School Finance Redesign Project

center on reinventing public education

IMPROVING TITLE I FUNDING EQUITY ACROSS STATES, DISTRICTS, AND SCHOOLS

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The School Finance Redesign Project

The School Finance Redesign Project (SFRP) encompasses research, policy analysis, and public engagement activities that examine how K-12 finance can be redesigned to better support student performance. The project addresses the basic question, "How can resources help schools achieve the higher levels of student performance that state and national education standards now demand?"

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Introduction

As Congress prepares to reauthorize the No Child Left Behind Act (NCLB), policymakers and advocates have urged significant reforms of the federal role in education, including national standards, school vouchers, and growth models for measuring progress. Although these ambitious proposals will garner headlines, it is worth recalling that the Elementary and Secondary Education Act had humbler origins not as an instrument for systemic education reform, but as a simple vehicle for directing federal aid to poor children living in concentrated poverty. For decades, this goal has been a constant refrain in discussions of the federal role in school finance. However, measured against this goal, the federal role leaves much to be desired.

This paper examines whether federal aid to public schools promotes equity, defined here to mean that greater resources flow to places with higher poverty. (Unless otherwise noted, the terms "poverty" and "poor" refer to U.S. Census poverty criteria, not eligibility for free or reduced-price lunch.) This definition of equity goes beyond the prescription that poor children should be given more resources than non-poor children. It requires that resources flow disproportionately to poor children in areas with higher poverty concentrations. This principle is rooted in the well-documented finding that poor children in concentrated poverty face a "double disadvantage" arising from their own poverty *and* the poverty of their peers and local neighborhood.[1] As James Guthrie has observed, "if there is one thing that is more related to a child's academic achievement than coming from a poor household, it is going to school with children from other poor households" (Tsouderos 1998, 2A). Federal policy recognizes that "the poverty of a child's family is much more likely to be associated with educational disadvantage if the family lives in an area with large concentrations of poor families" and aims to target resources to areas "where needs are greatest" (20 U.S.C. §§ 6301(5), 6336(a)(7)). We can debate how much resources should increase with every increment of poverty concentration, but it is enough for the present analysis to define the equity principle in general terms.

In evaluating federal policy against this principle, I will focus on Title I of the Elementary and Secondary Education Act.[2] Although the federal role in K-12 education encompasses more than Title I,[3] this focus is important for several reasons. Title I has long been the single largest federal investment in public schools, totaling $12.7 billion or one-third of federal K-12 spending in 2006. Title I also dictates federal aid allocations under several other education programs totaling $1.6 billion in 2006.[4] While these amounts are small within a combined local, state, and

[1] The finding is supported by research dating back to the Coleman Report (1966, 1967) and supported by Puma et al. (1997), Orfield and Eaton (1996), Rusk and Mosley (1994), and Rumberger and Willms (1992). For a survey of the literature, see Kahlenberg (2003).

[2] More precisely, I will focus on Title I, Part A, the principal stream of federal funds to aid disadvantaged children. Although Title I has four parts (A through D), for simplicity I will use "Title I" to refer to Title I, Part A.

[3] In addition to special education and other direct expenditures, the federal government provides large and highly regressive education subsidies in the form of tax expenditures. In particular, the federal income tax deduction for state and local property taxes confers a sizable benefit on high-income versus low-income school districts (Loeb and Socias 2004). A comprehensive effort to rethink the federal role in school finance would need to take these regressive tax expenditures into account.

[4] Title I allocations determine state allocations under the Even Start family literacy program, Comprehensive School Reform program, educational technology grants, 21st Century Community Learning Centers program, educational programs under the McKinney-Vento Homeless Assistance Act, and half of federal funds for safe and drug-free schools and communities.

federal education budget of $400 billion, Title I provided 5 to 10 percent of total revenue in over 1,200 school districts in 2003-2004. Moreover, Title I will serve for the foreseeable future as the policy vehicle for expanding federal aid to public schools, a prospect that has become more likely in the political environment. Congress has authorized almost twice the current level of spending on Title I, leaving ample room for appropriations to grow. Finally, Title I is the principal federal program whose purpose is to drive systemic education reform and to narrow achievement gaps by race and income. The allocation of Title I aid should bear a close relation to these policy goals.

Title I aid flows from the federal government to states, then to districts, then to schools. This paper examines Title I funding equity at each level: across states, across districts, and across schools. This multi-tiered inquiry reveals the complex ways in which equitable allocations are nested within inequitable allocations, and vice versa. In brief, the data show that Title I funds are inequitably allocated across states. By allocating aid to states in proportion to state per-pupil expenditures, Title I reinforces vast spending inequalities between states to the detriment of poor children in high-poverty jurisdictions. Across districts, aid per poor child generally increases with poverty concentration, but there are significant inequities among districts with comparable poverty. The two Title I formulas designed to target high-poverty districts work not only to the advantage of districts with higher poverty but significantly to the advantage of districts with larger enrollments. As a result, small or mid-sized districts that serve half or more of all poor children in areas of high poverty receive less aid than larger districts with comparable poverty. Finally, Title I disproportionately benefits schools with higher poverty, although equitable allocations across schools are nested within inequitable allocations across districts and across states.

Let me begin with one caveat. Although this paper examines Title I in isolation from state and local funding, federal aid is part of an intergovernmental system of school finance. As such, federal funds are more equitably distributed than either state funds, which are only weakly compensatory toward high-poverty districts, or local funds, which generally disfavor high-poverty districts (Chambers et al. 2000; GAO 1998). However, the net impact of federal aid on school resources depends on how other parts of the system behave. For example, Marguerite Roza and Paul Hill (2004) have shown that Title I, while targeting aid to high-poverty schools, often does not ensure that high-poverty schools have greater resources than low-poverty schools in a given district. The reason is that, although Title I requires districts to provide "comparable" services in high- and low-poverty schools with state and local money as a condition of federal funding, it allows districts to use average salary data in demonstrating comparability across schools (20 U.S.C. § 6321(c)(1), (c)(2)(B)). Because less experienced, lower salaried teachers tend to be concentrated in high-poverty schools, the use of average salary data masks large resource disparities between high- and low-poverty schools. Layering Title I funds on top of such disparities often serves to ensure at best equal, not greater, resources in high- versus low-poverty schools.

Similarly, Nora Gordon (2004) has shown that Title I does not achieve its goal of supplementing, not supplanting, state and local education funds. Using district revenue data from 1991 to 1995, Gordon observed the one-, two-, and three-year effects of sharp increases in Title I aid between 1992 and 1993 that resulted from Census-reported changes in poverty counts. Although increases in Title I aid boosted district revenues dollar-for-dollar in the first year, by the third year school districts had reduced their local share of education funding by an amount

that fully offset the Title I increase. Because Title I aid is typically less than 10 percent of total district revenue, the reduction in local funding does not violate the 90 percent "maintenance of effort" requirement in the statute (20 U.S.C. § 7901(a)).

This paper similarly asks to what extent Title I provides greater resources to high-poverty schools, districts, and states. Unless federal aid actually reaches its intended beneficiaries, there is little point to the perennial hand-wringing over Title I's efficacy in improving the achievement of children living in concentrated poverty.[5] As I show here, the reality of federal school finance policy does not fully match its stated ambitions.

The Title I Formulas

Title I aid is allocated through four statutory formulas whose main features are summarized in Table 1. Each formula distributes money based on poverty but with different emphases. Basic grants serve districts with at least 10 poor children who comprise at least 2 percent of enrollment, while Concentration grants serve districts that have more than 6,500 poor children or a poverty rate greater than 15 percent. Both formulas allocate funds based on the number of poor children in a given district.[6]

The Targeted formula also distributes aid based on poverty, but it uses poverty weights that are intended to direct greater aid to higher-poverty districts. The Education Finance Incentive grant (EFIG) formula has a two-step design. Federal funds are first allocated to states based on numbers of poor children as well as "equity" and "effort" factors intended to reward interdistrict spending equity and high per-pupil spending relative to state fiscal capacity, respectively. Each state then allocates EFIG funds to districts using poverty weights similar to those in the Targeted formula, except that the weights vary with the degree of interdistrict equity in the state (*i.e.*, less equity, heavier weights). Both the Targeted and EFIG formulas serve districts with at least 10 poor children who comprise at least 5 percent of enrollment.

All four formulas include statutory minimum allocations that benefit small states and hold-harmless provisions that limit the extent to which district allocations may be reduced from year to year. All four formulas also include a "state expenditure factor," which I will discuss shortly.

[5] "To the extent that state or local governments offset Title I by lowering their own spending on services to poor students, Title I will have diminished impact on students' educational experiences, and a finding of an insignificant treatment effect (as in the congressionally-mandated *Prospects* study) should be no surprise. Indeed, the common finding that Title I students exhibit no relative improvement could be entirely due to their having experienced few additional resources" (Gordon 2004, 1772).

[6] The child count for allocating Title I funds actually includes not only poor children but also children participating in Temporary Assistance for Needy Families and children living in a foster home or in a non-federal institution for neglected or delinquent youth, although the latter numbers are very small.

Table 1. Principal Elements of the Title I Formulas

	Basic Grants	Concentration Grants	Targeted Grants	Education Finance Incentive Grants
Eligible districts	≥ 10 poor children and > 2% poverty	> 6,500 poor children and > 15% poverty	≥ 10 poor children and ≥ 5% poverty	≥ 10 poor children and ≥ 5% poverty
Poverty factor	Number of poor children	Number of poor children	Weighted child count based on number or percentage of poor children	*State allocations*: Number of poor children *District allocations*: Weighted child count based on number or percentage of poor children (weights vary with equity factor)
State expenditure factor	Yes	Yes	Yes	Yes
Interdistrict equity factor	No	No	No	Yes
State effort factor	No	No	No	Yes
Small-state minimum	Yes	Yes	Yes	Yes
Hold-harmless amounts	Yes	Yes	Yes	Yes

Source: 20 U.S.C. §§ 6332-6337.

As the variation in poverty factors suggests, the degree of equity achieved by Title I depends in part on how much money flows through each formula relative to the others. In 2006, Congress appropriated $6.74 billion for Basic grants, $1.35 billion for Concentration grants, $2.25 billion for Targeted grants, and $2.25 billion for Education Finance Incentive grants. In this paper, I do not examine how permutations in formula appropriations might affect funding equity, focusing instead on how the formulas themselves actually allocate the funds appropriated.

It bears mention, however, that the Targeted and EFIG formulas have acquired particular significance since the passage of NCLB in 2002. Although both formulas were added to Title I in 1994, Congress did not fund either of them until NCLB introduced a requirement that any new Title I money above 2001 appropriations must be allocated through the Targeted formula (20 U.S.C. §§ 1122(a)(3), 1125AA(b)). Recent appropriations statutes have modulated this requirement by dividing new Title I money evenly between Targeted and Education Finance Incentive grants. The two formulas accounted for 35 percent of Title I funds in 2006, and this percentage is likely to grow as Congress considers significant increases in Title I funding. Although both formulas are intended to improve equity, there has been little inquiry into whether they are actually furthering this goal. The analysis here includes a careful look at these formulas.

The data that follow come from three sources. The Budget Office of the U.S. Department of Education provided me with state and district Title I allocations by formula for fiscal year 2006. Title I allocations are based on the most updated district enrollment and poverty data from the Census Bureau. The 2006 allocations are based on district enrollment and poverty data for 2003, available from the Census Bureau's Small Area Income and Poverty Estimates (U.S. Census

Bureau 2003). Throughout the paper, I adjust Title I allocations for geographic cost differences using state- or district-level values of the Comparable Wage Index (CWI) for 2004, the most recent year available (Taylor and Fowler 2006).[7]

Equity Across States

If Title I dollars were targeted to areas of high poverty, we would expect to see a positive relationship between poverty concentration and aid per poor child. Across states, however, the reality is otherwise. Figure 1a plots each state's Title I aid per poor child in 2006 against the poverty rate among its public schoolchildren. Overall, Title I aid per poor child *decreases* as state poverty increases. Whereas the 25 states with the lowest poverty had an average poverty rate of 11.2 percent and received $1,609 per poor child, the 25 states with the highest poverty had an average poverty rate of 18.4 percent and received only $1,382 per poor child.

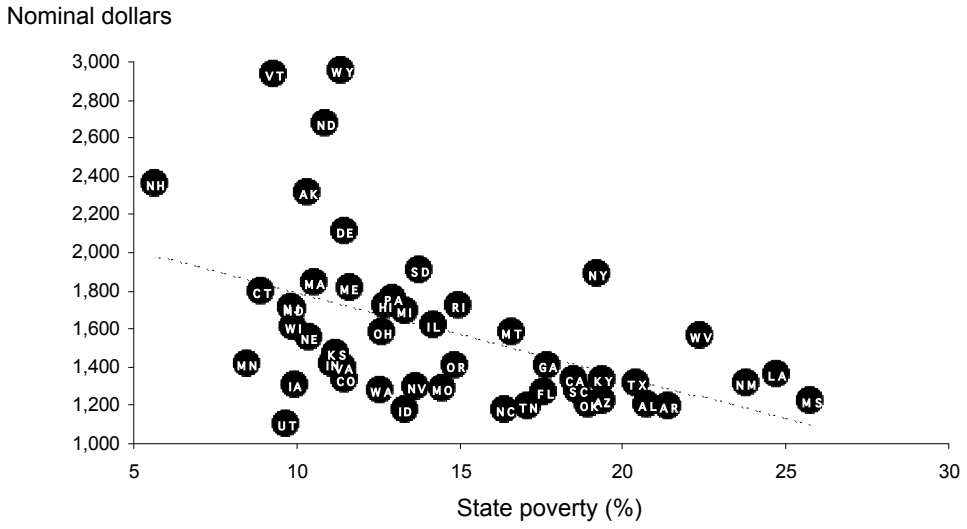


Figure 1a. Title I Aid Per Poor Child by State Poverty, 2006

This interstate comparison is distorted by two factors, however. First, the statutory minimum allocations for small states result in high amounts of aid per poor child in states like Alaska, New Hampshire, North Dakota, Vermont, and Wyoming, all of which have low poverty. Second, the cost of delivering education varies significantly from state to state. A dollar in Massachusetts, a low-poverty state with high Title I aid per poor child, has less educational purchasing power than a dollar in Mississippi, a high-poverty state with low Title I aid per poor child.

[7] State- and district-level CWI estimates are available at http://nces.ed.gov/edfin/prodsurv/data.asp.

Figure 1b omits the seven small states whose Basic grants were determined by the statutory minimum in 2006[8] and also adjusts Title I dollars for geographic cost differences with state-level CWI estimates. Even with these adjustments, the negative relationship between state poverty and Title I aid per poor child remains. The 18 states with poverty rates above the national average (15.8 percent)—comprised entirely of Sunbelt states, except for New York—had an average poverty rate of 19.2 percent and received $1,127 per poor child in cost-adjusted dollars. By contrast, the 25 states with below-average poverty had an average poverty rate of 11.9 percent but received $1,291 per poor child.

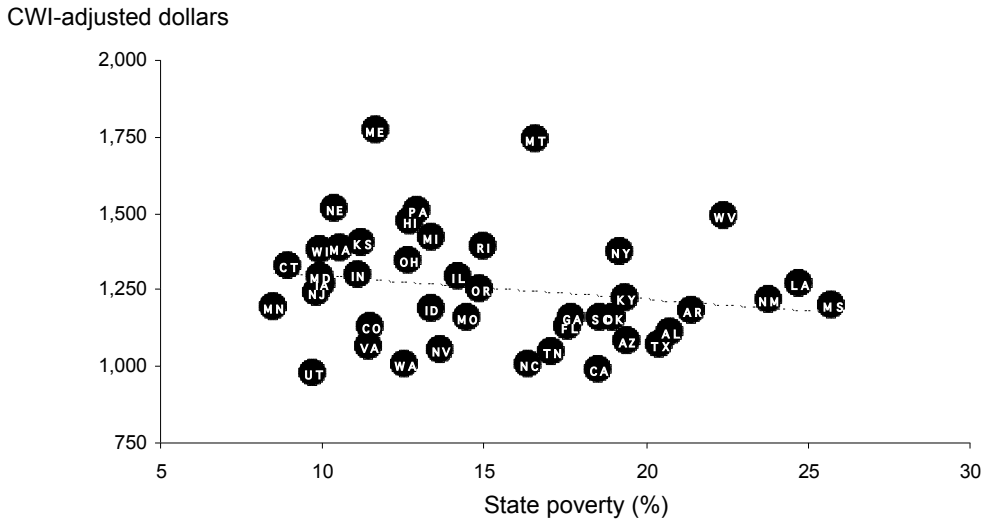


Figure 1b. Cost-Adjusted Title I Aid Per Poor Child by State Poverty, 2006

Since all four Title I formulas allocate money based on numbers of poor children, and since two formulas weight poor children according to poverty concentration, what explains the negative relationship between state poverty rates and Title I aid? The answer is that all four formulas include a "state expenditure factor" that makes each state's Title I allocation a function of its own per-pupil spending.[9] In other words, each state's Title I aid is a product not only of its number and concentration of poor children but also of the overall amount it spends per pupil. The negative correlation in Figures 1a and 1b is largely due to the fact that high-poverty states tend to have low per-pupil spending. Among the 18 states in Figure 1b with above-average poverty, all but two (New York and West Virginia) spent less per pupil than the national average. As a result, these states have low Title I aid per poor child even though they have high poverty.

[8] These states are Alaska, Delaware, New Hampshire, North Dakota, South Dakota, Vermont, and Wyoming. Other states, such as Idaho, Maine, and Montana, received statutory minimum allocations under Title I formulas other than Basic grants. But those formulas distributed less than half of Title I aid in 2006; the small-state minimum had its greatest bite under the Basic formula.

[9] The state expenditure factor is "the average per-pupil expenditure in the State," 20 U.S.C. §§ 6333(a)(1)(B) (Basic grants), 6334(a)(2)(B) (Concentration grants), 6335(b)(1)(B) (Targeted grants), 6337(b)(1)(A)(i) (EFIG), which is defined as each state's current per-pupil spending, regardless of source, in the third fiscal year prior to the allocation year, see 20 U.S.C. § 7801(2). The statute limits the state expenditure factor to a range from 80% to 120% of the national average per-pupil expenditure, see 20 U.S.C. § 6333(a)(1)(B).

Differences in per-pupil spending across states are large even when cost adjustments and weights for disadvantaged students are applied (Liu 2006; Rothstein 2000; Rubenstein 2003; Evans 1999; Murray 1998). Indeed, disparities across states account for a greater share of total interdistrict spending inequality than disparities within states. The poverty factors in the Title I formulas lessen interstate inequality insofar as low-spending states have higher poverty. But the state expenditure factor reinforces interstate inequality by directing greater aid per poor child to high-spending states. As I have shown elsewhere, the net result of these offsetting effects is that Title I does virtually nothing to reduce interstate inequality (Liu 2006).

Figure 1c models the distribution of cost-adjusted Title I aid per poor child by state poverty absent the state expenditure factor. The contrast between Figure 1c and Figure 1b makes clear the regressivity of the state expenditure factor. If Title I aid were distributed based on poverty factors alone, the cost-adjusted amount per poor child would tend to rise with increasing poverty concentration. Moreover, comparing Figure 1b with Figure 1a shows that the state expenditure factor does not reasonably function as a geographic cost adjustment.[10]

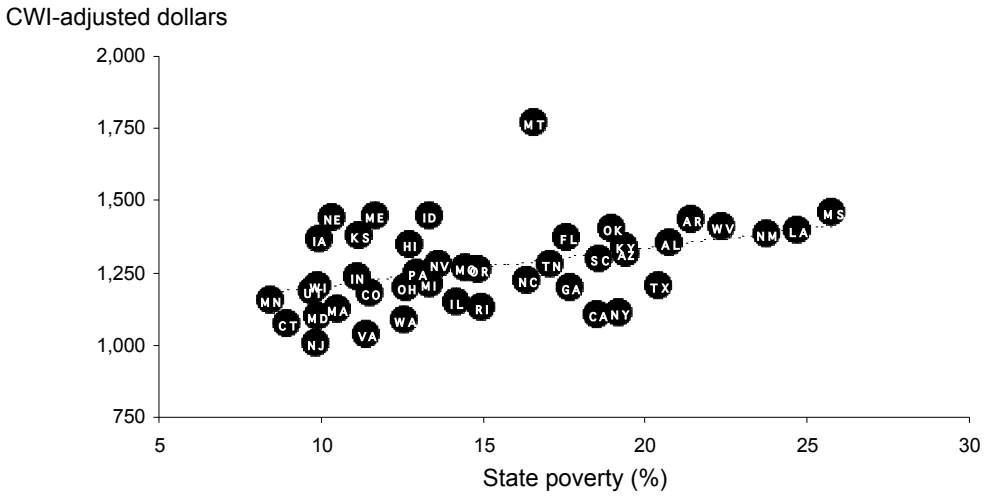


Figure 1c. Cost-Adjusted Title I Aid Per Poor Child by State Poverty, 2006 (excluding small states and state expenditure factor)

The state expenditure factor is sometimes rationalized as an incentive or reward for states that spend more on education. This rationale is flawed for three reasons. First, Title I aid is too small to motivate additional state or local spending. Suppose, for example, that Mississippi had raised its per-pupil spending in 2003 from $5,610 to $5,710 and that its Title I aid had increased proportionally in 2006 from $170 million to $173 million. This $3 million increase is less than 6 percent of the $54 million that the state would have had to spend to increase per-pupil spending

[10] If the state expenditure factor properly served as a cost adjustment, then we would expect aid per poor child in cost-adjusted dollars to increase or at least remain level as state poverty increases. But this is not the case, as Figure 1b shows. "The per-pupil expenditure factor was originally included in the Title I formulas to take into account cross-state differences in the cost of providing education services. While per-pupil expenditures reflect the cost of providing education services to some extent, expenditures are also explained by other factors not related to costs" (GAO 2002, 33).

by $100 for its 541,000 students. States are unlikely to spend an additional dollar just to capture a few extra pennies.[11]

Second, each state's education revenue is a function of its fiscal capacity to support education (wealth per pupil) and its willingness to leverage that capacity (effort). Although both wealth and effort are correlated with state per-pupil revenue, the correlation between wealth and revenue is stronger (Liu 2006). Thus, the state expenditure factor does not reward effort so much as it rewards wealth. Indeed, many wealthy states with low child poverty, such as Connecticut, Maryland, and Massachusetts, exert less effort against their fiscal capacities than poor states with high child poverty, such as Arkansas, Oklahoma, and New Mexico. Yet the wealthy states achieve higher per-pupil spending and thus receive higher Title I aid per poor child.

Third, it seems incongruous that a federal program intended to aid poor children should reward states with high per-pupil spending across the board. Some high-spending states, such as Massachusetts, New Jersey, and Connecticut, devote more resources to high-poverty districts than to low-poverty districts (Education Trust 2006). But other high-spending states have severe inequalities that disfavor high-poverty districts. For example, although Illinois, New York, and Pennsylvania spend significantly more per pupil than the national average, the lowest-poverty districts in these states spend $1,000 to $2,000 more per pupil than the highest-poverty districts.[12] The state expenditure factor indiscriminately rewards high spending without requiring high-spending states to distribute their own resources equitably.

In short, the state expenditure factor works to the disadvantage of high-poverty states with no coherent policy rationale.

Yet the state expenditure factor is not the only element of Title I that contributes to inequity across states, as we will see in a moment. Figures 2a to 2d disaggregate Figure 1b to compare the relationship between aid per poor child and state poverty under each of the Title I formulas.[13] The graph for the Basic formula, which spreads money widely based on numbers of poor children, appears downward sloping as expected due to the state expenditure factor (Figure 2a).

[11] Because Mississippi has high poverty and low per-pupil spending, this example provides an estimate of the upper bound of Title I's incentive effect. For the vast majority of states, the Title I "bonus" generated by incremental state and local spending is far less than 6%. Moreover, the incentive effect is further attenuated in states that share school funding authority with their local jurisdictions. Because a school district's Title I aid increases only when *state* per-pupil spending increases, Title I's incentive effect on *local* expenditures is negligible. The remote prospect of raising the state per-pupil average is unlikely to affect *local* school finance decisions.

[12] As used here, "highest-poverty districts" are the districts with highest poverty that collectively serve 25% of the state's poor children, while "lowest-poverty districts" are the districts with lowest poverty that collectively serve 25% of the state's poor children (Education Trust 2006).

[13] Figures 2a to 2d exclude states that received small-state minimum allocations under the respective formula in 2006. Thus, Figures 2a (Basic) and 2b (Concentration) exclude Alaska, Delaware, New Hampshire, North Dakota, South Dakota, Vermont, and Wyoming. Figure 2d (EFIG) excludes those seven states plus Idaho and Montana, while Figure 2c (Targeted) excludes the nine states just mentioned plus Maine, Nebraska, and Rhode Island.

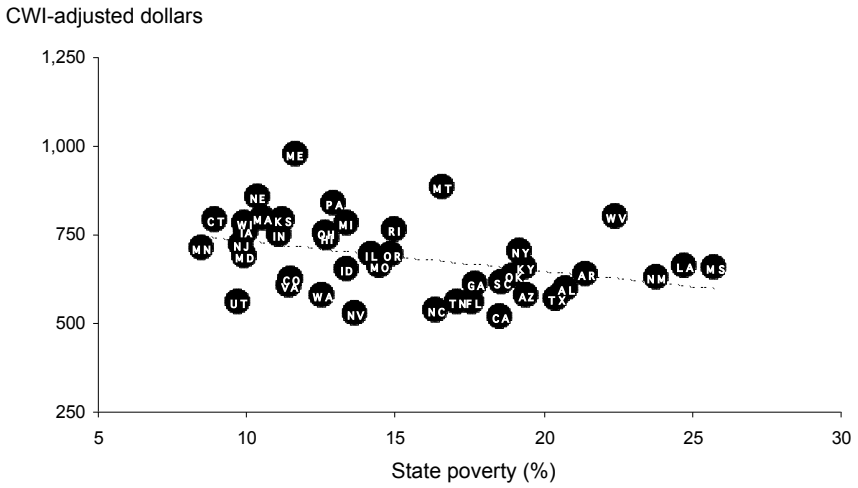


Figure 2a. Basic Aid Per Poor Child by State Poverty, 2006 (excluding small states)

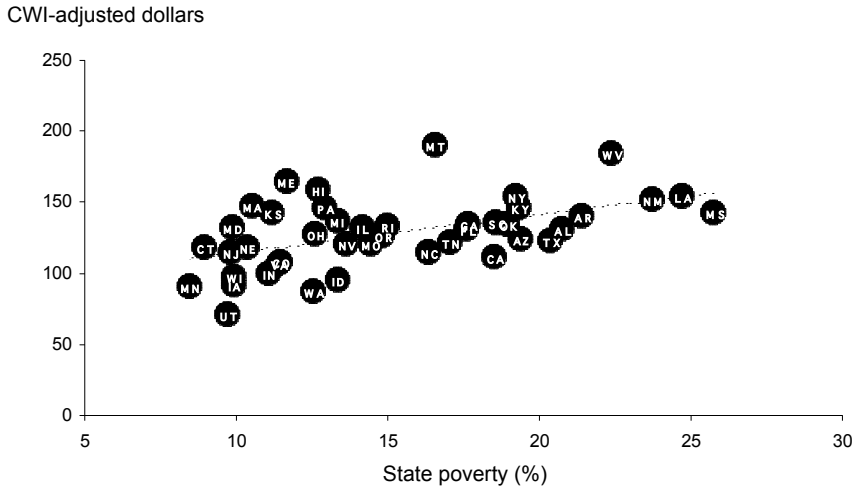


Figure 2b. Concentration Aid Per Poor Child by State Poverty, 2006 (excluding small states)

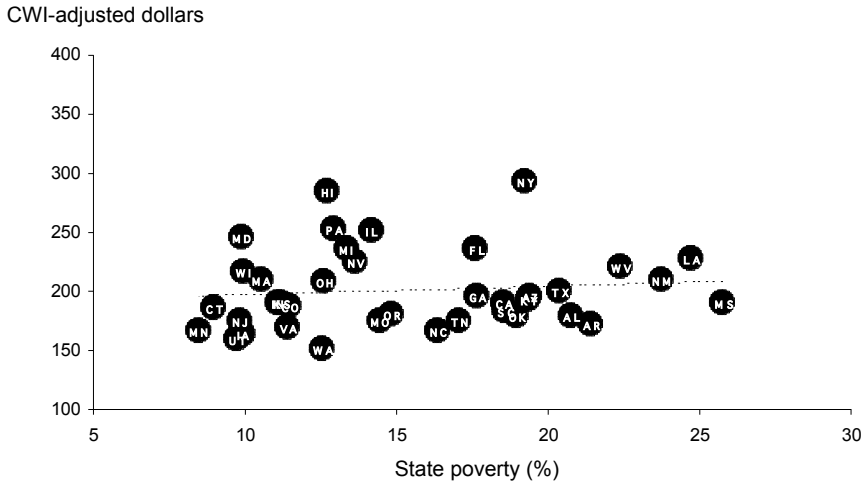


Figure 2c. Targeted Aid Per Poor Child by State Poverty, 2006 (excluding small states)

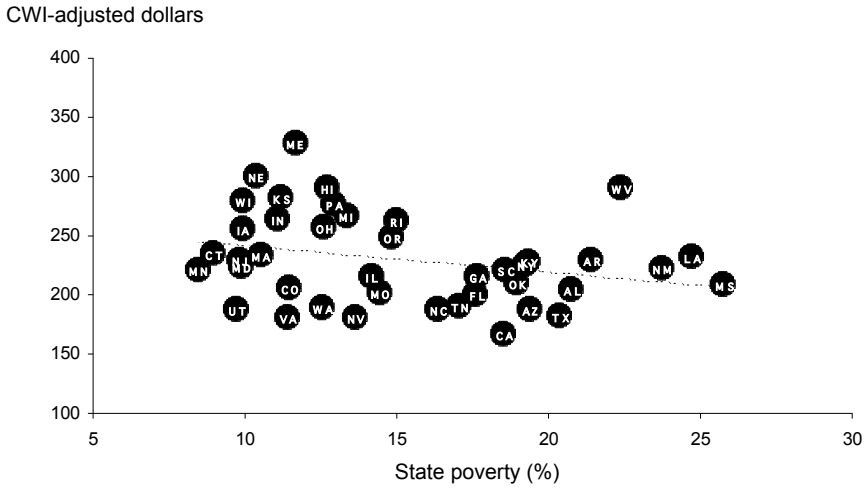


Figure 2d. EFIG Aid Per Poor Child by State Poverty, 2006 (excluding small states)

The graph for Education Finance Incentive grants is similar (Figure 2d). Although the EFIG formula aims to reward effort and equity in state finance systems, these factors play only a minor role in the formula. The effort factor is defined as the ratio between a state's per-pupil spending and its per-capita income, relative to the national average.[14] But the statute restricts these values to a minimum of 0.95 and a maximum of 1.05, a range so narrow that all but nine states were assigned the minimum or maximum value in 2006. Similarly, the equity factor—defined as 1.30 minus the enrollment-weighted coefficient of variation in district spending (with enrollment weighted for poverty)—produces little variation. In 2006, the values for 38 states fell within a range from 1.10 to 1.20.[15] EFIG allocations to states are principally determined by the same factors that determine Basic allocations, namely, numbers of poor children and the state expenditure factor, hence the resemblance between Figures 2a and 2d.

Interestingly, the relationship between aid per poor child and state poverty is positive under the Concentration formula, notwithstanding the state expenditure factor (Figure 2b). This shows that limiting funding eligibility to districts with more than 15 percent poverty—a poverty rate that approximates the national average (15.8 percent)—is a fairly robust form of targeting across states, even though aid per poor child does not rise with poverty concentration above the eligibility threshold.[16] High-poverty states receive more aid relative to their total population of poor children because a much larger share of their poor children are counted under the Concentration formula. In Figure 2b, 93 percent of poor children in the 10 highest-poverty states were in districts eligible for Concentration grants, compared to only 50 percent of poor children in the 10 lowest-poverty states. Concentration grants achieve the most equitable distribution of Title I aid across states.

What is perhaps surprising is that the Targeted formula, though explicitly designed to direct greater aid to areas of higher poverty, provides roughly the same aid per poor child to high-poverty states and low-poverty states (Figure 2c). Although the state expenditure factor is partly to blame, it does not fully account for the pattern in Figure 2c. For example, Maryland had slightly fewer poor children than Arkansas in 2003 but received nearly 80 percent more Targeted aid in 2006 ($32.8 million versus $18.4 million in nominal dollars). The state expenditure factor accounts for half of the difference in Targeted aid, since Maryland's per-pupil spending exceeded Arkansas' by approximately 40 percent. But the large remaining disparity is striking, since the student poverty rate in Maryland (9.9 percent) was less than half the rate in Arkansas (21.4 percent). What explains this gap?

[14] In passing, I note that this is a somewhat flawed specification of effort. If effort is the degree to which a state leverages its fiscal capacity in support of education, then fiscal capacity must be measured relative to state enrollment. Some states, like California, have high income per capita but only modest income per pupil because school-age children comprise a relatively high share of the population. Other states, like Rhode Island, have modest income per capita but high income per pupil because school-age children comprise a relatively low share of the population. A better specification of effort would be the ratio of a state's per-pupil spending to its income per pupil (or, more simply, a state's total education spending divided by its total income) relative to the national average.

[15] Moreover, the product of the effort and equity factors for 43 states fell within a range of 1.10 and 1.30 in 2006.

[16] Districts with more than 6,500 poor children are also eligible for Concentration grants. But less than half of 1% of districts with 15% or lower poverty have more than 6,500 poor children, while the vast majority of districts with over 15% poverty have fewer than 6,500 poor children. Thus, the 15% poverty threshold is the main eligibility criterion for Concentration grants.

The answer is not that poverty in Maryland, though lower than in Arkansas, attracts more Targeted aid because it is more concentrated at the district level. In fact, the opposite is true. As Table 2 shows, 70 percent of poor children in Arkansas, but only 28 percent in Maryland, were enrolled in districts with more than 20 percent poverty in 2003. None of Maryland's poor children were enrolled in districts with more than 25 percent poverty, while 43 percent of Arkansas' poor children were enrolled in such districts.

Table 2. Number and Percentage of Poor Children Enrolled in Districts of Varying Poverty Concentration, 2003

	District poverty concentration						Total poor children
	≤ 10%	> 10% ≤ 15%	> 15% ≤ 20%	> 20% ≤ 25%	> 25% ≤ 30%	>30%	
Maryland	61,577	5,528	5,835	28,213	0	0	101,153
	60.9%	5.5%	5.8%	27.9%	0	0	100%
Arkansas	1,293	13,282	17,067	28,039	23,572	21,847	105,100
	1.2%	12.6%	16.2%	26.7%	22.4%	20.8%	100%

Source: U.S. Census Bureau, Small Area Income and Poverty Estimates (School District Files), http://www.census.gov/hhes/www/saipe/school/sd03layout.html.

Instead, the explanation lies in the mechanism that the Targeted formula uses to direct more aid to higher-poverty districts. The formula distributes aid based on a "weighted child count" that assigns increasing weights to poor children as their percentage or number in a district increases. For a given district, the weighted child count is either (*a*) the sum of

1.0 * the number of poor children comprising ≤ 15.58% of enrollment,
1.75 * the number of poor children comprising > 15.58% and ≤ 22.11% of enrollment,
2.5 * the number of poor children comprising > 22.11% and ≤ 30.16% of enrollment,
3.25 * the number of poor children comprising > 30.16% and ≤ 38.24% of enrollment, and
4.0 * the number of poor children comprising > 38.24% of enrollment,

or (*b*) the sum of

1.0 * the number of poor children up to 691,
1.5 * the number of poor children from 692 up to 2,262,
2.0 * the number of poor children from 2,263 up to 7,851,
2.5 * the number of poor children from 7,851 up to 35,514, and
3.0 * the number of poor children above 35,514,

whichever is greater.

In application, the weighting formula—specifically, the weighting of poor children based on their sheer number under option (*b*) instead of their share of district enrollment under option (*a*)—substantially advantages large districts. The reason is that, at a given level of poverty, districts with enrollment above a certain threshold (typically 5,000 to 10,000 students) attain a higher weighted child count under option (*b*) than under option (*a*). Further, among districts where option (*b*) produces a higher count than option (*a*), larger districts draw greater aid per poor child than smaller districts with comparable poverty under option (*b*).

Table 3 illustrates these effects by showing average weights per poor child under the Targeted formula in districts of varying size and poverty concentration. Across each row, average weights increase as poverty concentration increases, although the relationship becomes weaker as district size increases. Down each column, poverty weights increase with district size. The enrollment threshold where the advantage of large size begins to accrue increases with poverty concentration, but even at higher levels of poverty (30 to 35 percent), the threshold is modest (around 10,000 students). Above the threshold, the advantage of size can be quite substantial. At 20 to 25 percent poverty concentration, for example, the average weight per poor child in a 25,000-student district is 30 to 45 percent greater than in a 5,000-student district. Moreover, poor children in a 50,000-student district at any poverty level have the same average weight as their counterparts in a 25,000-student district with *twice* the level of poverty.

Table 3. Average Weights Per Poor Child Under the Targeted Formula in School Districts of Varying Size and Poverty Concentration

	District poverty concentration					
Enrollment	10%	15%	20%	25%	30%	35%
1,000	1.00	1.00	1.17	1.37	1.56	1.80
5,000	1.00	1.04*	1.17	1.37	1.56	1.80
10,000	1.15*	1.27*	1.33*	1.41*	1.56	1.80
25,000	1.41*	1.61*	1.70*	1.76*	1.80*	1.88*
50,000	1.70*	1.80*	1.96*	2.07*	2.14*	2.19*
100,000	1.96*	2.14*	2.23*	2.28*	2.32*	2.35*
200,000	2.23*	2.32*	2.42*	2.54*	2.61*	2.67*

* Weighted child count based on *number* not percentage of poor children in the district.

As Table 4 shows, this weighting system is a substantial part of the reason that Maryland receives much higher Targeted aid than Arkansas. In Maryland, two-thirds of poor children are concentrated into four large districts, each enrolling over 100,000 students, with an average poverty rate of 11.5 percent. By contrast, two-thirds of Arkansas's poor children are spread across 72 districts with higher average poverty (20.4 percent) but much smaller enrollments (an average of 4,552) than in Maryland's four large districts. As a result, the average weight per poor

child under the Targeted formula is 34 percent greater in Maryland (1.93) than in Arkansas (1.44), even though Arkansas has much higher levels of poverty.

Table 4. Average Weights Per Poor Child Under the Targeted Formula in Maryland, Arkansas, and Districts With the Most Poor Children (based on 2003 poverty data)

	School-age population	Poor children	Poverty rate (%)	Weighted child count	Avg weight per poor child	
					Nominal	Relative[†]
Maryland (total)	1,020,230	101,153	9.9	187,546	1.93	1.08
Baltimore City	114,120	27,430	24.0	63,173	2.30	1.29
Prince George's County	161,755	15,813	9.8	34,131	2.16	1.21
Montgomery County	166,625	12,345	7.4	25,461	2.06	1.16
Baltimore County	134,134	10,913	8.1	21,881	2.00	1.12
Arkansas (total)	490,995	105,100	21.4	151,058	1.44	0.81
Little Rock	30,928	6,673	21.6	11,870	1.78	1.00
Fort Smith	15,119	3,608	23.9	5,740	1.59	0.89
Pulaski County	23,671	3,353	14.2	5,230	1.56	0.88
North Little Rock	10,641	2,942	27.6	4,408	1.50	0.84
West Memphis	6,161	2,182	35.4	3,956	1.81	1.02
Springdale	13,678	2,152	15.7	2,883	1.34	0.75
Pine Bluff	6,784	2,108	31.1	3,399	1.61	0.90
Rogers	14,615	1,871	12.8	2,461	1.32	0.74
Fayetteville	9,844	1,759	17.9	2,293	1.30	0.73
Conway	9,345	1,629	17.4	2,098	1.29	0.72
Hot Springs	4,185	1,608	38.4	3,102	1.93	1.08
Jonesboro	5,723	1,606	28.1	2,397	1.49	0.84

[†] Relative to the national average weight per poor child under the Targeted formula based on 2003 poverty data (1.78).

Source: The school-age population and number of poor children for each district are available from U.S. Census Bureau, Small Area Income and Poverty Estimates (School District Files), http://www.census.gov/hhes/www/saipe/school/sd03layout.html. Dividing the number of poor children by the school-age population gives the poverty rate. The weighted child count is derived from the Targeted formula. The weighted child count divided by the number of poor children gives the average weight per poor child.

Because the Targeted formula allocates aid in proportion to each state's share of the total weighted child count among all states, the amount of each state's Targeted grant is determined by its *relative* not nominal weight per poor child. Poor children in Arkansas have a nominal weight of 1.44, but this weight is only 81 percent of the average weight per poor child across all states (1.78). Meanwhile, the nominal weight of 1.93 among Maryland's poor children is 108 percent of the national average. Thus, in computing aid allocations, the Targeted formula assigns a relative weight of 0.81 to poor children in Arkansas and 1.08 to poor children in Maryland.

The clustering of poor children into small high-poverty districts is most prevalent in high-poverty states throughout the South. The relative weight per poor child is lower in Alabama (0.90), Arkansas (0.81), Kentucky (0.86), Mississippi (0.90), Oklahoma (0.84), South Carolina (0.86), and West Virginia (0.82) than in states with lower poverty such as Illinois (1.13), Maryland (1.08), Michigan (0.94), and Nevada (1.25) where the majority of poor children attend school in a few large districts.

On the whole, average weights increase with state poverty concentration, but only modestly. In Figure 2c, the average weight per poor child in the 17 states with above-average poverty is only 17 percent greater than the average weight in the 21 states with below-average poverty. If we leave New York aside, the average weight per poor child in the 10 highest-poverty states is only 15 percent greater than the average weight in the 10 lowest-poverty states. In sum, the weighted child count in the Targeted formula does little to direct greater aid per poor child to states with higher poverty.

To recap:

- Title I generally provides less aid per poor child to states with higher rates of poverty. The main reason is that Title I allocates aid to states based not only on poverty but also on state per-pupil spending. Because high-poverty states tend to be low-spending, they receive low Title I aid per poor child.
- The state expenditure factor does not reasonably function as a geographic cost adjustment. Nor does it properly serve as an incentive or reward for higher state per-pupil spending.
- The Concentration formula is the only Title I formula that directs greater aid to states with higher poverty, despite the state expenditure factor. Limiting Title I funding to districts with more than 15 percent poverty turns out to be a fairly robust form of targeting across states.
- The Targeted formula does not produce a positive relationship between aid per poor child and state poverty. Although the state expenditure factor is partly to blame, so is the formula used to weight poor children by poverty concentration. The funding advantage for states whose poor children are clustered into large school districts diminishes the formula's efficacy in directing greater aid to states with higher poverty.

Equity Across Districts

Let us now examine the relationship between Title I aid per poor child and district poverty. Figure 3a plots this relationship in cost-adjusted dollars for 6,858 school districts that received Title I money in 2006. These are districts with at least 5 percent poverty and 100 poor children in 2003, and they do not include districts in the seven states receiving small-state minimums under the Basic formula. Altogether these districts accounted for 94 percent of total Title I funds and 94 percent of the nation's poor children. To adjust district-level allocations for geographic cost differences, I applied district-level CWI values for 2004. The dark curve shows the level of aid per poor child by district-level poverty in a moving average of 100 districts weighted by poverty enrollment.

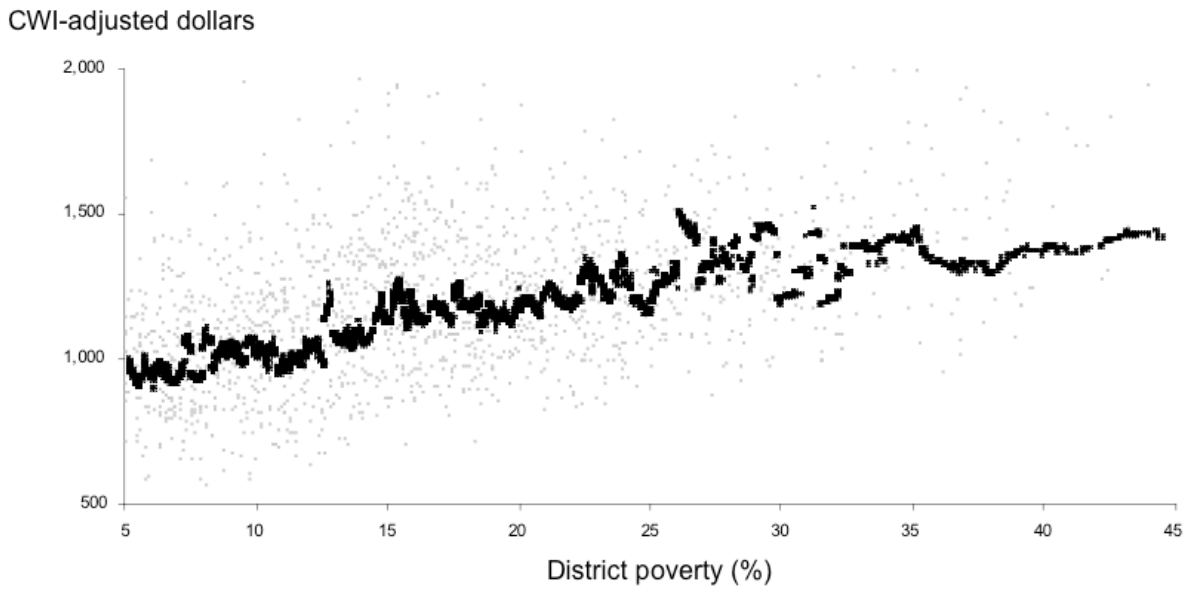


Figure 3a. Cost-Adjusted Title I Aid Per Poor Child by District Poverty, 2006 (excluding small states)

As Figure 3a shows, Title I aid per poor child increases with district poverty. The moving average increases by roughly $75 per poor child for every five percentage point increase in district-level poverty. But the slope of the moving average appears to flatten at the highest poverty concentrations. The average level of aid per poor child in districts with more than 35 percent poverty is comparable to the level in districts with 30 to 35 percent poverty. Moreover, the strength of the association between aid per poor child and poverty concentration is modest. The enrollment-weighted correlation coefficient is 0.49, and the weighted standard deviations of the values comprising the points along the moving average range from $100 to over $300, with a mean of $203.17. Despite the positive association between aid and poverty concentration, districts with comparable poverty receive significantly different levels of aid per poor child.

Figure 3b plots cost-adjusted aid per poor child by district poverty level absent the state expenditure factor. The dark curve shows the new moving average, while the light curve shows the moving average from Figure 3a for comparison. Without the state expenditure factor, Title I aid would increase by approximately $90 per poor child for every five percentage point increase in district poverty. The enrollment-weighted correlation is stronger (0.58), and the weighted standard deviations corresponding to the points along the moving average range from $95 to $240, with a mean of $166. Further, in contrast to Figure 3a, the upward slope of the moving average extends through higher levels of poverty. Because the highest-poverty districts are predominately located in high-poverty states with low per-pupil spending, eliminating the state expenditure factor would boost Title I aid per poor child in these districts considerably.

[17] In this discussion, when the term "weighted" or "enrollment-weighted" is used to describe a correlation coefficient, moving average, standard deviation, or coefficient of variation, I am referring to weighting by enrollment of poor children in each district unless otherwise specified.

Figure 3b. Cost-Adjusted Title I Aid Per Poor Child by District Poverty, 2006 (excluding small states and state expenditure factor)

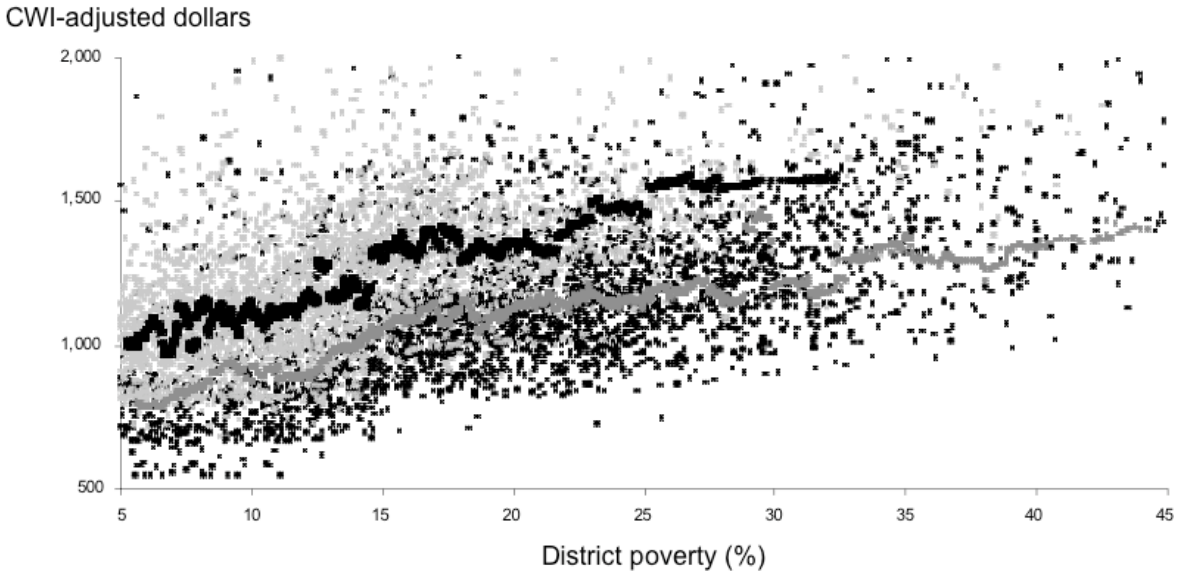


Figure 3c. Cost-Adjusted Title I Aid Per Poor Child by District Poverty, 2006 (excluding small states)

It may seem odd that Title I aid per poor child is positively associated with district poverty yet negatively associated with state poverty at the same time. But this is easily explained by looking more closely at the variation in district-level aid per poor child at each level of poverty. Figure 3c plots the same data as Figure 3a with colors distinguishing two sets of districts. The dark-colored dots show districts in states with above-average poverty, and the light-colored dots show districts in states with below-average poverty. As the moving averages indicate, districts in low-poverty states tend to receive higher aid per poor child than districts in high-poverty states at

every poverty concentration. As a result, districts with 20 to 30 percent poverty in high-poverty states receive roughly the same level of aid as districts with 10 to 15 percent poverty in low-poverty states. Although Title I aid per poor child generally increases with district poverty, school districts in high-poverty states comprise the "underbelly" of the distribution, producing a negative relationship between aid per poor child and state poverty.

We can gain further insight into the variability of district-level aid per poor child at each level of poverty by disaggregating the Title I formulas, as we did earlier for state allocations. Figures 4a to 4d decompose Figure 3b to show cost-adjusted aid per poor child by district poverty under each of the four formulas absent the state expenditure factor.[18] While the state expenditure factor helps explain why some districts receive less aid than others with comparable poverty, I set this factor aside in order to focus here on other sources of inequity between districts.

As expected, the Basic and Concentration formulas provide a fairly constant level of aid per poor child across poverty concentrations (Figures 4a and 4b). In both figures, which use cost-adjusted dollars, the slight dip in the enrollment-weighted moving average at approximately 30 percent poverty reflects the higher costs of educational services in large districts such as Detroit, New York, Newark, and St. Louis, while the slightly higher levels of aid at 35 percent poverty and above reflect the lower educational costs in high-poverty districts throughout the South and Southwest. Note that the Concentration formula, by predominantly serving districts with more than 15 percent poverty, contributes to equity in the aggregate distribution below that threshold (though not above it).

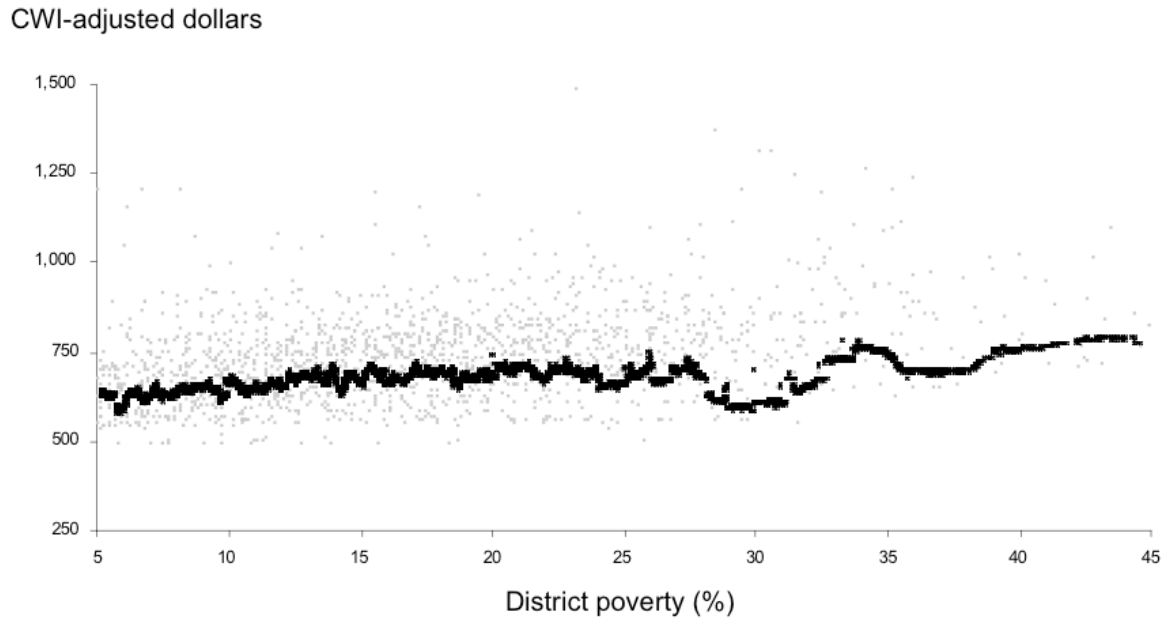


Figure 4a. Basic Aid Per Poor Child by District Poverty, 2006 (excluding small states and state expenditure factor)

[18] As with the decomposition of state-level aid by formula in Figures 2a to 2d, Figures 4a to 4d exclude districts in states that received small-state minimum allocations under the respective formula in 2006. For a list of those states by formula, see *supra* note 13.

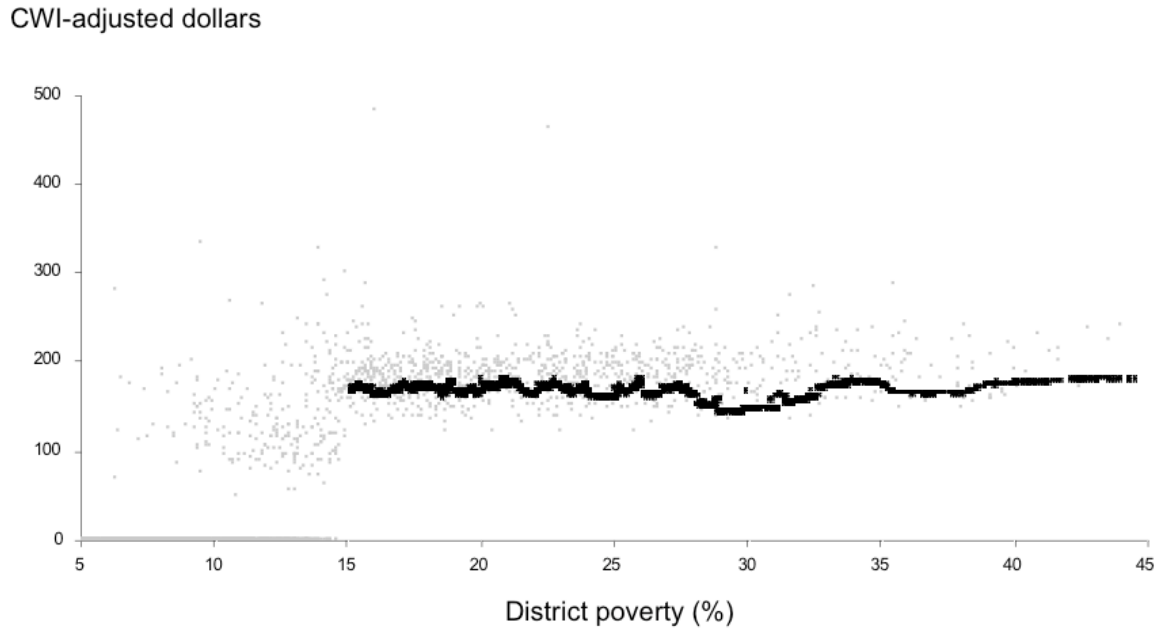


Figure 4b. Concentration Aid Per Poor Child by District Poverty, 2006 (excluding small states and state expenditure factor)

Figures 4c and 4d show that the Targeted and Education Finance Incentive grants are primarily responsible for the positive relationship between Title I aid per poor child and district poverty. Although EFIG allocations from the federal government to the states are based on numbers of poor children and not poverty concentrations, EFIG allocations from states to school districts are, like Targeted grants, based on a weighted child count computed with poverty weights that increase with the percentage or number of poor children in a given district.[19] Under both formulas, aid per poor child generally increases with district poverty.

In analyzing equity between districts, however, three features of Figures 4c and 4d deserve attention. First, the moving averages ride near the top of the distribution except at the highest levels of poverty. Second, the moving averages have some sharp discontinuities. In Figure 4c, for example, the moving average includes apparent outliers at 14, 25, and 30 percent poverty. Third, aid per poor child varies considerably more at a given poverty concentration under the Targeted and EFIG formulas than under the Basic and Concentration formulas.[20] While accounting for much of the positive association between Title I aid per poor child and district poverty, Targeted and Education Finance Incentive grants also account for much of the dispersion that weakens the association.

[19] Moreover, poverty weights under EFIG increase more steeply with district poverty in states with higher levels of interdistrict spending inequality. In other words, states with more inequitable systems of school finance are required to target EFIG funds more aggressively to the highest-poverty districts.

[20] The average enrollment-weighted coefficient of variation for the values comprising each point of the moving averages in Figures 4a to 4d is 0.136 for Basic grants, 0.156 for Concentration grants, 0.211 for Targeted grants, and 0.317 for EFIG.

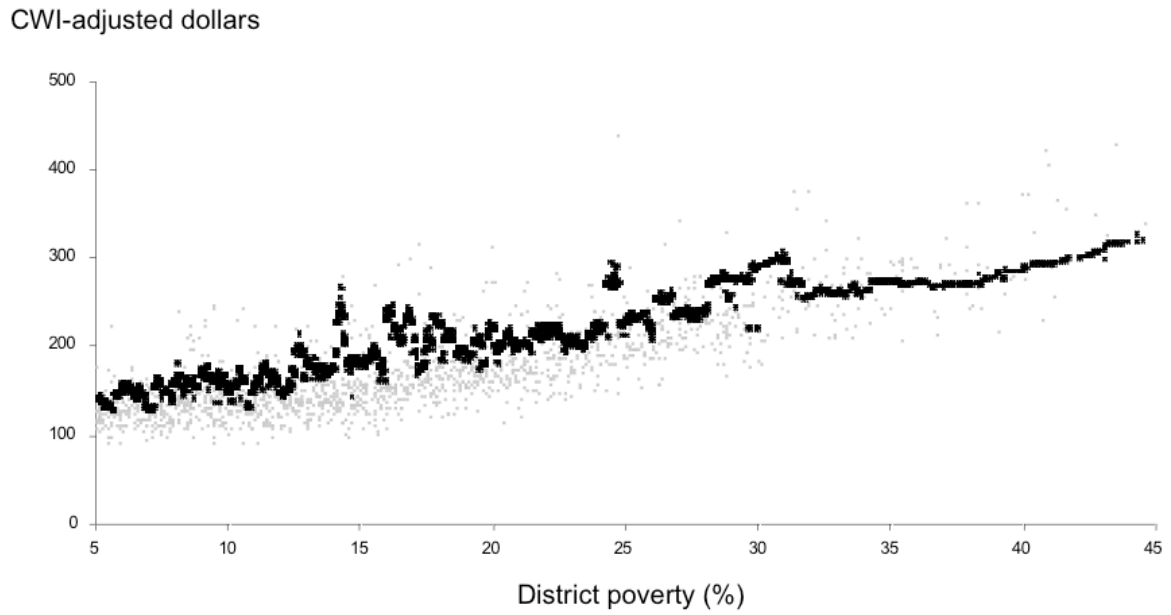


Figure 4c. Targeted Aid Per Poor Child by District Poverty, 2006 (excluding small states and state expenditure factor)

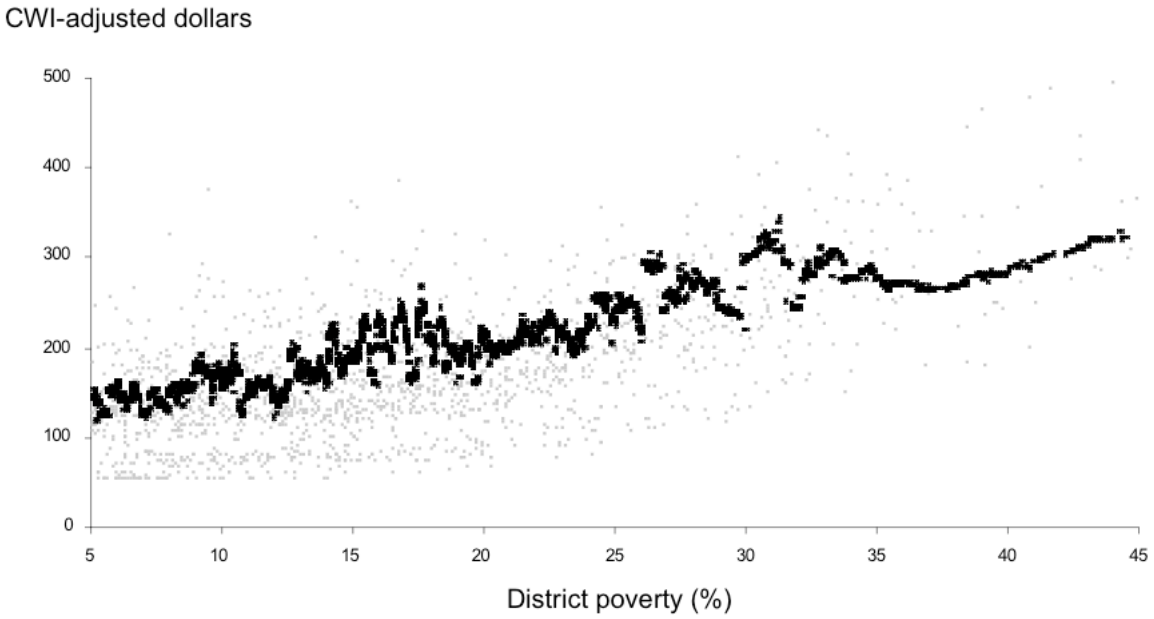


Figure 4d. EFIG Aid Per Poor Child by District Poverty, 2006 (excluding small states and state expenditure factor)

All three of these features are artifacts of computing weighted child counts based on the sheer number not percentage of poor children in a given district. As discussed earlier, this counting method works to the advantage of large districts. The enrollment-weighted moving averages in Figures 4c and 4d sit atop the bulk of the distribution because the averages reflect the

weight of a few large districts that receive above-average aid per poor child at each level of poverty. Moreover, the discontinuities in the moving averages are attributable to some very large districts whose poor children have much higher weights than their peers in smaller districts with comparable poverty. Consider, for example, the weighted child counts under the Targeted formula in 25 school districts with roughly 30 percent poverty (Table 5). The relative weight per poor child varies from 0.85 in Butler County, Alabama, to 1.00 in Gary, Indiana, to 1.63 in Los Angeles. As district size increases, so does the weight per poor child. New York, Los Angeles, Chicago, Detroit, Dallas, and other large districts pull the moving average in Figure 4c up sharply around 30 percent poverty. Baltimore City, Memphis, and Miami-Dade County likewise boost the moving average around 25 percent poverty, as do Charlotte-Mecklenburg County, Clark County (Las Vegas), and Palm Beach County around 14 percent poverty.[21]

Table 5 shows significant inequities in the treatment of districts with comparable poverty under the Targeted formula. For every dollar given to poor children in Los Angeles, for example, their peers in nearby Inglewood received 63 cents and only 56 cents in Kings Canyon. For every dollar given to poor children in Dallas, their peers in El Paso received 81 cents and only 60 cents in Texarkana. These inequities can be seen more generally in Figures 5a, which shows Targeted aid per poor child by poverty level (absent the state expenditure factor) with districts distinguished on the basis of size. The poverty weighting system produces a "layer cake" funding pattern with larger districts on top at each level of poverty. Although larger districts tend to have higher costs, Figure 5b shows that the layer cake pattern persists even after applying cost adjustments, albeit with some "marbling." Figures 5c and 5d show a less distinctly layered but similar pattern under the EFIG formula.

The funding advantage for large districts would have limited practical significance if it were true that major urban districts such as New York, Los Angeles, and Chicago serve most of the nation's poor children living in concentrated poverty. But that is not the case. Table 6 shows the number of poor children in school districts with greater than 15 percent poverty and at least 10 poor children in 2003, broken down by district size and poverty concentration. These 5,474 districts enrolled nearly 6.1 million poor children, comprising 73 percent of all poor children in the country. Sixty-two percent of these poor children were enrolled in districts with 50,000 or fewer students, and 48 percent were in districts with 25,000 or fewer students.[22] Moreover, among the 3.1 million poor children in districts with more than 25 percent poverty, half were in districts with 50,000 or fewer students, and 40 percent were in districts with 25,000 or fewer students. And among the 583,000 poor children in districts with more than 35 percent poverty, nearly three out of four (74 percent) were in districts with 50,000 or fewer students, and 61 percent were in districts with 25,000 or fewer students. Consistent with Figure 5a, the last two columns of Table 6 show that, while each group of districts from small to large has similar average poverty (from 22 percent to 27 percent), they have quite different average weights per poor child (from 0.78 to 1.59) under the Targeted formula.

[21] Large districts similarly account for discontinuities in the moving average of EFIG allocations in Figure 4d around 17% poverty (*e.g.*, Atlanta, Louisville, and Orange County, Florida), around 27% poverty (*e.g.*, Philadelphia and Fort Worth), and around 31% (*e.g.*, Los Angeles, Detroit, and Long Beach).

[22] In fact, counting districts of all sizes and poverty concentrations, over two-thirds (67%) of the nation's 8.4 million poor children attended school in districts with fewer than 50,000 students in 2003, and over half (54%) were in districts with fewer than 25,000 students.

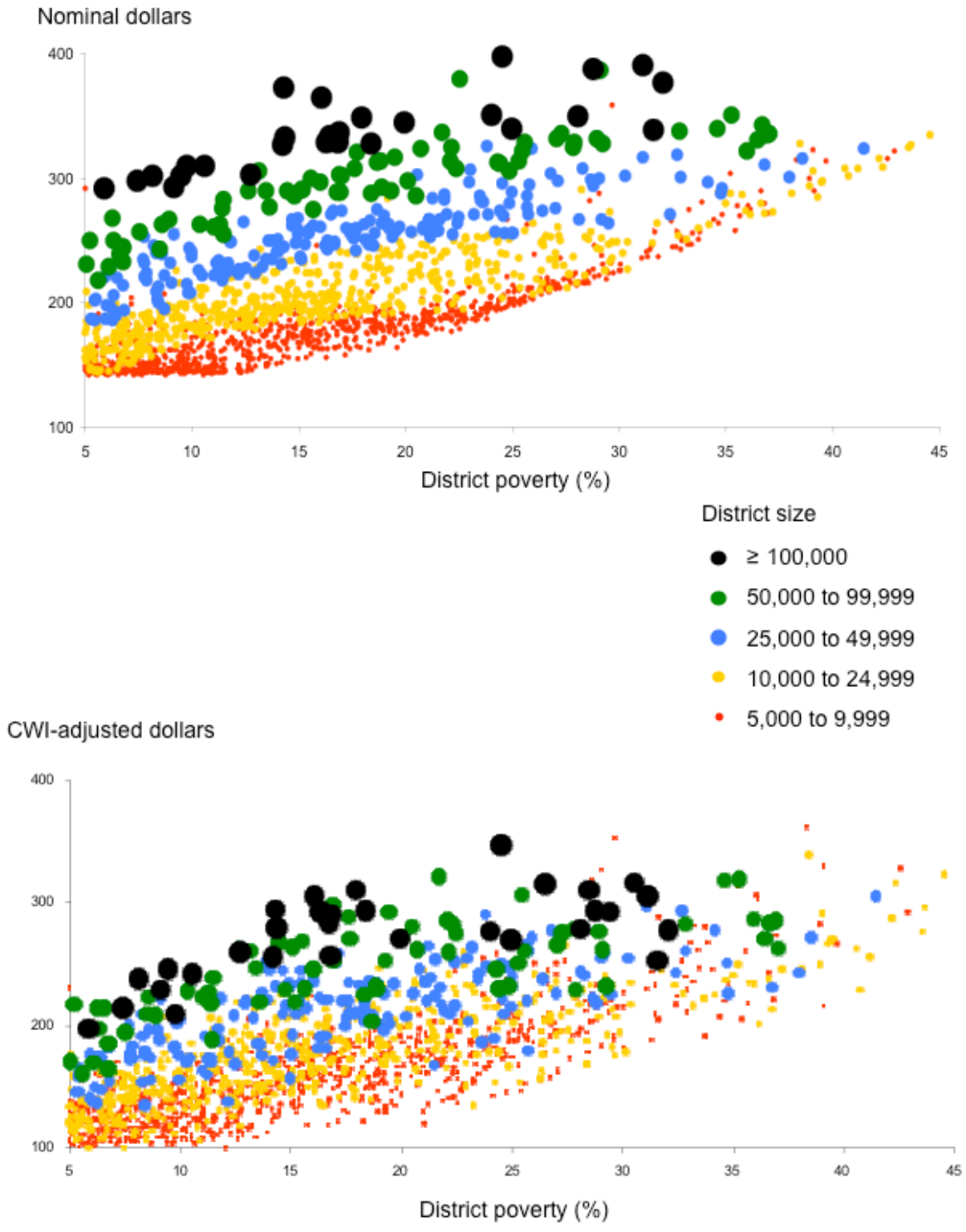
Table 5. Weighting of Poor Children Under the Targeted Formula in 25 Districts With ~30 Percent Poverty (based on 2003 poverty data)

	School-age population	Poor children	Poverty rate (%)	Weighted child count	Average weight per poor child	
					Nominal	Relative[†]
Los Angeles, CA	886,436	270,712	30.5	788,977[*]	2.91	1.63
Chicago, IL	524,587	149,574	28.5	425,563[*]	2.85	1.60
Detroit, MI	213,379	66,424	31.1	176,113[*]	2.65	1.49
Dallas, TX	187,119	60,014	32.1	156,883[*]	2.61	1.47
Milwaukee, WI	117,181	32,924	28.1	76,908[*]	2.34	1.31
St. Louis, MO	61,722	17,871	29.0	39,276[*]	2.20	1.24
Ysleta (El Paso), TX	44,071	13,704	31.1	28,858[*]	2.11	1.19
Montebello, CA	38,887	11,206	28.8	22,613[*]	2.02	1.13
Inglewood, CA	26,567	7,622	28.9	13,768[*]	1.81	1.02
Gary, IN	20,801	6,607	31.8	11,738[*]	1.78	1.00
St. Landry Parish, LA	17,758	5,607	31.6	9,738[*]	1.74	0.98
Dougherty County, GA	18,801	5,715	30.4	9,954[*]	1.74	0.98
Pontiac, MI	15,810	4,724	29.9	7,972[*]	1.69	0.95
Youngstown, OH	14,448	4,211	29.1	6,946[*]	1.65	0.93
Kings Canyon, CA	9,471	2,991	31.6	4,901	1.64	0.92
Covington, KY	6,196	1,961	31.6	3,220	1.64	0.92
Pine Bluff, AR	6,784	2,108	31.1	3,399	1.61	0.90
Florence, SC	4,088	1,258	30.8	2,008	1.60	0.90
Emanuel County, GA	4,233	1,299	30.7	2,068	1.59	0.89
Picayune, MS	4,299	1,310	30.5	2,070	1.58	0.89
Lincoln County, WV	3,661	1,118	30.5	1,771	1.58	0.89
Bernalillo, NM	4,737	1,434	30.3	2,250	1.57	0.88
Texarkana, TX	5,632	1,691	30.0	2,635	1.56	0.88
Halifax County, NC	6,372	1,896	29.8	2,939	1.55	0.87
Butler County, AL	3,738	1,079	28.9	1,641	1.52	0.85

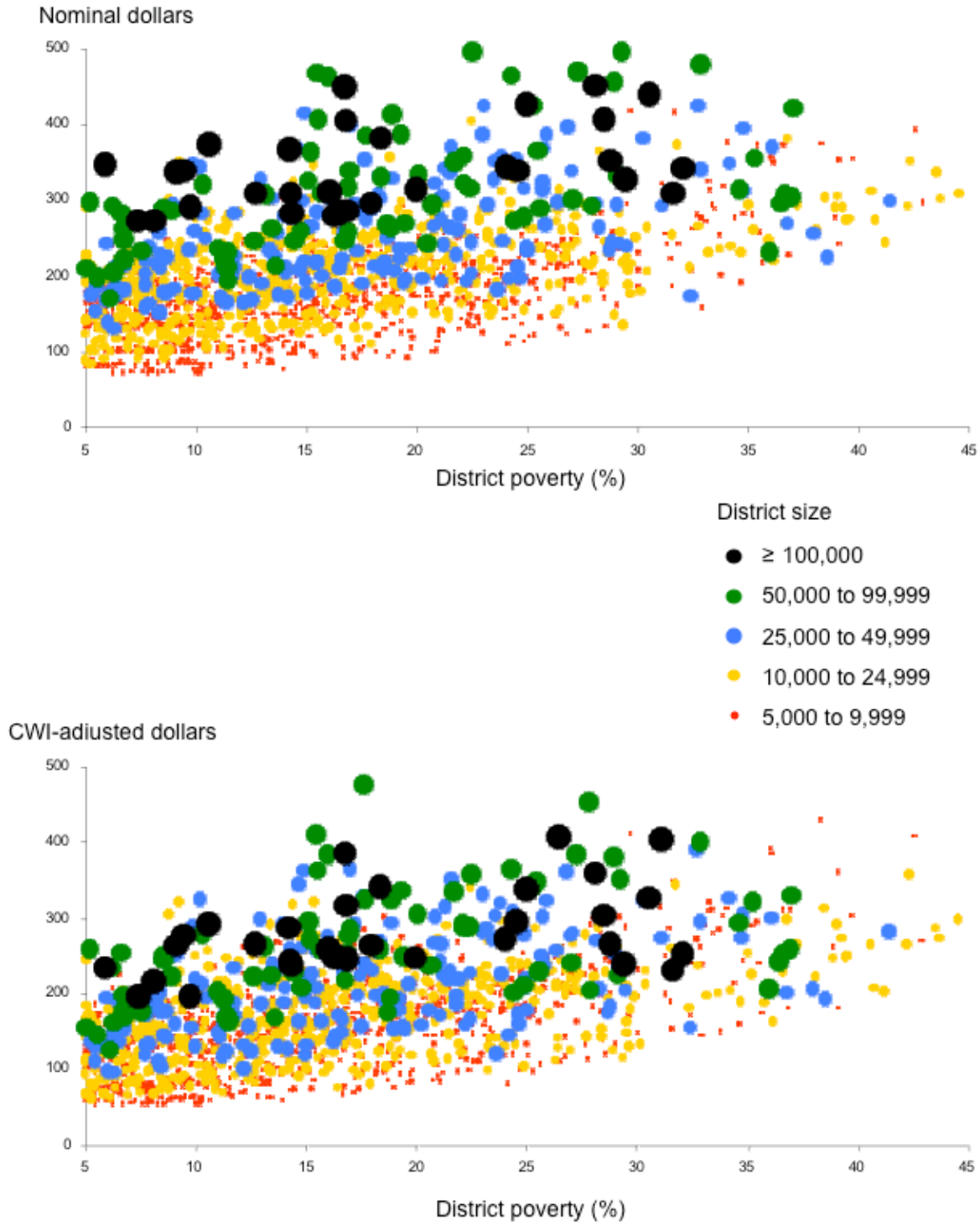
[†] Relative to the national average weight per poor child under the Targeted formula based on 2003 poverty data (1.78).

[*] Weighted child count based on *number* not percentage of poor children in the district.

Source: Same as Table 4.



Figures 5a and 5b. Targeted Aid Per Poor Child by District Poverty, 2006 (excluding small states and state expenditure factor)



Figures 5c and 5d. EFIG Aid Per Poor Child by District Poverty, 2006 (excluding small states and state expenditure factor)

Table 6. Number of Poor Children in School Districts of Varying Size and Poverty Concentration Above 15 Percent, 2003 (number of districts in *italics*)

Enrollment	District poverty concentration: > 15% ≤ 20%	> 20% ≤ 25%	> 25% ≤ 30%	> 30% ≤ 35%	> 35% ≤ 40%	> 40%	Total poor children (*total districts*)	Average poverty rate	Avg weight per poor child (relative†)
≤ 5,000	407,301 *1,914*	359,678 *1,297*	261,259 *776*	150,104 *375*	79,123 *155*	66,780 *105*	1,324,245 *4,622*	23.1%	0.78
5,001 to 10,000	198,739 *162*	195,783 *121*	143,290 *76*	70,339 *31*	34,111 *14*	21,249 *8*	663,511 *412*	22.9%	0.79
10,001 to 25,000	298,197 *116*	244,219 *71*	186,997 *45*	58,466 *12*	84,693 *14*	72,226 *11*	944,798 *269*	23.2%	0.92
25,001 to 50,000	230,663 *39*	271,807 *34*	159,983 *17*	94,016 *8*	55,369 *4*	17,168 *1*	829,006 *103*	23.1%	1.06
50,001 to 100,000	200,322 *18*	170,283 *11*	190,708 *10*	52,709 *2*	151,941 *6*	0 *0*	765,963 *47*	23.9%	1.22
100,001 to 200,000	168,615 *7*	60,255 *2*	32,924 *1*	93,875 *2*	0 *0*	0 *0*	355,669 *12*	21.9%	1.32
> 200,000	86,714 *2*	103,487 *1*	687,224 *4*	337,136 *2*	0 *0*	0 *0*	1,214,561 *9*	27.5%	1.59
Total	1,590,551 *2,258*	1,405,512 *1,537*	1,662,385 *929*	856,645 *432*	405,237 *193*	177,423 *125*	6,097,753 *5,474*	23.9%	1.08

† Relative to the national average weight per poor child under the Targeted formula based on 2003 poverty data (1.78).

Source: Author's calculations based on U.S. Census Bureau, Small Area Income and Poverty Estimates (School District Files), http://www.census.gov/hhes/www/saipe/school/sd03layout.html.

Importantly, the disparate treatment of poor children in smaller versus larger districts is not simply a "rural versus urban" problem. Although rural districts tend to have smaller enrollments, the Targeted formula also disadvantages many mid-sized urban districts with high poverty. Table 7 shows the average weighting of poor children in the member districts of the Council of Great City Schools, a national coalition of urban school systems. Within and across poverty levels, average weights differ significantly according to district size. For example, poor children in Philadelphia have nearly 50 percent greater weight than poor children in Dayton and Richmond, even though all three districts have similar poverty rates (25 to 27 percent). Meanwhile, poor children in Providence and Jackson have similar weights as poor children in Pittsburgh and Minneapolis, even though Providence and Jackson have poverty rates almost 50 percent higher.

Moreover, the growing suburbanization of poverty—reflected in the fact that the suburban poor outnumbered their central-city counterparts for the first time in 2005[23]—further suggests the diversity of communities in which poor children attend school. Although the average poverty rate in central cities is still roughly twice the rate in the suburbs, the gap narrowed between 1999 and 2005 as the poverty rate grew more rapidly in the suburbs than in central cities (Berube and Kneebone 2006).[24] Moreover, where overall poverty rates grew, child poverty rates grew even faster. Because suburban districts are typically smaller than urban districts, the current trend of increasing suburban poverty underscores the importance of remedying the interdistrict inequities in the Targeted and EFIG formulas.

Is there a sound policy rationale for advantaging large districts as the Targeted and EFIG formulas do? Although cost of living and wages are typically higher in large urban districts, we have already seen in Figures 5b and 5d that the funding advantage for large districts remains substantial even after adjusting for district-level wage differentials. One might posit that, at any given level of Census-measured poverty, larger districts serve a greater concentration of students from near-poor, low-income families than smaller districts. However, there is no positive relationship between district size and the ratio of students eligible for free or reduced-price lunch (*i.e.*, up to 185 percent of poverty) to students at or below the Census poverty threshold. In fact, there is some evidence that the ratio is larger in rural districts than in urban districts.[25]

[23] "[B]y 2005, the suburban poor outnumbered their central-city counterparts by at least 1 million…This 'tipping' of poor populations to the suburbs represents a signal development that upends historical notions about who lives in cities and suburbs" (Berube and Kneebone 2006, 4). See also Dreier (2004).

[24] Growth in suburban poverty rates was especially pronounced in the Midwest and South (Berube and Kneebone 2006). See also Berube and Frey (2002).

[25] According to the GAO (2002, 17) the ratio of children eligible for free or reduced-price lunch to children living in poverty is "closer to a one-to-one relationship" in urban districts than in rural districts, where "the relationship approaches a two-to-one relationship."

Table 7. Weighting of Poor Children Under the Targeted Formula in Member Districts of the Council of Great City Schools (based on 2003 poverty data)

	School-age population	Poor children	Poverty rate (%)	Weighted child count	Avg weight per poor child	
					Nominal	Relative†
> 35% poverty						
Fresno, CA	87,726	32,182	36.7	75,053	2.33	1.31
New Orleans, LA	83,808	29,565	35.3	68,511	2.32	1.30
Atlanta, GA	66,109	24,482	37.0	55,803	2.28	1.28
Buffalo, NY	52,617	18,931	36.0	41,926	2.21	1.24
Rochester, NY	42,118	16,243	38.6	35,206	2.17	1.22
Providence, RI	32,714	11,809	36.1	24,121	2.04	1.15
> 30% and ≤ 35% poverty						
Los Angeles, CA	886,436	270,712	30.5	788,977	2.91	1.64
Detroit, MI	213,379	66,424	31.1	176,113	2.65	1.49
Dallas, TX	187,119	60,014	32.1	156,883	2.61	1.47
Long Beach, CA	107,134	33,861	31.6	79,251	2.34	1.31
Cleveland, OH	92,582	30,413	32.8	70,631	2.32	1.30
Oklahoma City, OK	47,145	15,427	32.7	33,166	2.15	1.21
Birmingham, AL	41,619	13,685	32.9	28,811	2.11	1.18
Kansas City, MO	40,768	12,343	30.3	25,456	2.06	1.16
Jackson, MS	35,595	12,159	34.2	24,996	2.06	1.15
> 25% and ≤ 30% poverty						
New York, NY	1,349,933	397,230	29.4	1,168,531	2.94	1.65
Chicago, IL	524,587	149,574	28.5	425,563	2.85	1.60
Philadelphia, PA	267,652	70,931	26.5	189,634	2.67	1.50
Houston, TX	241,464	69,489	28.8	185,308	2.67	1.50
Milwaukee, WI	117,181	32,924	28.1	76,908	2.34	1.31
Fort Worth, TX	94,410	25,538	27.1	58,443	2.29	1.29
Columbus, OH	75,979	20,722	27.3	46,403	2.24	1.26
District of Columbia	74,518	21,695	29.1	48,836	2.25	1.26
Oakland, CA	71,399	19,922	27.9	44,403	2.23	1.25
Sacramento, CA	67,396	17,236	25.6	37,688	2.19	1.23
Indianapolis, IN	62,176	17,305	27.8	37,861	2.19	1.23
St. Louis, MO	61,722	17,871	29.0	39,276	2.20	1.23
Cincinnati, OH	57,181	14,472	25.3	30,778	2.13	1.19
Newark, NJ	56,044	16,397	29.3	35,591	2.17	1.22
Caddo Parish, LA	46,035	12,486	27.1	25,813	2.07	1.16
Dayton, OH	30,172	8,144	27.0	14,958	1.84	1.03
Richmond, VA	29,583	7,600	25.7	13,724	1.81	1.01
> 20% and ≤ 25% poverty						
Miami-Dade County, FL	421,467	103,487	24.6	287,302	2.78	1.56
Baltimore City, MD	114,120	27,430	24.0	63,173	2.30	1.29
Austin, TX	91,949	19,031	20.7	42,176	2.22	1.25
Denver, CO	84,936	18,811	22.1	41,626	2.21	1.24
Boston, MA	75,711	17,043	22.5	37,206	2.18	1.23
East Baton Rouge, LA	67,222	15,056	22.4	32,238	2.14	1.20
Minneapolis, MN	56,089	13,636	24.3	28,688	2.10	1.18
Toledo, OH	47,273	10,869	23.0	21,771	2.00	1.13
Pittsburgh, PA	46,950	11,186	23.8	22,563	2.02	1.13
Norfolk, VA	39,889	9,790	24.5	19,073	1.95	1.09
Salt Lake City, UT	28,005	5,929	21.2	10,382	1.75	0.98
> 15% and ≤ 20% poverty						
Broward County, FL	312,120	50,166	16.1	127,339	2.54	1.43
Hillsborough County, FL	203,451	36,548	18.0	86,485	2.37	1.33
Orange County, FL	182,369	30,768	16.9	71,518	2.32	1.31
San Diego, CA	163,325	32,584	20.0	76,058	2.33	1.31
Duval County, FL	156,653	25,783	16.5	59,056	2.29	1.29
Jefferson County, KY	119,227	19,989	16.8	44,571	2.23	1.25
Albuquerque, NM	103,461	19,028	18.4	42,168	2.22	1.25
Nashville, TN	87,635	15,511	17.7	33,376	2.15	1.21
Guilford County, NC	76,303	12,961	17.0	27,001	2.08	1.17
San Francisco, CA	71,073	13,285	18.7	27,811	2.09	1.18
Portland, OR	61,819	9,900	16.0	19,348	1.95	1.10
Seattle, WA	59,915	9,106	15.2	17,363	1.91	1.07
Omaha, NE	58,126	9,005	15.5	17,111	1.90	1.07
Wichita, KS	57,095	10,072	17.6	19,778	1.96	1.10
Charleston County, SC	54,102	10,450	19.3	20,723	1.98	1.11
St. Paul, MN	51,784	9,791	18.9	19,076	1.95	1.09
≤ 15% poverty						
Clark County, NV	308,200	44,088	14.3	109,105	2.47	1.39
Palm Beach County, FL	197,615	28,380	14.4	65,548	2.31	1.30
Charlotte-Mecklenburg, NC	140,431	19,995	14.2	44,586	2.23	1.25
Anchorage, AK	56,132	4,837	8.6	8,198	1.69	0.95
Des Moines, IA	34,902	5,215	14.9	8,954	1.72	0.96
Christina (Wilmington), DE	28,485	3,102	10.9	4,728	1.52	0.86

† Relative to the national average weight per poor child under the Targeted formula based on 2003 poverty data (1.78).

Source: Same as Table 4. Member districts of the Council of Great City Schools are listed at http://www.cgcs.org/about/member.cfm.

The funding advantage for large districts seems particularly perverse if one assumes that larger districts enjoy economies of scale. Yet the extant research on economies of scale suggests that per-pupil costs decline with increasing district size only up to enrollments of roughly 6,000, at which point diseconomies of scale begin to occur.[26] Thus the relationship between district size and educational costs is U-shaped, although what accounts for the right side of the U (*i.e.*, increasing per-pupil costs with increasing size) remains unclear. If diseconomies of scale are due to remediable inefficiencies in large districts, then it is questionable whether Title I should reward such inefficiencies by giving large districts a funding advantage.[27] On the other hand, if diseconomies of scale occur because poverty, at a given concentration, is more educationally detrimental in larger districts than in smaller districts,[28] then increases in poverty weights with district size may be justified.

Even if the latter were true, however, there is currently no evidence to support the *magnitude* of the advantage that large districts enjoy under Title I. Although several studies have found that per-pupil costs increase with district size by increments roughly comparable to the funding advantage under the Targeted and EFIG formulas (Reschovsky and Imazeki 2003; Duncombe and Yinger 1999; Duncombe, Lukemeyer, and Yinger, 2006), these findings do not isolate the effect of district size from differences in poverty concentration and wage costs across different-sized districts. If interdistrict differences in poverty concentration and wage costs were taken into account, the effect of district size on per-pupil costs would be much smaller and, in all likelihood, not nearly as large as the funding advantage for large districts under Title I.

To recap:

- Title I generally provides more aid per poor child to districts with higher poverty concentrations. Eliminating the state expenditure factor would strengthen this positive association as well as increase the rate at which aid per poor child rises with district poverty.
- Despite this positive association, there is significant variation in district-level aid per poor child at each level of poverty. Most districts in high-poverty states are situated in the "underbelly" of the distribution, accounting for the negative relationship between aid per poor child and state poverty.
- The Targeted and EFIG formulas are primarily responsible for the positive association between Title I aid per poor child and district poverty, but also for the variability in aid at each level of poverty. Through their poverty weighting methods, the formulas produce a "layer cake" funding pattern that favors larger over smaller districts with comparable poverty.

[26] For a review of 12 cost function studies on district enrollment since 1980 see Andrews, Duncombe, and Yinger (2002). A more recent study of Texas school districts found a U-shaped relationship between educational costs and district size, with the lowest per-pupil cost occurring at enrollment of 22,026 when an efficiency measure is included and 9,115 when it is not included (Reschovsky and Imazeki 2003).

[27] A study of New York school districts found that costs per pupil are much higher in large cities but that "states are right to be concerned about districts' productive efficiency" in designing aid programs (Duncombe and Yinger 1997, 108).

[28] Bill Duncombe has suggested to me that "density" or "urbanicity" may interact with poverty in ways that make a given level of poverty more detrimental to student performance in large districts than in small districts. But there is no firm evidence yet to characterize this interaction or quantify its effect on educational costs.

- The resulting interdistrict inequity occurs not only between urban and rural districts but also among urban districts and increasingly between urban and suburban districts. Small to mid-sized districts with 25,000 or fewer students account for nearly half of all poor children in districts with above-average rates of poverty.

Equity Across Schools

Districts have considerable discretion in distributing Title I aid to schools, but the discretion is cabined by allocation rules that Congress modified in 1994 to more aggressively target aid to the highest-poverty schools (20 U.S.C. § 6313). The allocation rules require districts to distribute Title I money to schools in rank order based on poverty concentration, prioritizing schools with more than 75 percent poverty (with poverty measured by free or reduced-price lunch (FRPL), Medicaid, Census, or other standards, at the district's discretion) (20 U.S.C. § 6313(a)(3)-(5)).[29] Once a district has served all schools with more than 75 percent poverty, it has discretion to rank the rest of the schools within grade spans (*e.g.*, K-5, 6-8, 9-12), and it may serve all schools within a grade span (*e.g.*, elementary schools) before serving other schools (*e.g.*, middle and high schools) (20 U.S.C. § 6313(a)(4)). A district may provide the same level of aid per poor child to each school it serves, but if it chooses to provide different levels of aid, it must give greater aid per poor child to higher-poverty schools (20 U.S.C. § 6313(c)(1)-(2)(A)).[30]

Although there is no comprehensive national dataset of school-level Title I allocations, the U.S. Department of Education has examined such allocations using large samples of districts and schools in its Study of Education Resources and Federal Funding (SERFF) (Chambers 2000; Stullich et al. 1999). The SERFF study found evidence that the post-1994 allocation rules improved within-district targeting. In particular, the share of the highest-poverty schools (defined as ≥ 75 percent FRPL) receiving Title I funds increased from 79 percent in 1993-1994 to 95 percent in 1997-1998, while the share of low-poverty schools (defined as < 35 percent FRPL) receiving Title I funds decreased from 49 to 36 percent. Whereas low-poverty schools served 25 percent of low-income students and received 18 percent of Title I funds in 1997-1998, the highest-poverty schools served 33 percent of all low-income students and received 46 percent of Title I funds.

Secondary schools are less likely to receive Title I funds than elementary schools and, if funded, receive smaller allocations per low-income student. Although secondary schools served one-third of all low-income students in 1997-1998, they received only 16 percent of Title I funds, with an average allocation per low-income student of $372 as compared to $495 in elementary schools. However, consistent with the statutory priority to serve all schools with more than 75 percent poverty, the highest-poverty secondary schools were almost as likely as the highest-poverty elementary schools to receive Title I funds, with roughly the same average allocation per low-income student. Expanding the reach of Title I funding into secondary schools is a major topic of current NCLB reform proposals (Hoff 2007).

[29] Districts enrolling less than 1,000 students are exempt from the rank ordering requirement (20 U.S.C. § 6313(a)(6)).

[30] Districts where all schools have at least 35% poverty are exempt from this requirement (20 U.S.C. § 6313(c)(2)).

Although the highest-poverty schools received more Title I aid than low-poverty schools relative to their shares of low-income children, the aid was stretched farther among the highest-poverty schools because a much greater percentage of them received funding compared to low-poverty schools (95 percent versus 36 percent in 1997-1998). As a result, the level of aid per low-income child was over 60 percent higher among low-poverty Title I schools ($773) than among the highest-poverty Title I schools ($475).

Three additional factors help to explain why high-poverty Title I schools did not receive more aid per low-income child than low-poverty Title I schools in the SERFF study. First, the study found that some districts violated the rule requiring them to allocate equal or greater aid per low-income child to high- versus low-poverty schools. Although such violations do not appear to be widespread, better enforcement of the within-district allocation rules may be necessary. Second, 86 percent of Title I funds flowed through the Basic formula and 14 percent flowed through Concentration grants in the study year (1997-1998). Because no money flowed through the Targeted or EFIG formula, Title I did almost nothing to direct greater aid per poor child toward higher-poverty districts where higher-poverty schools are concentrated.[31] (This is no longer the case, although interdistrict inequities persist under the Targeted and EFIG formulas.) Third, because high-poverty schools, like high-poverty districts, are disproportionately located in high-poverty states with low education spending, the state expenditure factor attenuates the degree of school-level targeting achieved nationally.

Nevertheless, taking all schools (Title I and non-Title I) into account, the highest-poverty schools receive greater Title I aid per poor child than low-poverty schools, a large majority of which receive no aid at all. Although the within-district allocation rules are nested within interdistrict and interstate inequities, they still succeed in directing greater aid on average to the schools where it is needed most.

That said, the caveat stated at the outset of this paper deserves emphasis. The net effect of Title I on school resources depends on how school districts adjust their own budgets or revenues. As long as districts are allowed to supplant up to 10 percent of their own revenue each year with Title I funds, or to certify the comparability of state and local resources in Title I and non-Title I schools using salary averages, Title I's efficacy in increasing *net* resources for children in high-poverty schools will be compromised, no matter how equitably the formulas are designed.

Policy Implications

Changing the Title I formulas is politically difficult. Historically, "formula fights" on Capitol Hill have been highly contentious and driven largely by parochial interests. But the evolution of Title I shows that past efforts to improve the formulas have often resulted in salutary if imperfect steps toward greater equity. For two reasons, the time is ripe for further efforts in this vein. First, the realistic possibility that Congress will significantly increase spending on Title I provides an auspicious context for equity reforms. Redistribution has more viability in the context of an expanding pie. Second, the need to distribute resources equitably has never been greater, as initial successes under NCLB in raising the performance of the easiest-to-improve schools and students give way to the most difficult and often least well-supported educational challenges.

[31] In 1997-98, districts in the lowest poverty quartile received 14% more Title I aid per poor child than districts in the highest poverty quartile ($996 versus $875) (Chambers 2000).

The analysis above suggests several key reforms for improving funding equity under Title I:

- *Eliminate the state expenditure factor.* This component of Title I, perhaps more than any other, frustrates equity across states, districts, and schools with no coherent policy rationale. High-poverty states should receive more aid per poor child, not less as the current system provides.
- *Eliminate the computation of weighted child counts based on sheer numbers of poor children under the Targeted and EFIG formulas*. Large districts presently receive a windfall at the expense of small and mid-sized districts that educate half or more of all poor children living in high poverty. This too frustrates equity across states, districts, and schools. Title I aid per poor child should increase with poverty *concentration*, not with the sheer number of poor children in a given district.
- *Build research-based cost factors into the Title I formulas*. Educational costs vary, sometimes significantly, from district to district and from state to state. Title I allocations should account for these variations not with invalid proxies for cost such as state per-pupil spending, but with state- and district-level cost factors grounded in empirical research and updated every few years. Congress could use estimates that are presently available, or it could commission new studies.
- *Increase appropriations for Concentration grants.* The Concentration formula currently provides the most equitable distribution of Title I aid across states. The 15 percent poverty eligibility threshold directs virtually all Concentration aid to districts with above-average poverty. This turns out to be a potent form of targeting across states, even though aid per poor child does not increase with poverty above the 15 percent threshold. Absent other reforms (an important caveat here), Congress should devote a sizable portion of new money to Concentration grants instead of channeling all new money to Targeted and Education Finance Incentive grants. In addition, Congress could improve targeting even more by defining the district eligibility threshold for Concentration aid to be either 15 percent poverty, as it is now, or the national child poverty rate based on the latest Census data, whichever is greater.
- *Strengthen the "maintenance of effort" requirement, and eliminate the use of district salary averages in demonstrating "comparability" between high- and low-poverty schools.* As mentioned before, Title I is part of an intergovernmental system of school finance. Federal efforts to promote funding equity will not achieve their ultimate objectives without stronger safeguards against erosion by state and local jurisdictions.

Finally, the scope of these reforms must be put in perspective. The foregoing proposals and the analysis supporting them are rooted in a definition of equity that simply prescribes greater aid for areas of higher poverty. But that is only one specification of Congress's broad goal of targeting aid to areas "where needs are greatest" (20 U.S.C. § 6301(5)). For purposes of federal policy, the concept of need might well include not only the neediness of children as indicated by poverty concentration, but also the neediness of states and districts for federal support. On this view, a federal policy to promote funding equity would prioritize not merely areas of high poverty, but rather high-poverty areas in jurisdictions with the least capacity to address

educational needs on their own. As I have shown elsewhere (Liu 2006), this kind of policy would be robustly redistributive from wealthy states to poor states, far more so than the recommendations above. Moreover, the analysis here has not addressed the level of funding needed to support ambitious educational outcomes, including NCLB's goals of closing achievement gaps and ensuring proficiency among all students in math, science, and reading. A broader federal school finance strategy that is closely linked to learning goals and that compensates for interstate disparities in fiscal capacity might reasonably take the form of a national foundation plan. Such a plan may exceed what is politically possible at this time, but the reforms proposed here can serve as useful steps toward a broader reconceptualization of the federal role in school finance equity.

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