

The Poverty Gap in School Spending Following the Introduction of Title I

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The Elementary and Secondary Education Act of 1965 (ESEA) was a watershed in federal education policy. Its primary provision – a block grant program under Title I – doubled federal revenues for K-12 education in authorizing \$1 billion (\$7 billion in 2009 dollars) in new federal funding for supplemental academic programs for “educationally deprived” children from low-income families. Title I was most recently reauthorized under the No Child Left Behind Act of 2001 and remains the cornerstone of federal education policy today.

There is considerable debate over whether additional school spending can narrow gaps in achievement between poorer and richer students. But the first-order challenge to a compensatory intergovernmental grants program like Title I is to ensure that it narrows gaps in school spending between higher-poverty and lower-poverty school districts. In a standard neoclassical model, school districts would be expected to spend on education out

of block grants as they would any other source of income (i.e., in accordance with the income elasticity of education demand) – potentially much less than dollar-for-grant-dollar. In response to a compensatory federal program like Title I, the state may also devote less tax revenue to education or distribute that aid less progressively.

While there have been numerous studies of the effects of Title I on student achievement,¹ we know little about how the introduction of Title I affected the poverty gap in school spending. Evidence on the spending impacts of Title I in its earliest years suggests a “flypaper effect” – a spending response that exceeds what would have been expected on the basis of the income elasticity of education demand – and hence some spending convergence across richer and poorer school districts. But these studies are limited in one way or another, either exploiting only cross-sectional variation in Title I grant amounts (Feldstein 1978) or focusing only on part of

¹ Borman and D’Agostino (1996) present a meta-analysis of studies of the test score impacts of student participation in nominally-designated Title I programs. Van der Klaauw (2008) and Matsudaira, Hosek, and Walsh (2012) estimate the effects of Title I designation at the school, rather than the student level. Despite differences in empirical technique, the studies are united in suggesting little achievement impact of Title I.

the country (Cascio, Gordon, and Reber 2012). Evidence on Title I using dynamic variation for the entire country (Gordon 2004) suggests complete crowd out within three years – and hence no effect on the poverty gap in spending across school districts – but is based on a more recent (and more marginal) policy change than that stemming from program introduction.

This paper explores how the introduction of Title I may have affected school spending gaps across richer and poorer *states* using state panel data for the entire country. Federal policy is uniquely suited to addressing regional inequalities, and indeed, given the uneven regional distributions of poverty and school spending in the U.S., promotion of regional spending convergence was a goal of this “War on Poverty” program. Our newly-collected data suggest that Title I may have narrowed the gap in school spending between richer and poorer states but was far too small a program to eliminate this gap entirely.

I. The Title I Program

The ESEA was far-reaching, but its most significant provision by far was Title I. Title I funds were initially distributed primarily based on counts of poor children from the 1960 Census, and grants per eligible child were smaller in states that spent less on

average.² Given that higher-poverty states were on average lower-spending, this feature of the formula reduced the program’s progressivity relative to what it would have been with a single, national grant per eligible child. Nevertheless, per-pupil Title I formula amounts in the late 1960s were strongly increasing in 1960 state child poverty rates, and a linear poverty term alone can explain most of the cross-state variation in per-pupil Title I formula amounts.

The size of the program, combined with this feature of the funding formula, made the distribution of overall federal education aid compensatory. Figure 1 shows that between the 1963-64 school year (hollow markers) and the 1969-70 school year (solid markers) – before and after the introduction of Title I – overall per-pupil federal revenue went from being uncorrelated with the 1960 child poverty rate to having a strong positive correlation with it. The increase in slope is more than would be expected on the basis of Title I, though not significantly so.

[Insert Figure 1 Here]

While the intended use of Title I funds is for supplemental academic programs for

² See Cascio, et al. (2010) and Cascio, Gordon, and Reber (2012) for more details on the Title I formula and implementation in the 1960s.

“educationally deprived” children from low-income families, Title I funds have often been used in other ways. For example, audits from the program’s earliest years (Martin and McClure 1969) show that some school districts used Title I funds to make capital investments. Other school districts substituted Title I grants for state and local funds, either by moving state and local revenues away from the poorer schools that received the Title I grants, or by lowering taxes, in which case the grants were not even spent on education. Regulations in the early 1970s sought to improve targeting and to prevent crowd-out, but expropriation remains difficult to prevent.

II. Title I and the State Poverty Gap in School Spending

Available data do not allow us to observe school spending on poor children *per se*. Our goal is therefore to understand how the introduction of Title I might have affected the gap in *overall* school spending across richer and poorer states.³ To this end, we obtained state-by-school-year level data on current spending per pupil in average daily attendance for all states in the continental U.S. from

³ We use the 1960 child poverty rate implicit in the initial Title I formula, but our conclusions are substantively similar if we use the overall poverty rate or measure poverty (child or overall) in later years.

1953-54 to 2007-08.⁴ These data show that real per-pupil school spending increased by over a factor of five over the period, from about \$2,000 per pupil in 1953-54 to over \$11,000 in 2007-08 (2009 dollars).⁵ Given this, we analyze per-pupil spending in percent terms, using its natural log, rather than in dollar terms.

Figure 2 shows the relationship between the 1960 child poverty rate and log per-pupil spending right before and well after Title I was implemented. In 1963-64 (hollow markers), there was considerable variation in spending across states, and this variation was strongly related to poverty. In 2006-07 (solid markers), by contrast, the variation in log spending was virtually unchanged from its pre-ESEA level,⁶ but the analogous regression yields a slope that is half as steep as it was in 1963-64, with an R-squared of only 0.17.⁷

[Insert Figure 2 Here]

[Insert Figure 3 Here]

⁴ *Fall Statistics of Public Schools* (U.S. Department of Health, Education, and Welfare (HEW), various years) provided data on a biennial basis from 1953-54 through 1979-80. Thereafter, we drew data from all available academic years from the *Digest of Education Statistics* (U.S. Department of Education, various years).

⁵ Our analysis gives each state equal weight, though our findings are similar if we weight by enrollment or school-aged population.

⁶ In 1963-64, the standard deviation of log per-pupil spending was 0.226; in 2006-07, it was 0.217.

⁷ The figure also shows that while Southern states (which we define as those in the former Confederacy) were significantly lower-spending on average, their lower spending was in line with their significantly higher poverty rates. This suggests no “South effect.”

Was the poverty gap in school spending diminished by the introduction of Title I, or were there other forces at work? While we cannot rule out the importance of other factors, we provide some evidence of a contribution of Title I to these changes in Figure 3, which plots slope coefficients analogous to those shown in Figure 2, but on a year-by-year basis from 1953-54 to 2007-08. There is a clear break in trend in 1965-66, when Title I funds were first distributed. Taking the pre-1965 trend in the poverty gradient as the counterfactual, one would conclude that Title I reduced the poverty gradient in spending for a decade or so: after a sharp decline in 1965-66, the poverty gap remained roughly constant in the two decades following the introduction of Title I and began to decline steadily again around 1990-91.

While Title I thus appears to have stimulated some convergence in school spending across states, it would have needed to be a much larger program to eliminate spending differences across richer and poorer states. We calculate that if there were no state or local crowd-out and nothing else changed, the introduction of Title I would have reduced the cross-state poverty gradient in spending by only about 15 percent.⁸

⁸ In level terms, a 10 percentage point increase in the 1960 child poverty rate was associated with a reduction in spending of \$625 per

As mentioned above, Title I's introduction also appears not to have had much of an effect on the variation in school spending across states. A considerable share of this more recent variation also appears to owe to per-capita state income, not poverty. Figure 4 plots the R-squares from year-by-year regressions of log per-pupil school spending on the 1960 child poverty rate (solid circles), on real per-capita state income (hollow circles), and on both (the x's). Before the ESEA, income was slightly more predictive of spending than poverty, but only marginally so. There is a clear downward shift in 1965-66, and the predictive power of both poverty and income declined continuously through the mid-1980s. The predictive power of poverty and income then diverged: the R-squares for poverty continued their decline, while those for income rose sharply, peaking at over 0.6 in 1988. While its predictive power declined thereafter, per-capita income has continued to explain more variation in spending in recent years. The predictive power of income controlling for poverty points to a potential role for income inequality in determining school spending during the period when many states reformed their school finance systems.⁹

pupil in 1963-64 (based on a version of Figure 2 with per-pupil spending in levels), but only a \$91 increase in per-pupil Title I funding in 1969.

⁹ See Boustan, et al. (forthcoming) and Corcoran and Evans (2010) for more on the effects of income inequality on spending.

[Insert Figure 4 Here]

III. Conclusion

School spending has long been negatively correlated with poverty at the state level, but this relationship has weakened in the 50 years since passage of the ESEA. We have presented evidence that the introduction of Title I contributed to this trend. Nevertheless, Title I was a small program relative to the spending differences associated with poverty, and substantial poverty gaps in spending remain. This is one potential reason why Title I has appeared so ineffective in closing the achievement gap. We nevertheless view these and any other conclusions as tentative given the limitations of our data and methodology.

Is Title I therefore failed policy? Not necessarily. The ability to withhold education funds is a key policy lever for the federal government to encourage school districts to implement other reforms. At Title I's inception, for example, receipt of funds in the South was conditional on meeting desegregation targets under the 1964 Civil Rights Act. These financial incentives worked, marking the beginning of the end of racially separate schools in the South (Cascio, et al. 2010) – a process which culminated in notable gains in black educational attainment (Guryan 2004, Reber 2010, Johnson 2011). More

recently, under the No Child Left Behind Act of 2001, receipt of Title I funds has been tied to adoption of state school accountability systems – a policy which appears to have reduced achievement gaps (Dee and Jacob 2011). Whether and how federal money might buy progress in the future remains to be seen.

REFERENCES

- Borman, Geoffrey D. and Jerome V. D'Agostino.** 1996. "Title I and Student Achievement: A Meta-Analysis of Federal Evaluation Results." *Educational Evaluation and Policy Analysis*, 18(4): 309-26.
- Boustan, Leah, Fernando Ferreira, Hernan Winkler, and Eric M. Zolt.** 2012. "The Effect of Rising Income Inequality on Taxation and Public Expenditures: Evidence from US Municipalities and School Districts, 1970-2000." *Review of Economics and Statistics*, forthcoming.
- Cascio, Elizabeth, Nora Gordon, Ethan Lewis, and Sarah Reber.** 2010. "Paying for Progress: Conditional Grants and the Desegregation of Southern Public Schools." *Quarterly Journal of Economics*, 125(1): 445-482.
- Cascio, Elizabeth, Nora Gordon, and Sarah Reber.** 2012. "Federal Aid and Equality of Educational Opportunity: Evidence from the

- Introduction of Title I in the South.” Forthcoming, *American Economic Journal: Economic Policy*.
- Corcoran, Sean, and William N. Evans.** 2010. “Income Inequality, the Median Voter, and the Support for Public Education.” NBER Working Paper 16097.
- Dee, Thomas and Brian Jacob.** 2011. “The Impact of No Child Left Behind on Student Achievement.” *Journal of Policy Analysis and Management*, 30(3): 418-446.
- Feldstein, Martin S.** 1978. “The Effect of a Differential Add-on Grant: Title I and Local Education Spending.” *Journal of Human Resources* 13(4): 443-58.
- Gordon, Nora.** 2004. “Do Federal Grants Boost School Spending? Evidence from Title I.” *Journal of Public Economics*, 88(9-10): 1771-1792.
- Guryan, Jonathan.** 2004. “Desegregation and Black Dropout Rates.” *American Economic Review* 94(4): 919-943.
- Johnson, Rucker C.** 2011. “Long-run Impacts of School Desegregation and School Quality on Adult Attainments.” NBER Working Paper 16664.
- Martin, Ruby and Phyllis McClure.** 1969. *Title I of ESEA: Is it Helping Poor Children?* Washington, DC.: National Association for the Advancement of Colored People, New York, NY and Washington Research Project.
- Matsudaira, Jordan, Adrienne Hosek, and Elias Walsh.** 2012. “An Integrated Assessment of the Effects of Title I on School Behavior, Resources, and Student Achievement.” Forthcoming, *Economics of Education Review*.
- Minnesota Population Center.** 2011. *National Historical Geographic Information System: Version 2.0*. Minneapolis, MN: University of Minnesota. <https://www.nhgis.org/> (accessed August 26, 2011).
- Reber, Sarah J.** 2010. “Desegregation and Educational Attainment for Blacks.” *Journal of Human Resources* 45(4): 893-914.
- U.S. Department of Health, Education and Welfare, Office of Education.** 1969. *History of Title I ESEA*. Washington, D.C.: U.S. Government Printing Office.
- U.S. Senate.** 1965. *Maximum Basic Grants – Elementary and Secondary Education Act of 1965 (Public Law 81-874, Title II, and Public Law 89-10, Title I.)* Washington, D.C.: U.S. Government Printing Office.
- van der Klaauw, Wilbert.** 2008. “Breaking the Link Between Poverty and Low Student Achievement: An Evaluation of Title I.” *Journal of Econometrics* 142(2): 731-756.

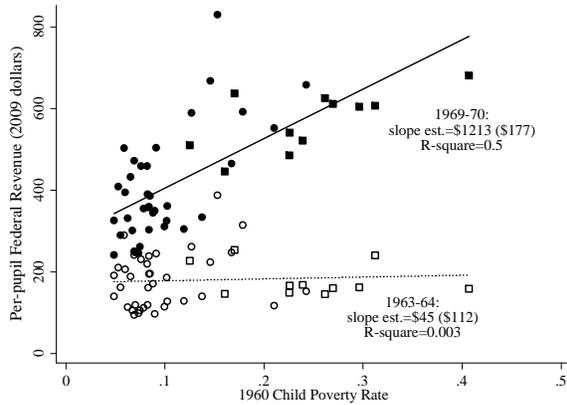


FIGURE 1. THE BEGINNINGS OF COMPENSATORY FEDERAL EDUCATION AID: THE RELATIONSHIP BETWEEN CHILD POVERTY AND PER-PUPIL FEDERAL REVENUE BEFORE AND AFTER THE INTRODUCTION OF TITLE I

Note: Per-pupil federal revenue is expressed in real 2009 dollars and is drawn from HEW (various years). The 1960 child poverty rate is the number of Title I eligible children in the state in 1965 (from U.S. Senate (1965)) to the number of 5-17 year olds in the state in 1960 (from Minnesota Population Center (2011)). Hollow markers represent 1963-64, and solid markers represent 1969-70. Square markers represent states in former Confederacy, and circle markers represent all other states in the continental U.S. Regressions give each state equal weight.

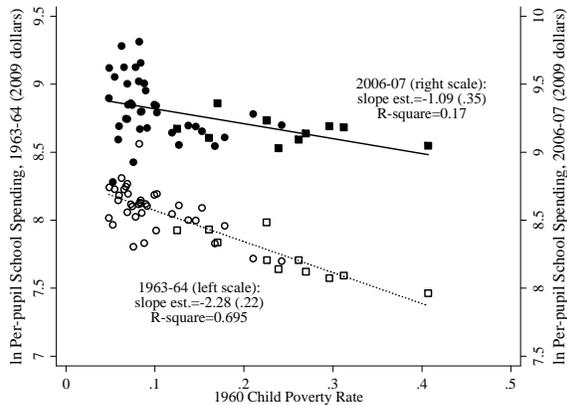


FIGURE 2. HAS THE POVERTY GAP ACROSS STATES IN SCHOOL SPENDING DIMINISHED? THE RELATIONSHIP BETWEEN CHILD POVERTY AND PER-PUPIL SCHOOL SPENDING IN 1963-64 AND 2006-07

Note: Per-pupil school spending is expressed in real 2009 dollars and is drawn from HEW (various years) and Department of Education (various years). See Figure 1 note for description of the 1960 child poverty rate. Hollow markers represent 1963-64, and solid markers represent 1969-70. Square markers represent states in former Confederacy, and circle markers represent all other states in the continental U.S.

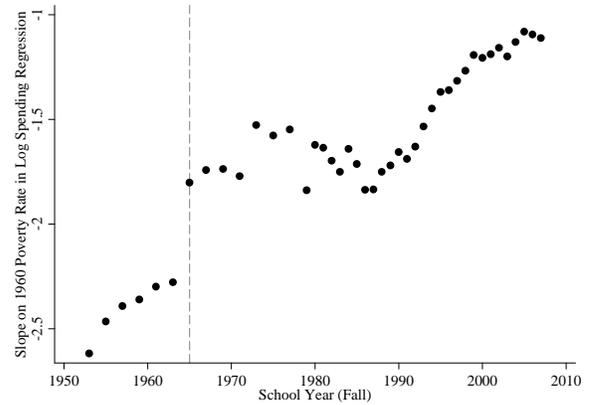


FIGURE 3. DID TITLE I PLAY A ROLE IN CLOSING THE POVERTY GAP IN SCHOOL SPENDING? HOW THE RELATIONSHIP BETWEEN CHILD POVERTY AND PER-PUPIL SCHOOL SPENDING CHANGED OVER TIME

Note: The figure plots slope coefficients from year-by-year regressions of log per-pupil school spending on the 1960 child poverty rate. Regressions give each state equal weight. The dashed vertical line is placed at 1965, the year that Title I was introduced. For sources, see Figure 2 note.

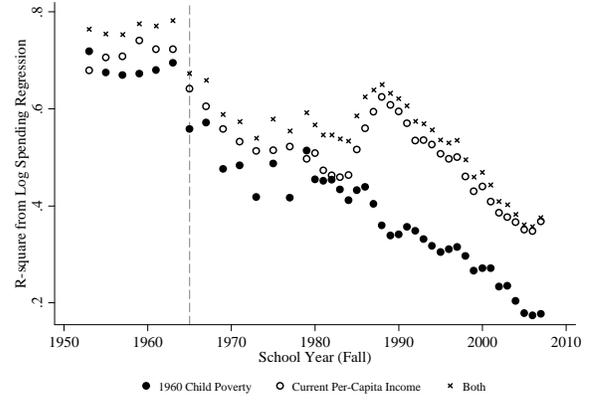


FIGURE 4. DID TITLE I REDUCE THE POWER OF POVERTY AND INCOME IN EXPLAINING CROSS-STATE SPENDING INEQUALITY?

Note: The figure plots R-squares from year-by-year regressions of log per-pupil school spending on the 1960 child poverty rate (solid circles), current per-capita income (hollow circles), and both variables together (x's). Regressions give each state equal weight. The dashed vertical line is placed at 1965, the year that Title I was introduced. For sources, see note for Figure 2.