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Equal Votes, Equal Money: Court-Ordered Redistricting and Public Expenditures in the American States

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Court-ordered redistricting in the mid-1960s eradicated severe disparities in the populations of U.S. state legislative districts. We examine the geographic distribution of money by states to counties. Cross-sectional analysis shows that counties with relatively more legislative seats per person prior to redistricting received relatively more transfers from the state per person. Over time, counties that lost legislative seats subsequently received a smaller share of state funds per capita. We calculate that population equalization significantly altered the flow of state transfers to counties, diverting approximately \$7 billion annually from formerly overrepresented to formerly underrepresented counties, an effect missed by past studies. For those concerned with the design of democratic institutions around the world today, the American experience provides clear evidence of the political consequences of unequal representation.

Court-ordered redistricting in the 1960s radically altered representation in the United States. Through a series of important cases, beginning with *Baker v. Carr* in 1962, the U.S. Supreme Court established a criterion of strict equality of state legislative and U.S. House district populations. Prior to judicial intervention, unequal representation was the norm in U.S. legislatures, and in some states districts had extremely unequal populations. In 1960, the state legislative districts in only two states, New Hampshire and Wisconsin, approximated the one-person, one-vote standard in both chambers (David and Eisenberg 1961). At the other extreme was the California state senate, with the smallest counties having 400 times as much representation as Los Angeles, the largest county in the state. Less than a decade after *Baker v. Carr*, every state in the country reshaped its legislative districts to comply with the Court's rulings.

Baker revolutionized representation and, we argue, fundamentally transformed the politics of public finance in the American states. Legal and legislative battles ended unequal representation in the state legislatures and the U.S. House by the close of the 1960s. We examine how political representation affected the distribution of state funds to counties in the United States from the 1950s through the 1980s.

Our interest in the consequences of *Baker v. Carr* derives from three broad problems for contemporary democracy. First, there is a persistent and nagging question for political scientists: Does representation matter? Do people benefit materially from having formal legislative representation? Some economists argue that

government policy responds to market forces rather than voters' interests, and some political scientists argue that the key determinants of public policy are the activities of interest groups or the state of public opinion, rather than formal political representation. Second, Can courts truly shape public policy or do their decisions merely reflect society's norms? Recent judicial scholarship argues that the courts have little direct impact on public policy in the United States. Early studies of the effects of redistricting, which show no effect of redistricting on public spending, are taken as a case in point (Carp and Stidham 1993; Rosenberg 1991). Third, around the world today many democratic governments are forming and reforming, and many nations have created legislatures with highly unequal representation of the populations. Among comparative political scientists and development economists there is growing concern that unequal political representation produces unequal distribution of public money in a variety of federal systems, though there are few unambiguous estimates of the effects of malapportionment on the *distribution* of public expenditures (Gibson, Calvo, and Falletti 1999; Samuels and Snyder 2000). We view *Baker v. Carr* and the resulting reapportionment of the American state legislatures as an important natural experiment with which to address these questions.

At the time of the *Baker* decision it was widely thought that equalization of representation would lead directly to equalization of public expenditures on highways, schools, and other important public programs. Gaining their "fair share" of public funding was, in fact, a central motivation of the plaintiffs in *Baker v. Carr*. The Intervening Petition to the District Court in *Baker*, filed by Mayor Ben West of Nashville, provides extensive statistical data showing "the direct relationship between excess representation in the unlawfully constituted General Assembly of Tennessee and the obtaining of an excess share in the monies collected by the State of Tennessee . . . and the converse, the direct relationship between the lack of proportionate

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representation in the General Assembly and the bearing of an excessive and disproportionate share of the expense of government.”¹

Despite these strong expectations, social science research to date provides at most only weak support for the conclusion that equalizing state legislative representation altered policy outcomes. Research published in the late 1960s and early 1970s probed the relationship between state-level measures of unequal representation prior to *Baker* and statewide levels of public expenditures on a variety of programs. On the whole, these studies found no or slight effects of unequal district populations on public spending overall or on specific programs.² Studies examining changes in state expenditures in the years immediately after redistricting found some effects, but typically the results were mixed and the methods problematic (Fredrickson and Cho 1970; Hanson and Crew 1973; Pulsipher and Weatherby 1968). Nearly 40 years after *Baker*, the conventional wisdom among legal scholars and political scientists is that court-ordered equalization of legislative district populations had little if any effect on how states allocate public funds (Carp and Stidham 1993, 370; Rosenberg 1991, 292–303).³

Could the immense change in representation that occurred in the American states from 1962 to 1972 have had large and demonstrable effects that were overlooked in previous research or obscured by methodological problems? Early research implicitly assumed that the effect of malapportionment would be reflected primarily in *levels* of spending, overall or on specific programs. We study how one-person, one-vote changed the *distribution* of state spending as it changed the distribution of seats to geographic areas.

We investigate perhaps the simplest hypothesis about the effect of redistricting: When a geographic area gets more power it will receive a greater share of state money. We know of no previous study that has looked directly for such redistribution. We examine both the cross-sectional relationship between each county's representation and its share of state transfers and the change in each county's share of state transfers that occurs following redistricting. We find strong and consistent evidence in support of this hypothesis.

¹ The quote is from pages 2 to 3 of the “Amendment and Supplement to the Intervening Petition Filed by the Plaintiff, Ben West, Mayor, City of Nashville, Tennessee, Civil Action No. 2724.” The data covered are school funds and highway revenues, which are distributed through state transfers to local governments. We are grateful to Harris Gilbert, attorney for the city of Nashville in the *Baker* suit, for providing these materials.

² Classic articles in this vein include Jacob 1964, Dye 1965, and Brady and Edmonds 1967. Bicker (1971) provides an extensive survey and a critique of the first generation of studies.

³ For other statements to this effect, see, for instance, Erikson 1973, 280, and McCubbins and Schwartz 1988, 388. Analysis of malapportionment arising from representation of states in the U.S. Senate produces additionally ambiguous results. Atlas et al. (1995) find effects of underrepresentation in the Senate, but Lee (1998) finds substantively small and statistically weak effects.

DATA AND METHODS

We analyze the distribution of state money to and the political representation of the 3,155 U.S. counties. Counties are the basic unit of analysis in this study for three reasons. First, state governments report their electoral and government finance data at the county level. Reports of electoral and finance data are available at other levels, such as cities, but county data are much more complete. Second, counties have very stable boundaries that are determined exogenously to the districting process. We can, therefore, measure changes in the dependent and independent variables over time for these units. Using political units, such as legislative districts, creates potential endogeneity problems because the legislatures determine these boundaries and make the revenue decisions. Third, there was ample variation in the political strength of counties prior to court-ordered redistricting.

Measuring Representation

Our primary independent variable of interest is the representation of individuals in the state legislatures. We measured this at the county level by calculating the number of legislative seats per person in each county. Because the sizes of legislatures and populations vary across states, any measure of voting power that is to be compared nationwide must be converted to a common metric. Following David and Eisenberg (1961), we measure the number of legislative seats per person in a county relative to the number of seats per person in a given state. When a county is split across more than one district the index equals the weighted average of the representation of the various parts of the county. We call this the Relative Representation Index (RRI).⁴ A county with an index value equal to 1 has representation equal to the ratio one would expect under an exact one-person, one-vote rule. Values <1 reflect underrepresentation and values >1 indicate overrepresentation.

An example helps with the interpretation of the index. Suppose that a state has 40 legislative districts and 2,000,000 people; thus, there are, on average two seats for 100,000 people. The denominator of the index, then, is 2/100,000. If a county contains three legislative districts and 100,000 people, the numerator of the index equals 3/100,000. The county in question, thus, has 50% more representation than the typical county in the state, for an index value of 1.5.

Following David and Eisenberg, the RRI for a state's entire legislature is the average of the index for the upper and lower chambers. For the legislative district lines in the 1950s and early 1960s, we rely on David and Eisenberg's measurement of this index. By 1972, populations of state legislative districts were nearly equal in every state (*Book of the States, 1972–1973*, 64, 65). Throughout, we treat the RRI as equal to 1 after 1972.

In 1960, the disparities in county representation in state legislatures were substantial. For the lower houses, the mean of the RRI was 1.65, indicating that

⁴ David and Eisenberg (1961) use the term “Right-To-Vote Index.”

the average county had about 65% more representation than it would have had if its share of the legislature equaled its share of the state population. The average within-state standard deviation in the RRI was 1.23. For the upper houses, the average value of the RRI was also 1.65. The average within-state standard deviation was 1.47. After establishing the one-person, one-vote standard, the Court allowed deviations from equal population of no more than several percent. In an ideal world, this would make the RRI equal to 1 in all counties; the mean would then be 1 and the standard deviation would be 0.

Unequal legislative district populations prior to the 1960s tended to reflect urban–rural divisions, but this is only part of the story. The correlation between the RRI (in logarithms) and the county population (in logarithms) is $-.58$. In 20 states, the correlation is above $-.9$. However, suburban counties were often as poorly represented as urban counties. In New York state, Nassau, Suffolk, and Westchester counties were more underrepresented than New York City. In Illinois, Lake and Dupage counties had less representation than Cook County (Chicago). In Maryland, the City of Baltimore had three times as many legislative seats per person as neighboring Baltimore County. Some rural counties were also badly underrepresented in some states. Tennessee, for example, gave fewer legislative seats per capita to rural counties in the eastern half of the state. Because urban residents tend to vote Democratic and suburbanites tend to vote Republican, the expansion of the franchise often had uneven effects on the partisan composition of state legislatures (see also Erikson 1973).

The exceptions to the underrepresentation of metropolitan areas deserve mention for a methodological reason. Noting the underrepresentation of urban areas, some studies have examined the *level* of state expenditures on “urban” programs, or total state intergovernmental transfers to the largest urban counties, using the states as the units of observation (Brady and Edmonds 1967; Fredrickson and Cho 1970). This approach introduces a large amount of measurement error, because “urbanity” is an imperfect measure of “underrepresentation,” especially when the data are aggregated to the state level. As a result these studies probably yield biased estimates.

Measuring Public Expenditures

We seek to explain the distribution of public money to counties. The Census of Governments is conducted every 5 years; we use data from 1957, 1962, 1967, 1972, 1977, and 1982. We focus on the first two and last two years in this series. The years 1957 and 1962 depict expenditures before *Baker*. Battles over equalization of district populations occurred mainly from 1962 through 1968. Because of lags in districting, budgeting, and legislative organization, it is difficult to pinpoint when changes in representation should have begun to affect transfers. Transfers to counties in 1977 and 1982, thus, measure the distribution of expenditures

once one-person, one-vote was in place. To smooth year-to-year variations in expenditures, we average the 1957 and 1962 reports and the 1977 and 1982 reports. Our findings are the same when analyzing each year separately.

We study total transfers from states to all local governments within counties. Though certainly not all state money, these transfers account for a large share of state expenditures: 35 to 38% of all money in this time frame. Roughly half of all money transferred to local governments was for education, one-fifth was for highways and roads, and one-sixth was for general aid to local governments.⁵

Our motivations for examining this variable are threefold. First, this is the variable used in much past research on this topic. Using this variable aggregated to the state level, researchers found no effects of reapportionment. Second, the geographic distribution of transfers is readily identified. It is very hard to determine the geographic distribution of the remaining 60% of state expenditures. Third, total state transfers to counties cumulate a large number of programs and, we expect, should reflect the influence of legislators on public finances generally. Measuring the effects of representation on isolated programs may be problematic if there is vote trading or logrolling across programs.

There is one important detail regarding our main dependent variable. State intergovernmental transfers to local government are not composed entirely of money that originates inside the state, but include some federal “pass-through” money—funds sent from federal accounts to the states that are then transferred to local governments. This is an accounting issue and practices vary from state to state.⁶ In only a few states are federal pass-throughs greater than 15% of the total state intergovernmental transfers. When we exclude these states from our analysis the results are unchanged.

Transfers from states to counties varied considerably across states and over time. State transfers to counties in 1962 averaged \$71 per person, with a standard deviation of \$40. State transfers to counties in 1977 averaged \$128, with a standard deviation of \$58. To compare these figures across states, we calculate each county’s share of per capita transfers, divide the total transferred to each county by the county’s population, and then divide this by the average per capita amount transferred to counties in the state. This is analogous to the definition of the RRI.

As we would expect if one-person, one-vote affected public finances, some degree of equalization of transfers occurred over the span of our study. If every county got its “fair share,” then the counties’ shares of per

⁵ For more details on the composition of intergovernmental transfers see the U.S. Bureau of the Census, *Census of Governments*, vol. 6, *State Payments to Local Governments*, various years.

⁶ In all states, pass-throughs include some portion of federal spending on Title I aid to education, school lunch programs, and adult and vocational education. In some states, pass-throughs also include funds for hospital construction and local health services, disaster relief, airports, and forest reserve payments. See the U.S. Bureau of the Census, *Census of Governments* vol. 6, *State Payments to Local Governments*, various years.

capita transfers from the states would be exactly equal to 1. From the 1950s to the 1970s, both the mean and the variance of counties' shares of per capita transfers shrank. The average relative per capita expenditures in 1957 and 1962 equal 1.25, and the variance around this average is .17. The average relative per capita expenditure in 1972 and 1977 equals 1.06, and the variance around this average is .09. In other words, in the wake of the redistricting cases of the 1960s, the transfers to the typical county more closely approximated the equal division of funds (with a mean near 1), and disparities across counties were cut in half (the approximate reduction in the variance).

Other Factors

In addition to our measure of county representation, many other variables might affect the distribution of public money. We address this in three ways.

First, we include variables for demographic, socioeconomic, and political factors. To minimize the danger of omitted variable bias we include the poverty and unemployment rates, median income, percentages of the population that are school-aged, black, and elderly, and population change (growth). Poverty and income are included because many state spending programs transfer money to low-income citizens. Unemployment rates are included because some state funds pay for short-term relief. The school-aged population is an important predictor of transfers because approximately half of all money transferred from states to locales is for education. Black and elderly populations are often targeted for assistance. Population change captures lags in the adjustment of the budget process to demographic shifts and the consequent depression of per capita transfers in fast-growing counties.

Political factors, in addition to representation, may affect the distribution of state money, including county voter turnout and partisanship, party control of the legislature and governorship, and the relative power of the governor versus the legislature. Counties with high turnout rates may be expected to receive more state money, because for *state-level* elected officials (such as the governor) the political rewards to providing public goods to counties with higher turnout rates will be greater, other things equal (Husted and Kenny 1997). We measure county partisanship by county gubernatorial vote. State-level fixed effects capture political control of the overall state government. We further consider whether partisanship of the electorate interacts with party control of the state legislature or the party of the governor to capture the possibility that politicians favor those counties with more agreeable partisan leanings.⁷

Second, we regress the change in each county's share of state transfers on the change in the county's repre-

sentation. This eliminates the influence of any omitted variables that are approximately constant over time.

Finally, we include dummy variables for each state in all model specifications. In our cross-sectional regressions, inclusion of state-level dummy variables eliminates the need to include any additional variables that are restricted to the value 0 or 1, such as variables for region of the country or "democratic majority in the state legislature." When we regress the change in a county's share of state transfers on the change in that county's representation, including a dummy variable for each state captures the effect of any contemporaneous changes in state-level variables, such as the state's adoption of the line item veto or a change in majority party control of the state legislature. Table 1 presents the variables used in the analysis.

REPRESENTATION AND THE DISTRIBUTION OF FUNDS WITHIN STATES

Our analysis of the effects of representation on spending breaks neatly into two empirical questions. First, did counties with relatively more legislative seats per person prior to 1962 receive relatively more money per person? We address this question by examining the relationship between representation and transfers across counties in 1960. Second, did equalization of voting strength produce a more equal distribution of state transfers per person to counties? We address this question by examining the relationship between representation and transfers across counties in the 1980s and by examining changes in transfers and representation over this 20-year period.

Differences Across Counties

Immediately before the Court imposed one-person, one-vote on the state legislatures, there was a strong positive relationship between legislative seats per person and state intergovernmental transfers per person. Figure 1 displays the relationship between revenue shares and vote shares (both in logarithms) for the national sample. We convert the revenue and vote measures to logarithms to reduce the heavy skew in these measures, making the relationships between the transformed variables nearly linear.

Controlling for other factors, the estimated effect of representation on the distribution of public expenditures is very large and highly significant. Table 2 reports regressions predicting counties' relative shares of state transfers controlling for political and demographic factors. The estimates in Table 2 confirm that unequal district populations correspond with substantial inequalities in the shares of funds in the 1960s. The coefficient on the RRI is .34 (SE = .01) without any control variables. Controlling for other demographic and political factors, the coefficient on relative representation is .17 (SE = .01). Other things equal, doubling a county's representation is predicted to increase its share of state money by almost 20%, a substantial effect on its share of state revenue.

⁷ An extensive literature investigates partisan and ideological effects on budgeting at both the federal and the state levels, with mixed findings. See, for example, Dye 1984, Plotnick and Winters 1985, and Erikson, Wright, and McIver 1989.

TABLE 1. Variable Definitions and Data Sources

Variable Name	Definition
State transfers per capita, 1960 ^a	$\log((\text{relative per capita intergovernmental transfers in 1957} + \text{relative per capita intergovernmental transfers in 1962})/2)$
State transfers per capita, 1980 ^a	$\log((\text{relative per capita intergovernmental transfers in 1977} + \text{relative per capita intergovernmental transfers in 1982})/2)$
Population growth rate, 1950–60 ^b	$\log(\text{relative population in 1960}) - \log(\text{relative population in 1950})$
Population growth rate, 1970–80 ^b	$\log(\text{relative population in 1980}) - \log(\text{relative population in 1970})$
Population change, 1960–80 ^b	$\log(\text{relative population in 1980}) - \log(\text{relative population in 1960})$
Per capita income, 1960 ^b	$\log(\text{relative per capita income in 1960})$
Per capita income, 1980 ^b	$\log(\text{relative per capita income in 1980})$
Percent poor, 1960 ^b	$\log(\text{relative percent of families} > \$3000 \text{ in 1960})$
Percent poor, 1980 ^b	$\log(\text{relative percent of families in poverty in 1980})$
Percent in school, 1960 ^b	$\log(\text{relative percent of population enrolled in grades K–12 in 1960})$
Percent in school, 1980 ^b	$\log(\text{relative percent of population enrolled in grades K–12 in 1960})$
Percent unemployed, 1960 ^b	$\log(\text{relative unemployment rate, civilian labor force, in 1960})$
Percent unemployed, 1980 ^b	$\log(\text{relative unemployment rate, civilian labor force, in 1980})$
Percent black, 1960 ^b	Relative percent of population that is black, 1960
Percent black, 1980 ^b	Relative percent of population that is black, 1980
Percent 65 and over, 1960 ^b	$\log(\text{relative percent of population that is age 65 or older, 1960})$
Percent 65 and over, 1980 ^b	$\log(\text{relative percent of population that is age 65 or older, 1980})$
Percent turnout, 1960 ^c	$\log(\text{relative percent of voting age population voting in gubernatorial elections, average 1958–62})$
Percent turnout, 1980 ^c	$\log(\text{relative percent of voting age population voting in gubernatorial elections, average 1978–83})$
Percent democratic vote, 1960 ^c	$\log(\text{relative percent voting democratic in gubernatorial elections, average 1958–62})$
Percent democratic vote, 1980 ^c	$\log(\text{relative percent voting democratic in gubernatorial elections, average 1978–83})$
Republican control, 1960	Republicans had a majority in both chambers of the legislature 60% or more of the time from 1953 to 1962.
Republican control, 1980	Republicans had a majority in both chambers of the legislature 60% or more of the time from 1973 to 1982.

Note: Footnotes refer to data source.

^aCensus of Governments, various years.

^bCity and County Databook, various years.

^cGeneral Election Data for the United States, 1950–90, ICPSR study 13. Data on line item veto are from *Book of the States*. Gubernatorial power indices are from Schlesinger 1965 and Beyle 1983. Data on committee and party leadership positions are from various state legislative handbooks. Party control of legislatures from *Book of the States*, selected years.

The effects of the control variables in the regression generally square with our intuitions regarding the ideological commitment to redistribution associated with the New Deal and Great Society and arguments from the public finance literature about government spending. Areas with higher poverty rates and lower median income received substantially more state revenue per person. More money flowed to areas with higher unemployment rates. Counties with more persons in school received more state money, though there was no significant effect of high percentages of old or black citizens. Consistent with the possibility that budgeting lags population growth, areas experiencing faster population growth receive less per capita state transfers. With the exception of the variable for county turnout, the political controls have no important effect. Consistent with Husted and Kenny (1997) and Stromberg (1999), counties with relatively high turnout in statewide elections received relatively more revenue per person.

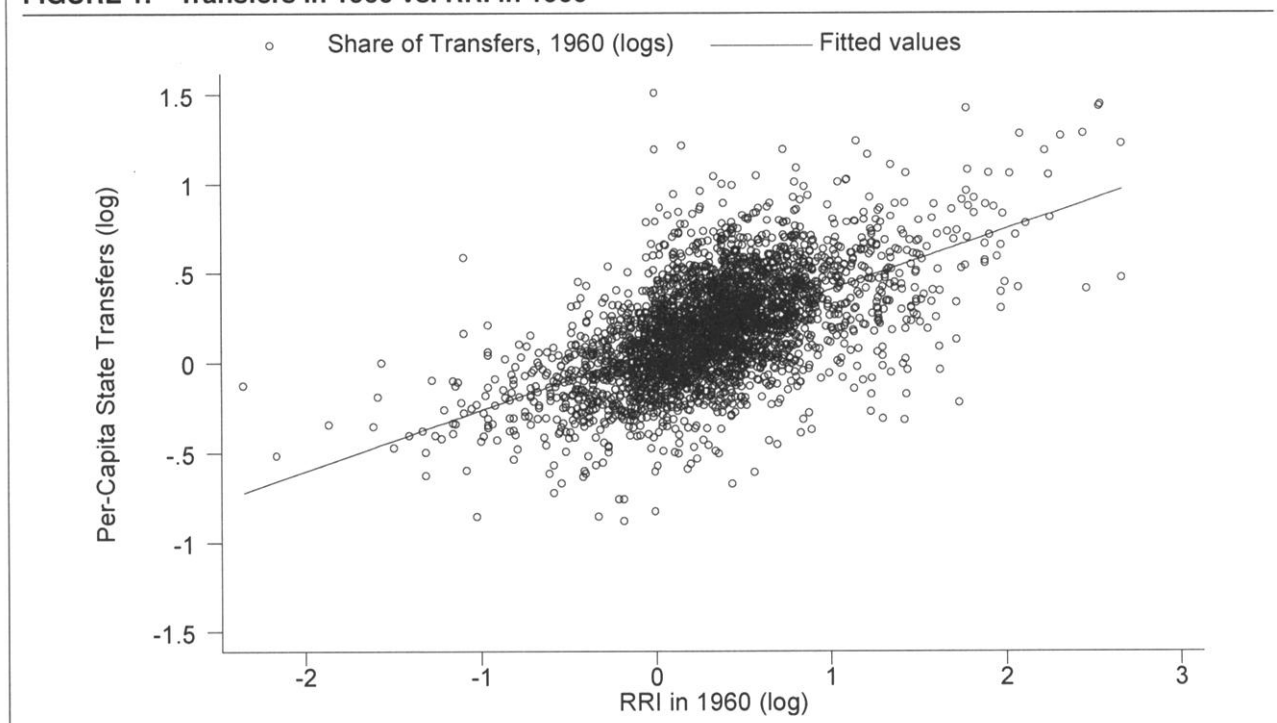
Analysis of the distribution of funds two decades after *Baker* serves as a check that the result for 1960 is not spurious. By 1980, after district populations had been equalized, the RRI in 1960 should have little or no

effect on the distribution of revenues. Figure 2 parallels Figure 1, but for 1980.

Regressions of 1980 transfer levels on 1960 RRI shows that RRI is, at most, only weakly correlated with enduring county-level differences associated with the distribution of state funds. A regression parallel to that in Table 2 for 1980 yields a coefficient on the 1960 RRI of .04, with a standard error of .01. The residual effect might reflect the persistence of agrarian legislators in positions of power in many state legislatures. By 1972, all state legislative districts were in compliance with the one-person, one-vote standard.

Considering regional differences in American politics, we examined whether the patterns we detected nationally also held within the South by rerunning the regressions reported in Table 2 separately for the Southern and non-Southern states. Regional variation did not prove substantively important. We also examined whether the percentage black in a county altered the relationship between RRI and transfers, and we found no interaction effect.

The key result from the cross sectional analysis, then, is that counties that had less representation received relatively less money during the pre-*Baker* era. The

FIGURE 1. Transfers in 1960 vs. RRI in 1960**TABLE 2. Cross-Sectional Analysis: Transfers and Votes (Dependent Variable: Relative per Capita Intergovernmental Transfers)**

Independent Variable	1960	1960
Relative representation	.34 (.01)	.17 (.01)
Population growth rate		-.19 (.03)
Average income		-.01 (.04)
% poor		.22 (.03)
% unemployed		.06 (.01)
% in school		.40 (.05)
% age 65 or older		-.03 (.02)
% black		-.02 (.02)
% turnout		.19 (.02)
% Democrat \times non-Republican control		.04 (.03)
% Democrat \times Republican control		-.02 (.04)
N	3,048	3,048
R ²	.33	.50

Note: Dummy variables for each state included in all regressions.

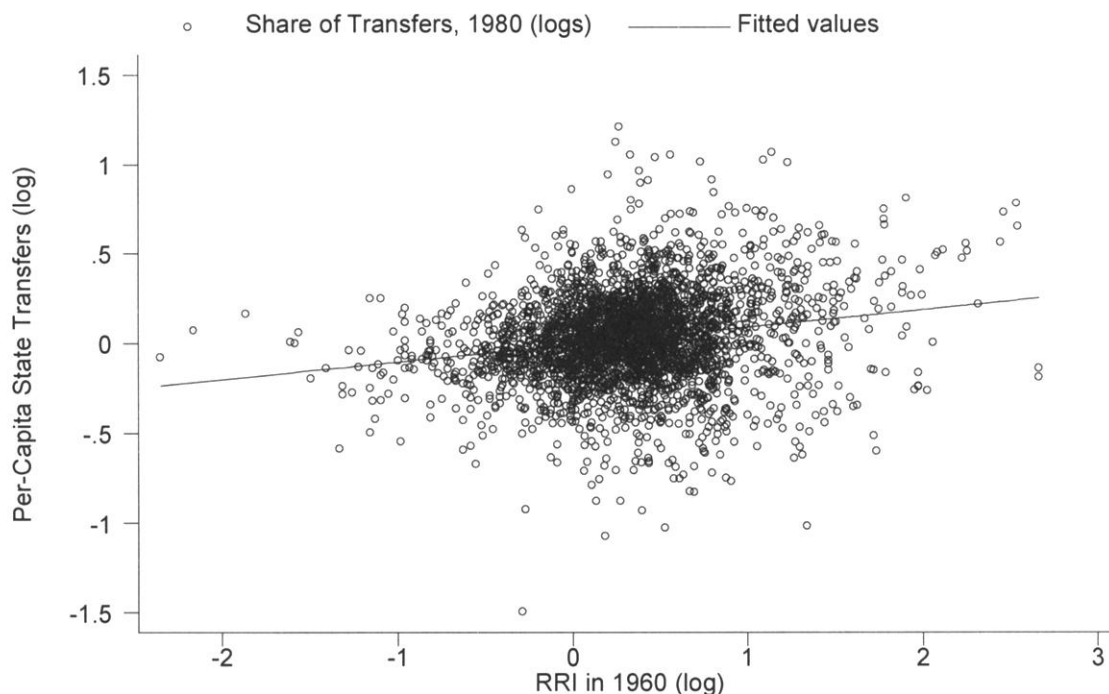
analysis does not appear to be driven by either the unique aspects of Southern politics or unmeasured county differences that are correlated with both state transfers and county representation.

Changes from 1960 to 1980

Cross-sectional analysis, even when control variables are included, can generate spurious results due to

omitted variables. One possible critique of our cross-sectional analysis is that malapportionment merely *reflected* a county's political power, rather than causing it. If so, some common feature might have led a county to have both overrepresentation in the legislature and a large share of the state's transfers. To minimize the chances that omitted variables led to incorrect inferences about the effect of districting, we next look at how revenue to a county changed over time in response to a change in the county's voting power. District populations were equalized in a very short period of time—from 1962 to 1968. If political representation influenced the distribution of public finances, then counties, especially those extremely over- or underrepresented, should have witnessed substantial changes in the revenues per person that they received from the state, relative to the amounts other counties received.

Increases in a county's representation did in fact produce dramatic increases in revenues per person. Table 3 presents regression results from an analysis predicting changes in revenue shares from 1960 to 1980. The estimated coefficient on $-\log(\text{RRI})$ in the multivariate regression reported in Table 3 equals .16 ($\text{SE} = .01$). Controlling for other factors, doubling a county's representation increases its revenues per capita by 16%. This effect is nearly identical to the cross-sectional estimates we report in Table 2, as expected if the cross-sectional results are not spurious. The effects of the control variables are, again, generally consistent with our expectations and with the results reported in Table 2. We also tested for possible interactions among our representation index region, levels of government

FIGURE 2. Transfers in 1980 vs. RRI in 1960**TABLE 3. Panel Analyses: Changes in Transfers and Votes, 1960 and 1980 (Dependent Variable: Change in Relative per Capita Intergovernmental Transfers)**

Independent Variable		
Changes in relative representation	.23 (.01)	.16 (.01)
Change in population growth rate		-.32 (.03)
Change in population, 1960 to 1980		-.26 (.02)
Change in average income		.04 (.03)
Change in % poor		.14 (.02)
Change in % unemployed		.02 (.01)
Change in % in school		.56 (.05)
Change in % age 65 or older		-.22 (.03)
Change in % black		.18 (.05)
Change in % turnout		.07 (.02)
Change in % Democrat \times non-Republican control, both periods		.17 (.04)
Change in % Democrat \times Republican control, both periods		-.36 (.10)
Change in % Democrat \times non-Republican to Republican Control		-.36 (.23)
Change in % Democrat \times Republican control to non-Republican control		-.07 (.11)
N	3,048	3,048
R ²	.16	.37

Note: Dummy variables for each state included in all regressions.

spending, and other demographics, but no interaction effects emerged.⁸

The racial composition of the counties captures another facet of representation. At the time of the reapportionment cases, legal and legislative actions sought

⁸ We also tested for the influence of federal spending improperly included in the state transfer totals. We created dummy variables identifying states that were large recipients of federal funds in 1960 or enjoyed large increases in federal funds over the period covered by the study. The effect of the RRI on transfers was the same for those states with high versus low initial levels of federal spending and high versus low levels of growth in federal spending.

to increase representation of blacks through the districting process. The results in Table 3 reveal that, over time, counties with increasing black populations showed substantial gains in their shares of transfers from the state. Of course, this effect reflects changes in social attitudes and policies as well as changes in redistricting practices. One possibility is that our estimate of the effect of reapportionment reflects mainly the gain among black counties. It does not. We test for such a possibility by interacting percent black with RRI in the regressions. The coefficient on the interaction is very small and statistically insignificant. In other

words, underrepresented black and white counties gained equally from reapportionment.⁹

The estimates in Table 3 are remarkably robust on a state-by-state basis.¹⁰ In bivariate regressions of the effect of the RRI on county transfers state by state, the median state coefficient estimate was $-.19$, with 50% of the state-level regressions producing values between $-.11$ and $-.41$. In only four cases was the coefficient negative. In only one case (South Carolina) was the estimate statistically significant; the remaining three cases (North Dakota, Oregon, and Washington) were among the least malapportioned states pre-*Baker*.

To test the robustness of the results further, we exclude the major urban areas. Cities tended to gain seats following redistricting, and the 1960s witnessed greater public attention to the problems of urban areas. We ran the regressions reported in Table 3, after excluding the 100 counties with the largest 1960 populations, counties with at least 300,000 people. The estimated coefficient on the RRI is $.21$ in the bivariate regression and $.15$ in the multivariate regression; neither is statistically different from the coefficients reported in Table 3. Changes in state transfers tracked changes in political power even among suburban and rural areas.

Finally, we examine whether political institutions distort the effect of representation on public finances. A large literature examines the effects of political institutions on public finances, including fiscal centralization, relative power of the legislature and the governor, power within the legislature, divided government, and popular control over the legislative processes.¹¹ Our analyses implicitly hold constant the direct effects of these institutional factors through fixed effects for states and, in Table 3, for each county. We also explored whether any of these institutional factors interact with the representation index, magnifying or shrinking the effects of malapportionment on the distribution of public funds.¹² With one exception, fiscal centralization, none of these factors proved to interact with the RRI. A county's per capita share of the legislative seats (RRI)

had a large and positive effect on the distribution of transfers in both fiscally centralized and decentralized states, though the effect of the RRI was somewhat smaller in more centralized states.¹³ We are unsure if this is a real effect. One possibility is that this interaction itself reflects malapportionment, as voters in highly malapportioned states may have trusted the state legislature less and kept more control over public finances locally.

Overall, the findings reveal that representation directly affects the distribution of public spending. Institutional and demographic factors do not mediate the effect.

Effects on the Level of Overall State Transfers

Equalization of legislative district populations in the mid-1960s may have affected the level of spending, in addition to altering the distribution of public expenditures. Transfers from states to counties grew from \$365 per person in 1960 to \$659 per person in 1980 (in 1999 dollars). One might expect *Baker* to have contributed to an expansion of state government in the 1960s and 1970s for three reasons. First, underrepresented areas may have had a higher demand for public expenditures than overrepresented areas. Underrepresented areas typically had a higher per capita income, and demand for public spending tends to increase with income. Second, expanding the size of government may have been politically more expedient than cutting programs that benefited voters who had been overrepresented in the past. Third, expansions of democracy have generally been associated with expansions in government spending, as new voters bring new demands for public expenditures (e.g., Husted and Kenny 1997; Lindert 1996).

Most prior research on the effects of malapportionment examined its effects on *levels* of spending, overall and on particular programs. Table 4 presents estimates of the association between changes in a state's overall degree of malapportionment and the growth in total state transfers to counties. As noted earlier there are many ways to measure state-level equality of representation. We considered three: the mean of the log of RRI, the standard deviation of the log of RRI, and the difference in the log of RRI between the county with the most representation and the county with the least representation (labeled the RRI range). We regressed the change in the log of total intrastate transfers to counties on the various state-level measures of malapportionment.

⁹ Looking more closely at the data indicates why. Population and percent urban are by far the strongest predictors of the RRI index. The racial composition and party composition of counties explain very little of the variation in the RRI index. This says nothing about the distribution of funds *within* counties, which might have been affected by racial politics.

¹⁰ Previous scholars have noted that, when states are pooled together in an aggregate analysis, important differences across states might be obscured even when state dummy variables are included (Stein 1982).

¹¹ Garand (1988) surveys a range of institutional factors affecting growth of government spending. Stephans and Olson (1979) and Rich (1989) survey a range of factors that affect federal aid. Abney and Lauth (1997) discuss the relative power of the governor, with specific emphasis on line item vetoes. On the role of political parties, see Levitt and Snyder (1995). On power within legislatures, see Ritt (1976).

¹² Our measure of fiscal centralization was the share of state and local government expenditures or revenues accounted for by the state. Our measures of governor power included the presence of a line item veto, appointment power, budgetary power, and overall power. Our measures of popular control was whether the state had initiatives and referenda and whether the state had an open meeting law. We interacted each of the variables with the RRI in the cross-sectional and over-time specifications.

¹³ Using data from the Statistical Abstract, we calculated the share of combined state and local revenues that originated at the state level and then created a variable equal to 1 for counties in states that were more centralized than the median and -1 otherwise. We then interacted this variable with the RRI. We reran the regression model in Table 3, column 3, including the new interaction variable. The effect of the RRI remained $.16$ ($SE = .01$), and the coefficient estimate for the new variable was $-.04$ ($SE = .01$). Similar findings are obtained when the centralization measure is based on spending rather than revenue.

TABLE 4. Effects of Redistricting on Growth in State Transfers (Dependent Variable: Change in Total Transfers per Capita)

Independent Variable						
Change in average RRI	.28 (.18)			.31 (.24)		
Change in standard deviation of RRI		.25 (.19)			.26 (.26)	
Change in range of RRI			.07 (.04)			.05 (.05)
Change in population				-.26 (.24)	-.31 (.23)	-.37 (.22)
Change in average income				-1.45 (.62)	-1.36 (.61)	-1.29 (.61)
Change in % poor				.42 (.26)	-.40 (.27)	-.44 (.26)
Change in % unemployed				-.41 (.17)	-.41 (.17)	-.38 (.17)
Change in % in school				.48 (.83)	.58 (.83)	.58 (.83)
Change in % age 65 or older				.03 (.14)	.03 (.15)	.03 (.15)
Change in % black				.71 (.37)	.72 (.39)	.67 (.37)
N	48	48	48	48	48	48
R ²	.05	.04	.09	.31	.30	.30

Note: Observations are for states excluding Alaska and Hawaii.

Consistent with past research we find that equalization contributed little to the growth of transfers from state governments to counties. All three state-level measures of malapportionment predict positive correlations with total state transfers per capita to all counties in a state from 1960 to 1980. However, none of the coefficients of interest reach conventional levels of statistical significance. And the effects are substantively very small: A one-standard deviation change in one of these measures predicts only a 3 to 4% growth in total revenue per capita transfers.¹⁴

WHAT IF CARR HAD WON?

Our findings clearly show that representation affects the distribution of public funds. Using the regression estimates, we can investigate an important counterfactual. Had the Court not imposed one-person, one-vote, what would the distribution of state revenues have looked like in 1980, the end point of our study?

Without the Court's action a, high degree of malapportionment would likely have existed in 1980, and even today. State legislatures created most of the malapportionment that existed in the 1960s through inaction, leaving in place district boundaries that were created at the end of the nineteenth century or the beginning of the twentieth century (Dixon 1968). Had the 1960 apportionment held in 1980, gross discrepancies in district populations would have existed in 1980, the end point of our analysis. The 300 most over represented counties in 1960 contained 5.3 million people by the 1980 census. The 300 most under represented counties in 1960 contained 85.1 million people by the 1980 census.

What would the distribution of public expenditures have been had this degree of malapportionment existed in 1980? We construct the counterfactual using predicted values from the regressions presented in the previous section. Algebraic manipulation of the regression

specification produces a simple formula for calculating how much per capita state revenues in 1980 differed from what would have been had the county representation remained as unequal as it was in 1960.¹⁵

The amount of redistribution that followed from *Baker* was substantial. In the most underrepresented counties, the lowest 5% in terms of RRI, equal votes increased state revenues by \$90 per person per year. In the most overrepresented counties, equalization of state legislative populations reduced revenues transferred from the state by \$270 per person per year. The cumulative effect was to shift approximately \$7 billion annually toward counties that had been underrepresented prior to the imposition of one-person, one-vote.¹⁶

DISCUSSION

Baker v. Carr exposed an age-old and fundamental flaw in the design of constitutional democracy—a flaw

¹⁵ The difference between the predicted state revenues per capita in a county had the 1960 distribution of votes held and the predicted state revenues under the 1980 district lines equals $Y^* - Y_{80} = Y_{80}[(RRI_{60})^2 - 1]$, where Y^* is the hypothetical level of per capita spending in a county if the 1960 districting held, Y_{80} is the actual level of per capita state spending in the county, RRI_{60} is the RRI measure for the county in 1960, and .2 is the elasticity from Table 3. We make one simplifying assumption in making this calculation: Equal voting power did not contribute to the growth in overall state transfers to counties, which seems reasonable from the section Effects on the Level of Overall State Transfer.

¹⁶ The very small standard errors for the RRI coefficient imply that the prediction standard errors are very small. To calculate the amount of redistribution we computed the amount gained by those who would have been underrepresented had Carr won. The 150 counties with the lowest RRI (bottom 5% of the distribution) had an average RRI of .49 and contained 62 million people. The difference between the predicted and the actual per capita transfers ($Y^* - Y_{80}$) equaled \$87.62, which implies that these counties gained a total of \$5.36 billion annually. The 150 counties with the next lowest RRI (fifth to tenth percentile) had an average RRI of .72 and a total population of 24 million people. The difference between the predicted and the actual transfers equaled \$41.91, and the total equaled \$1 billion annually. The remaining underrepresented counties (between the tenth, and the twenty-fifth percentile) had an average RRI of .94 and 72 million people. The average predicted difference in per capita transfers equaled \$8.10, and the total equaled \$600 million annually.

¹⁴ The standard deviations of the average of the logarithm of the RRI and of the standard deviation of the logarithm of the RRI are approximately .2 and the standard deviation of the hi-to-lo log RRI is .88.

elegantly described by John Locke (1960, 419) in the *Second Treatise of Government*:

... We may be satisfied when we see the bare Name of a Town, of which there remains not so much Housing as a Sheep-coat; or more inhabitants than a Shepherd is to be found, sends as many Representatives to the grand Assembly of Law-makers, as a whole County numerous in People, and powerful in riches. This Strangers stand amazed at, and every one must confess needs a remedy. Though most think it hard to find one, because the Constitution of the Legislative being the original and supreme act of the Society... no inferior Power can alter it.

In the United States, the Supreme Court imposed on the state legislatures a solution to the American version of the problem of "rotten boroughs." The Court's power in this situation is beyond doubt. The doctrine of one-person, one-vote transformed political representation in the United States. Within six years of the *Baker* ruling, nearly every state legislature was in compliance with the principle of one-person, one-vote.

Equally clear is the value of representation. Within 15 years of the *Baker* ruling, the doctrine of one-person, one-vote resulted in a substantial *equalization* of the distribution of public funds within states. This conclusion shifts the focus of research on the value of representation. Prior research has examined mainly the effects of representation on *levels* of spending, overall or on specific programs. The conclusion from such studies has been that unequal representation by and large does not effect levels of public spending, a conclusion that apparently questions the very value of political representation. That conclusion may be right, but it misses the true effect of representation on public spending. Representation affects the distribution of funds—who gets what—rather than how much government spends.

The reapportionment revolution in the 1960s also carries a very important insight about political power within legislatures. Many political scientists analyze and interpret legislative politics as bargaining among equals—the individual legislators. An alternative view treats distributive politics as bargaining among predetermined voting blocs or interests that may be quite unequal in strength. Indeed, many scholars and politicians have defended overrepresentation of rural areas as necessary to prevent the large urban areas from dominating the state legislatures: an urban bloc will take more than its "fair share" of public expenditures (see, e.g., Perrin 1962 and de Grazia 1962, chap. 5). Our findings strongly support the notion that distributive politics consists of bargaining among equals. We document that the overrepresented areas, which were primarily rural, received more than their fair share of public expenditures in the decades before the imposition of one-person, one-vote. In the decades following *Baker*, urban blocs did not dominate state legislatures' budgeting decisions. Rather counties have received shares of the public expenditure in proportion to their per capita representation. Equal votes produced equal distributions of money.

In the world today, questions of political representation are no less pressing than 40 years ago. Malap-

portionment is widely observed. It is the norm in federal systems, and it is common among emerging democracies (Samuels and Snyder 2000). For those concerned with the design of representative institutions, the American experience provides a clear and simple lesson. Apportionment of legislative seats determines the distribution of political power in legislatures and the resulting allocation of government resources.

REFERENCES

- Abney, Glenn, and Thomas P. Lauth. 1997. "The Item Veto and Fiscal Responsibility." *Journal of Politics* 59 (August): 882–92.
- Atlas, Cary M., Thomas W. Gilligan, Robert J. Hendershott, and Mark A. Zupan. 1995. "Slicing the Federal Net Spending Pie: Who Wins, Who Loses, and Why." *American Economic Review* 85: 624–29.
- Beyle, Thad. 1983. "Governors." In *Politics in the American States*. 4th ed., eds. Virginia Gray, Herbert Jacob, and Kenneth N. Vines. Boston: Little, Brown.
- Bicker, William E. 1971. "The Effects of Malapportionment in the States—A Mistrial." In *Reapportionment in the 1970's*, ed. N. W. Polsby. Berkeley: University of California Press.
- Book of the States, 1972–1973*. Vol. 19. Lexington, KY: Council of State Governments.
- Brady, David, and Douglas Edmonds. 1967. "One Man, One Vote—So What?" *Trans-Action* 4: 41–46.
- Carp, Robert A., and Ronald Stidham. 1993. *Judicial Process in America*. 2nd ed. Washington, DC: Congressional Quarterly Press.
- David, Paul T., and Ralph Eisenberg. 1961. *Devaluation of the Urban and Suburban Vote*. Charlottesville: University of Virginia Press.
- de Grazia, Anthony. 1962. *Apportionment and Representative Government*. New York: Praeger.
- Dixon, Robert G., Jr. 1968. *Democratic Representation: Reapportionment in Law and Politics*. Oxford: Oxford University Press.
- Dye, Thomas R. 1965. "Malapportionment and Public Policy in the States." *Journal of Politics* 27: 586–601.
- Dye, Thomas R. 1984. "Party and Policy in the States." *Journal of Politics* 46: 1097–116.
- Erikson, Robert S. 1973. "Reapportionment and Policy: A Further Look at Some Intervening Variables." *Annals of the New York Academy of Science* 219: 280–90.
- Erikson, Robert S., Gerald C. Wright, and John P. McIver. 1989. "Political Parties, Public Opinion, and State Policy in the United States." *American Political Science Review* 83: 729–49.
- Frederickson, H. George, and Yong Hyo Cho. 1970. "Legislative Reapportionment and Fiscal Policy in the American States." *Western Political Quarterly* 27: 5–37.
- Garand, James C. 1988. "Explaining Government Growth in the U.S. States." *American Political Science Review* 82: 837–49.
- Gibson, Edward L., Calvo, Ernesto F., and Tulia G. Falletti. 1999. "Reallocation Federalism: Over-representation and Public Spending in the Western Hemisphere." Unpublished manuscript.
- Hanson, Roger A., and Robert E. Crew, Jr. 1973. "The Policy Impact of Reapportionment." *Law and Society Review* 8: 69–93.
- Husted, Thomas A., and Lawrence W. Kenny. 1997. "The Effect of the Expansion of the Voting Franchise on the Size of Government." *Journal of Political Economy* 105 (1): 54–82.
- Jacob, Herbert. 1964. "The Consequences of Malapportionment: A Note of Caution." *Social Forces* 43: 256–61.
- Lindert, Peter H. 1996. "What Limits Social Spending?" *Explorations in Economic History* 33 (1): 1–34.
- Lee, Frances E. 1998. "Representation and Public Policy: The Consequences of Senate Apportionment for the Geographic Distribution of Federal Funds." *Journal of Politics* 60: 34–62.
- Levitt, Steven D., and James M. Snyder, Jr. 1995. "Political Parties and Federal Outlays." *American Journal of Political Science* 39: 958–80.
- Locke, John. 1960. *Two Treatises of Government*, ed. Peter Haslett. New York: Cambridge University Press.
- McCubbins, Mathew D., and Thomas Schwartz. 1988. "Congress, the Courts, and Public Policy: Consequences of the One Man, One Vote Rule." *American Journal of Political Science* 32: 388–415.

- Perrin, Noel. 1962. "In Defense of Country Votes." *Yale Journal* (Autumn): 16–24.
- Plotnick, Robert D., and Richard F. Winters. 1985. "A Politico-Economic Theory of Income Redistribution." *American Political Science Review* 79: 458–73.
- Pulsipher, Allan G., and James L. Weatherby. 1968. "Malapportionment, Party Competition, and the Functional Distribution of Government Expenditures." *American Political Science Review* 62: 1207–19.
- Rich, Michael J. 1989. "Distributive Politics and the Allocation of Federal Grants." *American Political Science Review* 83: 193–213.
- Ritt, Leonard G. 1976. "Committee Position, Seniority, and the Distribution of Government Expenditures." *Public Policy* 24: 463–89.
- Rosenberg, Gerald N. 1991. *The Hollow Hope: Can Courts Bring About Social Change?* Chicago: University of Chicago Press.
- Samuels, David, and Richard Snyder. 2000. "The Value of a Vote: Malapportionment in Comparative Perspective." University of Minnesota. Unpublished manuscript.
- Schlesinger, James A. 1965. "The Politics of the Executive." In *Politics in the American States*. 2nd ed., eds. Herbert Jacob and Kenneth N. Vines. Boston: Little, Brown.
- Stephans, G. Ross, and Gerald W. Olsen. 1979. *Pass-Through Federal Aid and the Interlevel Finance in the American Federal System, 1957 to 1977. Vol 1. A Report to the National Science Foundation*. "Kansas City, KS: University of Missouri, Kansas City, 1979."
- Stein, Robert M. U.S. Advisory Commission on Intergovernmental Relations. 1982. "The Allocation to Local Governments: An Examination of Interstate Variation." In *The Federal Influence on State and Local Roles in the Federal System*. Washington, DC: U.S. Printing Office.
- Stromberg, David. 1999. "Radio's Impact on New Deal Spending." Stockholm: Institute for International Economic Studies, Stockholm University.