

It was also a relevant margin of attainment for the South at this time, as 32 percent of whites and 45 percent of blacks aged 18 and 19 were high school dropouts in 1960.³⁵ We purchased special tabulations from the Census Bureau to obtain dropout rates from the 1960 and 1970 Censuses at the lowest possible level of geographic disaggregation – the county.³⁶ Because counties vary dramatically in size, and school districts, not counties, are the relevant decision makers, we weight the analysis by county population (of 18 and 19 year olds, by race) in 1960. The estimates are substantively similar but less precise when we estimate the model without weights, suggesting that weighting primarily corrects for heteroskedasticity. On average, Southern blacks experienced a 14.1 percentage point reduction in likelihood of high school dropout at ages 18 to 19 between 1960 and 1970; for whites, this figure was 10 percentage points.

We exploit the heterogeneity in the spending response shown above as a source of identification. To set ideas, the first column in Figure V shows the regression-adjusted relationship between 1960 child poverty rates and the change in per-pupil current expenditure between 1964 and 1969, separately in counties where all districts had low scope for local offset (Panel A) and in the remaining counties (Panel B); the slope estimates are presented in the first column of the same respective panels of Table VI. The regressions were estimated using county aggregates of the district-level finance data and are otherwise similar to the reduced-form specifications that underlie the district-level TSLS estimates in Table V.³⁷ The dot sizes represent the size of the county's white 18 to 19 year old

³⁵ Reducing high school dropout rates would be unambiguously good if graduation standards were clearly defined and followed. If schools graduate more students because of pressure to do so, rather than increasing shares of students achieving some set level of competency, dropout rates do not reveal underlying changes in true levels of human capital.

³⁶ In our sample, we have 838 districts in 647 counties. We restrict attention to counties where districts in our estimation sample represent at least 90 percent of total county enrollment in 1960. Though all discussion of impacts on high school dropout refers to counties, recall that the relevant fiscal decisions are made at and aggregated from the district level.

³⁷ County aggregates were generated from all district-level data weighting by 1960 district enrollment. The specification also includes the 1960 race-specific high school dropout rate of 18-19 year olds to account for the possibility that the trend in high school dropout depended on the starting point. We unfortunately cannot examine (or control for) trends in high school dropout by race at the county level during the 1950s.

population in 1960 to reflect weighting of the regression fit. Consistent with findings reported in Table V, school spending became much more progressive over the second half of the 1960s in the subsample of counties where the scope for local offset by districts was low. The finding is similar in the subsample of counties with black populations and weighting by initial county black population, as shown in the first column of Figure VI and the third column of Table VI.

If “money mattered,” we would expect to see greater convergence in educational attainment between poorer and richer counties over the 1960s in the subsample where the scope for local offset was low, or where Title I translated into more spending at a higher rate. We explore this in the second column of each figure using the same specification as in the first column but replacing the dependent variable with the 1960 to 1970 change in high school dropout rates of 18 and 19 year olds. For whites (column (2)), the reduction in high school dropout over the 1960s was much larger in poorer counties than richer counties in the subsample with low scope for offset (Panel A), but not elsewhere (Panel B), suggesting that Title I-induced spending increases improved white educational outcomes. This was not the case for blacks, however (column (4)).

We rescale the reduced-form estimates for high school dropout by the corresponding reduced-form estimates for the 1964 to 1969 change in annual per-pupil spending to make their magnitudes more interpretable. For example, the estimates in Panel A imply that each additional \$100 increase in per-pupil school spending was associated with a 3.46 percentage point decrease in high school dropout for whites ($=-39.98/(1,156.32/100)$). We take this approach to maintain consistency with our empirical analysis thus far, but note that scaling by the *cumulative* increase in spending resulting from Title I may be more appropriate. The cohorts in our analysis were exposed to about five years of Title I-induced spending increases before we observe high school dropout in 1970 (the 1969-70 school year). Title I grants were slightly smaller in the early years (and some

districts did not receive their grants due to non-compliance with the CRA), so an additional \$100 in spending by fall 1969 likely corresponds to somewhat less than \$500 of additional cumulative spending between 1965 and 1969. To think about the effects of an additional \$100 of *cumulative* spending exposure, the estimates presented would therefore need to be scaled down by about a factor of five.

We present TSLS estimates of the effects of changes in current expenditure on changes in high school dropout in Table VII. In Panel A, we instrument for the change in per-pupil current expenditure (in hundreds of 2009 dollars) with the 1960 child poverty rate, limiting the sample to counties with low scope for offset, where the spending response to Title I for both blacks and whites was statistically significant. This is the formalization of the example described intuitively above. The identifying assumption is that, in the absence of the Title I, there would have been no change in the poverty gradient in outcomes in these counties. In Panel B, we instrument for the change in per-pupil current expenditure with the 1960 child poverty rate *interacted with* an indicator for whether the county's districts had low scope for offset using the full sample. These estimates rescale the reduced-form estimate for the change in high school dropout in Panel C of Table VI by the corresponding reduced-form estimate for the change in per-pupil current expenditure. In this specification, we thus allow the 1960 child poverty rate to have an effect on high school dropout through channels other than educational expenditure. The identifying assumption here is that, in the absence of the program, changes in the poverty gradient in high school dropout would have been the same in both sets of counties.

Columns (1) and (4) of Table VII present the TSLS estimates for the baseline specification for changes in white and black high school dropout rates, respectively. The estimates in Panel A, which use the first identification strategy, imply that each additional \$100 increase in annual current expenditure per pupil between 1964 and 1969 was associated with a statistically significant 3.46

percentage point decrease in the likelihood of white high school dropout and an insignificant 0.66 percentage point increase in the likelihood of black high school dropout over the 1960s. Allowing for a direct effect of 1960 poverty by using other counties as a comparison group, in Panel B, we find slightly more negative estimates – a marginally statistically significant -5.47 for whites, and an insignificant 0.17 for blacks. The first stage is unsurprisingly weaker in these models, which are more demanding of the data.³⁸ Nevertheless, these models suggest that failure to allow for a direct effect of 1960 child poverty on high school dropout rates may bias the models in Panel A against finding an effect. Indeed, though not statistically significant, the coefficients on the 1960 child poverty rate in the second specification (not shown) are positive.

The estimates are robust to several specification tests. For example, in columns (2) and (5), we include changes in transfer payments to the county over the 1960s through other federal programs, including Head Start and Medicaid, and see if anything an increase in the magnitude of the estimates for whites.³⁹ Perhaps more compelling, we see no effect of spending on high school dropout rates of individuals whose secondary education would have been completed prior to 1965, using as a dependent variable the change between 1960 and 1970 in the percent of a county’s whites and blacks aged 25 and older without a high school degree (columns (3) and (6)). Presumably, unobserved shocks to educational attainment in the county population – through migration, for example – would have affected this older age group as well.

³⁸ Note that the first-stage coefficients reported in Table VII should be compared to the reduced-form coefficients in Table V. The reduced-form F-stats on the instrument from the district-level TSLs models linking federal revenue to spending (column 1 of Table V) are 16.56 (for the model in Panel B1 – low scope for offset districts) and 8.29 (for the model in Panel B3 – difference between low scope for offset districts and other districts). The first-stage F-stats from the county-level TSLs models linking spending to high school dropout reported in Table VII are slightly smaller because the process of aggregating the data to the county level reduces variation in our key explanatory variables and lowers the number of observations, reducing power.

³⁹ These estimates are similarly unaffected by the inclusion of the 1970 dissimilarity index as a control. The estimates in Panel B are also substantively similar but less precise when allow for heterogeneity in the direct effects of child poverty by whether all districts in the county had high (top quartile) 1960 black enrollment shares. (Results are available on request.)

We do not have similar county-level data for 1950, so we cannot directly conduct the “placebo test” on pre-program trends. We have located county-level data for 1950 and 1960 on the school enrollment rates of 16 and 17 year-olds, however. These data cover a different age group and, more importantly, are not reported separately by race. Nevertheless, the trend in this measure should reflect general trends in educational attainment of young people during the 1950s. The coefficients of interest reported in Table VII are not affected by the inclusion of the change in this variable between 1950 and 1960. When we estimated the specifications in columns (1) and (4) with the 1950 to 1960 change in enrollment rates as the dependent variable (results not shown), the point estimate on the change in per-pupil current expenditure from 1964 to 1969 was negative in three out of four cases (suggesting *increases* in dropout over the 1950s) and always insignificant and small relative to the estimates for white high school dropout over the 1960s, with large standard errors.

Because spending was low and high school dropout rates high during the period of study, the effects on educational attainment that we estimate may be larger than would be expected from modern-day spending increases. It is difficult to compare these estimates to those from studies that estimate the impacts of school spending for more recent cohorts, because such studies tend to measure achievement with test scores. Even comparing our findings to those for earlier cohorts is difficult: while most existing studies of earlier cohorts measure achievement with educational attainment, they also tend to measure school inputs directly (i.e., with pupil-teacher ratios), instead of with spending.⁴⁰

We can think about the magnitudes of the estimates in several ways. First, a back-of-the-envelope cost-benefit analysis focusing solely on labor market returns

⁴⁰ See, for example, Card and Krueger (1992a, 1992b, 1996) and Ashenfelter, Collins, and Yoon (2006). Such studies find positive effects of measured inputs on educational attainment and wages. Reber (2010) estimates the effects of desegregation-induced changes in spending on educational attainment for blacks and finds somewhat smaller effects. Existing work estimating the effects of educational spending tends to use test scores as the educational outcome of interest (Hanushek, 1997).

to an additional year of schooling for whites implies that the value of the social benefits were larger than the spending increase (see Appendix B for details). Second, the point estimate for whites implies that Title I can explain 37 percent of the 10 percentage point decrease in their high school dropout rate over the decade. By contrast, using the 95 percent confidence interval, we estimate that Title I can account for at most 24 percent of the 14 percentage point decrease in black high school dropout over the 1960s.⁴¹

B. Evidence on Within-District Allocation

Our estimates suggest that whites benefited from Title I-induced changes in educational expenditure, but blacks did not. The estimates are imprecise enough that we cannot reject moderate beneficial effects for blacks, but we reject that the effects are the same for the two groups.

One possible explanation for these findings is that Title I-induced spending increases were disproportionately directed toward whites. Because race-specific spending data are not available, we cannot directly examine to what extent within-district allocations of Title I funds targeted white students. And our analysis of changes in race-specific pupil-teacher ratios by race before and after Title I for the two states where data was available was uninformative. However, our analysis of changes in *overall* pupil-teacher ratios between 1964 and 1969 for five states in our estimation sample implies that Title I-induced reductions in pupil-teacher ratios can account for 36 to 40 percent of the spending increase.⁴² Given the

⁴¹ These calculations scale up the coefficient on the change in per-pupil funding (or its upper bound) in the baseline specification of Panel A of Table VII by the predicted change in per-pupil spending from Title I for the average child, then divide by the (weighted) mean of the dependent variable. The predicted change in per-pupil spending from Title I is calculated separately by race, weighting by the 1960 race-specific population of 18 and 19 year olds and controlling for their high school dropout rate. We focus on the Panel A estimates because they are more precise.

⁴² The states with pupil-teacher ratios are Alabama, Florida, Louisiana, Tennessee, and Virginia. Using the same specification as in Table III, we estimate a positive and statistically significant coefficient on child poverty for the change in teacher-pupil ratios (0.00518 (0.00130)). Given average teacher salaries in these states in 1964 and 1969 (\$36,423 and \$43,617, respectively, in 2009 dollars) and the corresponding coefficient estimate on child poverty for the change in per-

strong link between pupil-teacher ratios and black educational attainment in slightly earlier cohorts (e.g., Card and Krueger 1992a), we expect blacks to have benefited from these reductions in pupil-teacher ratios had they actually experienced them.

Moreover, targeting of Title I-induced spending increases toward whites was plausible. Substantial desegregation occurred only after 1968,⁴³ making it possible for districts to continue targeting resources to white schools as they had historically done (Margo, 1990). Targeting of Title I funds was also weak at the time, as discussed in Section I. Martin and McClure (1969) present many examples of districts targeting funds to schools not designated as Title I recipients.⁴⁴ But such blatant misuses of funds *identified as Title I* are only one way in which non-Title I schools could benefit from the program. More easily and without violating any laws or regulations at the time, districts could have allocated more state and locally-generated revenue to non-Title I schools, using Title I funds “correctly” in Title I schools. Martin and McClure’s documentation of such behavior lent political pressure for the increased regulation of the use of Title I funds starting with the 1969 ESEA amendments.

VI. Conclusion

This paper examines the fiscal and educational impacts of the introduction of Title I of the Elementary and Secondary Education Act in the South. Combining

pupil current expenditure in this sample (\$561.6), these estimates imply that reductions in pupil-teacher ratios can account for about 36 to 40 percent of the spending increase induced by Title I.

⁴³ A growing literature examining the effects of policy efforts to narrow black-white school quality gaps and desegregate schools consistently concludes that such programs were beneficial for black educational attainment. See, for example, Reber (2010), Johnson (2011), Card and Krueger (1992a), Lutz (2011), Ashenfelter, Collins, and Yoon (2006), and Guryan (2004). Similar to Reber (2010) and consistent with the idea that desegregation-induced spending helped blacks, we find that spending and educational attainment for blacks both increased more in districts with higher black enrollment shares (results not shown).

⁴⁴ For example: “In Oxford, Mississippi, a curriculum and materials center is located at a non-Title I school, near a police station, reportedly for fear of burglary. Furthermore, the Title I coordinator in Oxford is principal of a non-Title I, white school” (p. 6). An HEW audit of Louisiana school districts covering Title I expenditures in the program’s first year found that 23 counties “loaned” equipment costing \$645,624 to schools that were ineligible to participate in Title I programs. The auditors noted that much of the “loaned” equipment was “set in concrete or fastened to the plumbing.” (p. 9).

variation in the program’s intensity across school districts with the timing of its introduction in 1965, we find evidence of an important role for Title I in increasing the progressivity of funding for Southern schools during the 1960s. School districts responded to the influx of Title I funding by significantly reducing their own fiscal effort, and more so where Title I grants were small relative to what local revenue would have been had pre-ESEA trends continued. “Money mattered,” but only where the introduction of Title I increased spending, and only for whites.⁴⁵ Despite this, the program appears to have been cost-effective overall in the South on the basis of our estimates.

Our analysis contributes to the understanding of the impact of Title I in its earliest years, but necessarily falls short of a full assessment of Title I’s legacy. The introduction of the program likely also had other benefits – on other educational or social outcomes, on other cohorts, or in the increased consumption of other goods that crowd out represents – that are not easily quantified. The effects of Title I’s introduction might well have been different outside of the South. These questions are important ones for future research.

Our analysis also makes a more general point. In the same vein as Baicker and Staiger’s (2005) analysis of Medicaid Disproportionate Share Hospital funding and van der Klaauw’s (2008) school-level analysis of Title I programs in New York City, our findings emphasize the usefulness of examining the impacts of intergovernmental grants on a jurisdiction’s finances alongside any evaluation of its impacts on the ultimate outcome of interest. Indeed, the introduction of Title I improved educational attainment only where it increased education spending.

⁴⁵ Our findings are in contrast to the existing literature on Title I, which has concluded the program is largely ineffective. However, we ask a different question by estimating returns to increases in education *spending* induced by Title I for *all* students in a district, rather than comparing outcomes of participants in whatever was called a Title I program at a particular point in time to those for non-participants (as in Carter, 1984; Puma et al., 1997).

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TABLE I—DESCRIPTIVE STATISTICS ON DISTRICT REVENUE AND EXPENDITURE

| | Level | | | Change | |
|-------------------------------|----------------------|----------------------|----------------------|------------------------|------------------------|
| | 1961 (1) | 1964 (2) | 1969 (3) | 1961 to 1964 (4) | 1964 to 1969 (5) |
| Per-pupil federal revenue | 47.90 (62.62) | 65.12 (73.49) | 486.72 (262.51) | 17.22 (35.06) | 421.60 (270.20) |
| Per-pupil state revenue | 1,187.03 (351.72) | 1,318.43 (351.79) | 1,803.55 (428.93) | 131.40 (94.99) | 485.11 (231.73) |
| Per-pupil local revenue | 448.88 (341.59) | 509.44 (392.08) | 835.63 (586.08) | 60.56 (114.57) | 326.19 (286.14) |
| Per-pupil current expenditure | 1,675.67 (451.70) | 1,905.66 (464.14) | 2,825.19 (511.85) | 229.99 (215.31) | 919.53 (420.69) |

Notes: All figures are in real 2009 dollars. Standard deviations are in parentheses. Sample consists of 910 school districts in 9 southern states: Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia. See Appendix A for description of estimation sample.

TABLE II—DESCRIPTIVE STATISTICS ON DISTRICT CHARACTERISTICS

| | Mean (1) | Std. dev. (2) | Obs. (3) |
|--|-------------|------------------|-------------|
| Child poverty rate, 1960 | 0.32 | 0.17 | 910 |
| State factor in Title I grant, 1969 | 954 | 6.09 | 910 |
| Black enrollment share, 1960 | 0.32 | 0.22 | 910 |
| District enrollment, 1960 | 6,938 | 11,869 | 910 |
| One of poorest 300 counties, 1960 (=1) | 0.24 | 0.43 | 910 |
| Percent voting for Thurmond, 1948 | 34 | 30 | 910 |
| Black voter registration rate, early 1960s (percent) | 28 | 24 | 812 |
| Black/white dissimilarity index, 1970 | 0.28 | 0.22 | 853 |

Notes: The state factor in the Title I grant is in real 2009 dollars. Sample consists of school districts in 9 southern states: Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia. See Appendix A for description of estimation sample.

TABLE III—REDUCED-FORM AND TSLS ESTIMATES OF THE FISCAL RESPONSE TO THE INTRODUCTION OF TITLE I

| | Reduced Form | | TSLS |
|--|---------------------|----------------------|-----------------------|
| | 1961 to 1964 (1) | 1964 to 1969 (2) | 1964 to 1969 (3) |
| A. Δ Per-pupil Federal Revenue | | | |
| Child Poverty Rate, 1960 | 10.12 (6.702) | 990.4*** (63.15) | |
| Black Enrollment Share, 1960 | -9.161** (3.950) | 67.20 (41.46) | |
| B. Δ Per-pupil Current Expenditure | | | |
| Child Poverty Rate, 1960 | -59.30 (45.84) | 497.5*** (92.84) | |
| Δ Per-pupil Federal Revenue, 1964 to 1969 | | | 0.502*** (0.0795) |
| Black Enrollment Share, 1960 | -20.24 (49.37) | 369.2*** (71.49) | 335.5*** (67.80) |
| C. Δ Per-pupil State Revenue | | | |
| Child Poverty Rate, 1960 | 30.64 (21.29) | 51.37 (40.29) | |
| Δ Per-pupil Federal Revenue, 1964 to 1969 | | | 0.0519 (0.0405) |
| Black Enrollment Share, 1960 | -1.486 (19.10) | 83.34** (33.02) | 79.85** (34.56) |
| D. Δ Per-pupil Local Revenue | | | |
| Child Poverty Rate, 1960 | -60.21** (25.89) | -323.4*** (54.37) | |
| Δ Per-pupil Federal Revenue, 1964 to 1969 | | | -0.327*** (0.0586) |
| Black Enrollment Share, 1960 | -33.32 (20.98) | 122.5*** (40.91) | 144.4*** (46.40) |
| First-stage Partial <i>F</i> -stat on instrument | | | 245.9 |
| Number of districts | 910 | 910 | 910 |

Notes: All dollar figures are in real 2009 dollars. All specifications include as controls state dummies and 1960 black enrollment share. The TSLS regressions in column (3) use the 1960 child poverty rate as an instrument for the 1964 to 1969 change in per-pupil federal revenue. Standard errors (in parentheses) are clustered on county.

*** Significant at the 1 percent level.

**Significant at the 5 percent level.

* Significant at the 10 percent level.

TABLE IV—SENSITIVITY OF THE ESTIMATED LONG-RUN FISCAL RESPONSES TO THE INTRODUCTION OF TITLE I

| | Baseline | Change Functional Form of Black Share ^a | | Desegregation ^b | |
|--|-----------------------------------|---|--|--|--|
| | (1) | (2) | (3) | (4) | |
| | | A. Δ Per-pupil Current Expenditure | | | |
| Δ Per-pupil Federal Revenue | 0.502*** (0.0795) | 0.482*** (0.0822) | 0.526*** (0.0950) | 0.462*** (0.0828) | |
| Root MSE | 289.6 | 288.2 | 290.0 | 290.1 | |
| | | B. Δ Per-pupil State Revenue | | | |
| Δ Per-pupil Federal Revenue | 0.0519 (0.0405) | 0.0218 (0.0402) | -0.00485 (0.0479) | 0.0672 (0.0423) | |
| Root MSE | 145.8 | 142.8 | 145.9 | 144.7 | |
| | | C. Δ Per-pupil Local Revenue | | | |
| Δ Per-pupil Federal Revenue | -0.327*** (0.0586) | -0.320*** (0.0595) | -0.273*** (0.0672) | -0.310*** (0.0608) | |
| Root MSE | 217.8 | 217.8 | 215.0 | 217.2 | |
| First-stage Partial <i>F</i> -stat on Instr. | 245.9 | 240.3 | 187.0 | 225.6 | |
| Number of districts | 910 | 910 | 910 | 910 | |
| | | Other Concurrent Policy Changes | | | |
| | Voting Rights Act ^c | Head Start ^d | Other Federal Programs ^e | All Pre-existing Characteristics ^{b,d} | |
| | (5) | (6) | (7) | (8) | |
| | | A. Δ Per-pupil Current Expenditure | | | |
| Δ Per-pupil Federal Revenue | 0.499*** (0.0922) | 0.501*** (0.0950) | 0.485*** (0.0838) | 0.464*** (0.0982) | |
| Root MSE | 294.4 | 289.8 | 289.2 | 290.2 | |
| | | B. Δ Per-pupil State Revenue | | | |
| Δ Per-pupil Federal Revenue | 0.0457 (0.0488) | 0.0368 (0.0484) | 0.0634 (0.0430) | 0.0529 (0.0492) | |
| Root MSE | 149.7 | 146.0 | 145.0 | 144.8 | |
| | | C. Δ Per-pupil Local Revenue | | | |
| Δ Per-pupil Federal Revenue | -0.304*** (0.0653) | -0.336*** (0.0737) | -0.334*** (0.0613) | -0.321*** (0.0741) | |
| Root MSE | 218.1 | 218.4 | 217.1 | 218.0 | |
| First-stage Partial <i>F</i> -stat on Instr. | 179.5 | 174.4 | 230.2 | 168.9 | |
| Number of districts | 812 | 910 | 909 | 910 | |

Notes: Changes in fiscal variables correspond to 1964 to 1969 and are in real 2009 dollars. Each column and panel represents a different TSLS regression. Unless otherwise noted, all regressions include state dummies and 1960 black enrollment share as controls. The instrument for the change in per-pupil federal revenue is the 1960 child poverty rate. See Appendix A for detailed description of control variables and data sources. Standard errors (in parentheses) are clustered on county.

^a Column 2 interacts 1960 black enrollment share with state dummies. Column 3 replaces 1960 black enrollment share with dummies for deciles of 1960 black enrollment share.

^b ln(1960 district enrollment) and dummies for quintiles of 1948 Thurmond vote share added as controls.

^c Black voter registration rate in early 1960s added as a control.

^d Dummy for one of the 300 poorest counties in 1960 added as a control.

^e Changes in transfers for other federal programs added as a control.

*** Significant at the 1 percent level.

TABLE V—THE DESEGREGATION RESPONSE TO THE INTRODUCTION OF TITLE I AND HETEROGENEITY IN THE FISCAL AND DESEGREGATION RESPONSE TO THE INTRODUCTION OF TITLE I BY SCOPE FOR LOCAL OFFSET

| Dependent Variable: | Δ (1964 to 1969) in Per-pupil | | | 1970 |
|---|---------------------------------------|----------------------|-----------------------|----------------------------|
| | Current Expenditure (1) | State Revenue (2) | Local Revenue (3) | Dissimilarity Index (4) |
| A. Full Sample | | | | |
| Δ Per-pupil Federal Revenue, 1964 to 1969 | 0.464*** (0.0982) | 0.0529 (0.0492) | -0.321*** (0.0741) | 8.77e-05 (6.30e-05) |
| First-stage Partial <i>F</i> -stat on Instr. | 168.9 | 168.9 | 168.9 | 146.6 |
| Number of districts | 910 | 910 | 910 | 853 |
| B. By Scope for Local Offset | | | | |
| 1. Districts with Low Scope for Offset | | | | |
| Δ Per-pupil Federal Revenue, 1964 to 1969 | 0.881*** (0.167) | 0.0101 (0.0886) | -0.0262 (0.101) | 0.000151 (0.000121) |
| First-stage Partial <i>F</i> -stat on Instr. | 35.29 | 35.29 | 35.29 | 32.79 |
| Number of districts | 227 | 227 | 227 | 207 |
| 2. Other Districts | | | | |
| Δ Per-pupil Federal Revenue, 1964 to 1969 | 0.208 (0.154) | 0.0326 (0.0777) | -0.564*** (0.127) | -1.05e-05 (8.99e-05) |
| First-stage Partial <i>F</i> -stat on Instr. | 86.20 | 86.20 | 86.20 | 73.71 |
| Number of districts | 683 | 683 | 683 | 646 |
| 3. Difference | | | | |
| Δ Per-pupil Federal Revenue x Low Scope for Offset | 0.673*** (0.226) | -0.0225 (0.117) | 0.538*** (0.161) | 0.000162 (0.000149) |
| First-stage Partial <i>F</i> -stat on Instrs. | 57.90 | 57.90 | 57.90 | 50.88 |
| Number of districts | 910 | 910 | 910 | 853 |

Notes: All dollar figures are in real 2009 dollars. Each column and panel presents coefficient estimates from a TSLS regression. All regressions include state dummies, 1960 black enrollment share, ln(1960 district enrollment), an indicator that the district is in one of the 300 poorest counties in 1960, and indicators for quintiles of the Thurmond vote share. In Panels A, B1, and B2, the 1964 to 1969 change in per-pupil federal revenue is instrumented with the 1960 child poverty rate. In Panel B3, the 1964 to 1969 change in per-pupil federal revenue and the 1964 to 1969 change in per-pupil federal revenue interacted with the low scope for offset indicator are instrumented with the 1960 child poverty rate and the 1960 child poverty rate interacted with low scope for offset indicator. A district is classified as having "low scope for local offset" if it is ranked in the top quartile of the ratio of the predicted per-pupil Title I grant in 1969 to predicted per-pupil local revenue in 1969, the latter is the prediction given the district-specific linear trend over 1961 to 1964. Standard errors (in parentheses) are clustered on county.

*** Significant at the 1 percent level.

TABLE VI— REDUCED-FORM RELATIONSHIP BETWEEN 1960 CHILD POVERTY RATE AND CHANGES IN CURRENT SCHOOL EXPENDITURE AND HIGH SCHOOL DROPOUT RATES AT THE COUNTY LEVEL

| | Dependent Variable: | | | |
|---|--|--|--|--|
| | Δ Per-pupil Current Expenditure, 1964-1969 (1) | Δ White HS Dropout Ages 18-19, 1960-1970 (2) | Δ Per-pupil Current Expenditure, 1964-1969 (3) | Δ Black HS Dropout Ages 18-19, 1960-1970 (4) |
| A. Sample: Counties with Low Scope for Local Offset | | | | |
| Child Poverty, 1960 | 1,156.32*** (287.77) | -39.98*** (10.59) | 1,181.56*** (321.19) | 7.75 (11.58) |
| Number of counties | 152 | 152 | 135 | 135 |
| B. Sample: Other Counties | | | | |
| Child Poverty, 1960 | 338.89 (244.81) | 4.76 (3.37) | 564.98*** (172.87) | 6.69 (5.05) |
| Number of counties | 495 | 495 | 470 | 470 |
| C. Full Sample: Difference | | | | |
| Child Poverty, 1960 | 817.43** | -44.74*** | 616.58* | 1.06 |
| x Low Scope for Offset | (372.11) | (10.78) | (354.43) | (12.23) |
| Number of counties | 647 | 647 | 605 | 605 |
| Weight | Whites Ages 18-19, 1960 | | Blacks Ages 18-19, 1960 | |

Notes: The change in per-pupil current expenditure (columns (1) and (3)) is in real 2009 dollars. Each column and panel presents estimates from a different regression. All regressions are weighted by the race-specific population of 18-19 year olds in 1960. All regressions include as controls state dummies, 1960 black enrollment share, ln(1960 district enrollment), an indicator that the county was one of the 300 poorest counties in 1960, indicators for quintiles of the Thurmond county vote share, and the race-specific high school dropout rate of 18-19 year olds in 1960; in Panel C, these controls are interacted with the low scope for offset indicator. Throughout, attention is restricted to counties where districts in our estimation sample represent at least 90 percent of total county enrollment in 1960. A county is classified as having "low scope for local offset" if all districts in the county ranked in the top quartile of the ratio of the predicted per-pupil Title I grant in 1969 to predicted per-pupil local revenue in 1969, the latter is the prediction given the district-specific linear trend over 1961 to 1964. Standard errors (in parentheses) are heteroskedasticity robust.

*** Significant at the 1 percent level.

**Significant at the 5 percent level.

* Significant at the 10 percent level.

TABLE VII— TSLS ESTIMATES OF THE EFFECT OF SCHOOL SPENDING ON HIGH SCHOOL DROPOUT BY RACE

| Δ White High School Dropout (%), 1960-70: | Ages 18-19 (1) | Ages 18-19 (2) | Ages 25+ (3) |
|---|--|-------------------|-----------------|
| Mean of Dependent Variable | -10.0 | -10.0 | -7.7 |
| | A. Instrument is 1960 Child Poverty Rate (Sample is Counties with Low Scope for Local Offset) | | |
| Δ Per-pupil Current Expenditure (\$100s), 1964 to 1969 | -3.46*** (1.25) | -4.52** (1.88) | 0.55 (0.41) |
| Root MSE | 15.42 | 17.74 | 4.252 |
| First-stage Partial <i>F</i> -stat on instrument | 16.15 | 9.777 | 20.39 |
| Number of counties | 152 | 152 | 152 |
| | B. Instrument is 1960 Child Poverty Rate x Low Scope for Offset (Full Sample) | | |
| Δ Per-pupil Current Expenditure (\$100s), 1964 to 1969 | -5.47* (2.80) | -6.28* (3.72) | 0.48 (0.56) |
| Root MSE | 17.26 | 19.31 | 3.626 |
| First-stage Partial <i>F</i> -stat on instr. | 4.826 | 3.536 | 4.346 |
| Number of counties | 647 | 646 | 639 |
| | Δ Black High School Dropout (%), 1960-70: | | |
| | Ages 18-19 (4) | Ages 18-19 (5) | Ages 25+ (6) |
| Mean of Dependent Variable | -14.1 | -14.1 | -7.9 |
| | A. Instrument is 1960 Child Poverty Rate (Sample is Counties with Low Scope for Local Offset) | | |
| Δ Per-pupil Current Expenditure (\$100s), 1964 to 1969 | 0.66 (1.05) | 1.17 (1.09) | 0.39 (0.24) |
| Root MSE | 10.28 | 10.51 | 2.348 |
| First-stage Partial <i>F</i> -stat on instrument | 13.53 | 13.54 | 13.49 |
| Number of counties | 135 | 135 | 124 |
| | B. Instrument is 1960 Child Poverty Rate x Low Scope for Offset (Full Sample) | | |
| Δ Per-pupil Current Expenditure (\$100s), 1964 to 1969 | 0.17 (2.01) | 0.98 (1.82) | -0.29 (0.46) |
| Root MSE | 8.159 | 8.569 | 2.430 |
| First-stage Partial <i>F</i> -stat on instr. | 3.026 | 4.081 | 3.180 |
| Number of counties | 605 | 604 | 541 |
| Additional Controls? | X | | |

Notes: The change in per-pupil current expenditure is in hundreds of real 2009 dollars. Each column and panel presents estimates from a different regression. All regressions are weighted by the race-specific 1960 county population of the relevant age group. All regressions include as controls state dummies, 1960 black enrollment share, ln(1960 district enrollment), an indicator that the county was one of the 300 poorest counties in 1960, indicators for quintiles of the Thurmond county vote share, and race-specific 1960 high school dropout rates of the relevant age group; in Panel B, these controls are interacted with the low scope for offset indicator. "Additional controls" include changes in transfers to the county for other federal programs from 1962-69, which are interacted with the low scope for offset indicator in Panel B. Throughout, attention is restricted to counties where districts in our estimation sample represent at least 90 percent of total county enrollment in 1960. Standard errors (in parentheses) are heteroskedasticity robust.

*** Significant at the 1 percent level. **Significant at the 5 percent level. * Significant at the 10 percent level.



FIGURE I. TRENDS IN PER-PUPIL EXPENDITURE AND REVENUE BY SOURCE: SOUTHERN STATES, THE 1960S

Notes: All figures are in 2009 dollars. Unweighted means were calculated from our district-level sample from 9 Southern states: AL, FL, GA, LA, MS, NC, SC, TN, and VA.

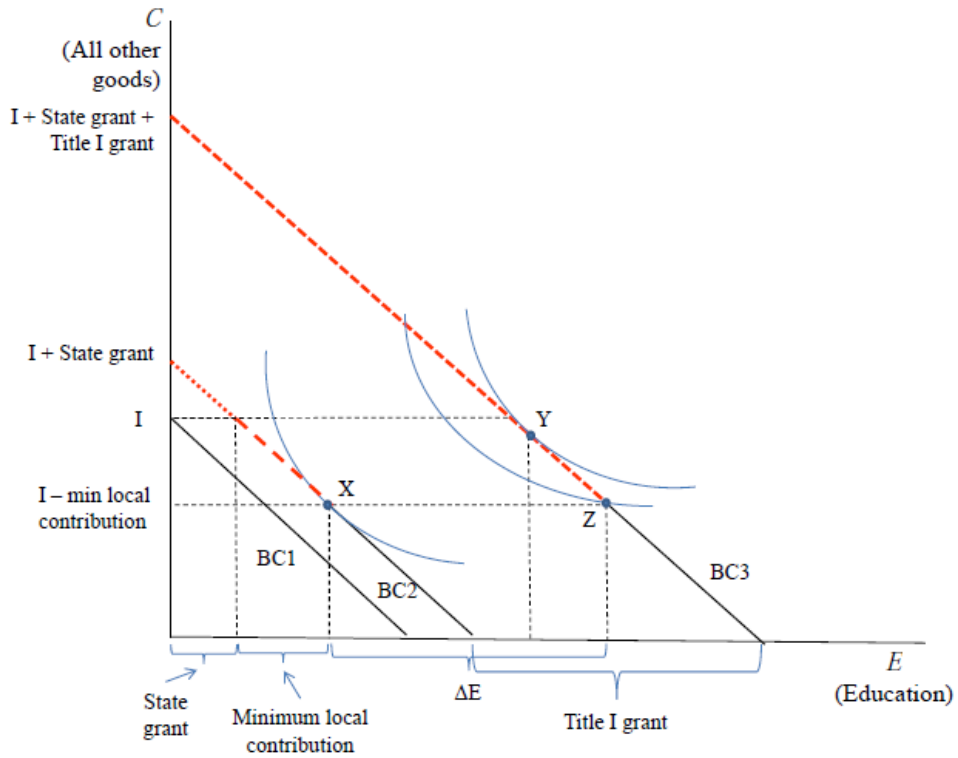


FIGURE II. LOCAL GOVERNMENT RESPONSES TO TITLE I GRANT

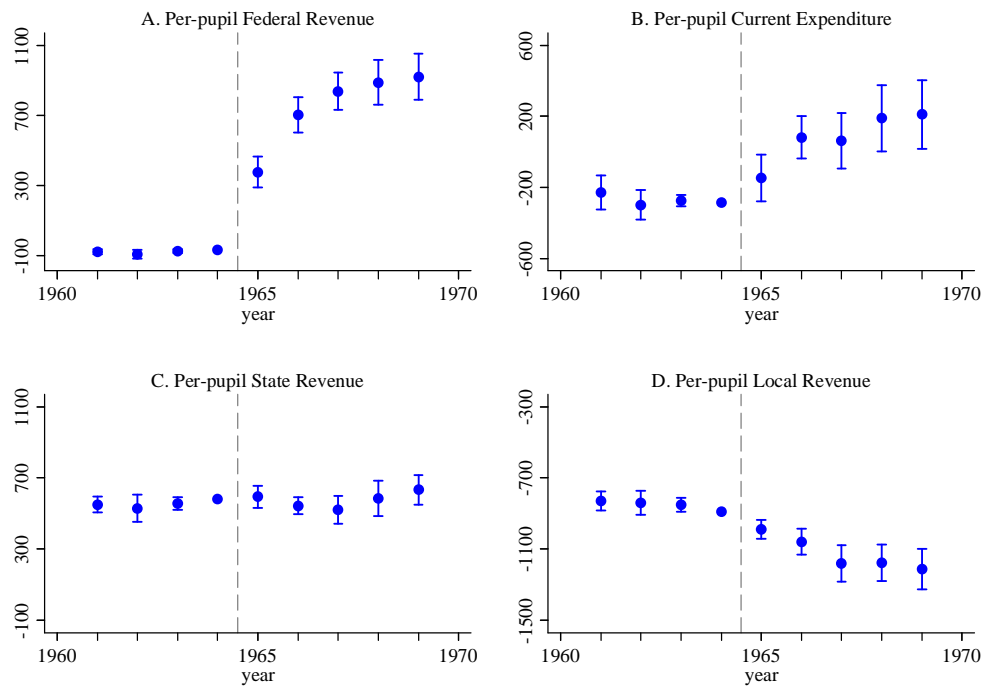
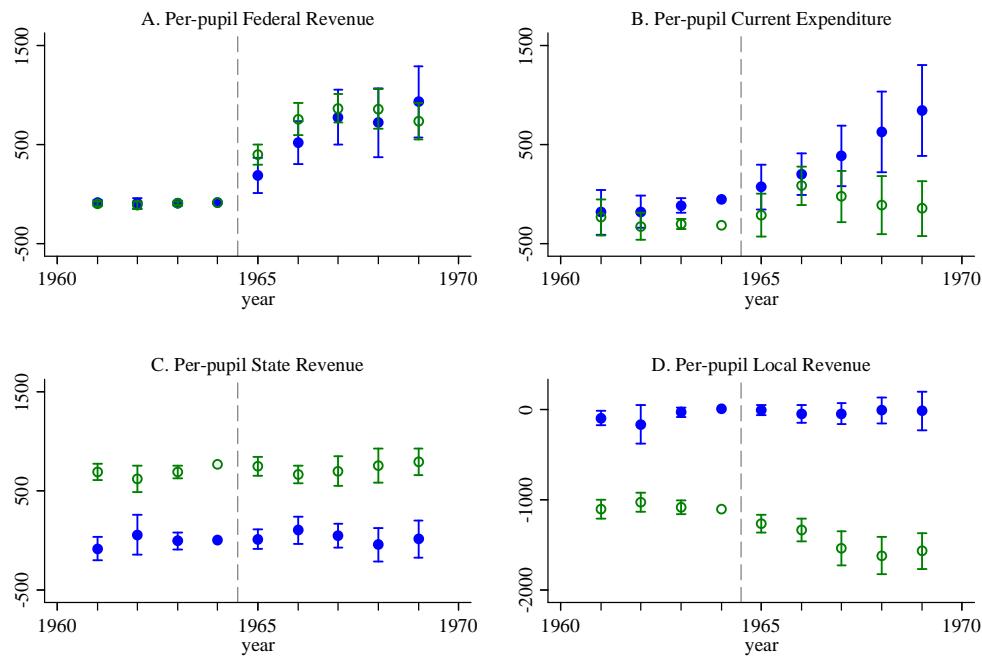


FIGURE III. YEAR-BY-YEAR GRADIENTS OF DISTRICT FINANCE VARIABLES IN THE 1960 CHILD POVERTY RATE

Notes: All figures are in 2009 dollars. The solid dots represent the coefficients on the 1960 district child poverty rate from (unweighted) year-specific regressions that also include state dummies and the 1960 district black enrollment share (equation (1)). The capped lines represent 95 percent confidence intervals on the estimated difference between the poverty gradient in a given year and its value in 1964. To obtain these confidence intervals, we estimated a regression using pooled data from 1961 to 1969 that included district dummies, state-by-year dummies, interactions of the 1960 black enrollment share and year dummies (for all years except 1964). Standard errors were clustered on county.



Solid dots: Districts with Low Scope for Offset, Hollow Dots: Other Districts

FIGURE IV. YEAR-BY-YEAR GRADIENTS OF DISTRICT FINANCE VARIABLES IN THE 1960 CHILD POVERTY RATE, BY SCOPE FOR LOCAL OFFSET

Notes: All figures are in 2009 dollars. A district is classified as having “low scope for local offset” if ranked in the top quartile of the ratio of the predicted per-pupil Title I grant in 1969 to predicted per-pupil local revenue in 1969, the latter is the prediction from the district-specific linear trend over 1961 to 1964. The dots represent the coefficients on the 1960 district child poverty rate from (unweighted) year-specific regressions, estimated separately for districts with and without low scope for local offset, that also include state dummies, the 1960 district black enrollment share, the natural log of 1960 district enrollment, dummies for quintiles of county vote share for Strom Thurmond in the 1948 presidential election, and a dummy for whether the district was in one of the 300 poorest counties in 1960. The capped lines represent 95 percent confidence intervals on the estimated difference between the poverty gradient in a given year and its value in 1964. To obtain these confidence intervals, we estimated a regression using pooled data from 1961 to 1969 for the subsample in question that included district dummies, state-by-year dummies, and interactions between year dummies (for all years except 1964) and each of the control variables. Standard errors were clustered on county.

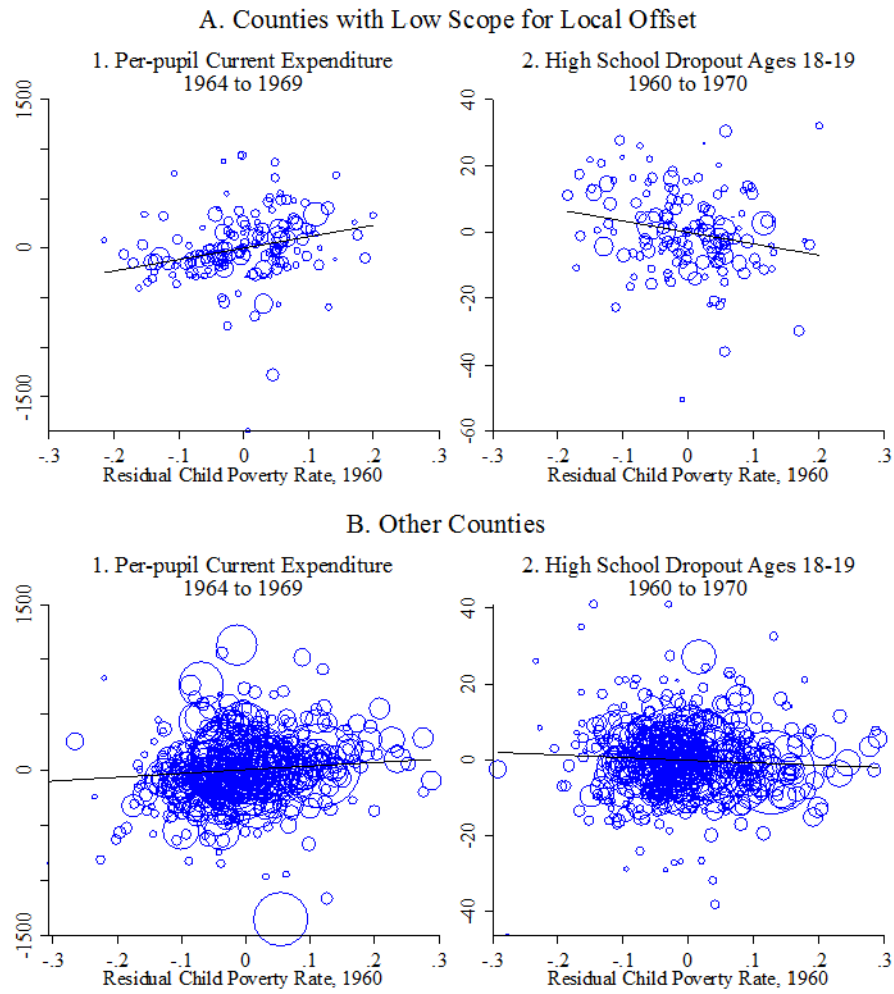


FIGURE V. THE 1960 CHILD POVERTY RATE AND DIFFERENCES IN CURRENT EXPENDITURE AND WHITE HIGH SCHOOL DROPOUT RATES OVER THE 1960S, BY SCOPE FOR LOCAL OFFSET

Notes: All figures are in 2009 dollars. A county is classified as having “low scope for local offset” if all districts in the county ranked in the top quartile of the ratio of the predicted per-pupil Title I grant in 1969 to predicted per-pupil local revenue in 1969, the latter is the prediction from the district-specific linear trend over 1961 to 1964. The hollow dots represent the residuals from regressions, estimated separately for counties with and without low scope for local offset, that also include state dummies, the 1960 county black enrollment share, the natural log of 1960 county enrollment, dummies for quintiles of county vote share for Strom Thurmond in the 1948 presidential election, a dummy for whether the county was one of the 300 poorest in 1960, and the high school dropout rate of white 18-19 year olds in the county in 1960. The regressions are weighted (and the dot sizes represent) the 1960 population of white 18-19 year olds.

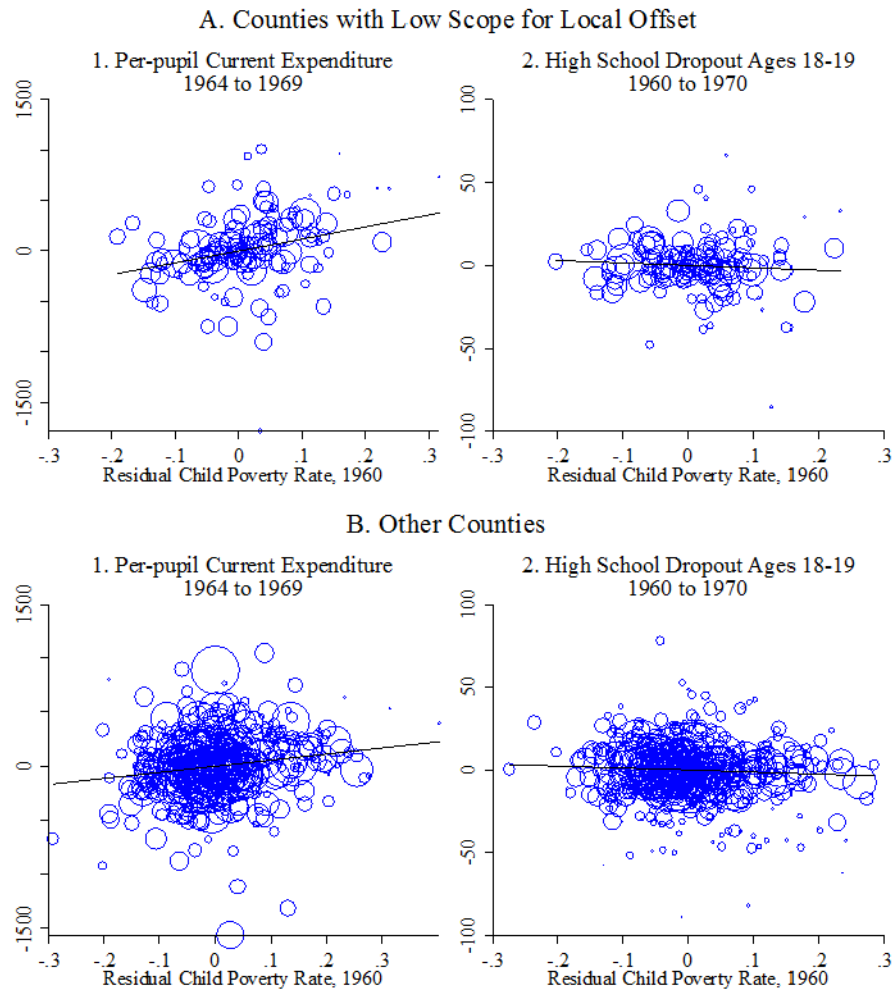


FIGURE VI. THE 1960 CHILD POVERTY RATE AND DIFFERENCES IN CURRENT EXPENDITURE AND BLACK HIGH SCHOOL DROPOUT RATES OVER THE 1960S, BY SCOPE FOR LOCAL OFFSET

Notes: All figures are in 2009 dollars. A county is classified as having “low scope for local offset” if all districts in the county ranked in the top quartile of the ratio of the predicted per-pupil Title I grant in 1969 to predicted per-pupil local revenue in 1969, the latter is the prediction from the district-specific linear trend over 1961 to 1964. The hollow dots represent the residuals from regressions, estimated separately for counties with and without low scope for local offset, that also include state dummies, the 1960 county black enrollment share, the natural log of 1960 county enrollment, dummies for quintiles of county vote share for Strom Thurmond in the 1948 presidential election, a dummy for whether the county was one of the 300 poorest in 1960, and the high school dropout rate of black 18-19 year olds in the county in 1960. The regressions are weighted (and the dot sizes represent) the 1960 population of black 18-19 year olds.