income, percentage of the population living in poverty, percent of the population that is school age, percent of the population that is elderly, population density, and total population. The typical specification we estimate is:

$$S_{it} = \alpha_i + \theta_t + \beta M_{it} + \gamma' X_{it} + \varepsilon_{it} .$$

We used county fixed effects (α_i) to control for unobserved heterogeneity across counties and year fixed effects (θ_t) to control for aggregate shocks, such as economic fluctuations and changes in national policy toward cities. The main coefficient of interest is β. If counties received more state aid when they were represented by at-large delegations, the β should be positive. If switching to SMDs was associated with an increase in state aid, then β should be negative.

To measure the degree of "multimemberness," we calculated the magnitude of legislative districts for each county: the number of legislators representing a county divided by the number of state legislative districts in the county.[15] For example, if a county has seven representatives and elects all of them in single-member districts, then the number of districts is seven, so the magnitude score equals one. In contrast, if a county has seven members all elected at-large in a countywide district, then it has one district, making the magnitude seven. This variable measures how many legislators a county has that *collectively* advocate its interests. Note that counties that employ SMDs have a magnitude score of 1 and those that employ MMDs have a score greater than 1. The higher score implies more members are working on a district's behalf.[16]

A more-complicated situation arises when a county shares a district with one or more other counties. As Table 1 indicates, a large number of multicounty districts existed. For multicounty districts, we used county populations as weights to calculate the number of representatives as well as the number of districts. Suppose that two counties, A and B, share a two-member district (that is, two members elected at-large). If county A has a population of 90,000 and county B has a population of 10,000, then we would calculate county A as having 2∗(9/10) representatives and county B as having 2∗(1/10) members representing it. The number of districts for each county would be calculated similarly. Continuing the same example, county A is assigned 1∗(9/10) districts, and county B gets 1∗(1/10) districts.

We performed the calculations at the district level and aggregated the number of representatives and the number of districts up to the county level. Thus, if county A in the previous example shares another two-member district with another relatively small county, county C (with the same population size as county B),[17] then county A has 2∗(9/10) + 2∗(9/10) representatives and 1∗(9/10) + 1∗(9/10) districts. We employed no weighting across districts when we added up districts to calculate the total number of representatives and districts for each county.

Results

Panel A in Table 5 reports our main estimation results. In all cases, the dependent variable is the amount of per capita intergovernmental transfers to each county in each year, relative to the statewide average in the same year. To facilitate interpretation, we present the dependent variable as well as control variables (except for dummy variables) in logs. Row (a) shows the results when the magnitude score is used as the main independent variable. Row (b) contains the results when we use a simple indicator variable for MMDs. This variable, *MMD Dummy*, is coded as 1 when a county uses a countywide MMD to elect its representatives and as 0 otherwise. Therefore, if a county has moved from an at-large MMD to small-sized MMDs, then the magnitude score would be greater than 1 in both periods, but *MMD Dummy* would be 1 only in the first period.[18]

We are interested in the impact of a large shift in the districting system, so we included only counties that had a magnitude score of 3 or higher (during the period of our study) in the estimation. Counties that only had a small-sized (for instance, two-member) MMD and then switched to SMDs were not included in the analysis,[19] nor were states that adopted SMDs before the mid-1960s.[20] We also excluded counties that used MMDs throughout the period.[21] All specifications include year and county fixed effects to account for unobserved heterogeneity across counties and year effects.

We estimated simple bivariate models as well as models with a set of control variables (both with year and county fixed effects). We included in these specifications the demographic control variables of population, population density, median household income, percentage of school-aged children (ages 5–17), percentage of black residents, percentage of residents living below the poverty line, and percentage of persons 65 years and older. The demographic information comes from the county-level decennial census data of 1970, 1980, and 1990.[22]

TABLE 5
Estimated Effects of Multimember Districts
on the Amount of Intergovernmental Transfers
(robust standard errors in parentheses)

Dependent Variable: Log(Relative Per Capita Transfers to County)

	1968–84		1968–78	
Variable	(1)	(2)	(3)	(4)
	Panel A: All Counties			
(a) MMD Dummy	0.054**	0.060**	0.057**	0.075**
	(0.016)	(0.017)	(0.019)	(0.023)
Controls	No	Yes	No	Yes
(b) Log(Magnitude)	0.028**	0.026*	0.024*	0.024
	(0.011)	(0.013)	(0.012)	(0.017)
Controls	No	Yes	No	Yes
N	622	557	466	425
	Panel B: Large Cities			
(a) MMD Dummy	0.063**	0.073**	0.081*	0.101*
	(0.023)	(0.028)	(0.031)	(0.044)
Controls	No	Yes	No	Yes
(b) Log(Magnitude)	0.024	0.023	0.027	0.023
	(0.013)	(0.015)	(0.015)	(0.019)
Controls	No	Yes	No	Yes
N	490	458	367	345

*significant at .05; **significant at .01.
Notes: Year and county fixed effects are included in all specifications. The dependent variable is the relative amount of per capita transfers from the state government to county. In columns (2) and (4), a set of control variables is included in the estimation: Population, Population Density, Median Income, % School Age, % Black, % Poverty, % 65 Years + (all measured in relative terms and logged) and % Democrat, Dem. Majority, and % Democrat × Dem. Majority. For full estimation results, see Tables A-1 through A-4 in the Appendix.

All the county characteristics variables are measured in the relative terms (relative to state mean) for each year and logged.

In addition, to abstract from confounding effects of partisan changes that often followed the switch to SMDs, we included political variables in the estimation. The relevant control variables are the fraction of Democrats in the county delegation, an indicator variable that measures party control of the lower house, and an interaction term of the two. The indicator variable for party control equals 1 if the state

house is under solid Democratic control, –1 if it is under solid Republican control, and 0 otherwise.[23] The estimation results with control variables appear in columns (2) and (4) of Table 5. To keep the table simple, we report only the estimated coefficients on *Log(Magnitude)* and *MMD Dummy* in Table 5. See Tables A-1 through A-4 in the Appendix for full estimation results.

Table 5 reports two sets of estimation results, both with the same specification, for two time periods. The first time period covers four legislative elections between 1968 and 1984, matched with financial data for the years between 1972 and 1987. The second period covers 1968–78, focusing more on the 1970s redistricting period, during which a large number of counties switched to SMDs. The estimation results for the period 1968–84 appear in columns (1) and (2), and columns (3) and (4) contain results for the period 1968–78.

According to Panel A in Table 5, the coefficients are all positive and statistically different from 0 (at the 1% significance level) in both time periods. The positive coefficients on *MMD Dummy* suggest that counties received relatively more state funds when represented by at-large delegations, compared to when the counties were represented by legislators elected from SMDs. In other words, counties that switched from MMDs to SMDs received *less* state aid after the switch. A switch from a countywide MMD to SMDs caused an approximately 6% reduction in state transfers. The results were similar when we used *Log(Magnitude)* in the specification. The effects are estimated to be larger for the district changes between 1968 and 1978, as shown in columns (3) and (4). In both cases, the estimated effects are robust to the inclusion of control variables.

One may argue that, during the same time period, the amount of state aid to big cities declined everywhere, not only in cities that changed their districting system. Because counties that switched to SMDs typically contain big cities (Table 2), we may be picking up the general declining trend in distributing funds to cities instead of the effects of districting. To rule out this possibility, we estimated the same model only for counties that contain big cities. The sample thus included large counties that exclusively used SMDs during the period (examples include counties in California and New York). The comparison is therefore between counties that experienced a switch from MMDs to SMDs and those that used SMDs throughout the period. Again, we excluded counties that used MMDs throughout the period under analysis. We selected counties in the sample by the following criteria: the average population during the period studied was more than 50,000, and the average number of representatives was greater than five.[24]

Panel B of Table 5 reports the estimation results for large cities. Again, the estimated coefficients on *MMD Dummy* are all positive and statistically significantly different from 0, in both periods. Compared to counties that had SMDs during the period, counties that switched from MMDs to SMDs experienced approximately an 8–10% decrease in the amount of state aid. This result suggests that only counties that were subdistricted into small districts experienced a substantial cut in state aid.

One may also argue that the decline in state aid to the area that switched to SMDs is not surprising because the subdistricting of large MMDs was politically motivated in some states. As we discussed in the previous section, although some states switched to SMDs because of exogenous shocks (such as court rulings or the Voting Rights Act), political considerations were clearly at play in some states. For example, SMD switches may have been aimed at weakening counties that had received relatively higher levels of state aid. It is possible that there was a systematic correlation between the dependent variable (y_{it}) and the district-type variable (M_{it}), which could bias our estimates.[25] To obtain cleaner estimates of the effects of districting, we also estimated the model using an instrumental variable. The instrument for the *MMD Dummy* variable is an interaction term of the following two variables: (1) a dummy variable coded as 1 if the county is covered under Section 5 of the Voting Rights Act or is in a state that switched to SMDs because of court rulings or pressures from outside forces (such as a federal court or the Attorney General) (Table 4), and (2) an indicator variable that equals 1 if a county has a population greater than 100,000.[26]

For this set of analyses, we focused on the change between 1968 and 1984. Because we have two time periods, the data are first-differenced and we used the instrument variables for a variable that measures the change in the district system (Δ *MMD Dummy*). The estimation results are presented in Table 6.

Again, we estimated the model for all large counties that switched from MMDs to SMDs and for metropolitan counties separately. The second group contains counties that exclusively used SMDs during the period as well as comparable counties that switched to SMDs. Columns (1) and (2) contain the estimation results for counties that previously employed large MMD systems, which subsequently districted. To facilitate comparison, we present the estimation result of the first-differenced model by ordinary least squares (OLS) in column (1) and the instrumental variable (IV) estimates in column (2). According to Table 6, the estimated coefficients on Δ *MMD Dummy* are all positive, regardless of the way we estimate the coefficient. As

TABLE 6
Instrumental Variable Estimation of the Effects of Multimember Districts on the Amount of Intergovernmental Transfers, 1968–84
(robust standard errors in parentheses)

Dependent Variable: ΔLog(Relative Per Capita Transfers to County)

	All Counties		Large Cities	
	(1)	(2)	(3)	(4)
Variable	FD	FD/IV	FD	FD/IV
Δ MMD Dummy	0.126**	0.238	0.100*	0.280
	(0.039)	(0.149)	(0.041)	(0.166)
Δ % Democrat	–0.019	–0.039	–0.039	–0.062
	(0.042)	(0.054)	(0.098)	(0.095)
Δ Dem. Majority	0.053*	0.082	0.034	0.079
	(0.026)	(0.043)	(0.038)	(0.053)
Δ % Democrat × Dem. Majority	0.024	0.027	0.196*	0.170
	(0.041)	(0.049)	(0.098)	(0.097)
Δ Population	0.095	0.055	–0.112	–0.006
	(0.241)	(0.262)	(0.302)	(0.334)
Δ Population Density	–0.156	–0.140	–0.063	–0.141
	(0.121)	(0.122)	(0.147)	(0.191)
Δ Median Income	0.440	0.695	–0.113	–0.407
	(0.544)	(0.741)	(0.643)	(0.665)
Δ % School Age	1.335**	1.349**	1.099*	1.359*
	(0.351)	(0.375)	(0.434)	(0.563)
Δ % Black	0.021	0.033	0.088*	0.116
	(0.067)	(0.064)	(0.041)	(0.066)
Δ % Poverty	0.289**	0.298*	0.154	0.016
	(0.109)	(0.118)	(0.151)	(0.194)
Δ % 65 Years+	0.178	0.222	0.092	0.056
	(0.180)	(0.212)	(0.179)	(0.203)
Constant	0.078*	0.132	0.037	0.120
	(0.034)	(0.083)	(0.036)	(0.091)
Observations	120		95	

*significant at .05; **significant at .01.

Notes: The dependent variable is the change in relative amount of per capita transfers from the state government to county, 1972–1987. District system and legislative information are as of 1968 and 1984. All control variables (except for *% Democrat* and *Dem. Majority*) are measured relative to the state average and logged. *% Democrat* measures the fraction of Democrats in the county delegation. *Δ Dem. Majority* equals 1 if the lower house was under solid Democratic control between 1968 and 1984, –1 if it was under solid Republican control, and 0 if party control switched from the Republican to the Democratic party.

expected, the standard errors of the IV estimator are larger than those of the OLS, resulting in imprecise estimates; the results suggest, however, that the sign of the coefficient at least is positive. We obtained a similar set of results for large metropolitan counties [columns (3) and (4)]: the counties districted into SMDs experienced a large decline in the amount of state transfers compared to those that used SMDs throughout the period.

Taken together, the estimation results in Tables 5 and 6 indicate that the change from MMDs to SMDs had a negative effect on the counties' ability to secure funding from the state government. The estimated effects are robust to the effects of other confounding factors and the choice of estimators.

These analyses do not allow us to determine why switching to SMDs hurts metropolitan counties. We can, however, point out a few suggestive facts. First, in almost all of the counties that switched to SMDs from large MMDs, the partisan composition of the delegations changed dramatically after the switch. Under the "mega" at-large MMD system, one-party sweeps were very common, because voters, faced with impossibly long ballots, typically voted straight or nearly straight party tickets (Hamilton 1967). With the dismantling of large MMDs, split delegations became much more common. Second, and relatedly, the switch to SMDs often resulted in lower cohesion in legislative roll-call voting among the metropolitan county's representatives, largely because of the change in partisan composition. For example, Jewell (1969) has reported noticeable reductions in cohesion in the Cuyahoga (Cleveland) and Hamilton (Cincinnati) delegations after they adopted SMD plans. Conflicts between the urban core and more-suburban parts of the metropolitan counties might also have arisen after the shift to SMDs. These two facts suggest that metropolitan legislators had a harder time agreeing on which projects to support once they started to represent geographically smaller single-member districts. One way to check this hypothesis is to determine if the types of items financed by intergovernmental transfers changed after the switch. For example, the low cohesion may have led to lower transfers for citywide projects, such as mass transit systems or large-scale highways that benefit an entire city population. Unfortunately, the financial data for this period are reported in several broad categories (for example, "Education," "Health and Hospital") and do not allow us to conduct this type of analysis.

Discussion

We draw two conclusions from the foregoing analysis. First, dividing large "natural economic communities" into many single-member districts may reduce the effectiveness of these communities' legislative delegations, providing an argument for the use of multimember districts. Naturally, we hesitate to give policy advice on the basis of one limited study. But if future studies yield similar findings, then those involved in the districting process—legislatures, districting commissions, and courts—might want to reconsider the current preference for SMDs.

Second, theoretical models that focus overwhelmingly on the free-rider issues of MMDs may be in need of revision. Our results suggest that countervailing factors, such as externalities and the power of similar preferences and bloc voting, may outweigh free-riding. We cannot identify precisely which countervailing factors are most important, but this may be a fruitful question for future research.

MMDs are widespread. They are used in all proportional-representation systems. Most European countries also use MMDs (and proportional representation) to elect their European Parliament members, although the United Kingdom does not. At-large MMDs are the most common form of electoral system in U.S. cities with populations between 5,000 and 1,000,000, and mixed systems that combine MMDs and SMDs are the second-most common form (*Municipal Year Book* 1998). MMDs are also used in a variety of other local governments in the United States, such as school boards and county commissions.

Today there are proposals in the U.S. Congress to allow the use of MMDs in congressional elections. Several members of Congress—including Mel Watt, Eva M. Clayton, Loretta Sanchez, Stephanie Tubbs Jones, Barbara Lee, Alcee Hastings, and Cynthia McKinney—have supported legislation in recent Congresses that would allow states to use MMDs, proportional voting, instant-runoff voting, and other methods to elect their congressional delegations. So far these proposals have gone nowhere. But someday they might. The ban against MMDs was passed by an ordinary law (in 1967), and an ordinary law could change it again.

There are a few notable caveats regarding our analysis. First, we did not observe the distribution of state aid *within* cities. Thus, while the use of MMDs may be associated with an increase in the total amount of funds flowing to a city, it is possible that the benefits are so concentrated that some areas or groups within the city might nonetheless suffer

a loss. Second, the period of this study coincides with a period in which state legislatures experienced other types of changes, including greater incumbency advantages and professionalization. These factors are likely to influence the incentives for legislators to procure additional state aid for their localities, as well as the resources for seeking such aid. The fixed effects in our model absorbed the impact of these changes as long as the changes were relatively uniform within states over time. Still, there may have been some heterogeneity in the timing of these changes that we could not capture in our model. For example, if the professionalization of state legislators happened earlier in urban areas, and if legislators from rural and suburban areas became more professionalized around the time when urban areas switched from MMDs to SMDs, then some of the relative decrease in state aid in urban areas may be attributable to this professionalization factor. Further research, with more detailed data, is required to study these possibilities.

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NOTES

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1. The literature is enormous. Here is a tiny sample of recent work: On the first topic, see Lizzeri and Persico 2001 and 2005, Persson and Tabellini 1999, and Persson, Tabellini, and Trebbi 2003. On the second, see Ansolabehere, Gerber, and Snyder 2002, Lee and Oppenheimer 1999, and Rodden 2002. On the third, see Strömberg 2005. On the fourth, see Larimer 2005 and Richardson, Russell, and Cooper 2004.

2. Berry, Berkman, and Schneiderman (2000), Carey, Niemi, and Powell (2000), Moncrief and Thompson (1992), and Niemi and Winsky (1987) have all found evidence that the incumbency advantage is lower in MMDs, but Niemi, Jackman, and Winsky (1991) and Welch and Studlar (1990) have not. Cox and Morgenstern (1995) report that the incumbency advantage has grown in MMDs but at a slower rate than in SMDs.

3. On the other hand, noncooperative models of legislative behavior often yield different predictions, in which bloc voting is not rewarded so generously. See, for example, Montero 2003 and Snyder, Ting, and Ansolabehere 2005.

4. The shift to SMDs might lead to an *increase* in seniority in the long term, if the districting process tends to produce relatively homogeneous constituencies that are easy for representatives to serve and hold.

5. There are examples from other states, as well. Irwin (1962, 74) describes the situation in Colorado: "The culminating and most significant aspect of this Democratic Party discipline in Denver is its extension into the legislature. . . . It is a matter of common observation in both political parties that the Denver Democrats, with occasional exceptions, tend to vote as a bloc." More generally, Jewell (1982, 140) notes,

> Members of metropolitan county delegations do not always agree on priorities for allocating resources within the county or on specific projects. In several states [among nine states that he studied] that have shifted from at-large to district representation in metropolitan counties, there has been a resulting decline in the cohesion of the county delegation on matters pertaining to the county. Those representing the suburbs and those from the central cities do not always agree on what needs in the county are most urgent. Obviously the greater the disagreement, the weaker the ability of the county delegation to get administrative support for projects or legislative support for budgetary items and local legislation.

6. We are aware of only one other paper that attempts to show a systematic effect of MMDs on actual policy outcomes, such as the passage of laws or patterns of government spending. Larimer (2005) examined state welfare policy from 1997 to 2000 and found that states with higher proportions of upper-chamber MMDs tend to have less-generous welfare policies. Our article presents evidence that is more systematic by examining a panel dataset that spans almost 20 years. In addition, this article focuses on the influence of electoral rules on distributive government spending.

7. There are mainly three types of MMDs: free-for-all MMDs, in which all candidates run against each other; MMDs with posts or positions, in which candidates specify the post or position for which they are running and voters cast their votes for each position; and floterial districts, which are districts superimposed over another. We do not distinguish between these different types of MMDs here, since they operate in a similar fashion for the purposes of our inquiry. One may argue, however, that the post system (especially the one with a residency requirement) works differently, because incumbents do not have to compete against each other for reelection. When we excluded counties that employed the post system from our analysis, the substantive results remained the same.

8. See, for example, Davidson 1984 and 1992.

9. Michigan switched earlier, in similar circumstances. We do not include that change in our sample since it was an isolated case.

10. Relatively few switches to SMDs happened during the 1990s round of redistricting.

11. Almost all states had finished their reapportionment/redistricting processes by the elections of 1966.

12. We should note that the total amount of state intergovernmental transfers reported in the censuses include federal "pass-through" funds—funds originated from federal governments that are allocated by states to local governments. Many major federal pass-throughs are formulaic and education-related aid (e.g., school lunch and educational aid for low-income areas). See the U.S. Bureau of the Census, *Census of Governments,* Vol. 6, *State Payments to Local Governments*, various years. While it is impossible to determine the exact amount of federal pass-throughs, because the practices

of pass-throughs vary from state to state, the inclusion of state fixed effects should capture some of the major variations caused by federal pass-throughs. When we included state fixed effects in our analysis (instead of county fixed effects), the results were unchanged. In addition, when we excluded states in which pass-throughs accounted for more than 25% of state aid to local governments using data reported in Stephans and Olsen (1979), our substantive results remained the same.

13. This is the same variable studied by Ansolabehere, Gerber, and Snyder (2002), Brady and Edmunds (1967), and others.

14. For those states that have state legislative elections in odd-numbered years, we subtracted one year from the election year. For example, we treated the legislative elections of 1983 in Virginia and New Jersey as the elections of 1982.

15. Our *Magnitude* is similar to the district magnitude measure commonly used in the electoral system literature, but it is slightly different because it is calculated at the political-unit level, not at the electoral-district level.

16. A potential problem with this measure is that we cannot distinguish the following two cases: a county with four members electing them all at-large and a county with two four-member district members (a county split into two). In both cases, the magnitude score is four (4/1 and 8/2), but one may argue that in the latter case the legislators do not necessarily work for the county as a whole but instead for each of their districts. The latter type of MMDs were actually employed in Multnomah County, Oregon. During the 1960s, Multnomah County had five geographically defined MMDs, and each district had three to four members elected at-large. To deal with this issue, we also used a different measure, discussed later in the text.

17. The Florida lower house employed this arrangement for some of its large counties.

18. Recall that the magnitude score is 1 for SMDs but greater than 1 for MMDs.

19. We also excluded states in New England from the analysis because these states' unit of representation is typically towns, not counties. Including New England states does not change the substantive results.

20. There are no legislative districts that switched back to MMDs from SMDs.

21. Most of the counties that used MMDs throughout the period are in Wyoming and West Virginia.

22. The legislative data of 1968 (therefore, 1972 financial data) are merged with the 1970 census data. Similarly, the legislative data of 1978 (with the 1982 *Census of Governments* data) and 1984 (with the 1987 *COG* data) are merged with the 1980 and 1990 censuses, respectively. As for variables to be merged with the 1974 legislative data, we used values for 1975 (taken from the 1977 version of *County and City Data Book* when available, and we linearly interpolated values for other variables using the 1970 and 1980 census data.

23. To be more precise, for each time period, we looked at party control for the past several years. For example, for the 1972 data, we examined party control of the lower chamber between 1968 and 1972 in each state and assigned 1 if the Democratic party controlled the chamber during the entire period, 0 if party control switched, and –1 if the chamber was under Republican party control. We also included a variable to measure the partisanship of governors, but this factor had no significant effect, so we dropped it from the analysis.

24. Increasing the population threshold to 100,000 does not change any substantive results.

25. We conducted the Hausman test for endogeneity of the MMD dummy variable. For the set of large cities, the null that *MMD Dummy* is exogenous is rejected at the 1% significance level. For the sample that includes all counties, we cannot reject the null, suggesting that the switch is not entirely endogenous. We present the instrumental variable estimation results for this set of counties for comparison purposes.

26. States covered under Section 5 as a whole and that employed MMDs as of 1968 are Alabama, Georgia, Louisiana, Mississippi, South Carolina, and Virginia. Texas was covered in 1975. North Carolina was partially covered, but, because its legislative data for 1968 are not included in the ICPSR dataset, North Carolina is excluded from this set of analyses. Other states with clear outside interventions are Indiana and Arkansas. The first-stage regression results are reported in Table A-5.

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APPENDIX
TABLE A-1
Estimated Effects of Multimember Districts on the Amount of Intergovernmental Transfers

Dependent Variable: Log(Relative Per Capita Transfers to County)
Main Independent Variable: MMD Dummy

	1968–84		1968–78	
Variable	(1)	(2)	(3)	(4)
MMD Dummy	0.054**	0.060**	0.057**	0.075**
	(0.016)	(0.017)	(0.019)	(0.023)
% Democrat		–0.028		0.012
		(0.036)		(0.044)
Dem. Majority		–0.008		0.009
		(0.026)		(0.034)
% Democrat × Dem. Majority		0.023		–0.020
		(0.040)		(0.052)
Population		–0.070		–0.103
		(0.133)		(0.192)
Population Density		–0.053		–0.225
		(0.070)		(0.159)
Median Income		0.059		0.183
		(0.339)		(0.425)
% School Age		1.040**		1.008**
		(0.245)		(0.378)
% Black		0.001		0.004
		(0.047)		(0.069)
% Poverty		0.203**		0.211*
		(0.072)		(0.099)
% 65 Years+		0.035		–0.076
		(0.134)		(0.219)
Constant	–0.121**	0.055	–0.141**	0.194
	(0.008)	(0.113)	(0.010)	(0.138)
Observations	622	557	466	425
R^2	0.83	0.85	0.83	0.86

Note: Robust standard errors in parentheses. Year and county fixed effects are included in all specifications.
*significant at .05; **significant at .01.

TABLE A-2
Estimated Effects of Multimember Districts
on the Amount of Intergovernmental Transfers

Dependent Variable: Log(Relative Per Capita Transfers to County)
Main Independent Variable: Log(Magnitude)

	1968–84		1968–78	
Variable	(1)	(2)	(3)	(4)
Log(Magnitude)	0.028**	0.026*	0.024*	0.024
	(0.011)	(0.013)	(0.012)	(0.017)
% Democrat		–0.029		0.017
		(0.037)		(0.046)
Dem. Majority		–0.015		–0.004
		(0.026)		(0.034)
% Democrat × Dem. Majority		0.031		–0.003
		(0.041)		(0.054)
Population		–0.050		–0.064
		(0.135)		(0.190)
Population Density		–0.066		–0.232
		(0.071)		(0.162)
Median Income		0.009		0.099
		(0.345)		(0.429)
% School Age		0.994**		0.950*
		(0.249)		(0.381)
% Black		–0.001		0.001
		(0.049)		(0.071)
% Poverty		0.208**		0.239*
		(0.074)		(0.104)
% 65 Years+		0.017		–0.101
		(0.138)		(0.228)
Constant	–0.163**	0.067	–0.131**	0.198
	(0.017)	(0.116)	(0.010)	(0.141)
Observations	622	557	466	425
R^2	0.82	0.85	0.83	0.85

Note: Robust standard errors in parentheses. Year and county fixed effects are included in all specifications.
*significant at .05; **significant at .01.

TABLE A-3
Estimated Effects of Multimember Districts on Large Cities

Dependent Variable: Log(Relative Per Capita Transfers to County)
Main Independent Variable: MMD Dummy

	1968–84		1968–78	
Variable	(1)	(2)	(3)	(4)
MMD Dummy	0.063**	0.073**	0.081*	0.101*
	(0.023)	(0.028)	(0.031)	(0.044)
% Democrat		0.037		0.069
		(0.039)		(0.049)
Dem. Majority		0.008		0.059*
		(0.021)		(0.029)
% Democrat × Dem. Majority		0.003		–0.087
		(0.037)		(0.045)
Population		–0.318		–0.403
		(0.210)		(0.326)
Pop. Density		0.003		0.025
		(0.082)		(0.202)
Median Income		–0.148		0.042
		(0.369)		(0.469)
% School Age		0.957**		1.120*
		(0.291)		(0.484)
% Black		0.073*		0.067
		(0.037)		(0.055)
% Poverty		0.071		0.181
		(0.094)		(0.130)
% 65 Years+		0.096		0.086
		(0.145)		(0.283)
Constant	–0.184**	0.458	–0.142**	0.565
	(0.018)	(0.277)	(0.012)	(0.370)
Observations	490	458	367	345
R^2	0.84	0.86	0.85	0.87

Note: Robust standard errors in parentheses. Year and county fixed effects are included in all specifications.
*significant at .05; **significant at .01.

TABLE A-4
Estimated Effects of Multimember Districts on Large Cities

Dependent Variable: Log(Relative Per Capita Transfers to County)
Main Independent Variable: Log(Magnitude)

	1968–84		1968–78	
Variable	(1)	(2)	(3)	(4)
Log(Magnitude)	0.024	0.023	0.027	0.023
	(0.013)	(0.015)	(0.015)	(0.019)
% Democrat		0.025		0.062
		(0.039)		(0.051)
Dem. Majority		0.004		0.050
		(0.021)		(0.030)
% Democrat × Dem. Majority		0.006		–0.081
		(0.038)		(0.047)
Population		–0.337		–0.430
		(0.213)		(0.325)
Population Density		0.009		0.040
		(0.081)		(0.196)
Median Income		–0.099		0.150
		(0.379)		(0.473)
% School Age		0.958**		1.092*
		(0.287)		(0.468)
% Black		0.068		0.062
		(0.037)		(0.058)
% Poverty		0.091		0.238
		(0.097)		(0.133)
% 65 Years+		0.127		0.104
		(0.142)		(0.277)
Constant	–0.174**	0.509	–0.132**	0.616
	(0.017)	(0.280)	(0.011)	(0.382)
Observations	490	458	367	345
R^2	0.84	0.86	0.85	0.87

Note: Robust standard errors in parentheses. Year and county fixed effects are included in all specifications.
*significant at .05; **significant at .01.

TABLE A-5
First-stage Regression of IV Estimator (Table 6)

Dependent Variable: ΔMMD Dummy

Variable	All Counties	Large Cities
Outside Intervention Dummy	–0.301**	–0.394**
	(0.086)	(0.113)
Δ % Democrat	0.029	–0.148
	(0.206)	(0.202)
Δ Dem. Majority	–0.261**	–0.212**
	(0.087)	(0.049)
Δ % Democrat × Dem. Majority	–0.095	0.242
	(0.206)	(0.173)
Δ Population	0.185	–0.564
	(0.462)	(0.592)
Δ Population Density	0.066	0.374
	(0.283)	(0.257)
Δ Median Income	–2.425*	0.644
	(1.123)	(1.161)
Δ % School Age	–0.322	–1.371
	(0.751)	(0.848)
Δ % Black	–0.084	–0.143
	(0.119)	(0.162)
Δ % Poverty	0.000	0.619*
	(0.286)	(0.290)
Δ % 65 Years+	–0.301	0.223
	(0.408)	(0.441)
Constant	–0.441**	–0.402**
	(0.093)	(0.087)
Observations	120	95
R^2	0.20	0.40

Note: Robust standard errors in parentheses. The dependent variable is the change in districting system, which equals –1 if the county switched from a MMD to SMDs, or 0 if there was no change. The instrumental variable is an indicator variable that equals 1 if a county is covered under Section 5 of the VRA or had a court ruling that mandated the use of SMD *and* if the county has a population size greater than 100,000.
*significant at .05; **significant at .01.