Premature celebrations:
The persistence of inter-district funding disparities

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Abstract: Two interlocking claims are being increasingly made around school finance: that states have largely met their obligations to resolve disparities between local public school districts and that the bulk of remaining disparities are those that persist within school districts. These local decisions are described as irrational and unfair school district practices in the allocation of resources between individual schools. In this article, we accept the basic contention of within-district inequities. But we offer a critique of the empirical basis for the claims that within-district gaps are the dominant form of persistent disparities in school finance, finding instead that claims to this effect are largely based on one or a handful of deeply flawed analyses. Next, we present an empirical analysis, using national data, of 16-year trends (1990 to 2005) and recent patterns (2005 to 2007) of between-district disparities, finding that state efforts to resolve between-district disparities are generally incomplete and inadequate and that in some states between-district disparities have actually increased over time.
Keywords: finance; equity; between-district disparities; within-district disparities

Celebraciones prematuras: La persistencia de las disparidades de financiamiento entre los distritos

Resumen: Dos perspectivas interrelacionadas en torno a la financiación de las escuelas son escuchadas cada vez más frecuentemente: que los estados han cumplido en gran medida sus obligaciones para resolver las disparidades entre los distritos escolares locales y que la mayor parte de las diferencias que restan son las que persisten dentro de los distritos. Las decisiones locales de asignación de recursos entre escuelas de un distrito se describen como prácticas irracionales e injustas. En este artículo, aceptamos la tesis fundamental de las desigualdades dentro de los distritos. pero ofrecemos una crítica al sustento empírico de la afirmación que las brechas dentro de los distritos son la forma dominante de las disparidades que persisten en el financiamiento de las escuelas ya que esas afirmaciones se basan principalmente en un pequeño grupo de estudios con serios problemas. A continuación, presentamos un análisis empírico, utilizando datos nacionales, tendencias registradas a lo largo de 16-años (1990 a 2005) y patrones más recientes (2005 a 2007) sobre las disparidades dentro de los distritos. Concluimos que los esfuerzos de los estados para resolver esas disparidades entre los distritos son generalmente incompletos e insuficientes y que en algunos estados, las disparidades entre los distritos aumentaron.
Palabras-clave: financiaciamiento; equidad; disparidades entre distritos; disparidades dentro distritos.

Celebrações precoces: A persistência das disparidades de financiamento inter-distritales
Resumo: Duas perspectivas inter-relacionadas sobre o financiamento das escolas são ouvidas freqüentemente: que os estados têm amplamente cumpridos suas obrigações para compensar as disparidades entre os distritos escolares locais e que a maioria das diferenças que permanecem são aqueles que persistem dentro dos distritos escolares. Estas decisões locais de alocação de recursos entre as escolas de um distrito são descritas como práticas irracionais e injustas. Neste artigo, aceitamos a tese fundamental das disparidades dentro dos distritos. Mas oferecemos uma crítica ao suporte empírico para a afirmação de que as brechas dos distritos são a forma dominante das disparidades persistentes no financiamento das escolas já que essas analises estão baseadas principalmente em um pequeno grupo de estudos com graves deficiências. Apresentamos um análise empírica usando dados nacionais, tendências registradas durante 16-anos (1990 a 2005) e os padrões recentes (2005 a 2007) sobre as disparidades dentro dos distritos e concluímos que os esforços dos estados para resolver estes disparidades entre os distritos são geralmente incompletos e inadequados e em alguns estados, as disparidades entre os distritos aumentou.
Palabras-chave: finançiamento; eqüidade; disparidades entre-distritos; isparidades dentro dos distritos escolares.

Introduction

An increasing volume of rhetoric around school finance rests on claims that states have largely met their obligations to resolve disparities between local public school districts. This premise is then extended to the contention that the bulk of remaining disparities are those that persist within school districts, due to irrational and unfair school district resource allocation practices between individual schools (see, for example, McClure, Wiener, Roza, and Hill, 2008; Public Impact, et al., 2008). In short, since states have done their job to promote equity and adequacy of school funding, school district officials must now meet their corresponding obligations. This argument is also often

attached to the remedy of weighted student funding (see Roza, 2006, pointing readers to the Fordham Institute's "Fund the Child" campaign).

Notably, no leading researchers in economics and school finance have joined this overwhelming shift in emphasis away from state-level concerns. Many have opted instead for a broad description of the funding problem that encompasses both within-district and between-district resource disparities (see, e.g., Bifulco, 2005; Burke, 1999; Duncombe and Johnston, 2004; Downes, 2004; Imazeki and Reschovsky, 2004; Stiefel, Rubenstein & Berne, 1998; Rubenstein et al., 2007). Nonetheless, arguments favoring a devolution in focus from states to school districts have gained significant traction in policy debates, and they have the rhetorical advantage of providing state policymakers with an enticing, revenue-neutral policy solution (see Public Impact, et al., 2008). If states have done their job, no more money is needed, nor must these policymakers consider painful movement of limited funding away from wealthier districts. Rather, districts must simply reshuffle what they have, in order to achieve optimal distribution. But, as discussed below, the increase in popularity of these political arguments is backed by little or no empirical evidence for the premise that states have already met their end of the bargain (Baker, 2007).[1]

This article explores the extent that states have actually resolved substantial disparities in available resources between local public school districts. Although we review recent literature on within-district disparities and their relation to between-district disparities, we do not separately estimate the relative disparities within and between districts. Rather, we remain focused on the single question of whether and to what extent states have substantially resolved past between-district disparities such that it really is time to check that box and move on to other policy concerns. In short, this article begins with a critique of the within-district comparative claims and then examines between-district disparities in state and local revenues per pupil across all states—over the 16-year period from 1990 to 2005 across all states, and with more fine-grained detail for the years 2005 to 2007.

Recent Evidence on Between-district Disparities and State School Finance Policies

In the late 1990's through early 2000's a handful of rigorous studies evaluated changes to the distribution of school funding within and across states. Related studies examined those changes in connection with the existence of judicial mandates for reform in a given state, ultimately looking at the relationship between funding changes and student outcomes. Notable examples include Murray, Evans and Schwab's (1998) evaluation of the effect of judicial mandates on the level and distribution of funding and Card and Payne's (2002) evaluation of the link between judicial mandates, school finance reforms, changes in the level and distribution of resources, and student outcomes. These teams of authors found that state school finance lawsuits—specifically high court rulings in favor of

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[1] A secondary current rhetorical argument against increased funding, or school finance reform more generally, rests on the related contention that no substantial improvements to student outcomes or closure of achievement gaps have followed from a purported dramatic increase in state-level funding and improved funding equity over time. Moreover, the argument continues, given the absence of outcome improvements, the asserted major increases to funding have proven ineffective and the fault lies with the policies of local districts or others, rather than with the state funding formulas. This argument as well hinges on whether there really have been substantive and sustained improvements across states in school funding equity and adequacy, and whether school finance reforms have improved student outcomes or reduce achievement gaps. The contention that there have not been improvements is woven throughout the recent work of Hanushek and Lindseth (2009) and Hill, Roza and Harvey (2008).

plaintiffs—tend to lead to positive changes in the level and distribution of funding. Card and Payne found as well that those changes lead to improvements to the distribution of outcomes. Other recent studies on improvements to equity or adequacy of funding over time have focused longitudinally on specific states and reached similar conclusions (see, for example, Downes, Zabel & Ansel, 2009 [Massachusetts]: Downes, 2004 [Vermont]; Deke, 2003 [Kansas]).

In addition, a handful of relatively recent publications have described disparities—absolute as well as changes—in school funding by race and/or poverty across states. For example, Bifulco (2005) conducted a longitudinal analysis of racial disparities in school funding, looking at data from the late 1980s through 2002 across all states. He found that in 2002 the average black student's funding was approximately 8.5% higher than the average white student's funding, with no adjustments applied. However, when resources are adjusted for well-documented factors affecting the costs of producing comparable student outcomes (including student need factors such as poverty and limited English language proficiency), as well as economies of scale and regional labor market variation, he found that the average black student's district had from 3.2% to 15.8% less funding than the average white student's district.

Similarly, intermittent reporting by the Education Trust has noted persistent funding gaps between school districts with high and low poverty rates and high and low enrollment concentrations of students of color.[2] These reports show that some states have relatively small gaps, while others provide greater amounts of funding to higher poverty, higher minority districts. But the reports also identify states that provide much lower levels of funding to higher poverty and higher minority districts. On net, Education Trust finds that higher poverty and higher minority concentration school districts continue to receive relatively less funding from their states.

Taken together, these findings suggest that states have not yet fully met their end of the bargain and that significant work remains to be done at the state policy level before turning attention entirely to within-district resource disparities. That said, the Bifulco analysis leaves off eight years ago, and the Education Trust analysis of funding gaps has methodological and data limitations that prevent readers from making accurate judgments in this regard.[3] It also does not address progress—or lack thereof—over time.

Recent Evidence on Within-district Disparities

The examination of within-district resource allocation in public education is not new. Studies conducted in the 1990s found significant disparities in resources between schools within the same district. In the mid- to late-1980's, major litigation was pursued (and settled) in Los Angeles concerning that district's intra-district funding disparities (see discussion of *Rodriguez v. Los Angeles Unified School District* in Roos, 1998). Going back even further, a key issue in the legal challenges to

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[2] Education Trust has in the past prepared an annual report titled the "Funding Gap." The 2006 Funding Gap report appears here:
http://www.edtrust.org/sites/edtrust.org/files/publications/files/FundingGap2006.pdf. The report was produced in 2003, 2005, 2006 and in 2008, but the 2008 report was retracted due to data errors (http://www.edtrust.org/dc/publication/the-funding-gap-0)

[3] One notable shortcoming of the Education Trust analysis is that it looks only at districts clustered in the ends of each state's distribution—high and low poverty or high and low minority—and thus fails to evaluate whether the funding gaps indentified are part of a pattern across all districts by poverty. In addition, the Education Trust report relies on relatively arbitrary a priori assumptions of the additional "costs" associated with children in poverty (assuming a 40% additional cost, used as a "weight" for adjusting state and local revenues in their analysis).

separate-but-equal policies leading up to *Brown v. Board of Education* (1954) concerned the fact that districts' separate schools for blacks were resourced at levels below those for whites.

An issue raised by the Los Angeles Unified School District *Rodriguez* litigation is the degree to which intra-district funding disparities are linked to teacher seniority and transfer policies. Because teachers with more experience tend to transfer to schools serving fewer low-income students of color, and because those teachers are paid more than beginning teachers (Lankford, Loeb, & Wyckoff, 2002), the salary resources devoted to more advantaged schools tend to be higher. While this can be disregarded as not really about district allocation of funding, we should keep in mind that teacher experience is associated with teacher quality—at least in the early career years— and that teacher quality is generally regarded as the most important resource a school can provide to its students (see Clotfelter, Ladd & Vigdor, 2005; Rivken, Hanushek & Kain, 2005). Nothing in the analysis that follows should be understood as suggesting that this is not an important issue; our intent is merely to question the associated argument that disparities between districts are no longer of major importance.

Research over the past fifteen years has started to tease out the nature of intra-district spending patterns. These studies are largely limited to a few states or individual districts where school-site expenditure data have been available, including California, Ohio and Texas, as well as select cities in New York State and the city of Chicago. In one early study, for instance, Hertert (1995) simultaneously evaluated variations in California between-school spending both across districts and within districts, using data from 1990-91. She found generally that between-school disparities across districts were greater than the average district-level spending disparities across districts. Moreover, in some cases between-school disparities within districts were greater than between-school disparities across districts. Hertert accounted for district size and district type to correct for some explainable differences in spending across districts, and she found that accounting for school type did mitigate (but did not completely explain) between-school differences. In another such study, Burke (1999) estimated resource distributions at the school level rather than the district level—revealing significant intra-district disparities that in some states (Illinois and New York) exceeded inter-district disparities.[4] Burke's and Hertert's studies represent the most direct test of the relative magnitude of within- and between-district resource variations, but both overlook a number of factors addressed in more recent studies, including differences in costs from one district to the next and one school to the next (see Baker, 2009).

A related body of relevant research looks in isolation at within-district spending (that is, it does not compare these spending patterns to between-district patterns). Steifel, Rubenstein and Berne (1998) analyzed school-level data from four large urban districts (Chicago, Fort Worth, New York City and Rochester) in an effort to measure within-district disparities in resources. They asked two basic questions. First, how much variation exists across school-level budgets within the districts? Second, to what extent is that variation associated with factors that may affect the costs of providing equal educational opportunity across those schools—most notably, rates of children in poverty?[5] Like Hertert (1995) and Burke (1999), they found significant variation in resources across schools within districts. But they also looked more closely and found that some of that variation was

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[4] This result may relate to the size of Chicago and New York City within their state systems. However, the article's presentation of data and analyses are insufficiently transparent to allow for this determination.

[5] In related work, Schwartz and Stiefel (2004) explore the relationship between within-district disparities and immigrant populations in New York City, finding "that some resources increase over time when there are large increases in the percentage of immigrants in a school" (p. 303). Work by Stiefel and colleagues at New York University, primarily focused on within-district resource variations in New York City, dates back to the period of early interest in within-district resource allocation (see Berne and Stiefel, 1994).

positively associated with poverty rates across schools.[6]

Texas' within-district patterns appear to also show such variation. Ajwad (2006) used data on Texas school-level expenditures for elementary schools to evaluate whether districts have targeted greater resources toward schools in higher-poverty neighborhoods. Using fixed effects expenditure regressions and neighborhood resident population characteristics rather than school enrollments, he shows that Texas school districts, on average, target additional resources toward elementary schools in higher-poverty neighborhoods. Ajwad also finds, however, that the average dollar differences in targeted funding are relatively small.

Baker (2009) also focuses on within-district disparities, but—adding an important contextual element to the approaches used in above-discussed studies—he applies school-level cost function modeling[7] to estimate adjustments for costs, and he places disparities in the context of other districts sharing the same labor market. He finds that "in some cases, resource levels in urban core elementary schools are relatively insufficient for competing with schools in neighboring districts to achieve comparable outcomes" (p. 1). That is, between-district disparities may constrain the ability of some districts to resolve within-district disparities, at least for the Ohio and Texas school districts he examined.

But the most prominent work in this area has been conducted by Marguerite Roza and her colleagues, and those studies therefore deserve a close look. As with several of the above-discussed analyses, Roza, Guin, Gross and Deburgomaster (2007) use Texas school-level expenditure data. They examine changes in internal resource allocation from 1994 to 2003. Rather than estimating the statistical relationship between school-level expenditures and cost factors—as did Ajwad (2006), Baker (2009), and Rubenstein, Schwartz, Stiefel and Bel Hadj Amor (2007)—Roza and her colleagues adopt an approach that involves calculating a Weighted Student Index (WSI) to track equity levels and changes over time. A significant shortcoming of the WSI approach, however, is that it fails to measure differences in resources with respect to student population variation across schools. It instead measures whether a child in poverty in one school receives the same level of resources as a child in poverty in another school (even if that level is $0, or 0% more than the non-poor child).[8] The extent to which resources are targeted on the basis of poverty or other costs and

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[6] Interestingly, this finding was not systematic across settings or school types (e.g., Rochester middle schools showed stronger positive relationships between poverty and resources than Rochester elementary or high schools).

[7] Cost modeling is commonly used to determine the additional costs of achieving constant outcome targets. It has been used primarily in district-level analyses like those conducted by Imazeki and Reschovsky (2004) and Duncombe and Johnston (2004). The approach involves estimation of econometric models (regression equations) to determine specifically the additional costs associated with student poverty, competitive wages, economies of scale and other uncontrollable factors.

[8] Roza and her colleagues also test whether variations in their WSI are a function of four different factors: (a) school grade level, (b) percent white in the school, (c) teacher experience, and (d) the academic rank of the school in the state. The authors suggest that this analysis is undertaken with the goal of determining whether observed resource variation (as measured by the WSI) is a function of "intentional" and "unintentional" factors. It is difficult to interpret, however, how this *ad hoc* mix of outcome measures, organizational features and racial composition relates to more common sets of "cost" factors, or factors outside the control of local school officials that influence the costs of achieving any given level of outcomes (see Duncombe and Yinger, 2008). The dependent variable (WSI) measures resource variation in terms of differences across schools between student subgroups, rather than aggregate resource differences across schools with respect to population differences across schools. A more straightforward interpretation (at least with respect to whether resource variation is a function of uncontrollable cost factors) would be possible from an analysis that used

needs is not addressed or accounted for in the study. That is, if every school serving low-income students were funded regressively, this would not be addressed; but if some schools serving low-income students were regressive and some were progressive, the study would highlight that difference. Those questions are certainly of some import, but they do not get at core equity concerns.

Roza, Guin, Gross and Deburgomaster (2007) begin with a quick comparison of within-district and between-district disparities in Texas and then jump quickly to their case that "At least in Texas, funding decisions within districts currently have a greater impact on a school's resources than inequalities in access to resources across school districts" (p. 70). The first section of their article reports that variations in spending between Texas districts tend to fall within 5% to 10% of mean spending statewide, compared to disparities within large Texas districts (again, disparities in funding of similar students at different schools, as explained above) that tend to be on the order of 15%. Unfortunately, documentation is largely absent concerning the method for calculating the coefficients of variation presented by the authors.[9]

There is a bit of a tautology at work here, slightly under the surface. If a researcher were to use the pupil weights and cost factors adopted in the Texas funding formula itself, or weights derived from the implementation of that formula (as is the case with the WSI approach used by Roza and her colleagues)[10] as a basis for accounting for need and cost variation, the result would almost by definition show little disparity between districts funded under that formula. But such an analysis would be based on a deeply flawed assumption—that the state school finance formula itself represents true costs. Categorical weights and other distributional criteria included in state formulas tend to be the result of political wrangling as much as they are reflections of empirical determinations of need. In reality, what an analysis like Roza's effectively shows is only that the state school finance formula does what the state school finance formula does. It is not surprising, then, that others such as Reschovsky and Imazki (2004, showing about a 25% coefficient of variation) report much greater between-district disparities in Texas, both in raw unadjusted spending and in spending adjusted for need and cost.[11]

Interestingly, Roza, Guin, Gross and Deburgomaster's use of formula-induced spending variation as a proxy for cost and need variation conflicts with the concurrent work of Roza and Guin themselves. In *What is the Sum of the Parts?*, also released in 2007, Roza, Guin and Davis calculate 'implicit weights' of district spending on specific populations of students for multiple

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per pupil expenditures as the dependent variable and identified standard cost factors as independent variables in an expenditure function framework.

[9] The coefficient of variation, or CV, is the standard deviation divided by the mean, or standard deviation expressed as a percent of the mean.

[10] Roza, Guin, Gross and Deburgomaster (2007) explain that the WSI is "a ratio … of the actual funding received by each school to the funding we would expect if schools received the district's average allocation for its particular mix of students" (p. 78). This calculation is made without judgment regarding whether the estimated average differences relate either logically or empirically to needs or costs. As such, there are clear limitations to the usefulness of an estimate of between-school differences in district-level budgets by factors such as student poverty rates, limited English proficiency rates, and disability rates. This estimate would merely reflect the average effect of the state distribution formula with respect to these factors. The estimate tells us nothing about whether the state weights can rationally be used for cost or need adjustment.

[11] In addition, Baker (forthcoming), in a study of large urban Texas districts in their labor market context, applies cost-adjusted equity analysis for schools within the large urban core and then across all schools within the labor market for each large urban core. Baker finds that in Dallas the within-Dallas variation is greater than variation across schools throughout the labor market, but that in Houston, San Antonio, Austin and Fort Worth, the labor-market wide variation is greater than the within-urban-core variation.

states. That is, their analysis is based on a calculation of how much is spent on a specific student population in a school district compared to how much is spent on the average student in the same district. They explain that these weights represent budgeting priorities or the "relative investment in each student type" (p. 16). The authors show that the budgeting priorities (implicit weights) for different student types vary from one district to the next, pointing out that such variation is problematic.

In contrast, Roza, Guin, Gross and Deburgomaster, in the above-discussed *Do Districts Fund Fairly?* (2007) article, calculate separate implicit WSIs for each district as a basis for estimating within-district disparities adjusted for student characteristics, across multiple districts. That is, the analysis highlights only funding variations within each district, not allowing for identification of funding variation for similar students between districts, and not allowing for judgments about whether weights are linked to need. Such application of within-district implicit weights is thus deeply problematic at two levels.

First, this approach determines within-district inequities by interpreting or—more accurately—defining the variation in district-level spending priorities as variation in cost and need.[12]

Second, this approach creates illogical apples-to-bratwurst comparisons by applying different sets of implicit weights across schools for each different district and then, by aggregating the results across districts, mashing together the apples and bratwurst into an unwholesome smoothie. For example, if the child in poverty in school S1 in district D1 receives 20% more than the average child in district D1, then district D1 will be considered equitable if the child in poverty in all schools in that district receive 20% more than average funding. But a second district (D2) would be considered comparably equitable to district D1 if each child in poverty in each school received 10% less than average funding—because D2 disadvantaged poor children as systematically as D1 advantaged them. D2 simply had different "spending priorities" which were equitably applied. Averaging D1's equity with D2's equity, we would find the system to be extremely equitable, despite D2's systematic disadvantaging of poor children. Such a finding masks real inequities that would be revealed by the more standard methods applied by Ajwad (2006), Baker (2009) or Rubenstein, Schwartz, Stiefel and Bel Hadj Amor (2007).

Simply put, Roza, Guin, Gross and Deburgomaster (2007) fail to acknowledge that Roza, Guin and Davis (2007) severely undermines their findings at these two levels: (a) that the implicit-weight-driven WSI reflects spending priorities that cannot reasonably be used as an independent determination of equity that adjusts for student characteristics, and (b) that allowing implicit weights to vary by district in a school-level equity analysis—for which findings are eventually aggregated across districts—produces findings that are difficult to interpret at best, and entirely meaningless at worst. Yet this *Education Next* study has arguably become the most frequently cited basis for the broader assertion that within-district inequity should supplant between-district inequity as the funding policy concern *du jour*.

The Missing Link and Misguided Assumptions

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[12] Recall that Roza and her colleagues explain that the WSI is a ratio of actual funding received relative to expected funding if the school received the district average for its mix of students. Though this approach has little to do with adjustment for "costs" or "needs," Roza, Guin, Gross and Deburgomaster (2007) state: "The WSI allows us to compare per-pupil funding in schools while accounting for the types of students a school serves." (p. 71)

None of the above-discussed studies addresses more broadly the level of between-district disparities across all states and school districts. This is important because the recent policy arguments directly implicate the relationship between within-district and between-district disparities. That is, some researchers and advocates have begun to contend that within-district disparities are more important than any remaining between-district disparities.

Carr, Gray and Holley (2007), for example, contend that average per pupil spending in higher-poverty districts in Ohio has increased over time at a rate faster than in lower-poverty districts. They also contend that this spending has reached an average level higher than for lower-poverty districts (Chart 2, page 3). The authors present cursory analyses to support these contentions, failing to explore in any depth whether these differences are systematic across districts. That is, are there significant inequities between districts among higher- and lower-poverty districts? Instead, they move quickly from their broad findings to the argument that the state of Ohio has met its state obligation and that the remaining focus should be on within-district inequities.

To the authors' credit, as we discuss later herein, it turns out that Ohio does indeed have a progressive distribution of fiscal resources across school districts—more resources targeted to higher-poverty districts—on average.[13] Whether Ohio has met its obligation as a state is a separate question. Also to their credit, the authors do not attempt to extrapolate their Ohio-based claims to other states or to the nation as a whole.

More troublesome claims are presented in a recent highly publicized report on school finance reform from the Center for Reinventing Public Education (Hill, Roza and Harvey, 2009). The report states that recent "intradistrict or subdistrict studies have questioned the importance of district-level spending differences, showing that there is more variation in per-pupil spending within than between districts" (p. 18). The authors' only citation for the presumption that within-district inequity is a greater national problem than between-district inequity is to the study of Texas large districts by Roza, Guin, Gross and Deburgomaster (2007) noted above. That is, the authors make a nationwide policy argument on the basis that prior research has documented within-district inequity as the greater problem. The flaw here is two-fold. First, Hill, Roza and Harvey cite only a piece coauthored by Roza which considers only Texas data, not national data or data on any state other than Texas. Second, as we have discussed above, the analysis of Texas data itself is extremely problematic.

In the same report, Hill, Roza and Harvey cite the findings of Rose, Sonstelie and Reinhard (2006) on within-district teacher salary disparities in California. Again, they extend these findings to the rest of the country but offer no evidence to support their key contention that "What is true in California happens to some degree in every other state and every large district" (p. 10).[14]

On other occasions, Roza and Hill have argued that persistent between-district disparities may exist but are relatively unimportant. Following a state high court decision in New York

[13] While Ohio's system is generally progressive, there is important variation among labor markets. Across districts within some Ohio labor markets, the relationship between poverty and per pupil spending is stronger and more systematic, and in others, weaker and less systematic. Accordingly, some Ohio cities are poorly positioned with respect to their neighbors.

[14] Interestingly, the nearly concurrent study by Roza and her other co-authors used much more measured wording. For example, Roza, Guin and Davis state merely that: "Several studies give cause for concern by demonstrating that spending differences among schools within districts at times exceed spending differences across districts (e.g., Hertert 1995; Roza, Guin, Gross, and Deburgomaster, forthcoming 2007)." The authors' statement recognizes that limited nature of their Texas study and of Hertert's 1995 book chapter, which suggest only that within-district disparities "at times" exceed between-district disparities. Hertert's study, as discussed previously, supports this contention, but specifically in California and lacking attention to cost adjustment, as would be commonly expected in more recent research.

mandating increased funding to New York City schools, Roza and Hill (2005) opined: "So, the real problem is not that New York City spends some $4,000 less per pupil than Westchester County, but that some schools in New York [City] spend $10,000 more per pupil than others in the same city." That is, the state has fixed its end of the system *enough*.

This statement by Roza and Hill is even more problematic when one dissects it more carefully. What they are saying is that the average of per pupil spending in suburban districts is only $4,000 greater than spending per pupil in New York City but that the difference between maximum and minimum spending across schools in New York City is about $10,000 per pupil. Note the rather misleading apples-and-oranges issue. They are comparing the average in one case to the extremes in another.

In fact, among downstate suburban[15] New York State districts, the range of between-district differences in 2005 was an astounding $50,000 per pupil (between the small, wealthy Bridgehampton district at $69,772 and Franklin Square at $13,979). In that same year, New York City as a district spent $16,616 per pupil, while nine downstate suburban districts spent more than $26,616 (that is, more than $10,000 beyond the average for New York City). Pocantico Hills and Greenburgh, both in Westchester County (the comparison County used by Roza and Hill), spent over $30,000 per pupil in 2005.[16] These numbers dwarf even the purported $10,000 range within New York City (a range that we agree is presumptively problematic); our conclusion based on this cursory analysis is that the bigger problem likely remains the between-district disparity in funding.

That said, these are anecdotal comparisons between values not adjusted for variations in costs.[17] What these examples and the above review do highlight is the very shallow depth of the current research base that might be used to tease out the relative sources of school-level funding disparities. Studies of within-district disparities are largely confined to a few states or individual districts where school-site expenditure data have been available. Yet, notwithstanding the fact that state school finance policies are idiosyncratic, studies having oft-suspect validity from select locations have been extrapolated by prominent researchers and advocates to have broader implications for within- and between-district disparities in other states.[18]

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[15] "Downstate Suburban" refers to areas such as Westchester County and Long Island and is an official regional classification in the New York State Education Department Fiscal Analysis and Research Unit Annual Financial Reports data, which can be found here:
http://www.oms.nysed.gov/faru/PDFDocuments/2008_Analysis.pdf and
http://www.oms.nysed.gov/faru/Profiles/profiles_cover.html
[16] Interestingly, however, Bridgehampton and New York City have relatively similar "costs" due to Bridgehampton's small size and New York City's high student needs (see Duncombe and Yinger, 2009). The figures offered in this paragraph are based on Total Expenditures per Pupil from State Fiscal Profiles 2005. http://www.oms.nysed.gov/faru/Profiles/profiles_cover.html. Results are similar when comparing current operating expenditures per pupil.
[17] Both are estimated to have per pupil costs about 2.25 times average cost to achieve comparable outcomes. Individual district cost indices provided by authors. By contrast, Pocantico Hills is estimated to have per pupil costs only 29% above average (also small size) and Greenburgh about 42% above average costs. As a result, per pupil spending in Greenburgh and Pocantico Hills is actually far greater than $10,000 more than New York City spending.
[18] As one additional example, William Ouchi (2004), based on a study of within district allocation and governance practices in Houston, Seattle, New York, Chicago and Los Angeles broadly proclaims: "Today's urban school districts have more than enough money in their budgets to do their jobs well." Baker and Thomas (2006) counter that New York City and Chicago Public Schools each spent well below that of surrounding districts in the years in which Ouchi studied these districts, but ignored their surroundings and state policy context.

There are, by our count, five inter-connected issues swimming around in this soup:
1. The existence of within-district funding disparities.
2. The extent of any such within-district disparities.
3. The continuing existence of between-district disparities.
4. The extent of any such between-district disparities.
5. The relative causal importance of within- and between-district disparities.

Our best reading of the extant literature tells us that numbers (1) and (3) should be non-controversial: disparities do exist, but they vary tremendously by jurisdiction. As discussed above, the evidence regarding number (2) is very limited, which also means we can provide no answers regarding number (5). But it is number (4) that is most interestingly implicated by the recent policy push—the contention that we as a nation have made such progress on addressing between-district disparities that we can now turn our attention elsewhere. As such, a fifty state analysis of the current status of between-district funding inequities is warranted.

Goals of this Analysis

The following analyses are focused only on the question of between-district disparities. That is, we are investigating the sometimes-explicit, sometimes-implicit argument that states have fulfilled their equity obligations, allowing a narrowed focus on district-level resource distribution policies. Our analyses are in two parts. First, we evaluate changes in the income-revenue relationship across school districts within states from 1990 to 2005. That is, we evaluate the extent to which combined state and local revenues per pupil are associated with median household income at the school district level. We apply Census 1990 income estimates for data from 1990 to 1995 and Census 2000 income estimates for data from 1996 to 2005. The goal of these analyses is to identify the extent to which state and local revenues across all states and within each state are linked to local differences in income. We characterize state school finance systems where state and local revenues are positively associated with income as *regressive*, meaning that wealthier districts receive more revenues. Similarly, we characterize state school finance systems where state and local revenues are negatively associated with income as *progressive*. This approach is similar to that used by Card and Payne (2002).

Second, using the most recent three years of federal data on local school district finances, we generate—for each state—predicted values of state and local revenue per pupil at 0% poverty, 10% poverty, 20% poverty and 30% poverty (based on U.S. Census Poverty Rates),[19] holding constant district economies of scale, population density, regional variations in competitive wages, and year. This approach allows us to construct a more complex and thorough model of state and local expenditures and also allows us to evaluate the extent to which states are providing predictably progressive (systematically supporting poor districts and the children they serve) resources across all districts within the state.

Longitudinal Changes, from 1990 to 2005

The first data set consists of 10,189 unified public school districts matched (the same districts over time) over the 16-year period from 1990 to 2005. The dependent measure of interest is

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[19] U.S. Census Small Area Income and Poverty Estimates (SAIPE) data are used in this analysis in part due to gaps in reporting of subsidized lunch data across all districts and states. In general, free and reduced price lunch rates run about 2 to 3 times U.S. Census poverty rates because higher-qualifying income thresholds are applied (130% poverty level for free lunch and 185% poverty level for reduced price lunch). Accordingly, the 30 percent poverty category here corresponds to an approximately rate of 90 percent free and reduced price lunch.

the total state and local revenues per pupil at the level of the school districts. Other relevant measures include the National Center for Education Statistics (NCES) Education Comparable Wage Index (available from 1997 to 2005), district enrollments, and data on median household income drawn from the U.S. Census and NCES School District Demographics System.

The objective of the statistical model is to evaluate the relationship between the income measure and state and local revenues per pupil, over time, but conditional on major factors affecting the differential costs of providing education in different settings and under different conditions. As such, the following equation is applied:

EQ1:

$$ln\text{SLOCREVPP}_{d,t} = b_0 + b_1\text{ECWI}_{d,t} + b_1\text{SCALE}_{d,t} + b_2\text{STATE}_d + b_3\text{YEAR}_{d,t} + b_4 ln\text{INCOME}_{d,t} + b_5(ln\text{INCOME}_{d,t} \times \text{YEAR}_d) + e$$

Where SLOCREVPP is the total of state and local revenue per pupil for each school district, ECWI is the National Center for Education Statistics Education Comparable Wage Index, SCALE is a matrix of dummy variables indicating enrollment size, STATE is a matrix of dummy variables for each state, YEAR is a matrix of dummy variables for each year in the data set, and INCOME is median household income (from U.S. Census 1990 and 2000).

State and Local Revenue per Pupil is expressed here as a natural logarithm because it is assumed that marginal increases in state and local revenue diminish at very high levels of median household income, also expressed as a natural logarithm. The ECWI (education comparable wage index) is applied annually from 1997 to 2005, but it is held at 1997 levels back through 1990 (because of its unavailability prior to 1997). Economies of scale are captured with a series of enrollment group variables from less than 100 students up to greater than 2,000 students.

Note that from 1997 to 2005, the ECWI picks up inflationary changes but prior to 1997, the year fixed effect picks up those inflationary changes. Our primary interest is in the income term and that term's interaction with the year term—or the way in which the relationship between income and state and local revenues per pupil changes over time. Below, in the "Findings" section of this article, we plot these elasticities over time to characterize the improvement—or lack thereof—in the distribution of state and local per pupil revenues over time.

Current Profiles, from 2005 to 2007

Our second data set consists of over 13,000 local public school districts from 2005 to 2007 and combines data from multiple sources including the following: U.S. Census fiscal survey of local governments (state and local revenues per pupil), U.S. Census small area income and poverty estimates of children between the ages of 5 and 17 in poverty, the NCES Education Comparable Wage Index (ECWI), and a county-level measure (from U.S. Census) of population density.

We use these data to estimate a slightly more complex model than the one estimated for our longitudinal analysis. In this case, our goal is to test the sensitivity of state and local revenues per pupil to student poverty rates across districts. Similar to our approach with the first set of analyses, a regressive state school finance system is one in which state and local revenues per pupil are negatively and systematically associated with poverty rates across districts, a progressive system is one in which state and local revenues per pupil are positively associated with poverty across districts, and a neutral system is one in which no relationship exists between poverty rates and state and local revenues per pupil. We assume a policy objective of progressiveness, where the ultimate objective of state school finance policy is to provide equal educational opportunity to children attending districts in high-poverty settings by providing additional resources in those settings (see Duncombe and

Yinger, 2008). We estimate the elasticities[20] between poverty and state and local revenues, conditional on major factors with demonstrated potential to affect the relative costs of providing educational services in one setting or location versus another.

  We estimate a three-year regression model using a pooled cross-state universe of local public school districts and local education agencies. That model is specified as follows:

EQ2:

$$ln\text{SLOCREVPP}_{d,t} = b_0 + b_1\text{ECWI}_{d,t-2} + b_2\text{SCALE}_{d,t} + b_3 ln\text{DENSITY}_c + b_4(\text{SCALE}_{d,t} \text{ x } ln\text{DENSITY}_c) + b_5\text{STATE}_d + b_6\text{YEAR}_{d,t} + b_7(\text{STATE}_{d,t} \text{ x } \text{YEAR}_{d,t}) + b_8\text{POVERTY}_{d,t} + b_9(\text{POVERTY}_{d,t} \text{ x } \text{STATE}_d) + e$$

In this model, *ln*SLOCREVPP is the natural logarithm of state and local revenue per pupil for district "d" at time "t", ECWI is the education comparable wage index for district "d" at time "t-2" (lagged primarily due to lack of an updated index),[21] SCALE is a series of categorical dummy variables indicating district enrollment size for district "d" at time "t", and SCALE is interacted with the natural log of the 2007 population density (DENSITY) for the primary county "c" of the district's location. This interaction term is included to capture the national average spending differences associated with economies of scale given population density. STATE is the state of district "d", which is also included in an interaction term with two year dummy variables (for 2005-06 and 2006-07, with base year 2004-05) in order to generate a coefficient of state-specific revenue-per-pupil increases (both state and local).

  The next term is POVERTY, which is the U.S. census poverty rate for resident 5- to 17-year olds in district "d" at time "t", which is followed by an interaction term between POVERY and STATE. It is this final interaction that is of primary interest to us in evaluating the fairness of state school finance systems. That is, how do state and local revenues per pupil vary by poverty, within states?

  This model is weighted for district enrollment because the ultimate goal of analyses of this type is to evaluate how, on average, the state school finance system treats its children. As such, it makes little sense to identify a state as fair if that state has a large number of very small high-poverty school districts that are well funded, but a handful of large districts that are poorly funded serving many more children than the aggregate of the small districts. The same is true of the inverse scenario, where a state does a good job in funding its larger urban districts but neglects poor rural

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[20] Elasticities are measured on a scale from 1 to -1, where an elasticity of 1.0 would signify a perfect alignment between revenues and median household income, while an elasticity of -1.0 would signify a perfect negative relationship between revenues and median household income. An elasticity of 1.0 would indicate that for a 1% change in income, one would expect a corresponding 1% change in state and local revenue per pupil. An elasticity of .1 would indicate that for a 10% change in income, one could expect a 1% change in state and local revenue. Relationships among variables like income and revenue must be evaluated against "expectations" for relationships among those specific variables, rather than against some more general statistical benchmark. In this case, an elasticity of .20 would be considered high.

[21] The current NCES ECWI is available for all districts from 1997 to 2005 and accounts for both between-labor market differences in competitive wages and inflationary changes in wages over time. Because it is reasonable to assume that most teachers in a school district were hired two or more years ago it is reasonable to account for cost variation across districts by lagging the CWI by two years. Further, we account additionally for inflation by including a year fixed effect in our models which should pick up any differences in the average change in state and local revenue not captured by the inflation component of the CWI (even if we excluded the inflation component). Finally, our use of the ECWI is primarily to account for between-labor market differences which do not change substantively from year to year.

ones. In both types of scenarios, the weight remains greater on large districts because of the numbers of children they serve.

     With the regression equation estimates, we then predict for each state the expected state and local revenues per pupil for a district with 0% poverty, 10% poverty, 20% poverty and 30% poverty. In doing so, we hold constant at the national average the NCES ECWI, we set the economies of scale dummy indicators to zero and the density to average (such that the hypothetical district represents a district of over 2,000 students, or one operating at the most efficient scale), and we set the year to 2006-07.

Findings

     In this section, we provide national longitudinal findings, as well as current status and longitudinal findings for selected states (by region). Figure 1 presents the national mean elasticity between income and per pupil revenues (state and local) from the models using the data from 10,189 districts. It shows that state and local revenues in 1990 were positively associated in a relatively strong way with median household income (an elasticity of over .20). Since that time, the relationship has moderated, with the income-revenue relationship becoming less positive, meaning that school funding overall has become less regressive. But funding has nevertheless remained positively associated with income as an average across all states.

Figure 1: *National Mean Relationship between Income and State and Local Revenue per Pupil over Time*
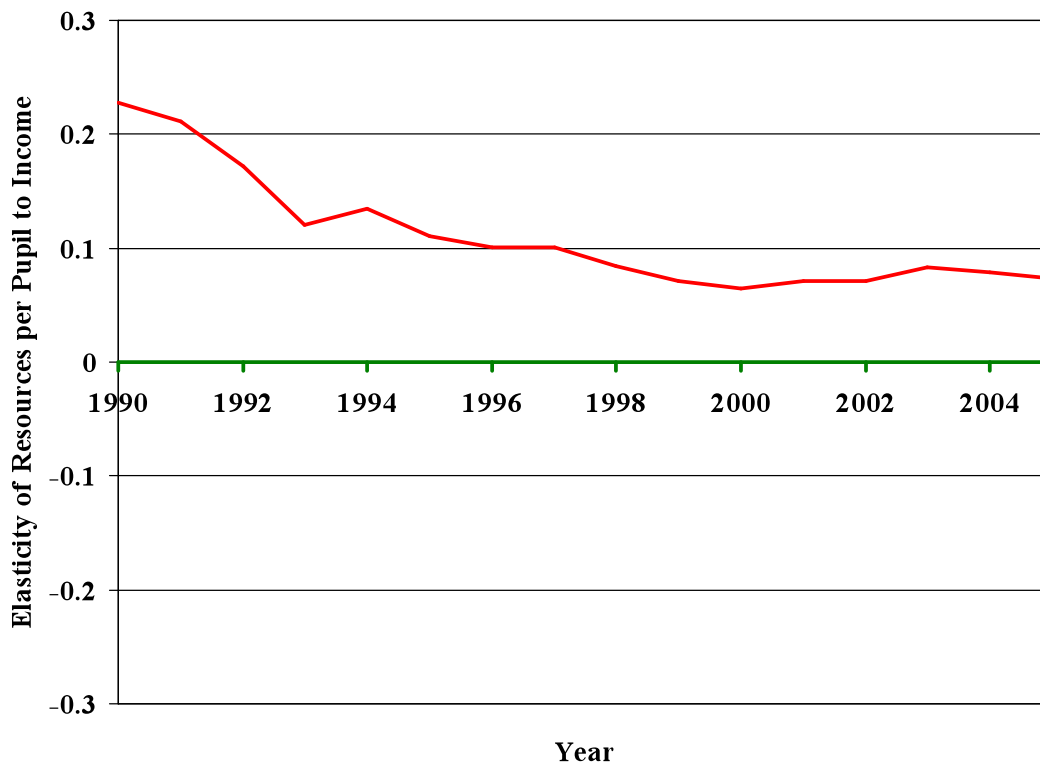
Source: Based on regression (lnState&Local = f(CWI, Year, MedHouseInc, MedHouseInc x Year, Scale, State) of federal data on 10,189 observations per year, matched over time.

This finding, of course, conceals substantial heterogeneity across states. Figure 2 displays the individual state trends of income-revenue elasticity for three Mid-Atlantic states (Delaware was excluded from this longitudinal analysis due to insufficient data points across districts for all years).

Consistent with the national trend, all of the Mid-Atlantic states have become less regressive over time. Nonetheless, all these states start out highly regressive, and only New Jersey has a negative income-revenue relationship across their school districts at the end of the period. From 1998 through 2005, the relationship between income and state and local revenues in Maryland actually increases. In New York, despite a fairly steady move toward less regressiveness, the relationship between income and state and local revenue in 2005 remains stronger than the national average relationship had been in 1990.

Figure 2: *Subdivision and State Level Changes in Income-Revenue Relationship in Mid-Atlantic Region*
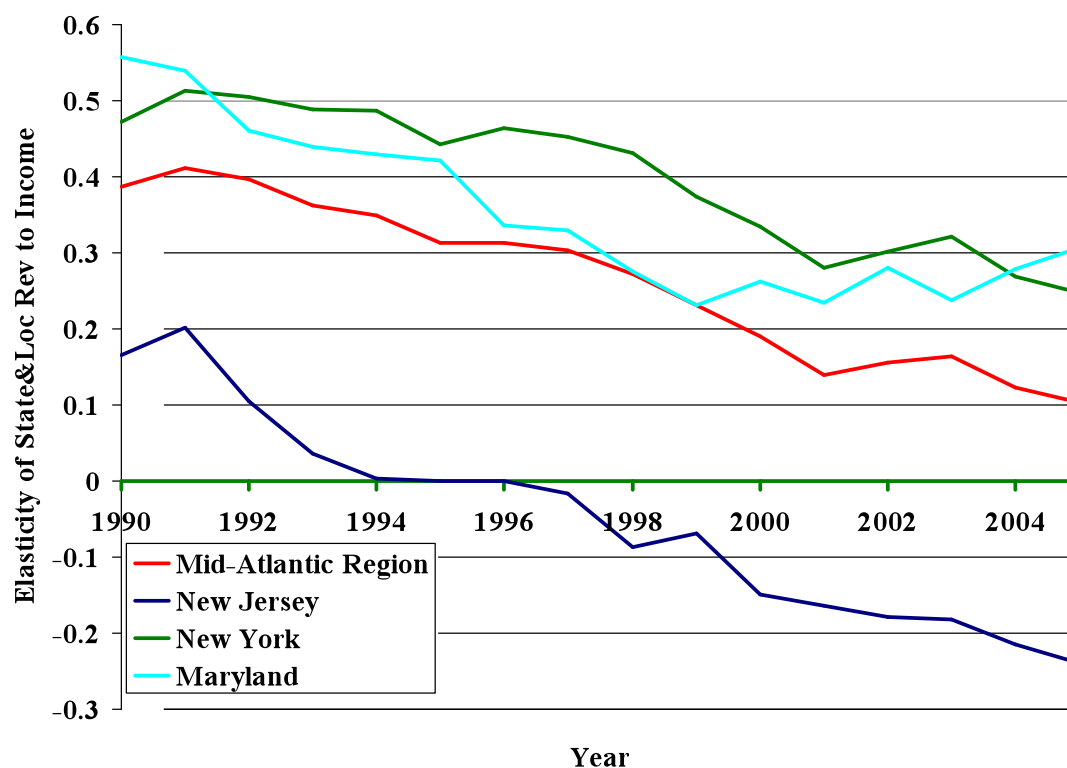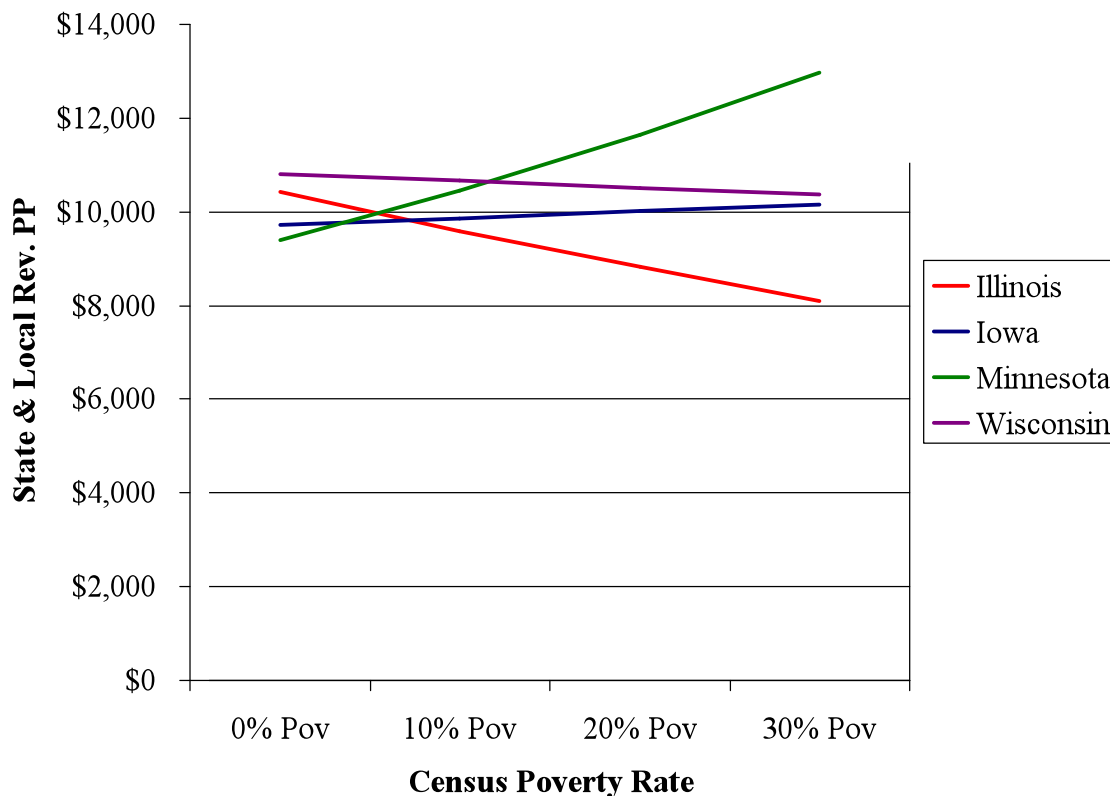

Source: Based on regression (lnState&Local = f(CWI, Year, MedHouseInc, MedHouseInc x Year, Scale, State) of federal data on 10,189 observations per year, matched over time.

Figure 3 presents the profiles of these three states plus Delaware, showing projected state and local revenues at varied poverty levels for 2007 after controlling for regional costs, population density, economies of scale and poverty. As in Figure 2, the New Jersey distribution is progressive while the others are regressive. The additional information provided in Figure 3 is the overall level of funding available across districts at differing levels of poverty. Comparing New York and New Jersey, for example, low-poverty New York districts have more resources than low-poverty New Jersey districts, but for higher-poverty districts the differential is reversed. Both New York and New Jersey districts have more resources than those in Delaware and Maryland.

Figure 3: *State Level Profiles of State and Local Revenue per Pupil for Mid-Atlantic States in 2007*
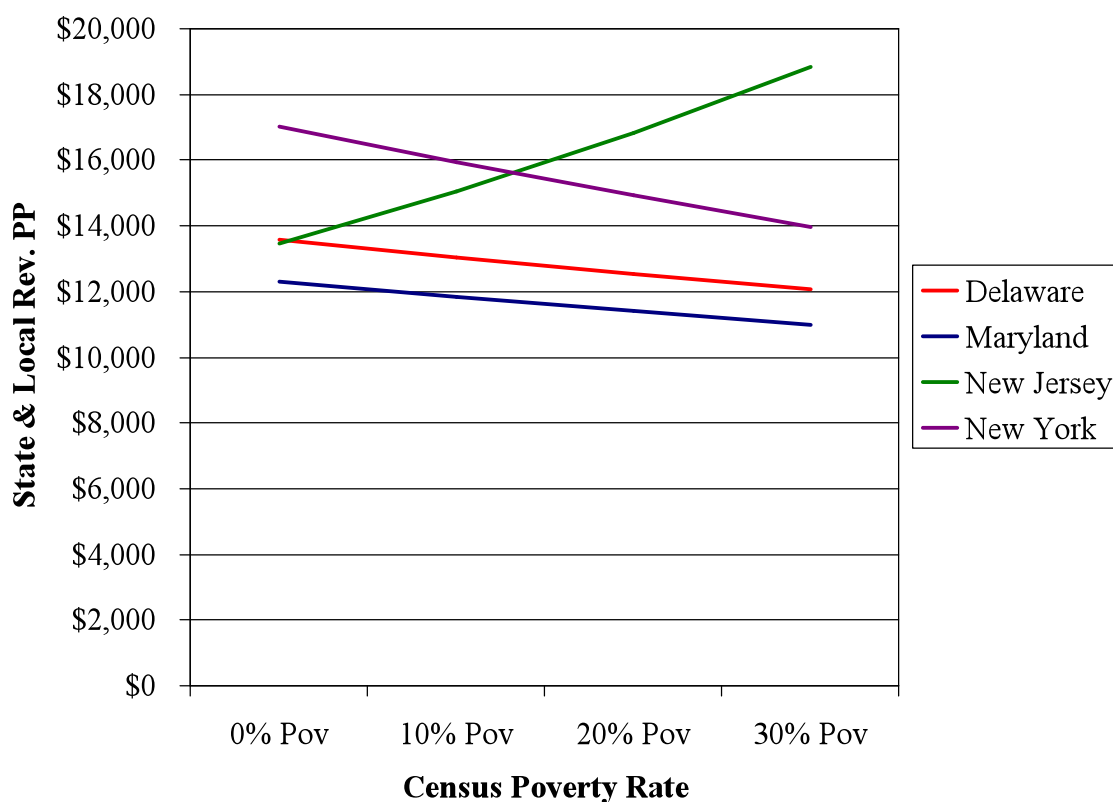
Source: Based on regression of over 13,000 observations per year for 2004-05, 2005-06 and 2006-07 with state and local revenue per pupil as dependent variable, and CWI, Scale, Density, Year, Census Poverty Rate and State as independent variables.

Figure 4 compares the trends in income-revenue elasticity for states in New England. (Vermont is excluded due to data issues including relatively small shares of children attending unified public school districts.) Massachusetts shifted from a positive to negative income-revenue relationship in the mid-1990s and then leveled off at this negative (progressive) relationship. Because two high-poverty districts experienced funding increases (Hartford and New Haven), Connecticut also shifted to a slightly negative income-revenue relationship, albeit not statistically significant. Rhode Island also shifted to a slightly (and non-significant) negative relationship between income and revenue around 2000. By contrast, income-related inequities in state and local revenues per pupil remained sizeable in New Hampshire throughout the period, and inequities in Maine actually increased between 1998 and 2005.

Figure 4: *Subdivision and State Level Changes in Income-Revenue Relationship in New England Region*
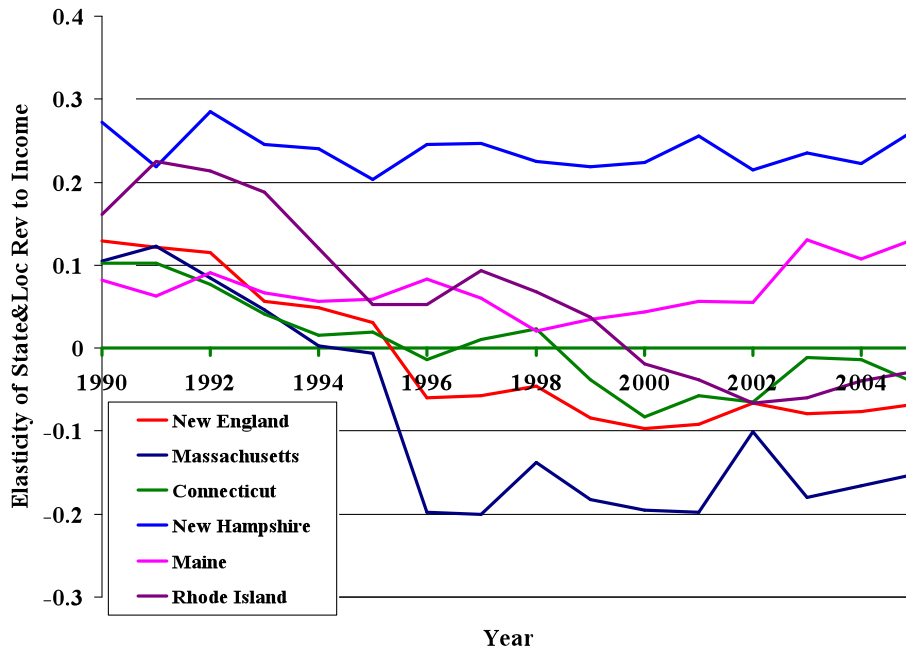
Source: Based on regression (lnState&Local = f(CWI, Year, MedHouseInc, MedHouseInc x Year, Scale, State) of federal data on 10,189 observations per year, matched over time

Figure 5: *State Level Profiles of State and Local Revenue per Pupil for New England States in 2007*
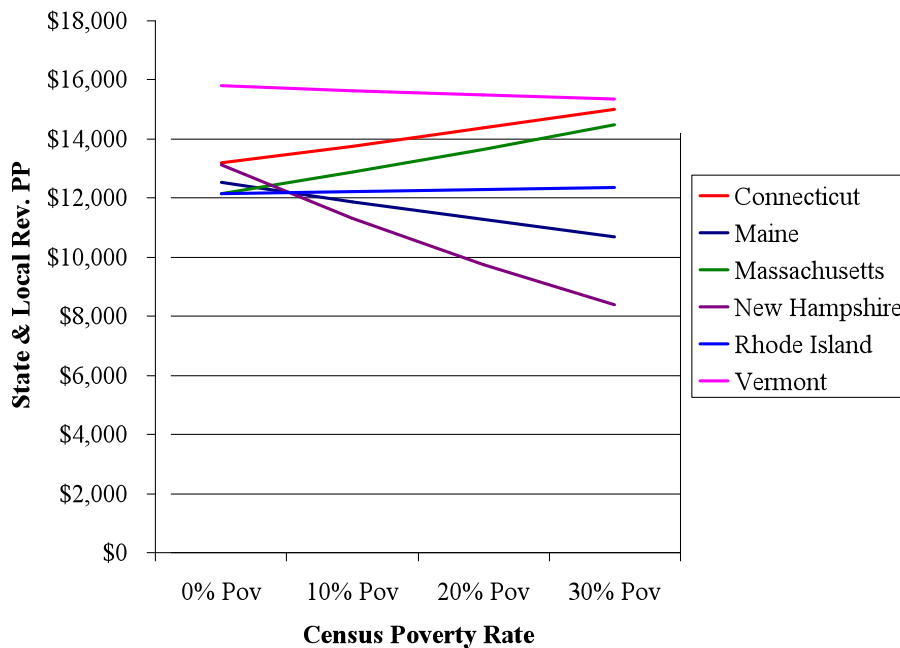
Source: Based on regression of over 13,000 observations per year for 2004-05, 2005-06 and 2006-07 with state and local revenue per pupil as dependent variable, and CWI, Scale, Density, Year, Census Poverty Rate and State as independent variables.

Figure 5 shows the 2007 state-level poverty profiles for New England states (including Vermont), again controlling for regional costs, population density, economies of scale and poverty. As revealed in Figure 4, Massachusetts and Connecticut are the only two states in New England where higher poverty districts have, on average, more resources per pupil, with that relationship being less systematic in Connecticut than in Massachusetts. In Rhode Island, the distribution remains poverty-neutral. Vermont, too, is fairly neutral, but at a higher spending level than the other states. In Maine and especially New Hampshire, higher-poverty districts have significantly less state and local revenue per pupil than lower-poverty districts.

Figure 6 shows the longitudinal trends in income-revenue elasticity for North Central states. As this figure makes clear, Minnesota is the only state in this region that has achieved progressive distribution of resources with respect to income, beginning with a progressive distribution by 1990 and building on that progressiveness during the succeeding years. This pattern is driven largely by elevated levels of funding in Minneapolis and St. Paul. In contrast, Iowa and Wisconsin have maintained relatively neutral funding with respect to income since the mid-1990s. Illinois, similar to Maryland and Maine, has become increasingly regressive since the mid-1990s. By 2004, Illinois had an income-revenue relationship comparable to the national average relationship in 1990.

Figure 6: *Subdivision and State Level Changes in Income-Revenue Relationship in North Central Region*
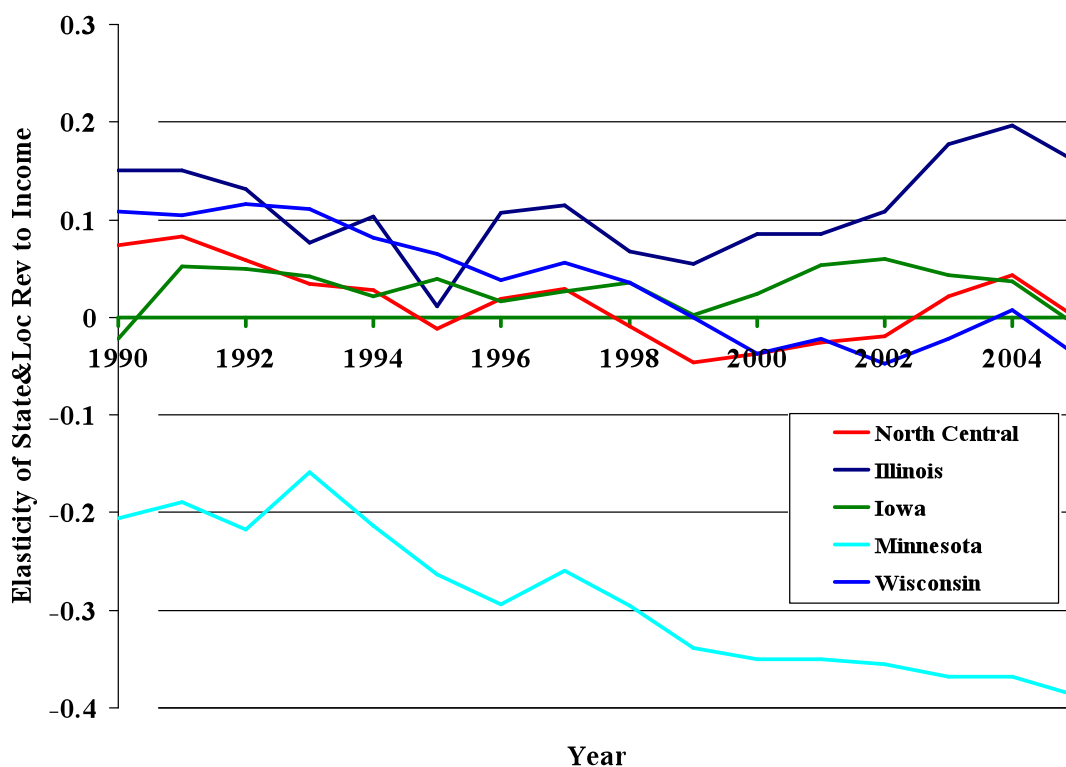
Source: Based on regression (lnState&Local = f(CWI, Year, MedHouseInc, MedHouseInc x Year, Scale, State) of federal data on 10,189 observations per year, matched over time.

Figure 7 displays the 2007 poverty profiles for these states. Only Minnesota maintains a poverty-progressive distribution of state and local revenues per pupil. Wisconsin and Iowa maintain

relatively flat distributions, and Illinois maintains a highly regressive distribution of state and local revenues per pupil with respect to poverty.

Figure 7: *State Level Profiles of State and Local Revenue per Pupil for North Central States in 2007*

Source: Based on regression of over 13,000 observations per year for 2004-05, 2005-06 and 2006-07 with state and local revenue per pupil as dependent variable, and CWI, Scale, Density, Year, Census Poverty Rate and State as independent variables.

The above graphs are illustrative of the heterogeneity of school funding inequities that persist across states in most regions. Appendix A sets forth a table of projected state and local revenues at varied poverty levels for all states, based on our three-year panel analysis from 2005 to 2007. Notably, some regions—in particular, the Southeast—include only states where the poverty-revenue relationship remains regressive.

Table 1 presents a subset of the data in Appendix A, summarizing spending trends in those states having the most and least progressive distribution of state and local revenues. Alaska[22] and

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[22] Our models project that in Alaska, a district with 30% children in poverty would be expected to have nearly three times the per pupil revenues of a district with 0% children in poverty. Notably, Alaska is a quirky state when it comes to the organization of its schools and distribution of children. This strong positive effect is partly a function of very high poverty rates in very remote rural school districts, which receive a substantial boost in funding due to their remoteness. It might be argued that those "similarly" small and remote school districts in other states like Wyoming or Montana are not in fact similar enough to Alaska schools.

Utah,[23] which lead the pack, are both a bit quirky. Other states with positive systematic relationships between state and local revenues and poverty include New Jersey, Minnesota, Massachusetts, Indiana, and Ohio.[24] Despite our efforts to correct as fully as possible for factors such as size and economies of scale, we remain less confident in relationships revealed for South Dakota, Montana and New Mexico because of smaller overall shares of total children attending scale-efficient unified districts, but all three do show statistically significant positive relationships.

Among the bottom ten states are six where the negative relationship between state and local revenue per pupil and poverty is not systematic (labeled with an "N" in the "confidence" column on the right side of the table). These states' school finance systems are certainly still problematic; on average, high-poverty districts receive less than low-poverty districts. But a non-systematic relationship suggests differences in state and local revenues where some poor districts receive more than others and some less than others, even after accounting for a variety of other cost factors.

Table 1: *Most and least progressive states in 2007*

State	Mean Actual State and Local Rev. per Pupil	At 0% Poverty	At 10% Poverty	At 20% Poverty	At 30% Poverty	High/ Low	Confidence[*]
TOP TEN							
Alaska	$12,504	$7,859	$11,665	$17,314	$25,699	327%	
Utah	$6,586	$5,700	$6,539	$7,503	$8,608	151%	
New Jersey	$17,115	$13,464	$15,060	$16,845	$18,841	140%	
Minnesota	$10,893	$9,391	$10,458	$11,646	$12,968	138%	
Ohio	$10,933	$9,054	$9,896	$10,816	$11,821	131%	
South Dakota	$8,347	$7,467	$8,066	$8,712	$9,410	126%	
Massachusetts	$14,355	$12,146	$12,880	$13,658	$14,483	119%	
Montana	$9,158	$7,848	$8,279	$8,733	$9,213	117%	
Indiana	$9,271	$8,534	$8,991	$9,471	$9,978	117%	
New Mexico	$8,890	$8,286	$8,664	$9,060	$9,474	114%	
BOTTOM TEN							
Missouri	$8,689	$8,994	$8,611	$8,244	$7,893	88%	N
Maine	$11,903	$12,532	$11,889	$11,279	$10,701	85%	N
Pennsylvania	$12,282	$12,715	$12,020	$11,362	$10,741	84%	
Virginia	$10,854	$10,758	$10,157	$9,590	$9,054	84%	N
North Carolina	$8,401	$9,134	$8,615	$8,126	$7,664	84%	N
North Dakota	$9,063	$9,370	$8,788	$8,241	$7,728	82%	N
New York	$17,247	$17,012	$15,931	$14,920	$13,972	82%	
Illinois	$10,179	$10,430	$9,589	$8,816	$8,105	78%	
Nevada	$8,829	$9,916	$8,988	$8,146	$7,383	74%	N
New Hampshire	$12,351	$13,113	$11,304	$9,745	$8,401	64%	

* The "N" in the column signals that the negative relationship between state and local revenue per pupil and poverty is not systematic.

In four of these bottom ten states—Pennsylvania, New York, Illinois and New Hampshire—there existed in 2006-07 a strong, negative, and systematic relationship between school district poverty and state and local revenues per pupil. In each of these states, high-poverty districts

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[23] Utah shows a relatively high ratio of state and local revenues per pupil in high poverty compared to low-poverty districts. But Utah's state and local revenues per pupil at all poverty levels are very low—last in the nation.

[24] This finding provides some support for Carr, Gray and Holley's untested contention that Ohio has made progress on resolving between-district disparities.

were expected to receive systematically less state and local revenue per pupil than low-poverty districts. Since 2006-07, New York and Pennsylvania have begun implementing changes to their state school finance systems, which may change this distribution. Illinois and New Hampshire, however, have not.

Conclusions and Policy Implications

Overall, we find that there has been no consistent treatment or resolution of between-district disparities in school revenues. New Hampshire and some other states have made no apparent progress. Illinois is an example of a state that has actually become more regressive over time. Pennsylvania and New York are among those states that, while still highly regressive, may be making recent progress as a result of newly adopted state school finance formulas. And states like New Jersey, Massachusetts and Ohio have made genuine progress in moving toward a progressive system.

This answers an important question: problems with between-district revenue disparities are still not resolved. Some states have made progress, but others have actually regressed.

The above analysis, however, does not attempt to answer a second, related question. Researchers such as Roza have raised the comparative issue: which type of disparity—inter-district or intra-district—results in greater inequities. An analysis that would appropriately answer this question concerning relative importance would require more systematic efforts to evaluate simultaneously these disparities and their effects on students in a given area. Such analyses would also require more systematically collected data on school-site expenditures. Only a handful of states, including California, Ohio, Rhode Island and Texas, currently engage in a thorough collection of this type of data across all districts. Further, even among these states, data on school-site expenditures differ from state to state, making difficult any cross-state comparisons of within-district disparities.

For the foreseeable future, therefore, researchers will likely be confined to evaluating within- and between-district equity for specific states, one at a time. This type of focus on individual states is generally most appropriate anyway, given the heterogeneity of state school finance systems. Few generalizations regarding equity of school funding can reasonably be drawn across all states or even among groups of geographically contiguous states; any such generalizations should be greeted with a high degree of skepticism.

We certainly recommend that more states collect and make available school-level spending data. Yet we hasten to add that the comparative question itself is largely misguided. There is no need to rank the two sources of inequity, nor is there a need to address one to the exclusion of the other. Moreover, our inability to draw national conclusions regarding within- or between-district inequities only modestly constrains any policy responses. The role of federal funding is relatively limited, having negligible effects on the overall relationships addressed in the analyses set forth above (Baker, Sciarra and Coley, forthcoming). Instead, each individual state has control over the levels of funding available across its local public school districts. Each state also has control over accountability policies that might push those districts toward greater internal equity in resource distribution. The solutions to these state-level problems lie largely with state governments, in the absence of a dramatically expanded federal role. Downes (2002) similarly explains that:

> School finance reforms, tax and expenditure limitations, and legislation enabling the creation of charter schools have as many differences across states as they have commonalities. The challenge facing researchers is to determine what lessons can be learned only from national-level analyses and only from state-level case studies and to distill these lessons for policymakers (p. 161).

The main lesson to be drawn from the cumulative state-level analyses documented earlier in this article is that it is premature to shift policy attention away from between-district spending disparities. Just to be clear, it is difficult to evaluate the policy impact to date of advocacy in favor of this shift the emphasis. Looking first at litigation, we see little evidence, as of yet, that state courts are willing to emphasize one over the other, or to back off from mandating that states resolve between-district disparities until districts first do their part. Moreover, we expect that state courts will continue to acknowledge that the primary responsibility for ensuring equity across both schools and districts rests with the state, pursuant to language in state constitutions.

But we are less sanguine about the potential emphasis shift in state legislatures. A goal of this article is to head off what we perceive as a growing wave of policy advocacy and punditry seeking to provide ineffective but deceptively convenient revenue-neutral school-finance "solutions" for state legislatures (see Baker and Elmer, 2009). We point to the esteemed list of signatories of the original Fordham Institute *Fund the Child* advocacy document as evidence that our concerns are not unfounded (Fordham Institute, 2006).[25] We also point to proposals from the Center for American Progress for using Title I aid as the carrot for requiring states to fix within-district but not between-district disparities as evidence that influential policy think tanks at least plan to use this argument to influence federal policy (McClure, Wiener, Roza, and Hill, 2008). Such arguments have made their way into congressional hearings in the past year, and we expect increased emphasis on these issues as reauthorization of ESEA moves forward.[26]

Research and policy attention to within-district resource allocation should certainly continue, since it appears that this is an important issue as well. But policymakers should be skeptical of claims that the resource needs of high-poverty schools can generally be met merely via a reshuffling of district-level resources. Further, policymakers must be cognizant that persistent between-district disparities may significantly constrain districts' ability to resolve within-district disparities (Baker, forthcoming). Remedies should consider both simultaneously. While the circumstances of each state and each district will differ, spending patterns in the country as a whole are still far from the progressivity that would be needed to provide equitable and adequate resources to these schools.

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[25] See http://www.edexcellence.net/fundthechild/signatories.cfm
[26] See testimony of Marguerite Roza at:
http://edlabor.house.gov/documents/111/pdf/testimony/20090930MargueriteRozeTestimony.pdf
See the testimony of Linda Murray at:
http://edlabor.house.gov/documents/111/pdf/testimony/20090930LindaMurrayTestimony.pdf

Appendix A

Average actual state and local revenues and predicted state and local revenues from regression model (Current Profiles EQ2) with poverty set at varied levels

State	Mean Actual State and Local Rev. per Pupil	At 0% Poverty	At 10% Poverty	At 20% Poverty	At 30% Poverty	High/ Low [a]	Confidence [b]
Alaska	$12,504	$7,859	$11,665	$17,314	$25,699	327%	
Utah	$6,586	$5,700	$6,539	$7,503	$8,608	151%	
New Jersey	$17,115	$13,464	$15,060	$16,845	$18,841	140%	
Minnesota	$10,893	$9,391	$10,458	$11,646	$12,968	138%	
Ohio	$10,933	$9,054	$9,896	$10,816	$11,821	131%	
South Dakota	$8,347	$7,467	$8,066	$8,712	$9,410	126%	
Massachusetts	$14,355	$12,146	$12,880	$13,658	$14,483	119%	
Montana	$9,158	$7,848	$8,279	$8,733	$9,213	117%	
Indiana	$9,271	$8,534	$8,991	$9,471	$9,978	117%	
New Mexico	$8,890	$8,286	$8,664	$9,060	$9,474	114%	
Connecticut	$15,132	$13,181	$13,765	$14,375	$15,013	114%	
Tennessee	$6,966	$6,429	$6,683	$6,946	$7,220	112%	
Oregon	$8,525	$8,175	$8,417	$8,666	$8,922	109%	
Wyoming	$16,238	$16,254	$16,684	$17,126	$17,580	108%	N
Oklahoma	$7,053	$6,665	$6,813	$6,964	$7,118	107%	
Iowa	$9,879	$9,723	$9,867	$10,014	$10,163	105%	
Arizona	$8,091	$7,801	$7,906	$8,012	$8,120	104%	
Arkansas	$8,158	$8,136	$8,233	$8,332	$8,432	104%	
Kentucky	$8,585	$8,531	$8,627	$8,724	$8,823	103%	
California	$9,774	$8,879	$8,974	$9,069	$9,166	103%	
Georgia	$9,969	$9,544	$9,623	$9,703	$9,784	103%	
South Carolina	$9,155	$9,057	$9,122	$9,188	$9,255	102%	
Rhode Island	$13,114	$12,159	$12,222	$12,285	$12,349	102%	
AVERAGE		**$10,153**	**$10,127**	**$10,144**	**$10,207**	**101%**	
West Virginia	$9,072	$9,349	$9,361	$9,373	$9,385	100%	
Nebraska	$9,881	$9,633	$9,589	$9,545	$9,501	99%	N
Vermont	$17,552	$15,802	$15,648	$15,495	$15,344	97%	N
Washington	$9,366	$9,076	$8,969	$8,863	$8,758	96%	
Mississippi	$7,102	$7,608	$7,505	$7,403	$7,303	96%	
Wisconsin	$10,999	$10,813	$10,662	$10,513	$10,367	96%	
Texas	$8,813	$8,738	$8,542	$8,350	$8,163	93%	
Michigan	$10,200	$10,077	$9,825	$9,580	$9,341	93%	N
Kansas	$10,040	$10,300	$10,023	$9,754	$9,492	92%	N
Colorado	$9,012	$9,149	$8,882	$8,623	$8,372	92%	N
Louisiana	$8,806	$9,558	$9,259	$8,970	$8,689	91%	N
Florida	$9,947	$10,216	$9,884	$9,562	$9,251	91%	N
Maryland	$12,948	$12,313	$11,856	$11,417	$10,993	89%	N
Alabama	$8,591	$9,465	$9,107	$8,764	$8,433	89%	
Delaware	$13,572	$13,564	$13,045	$12,546	$12,065	89%	N
Idaho	$6,898	$7,471	$7,166	$6,873	$6,593	88%	N
Missouri	$8,689	$8,994	$8,611	$8,244	$7,893	88%	N
Maine	$11,903	$12,532	$11,889	$11,279	$10,701	85%	N
Pennsylvania	$12,282	$12,715	$12,020	$11,362	$10,741	84%	
Virginia	$10,854	$10,758	$10,157	$9,590	$9,054	84%	N
North Carolina	$8,401	$9,134	$8,615	$8,126	$7,664	84%	N
North Dakota	$9,063	$9,370	$8,788	$8,241	$7,728	82%	N
New York	$17,247	$17,012	$15,931	$14,920	$13,972	82%	
Illinois	$10,179	$10,430	$9,589	$8,816	$8,105	78%	
Nevada	$8,829	$9,916	$8,988	$8,146	$7,383	74%	N
New Hampshire	$12,351	$13,113	$11,304	$9,745	$8,401	64%	

[a] Ratio of predicted state and local revenue at 30% poverty to predicted revenue at 0% poverty
[b] N = slope not statistically significant (p<.05)

References

Ajwad, M. I. (2006). Is intra-jurisdictional resource allocation equitable? An analysis of campus level spending data from Texas elementary schools. *The Quarterly Review of Economics and Finance*, *46*, 552-564.

Andrews, M., Duncombe, W., and Yinger, J. (2002). Revisiting economies of size in American education: Are we any closer to consensus? *Economics of Education Review*, *21*, 245-262.

Baker, B. D. (forthcoming). *Re-arranging deck chairs in Dallas: Contextual constraints on within district resource allocation in large urban Texas school districts.*

Baker, B. D. (2009). Evaluating Marginal Costs with School Level Data: Implications for the Design of Weighted Student Allocation Formulas. *Education Policy Analysis Archives*, 17(3).

Baker, B. D. (2007). *Review of "Shortchanging Disadvantaged Student: An Analysis of Intra-district Spending Patterns in Ohio."* Boulder and Tempe: Education and the Public Interest Center & Education Policy Research Unit. Retrieved December 14, 2009 from http://epicpolicy.org/thinktank/review-shortchanging-disadvantaged-students-an-analysis-intra-district-spending-patterns-o

Baker, B. D., Sciarra, D., and Coley, R. (forthcoming). *Fair School Funding: A National Report Card.*

Berne, R., Stiefel, L. (1994). Measuring Equity at the School Level: The Finance Perspective. *Educational Evaluation and Policy Analysis, 16*(4) 405-421.

Bifulco, R. (2005) District-Level Black-White Funding Disparities in the United States 1987 to 2002. *Journal of Education Finance* 31 (2) 172-194.

Burke, S. M. (1999). An Analysis of Resource Inequality at the State, District, and School Levels. *Journal of Education Finance*, *24*(4), 435-458.

Card, D., and Payne, A. A. (2002). School Finance Reform, the Distribution of School Spending, and the Distribution of Student Test Scores. *Journal of Public Economics*, *83*(1), 49-82.

Carr, M., Gray, N., and Holley, M. (2007, September 20). *Shortchanging disadvantaged students: An analysis of intra-district spending patterns in Ohio.* Policy Report No. 14. Columbus: The Buckeye Institute for Public Policy Solutions. Retrieved Oct. 10, 2007, from http://www.buckeyeinstitute.org/docs/Shortchanging_Disadvantaged_Students.pdf.

Clotfelter, C. T., Ladd, H. F., and Vigdor, J. (2005). Who Teaches Whom? Race and the distribution of novice teachers*, Economics of Education Review*, *24*(4), 377-392.

Deke, J. (2003). A study of the impact of public school spending on postsecondary educational attainment using statewide school district refinancing in Kansas, *Economics of Education Review*, *22*(3), 275-284.

Downes, T. A. (2004). School Finance Reform and School Quality: Lessons from Vermont. In Yinger, J. (ed), *Helping Children Left Behind: State Aid and the Pursuit of Educational Equity*. Cambridge, MA: MIT Press.

Downes, T. A., Zabel, J., and Ansel, D. (2009). *Incomplete Grade: Massachusetts Education Reform at 15*. Boston, MA. MassINC.

Downes, T.A. (2002) Do State Governments Matter? a review of the evidence on the impact on educational outcomes of the changing role of the states in the financing of public education. *Federal Reserve Bank of Boston*. Conference Proceedings, June 2002, pp. 143-180

Duncombe, W.D., and Johnston, J. (2004). *Helping Children Left Behind: State Aid and the Pursuit of Educational Equity*. Cambridge, MA: MIT Press.

Duncombe, W., and Yinger, J. (2008). Measurement of Cost Differentials. In H.F. Ladd & E. Fiske (eds), pp. 203-221. *Handbook of Research in Education Finance and Policy*. New York: Routledge.

Education Trust (2006) *Funding Gaps 2006*. Washington, DC. Author
http://www.edtrust.org/dc/publication/the-funding-gap-0

Education Trust (2005a). *The Funding Gap Report 2005: Low-Income and Minority Students Shortchanged by Most States*. Washington, DC. Author (www.edtrust.org)

Education Trust (2005b). *Technical Appendix to the Funding Gap Report 2005: Low-Income and Minority Students Shortchanged by Most States*. Washington, DC. Author (www.edtrust.org)

Fordham Institute, Thomas B. (2006). *Fund the child: Tackling inequity and antiquity in school finance*. Washington, DC: Author. Retrieved February 7, 2009, from http://www.edexcellence.net/fundthechild

Hanushek, E. A. and Lindseth, A. (2009). *Schoolhouses, Courthouses and Statehouses*. Princeton, N.J.: Princeton University Press.

Hertert, L. (1995). "Does Equal Funding for Districts Mean Equal Funding for Classroom Students? Evidence from California" In Picus, L.O. & J.L. Wattenburger (Eds.). *Where Does the Money Go? Resource Allocation in Elementary and Secondary Schools*. Thousand Oaks, CA: Corwin Press.

Hill, P., Roza, M., and Harvey, J. (2008). *Facing the Future: Financing Productive Schools*. Final Report from the Center on Reinventing Public Education, School Finance Redesign Project. Retrieved December 14, 2009 from http://www.crpe.org/cs/crpe/view/csr_pubs/251

Imazeki, J., and Reschovsky, A. (2004). *Helping Children Left Behind: State Aid and the Pursuit of Educational Equity*. Cambridge, MA: MIT Press.

Lankford, H., Loeb, S., and Wyckoff, J. (2002). Teacher sorting and the plight of urban schools: A descriptive analysis. *Educational Evaluation and Policy Analysis, 24*, 37-62.

McClure, P., Wiener, R., Roza, M., and Hill, M. (2008). *Ensuring equal opportunity in public education: How local school district funding policies hurt disadvantaged students and what federal policy can do about it*. Washington, DC: Center for American Progress. Retrieved December 20, 2009 from http://www.americanprogress.org/issues/2008/06/pdf/comparability.pdf

Murray, S. E., Evans, W. N., and Schwab, R. M. (1998). Education Finance Reform and the Distribution of Education Resources. *American Economic Review, 88*(4), 789-812.

Ouchi, W.G. (2004, Winter). Academic Freedom. *Education Next*. Retrieved December 14, 2009 from http://www.educationnext.org/20041/21.html

Public Impact; The University of Dayton, School of Education and Allied Professions; and Thomas B. Fordham Institute. (2008, March). *Fund the Child: Bringing Equity, Autonomy and Portability to Ohio School Finance How sound an investment?* Washington, DC: Thomas B. Fordham Institute. Retrieved December 20, 2009 from http://www.edexcellence.net/doc/fund_the_child_ohio_031208.pdf

Rivkin, S. G., Hanushek, E. A., and Kain, J. F. (2005). Teachers, schools, and academic achievement. *Econometrica*, 73(2), 417-458.

Roos, P. (1998). Intradistrict Resource Disparities: A Problem Crying Out for a Solution, in Marilyn Gittell (ed.), *Strategies for School Equity: Creating Productive Schools in a Just Society* (pp. 40-52). New Haven, CT: Yale University Press.

Rose, H., Sonstelie, J., and Reinhard, R. M. (2006). *School resources and academic standards in California: Lessons from the schoolhouse*. San Francisco: Public Policy Institute of CA.

Roza, M. (2006) "How Districts Short Change Low Income and Minority Students," in *Funding Gaps 2006*. Washington, DC: The Education Trust.

Roza, M., Guin, K., and Davis, T. (2007). *What is the Sum of the Parts? How Federal, State, and District Funding Streams Confound Efforts to Address Different Student Types*. School Finance Redesign Project Working Paper 9, Center on Reinventing Public Education, University of Washington. Retrieved December 24, 2009 from

http://reference.kfupm.edu.sa/content/w/h/what_is_the_sum_of_the_parts__how_federa
_92157.pdf

Roza, M., Guin, K., Gross, B., and Deburgomaster, S. (2007). Do Districts Fund Schools Fairly?
Education Next, *7*(4), 68-73. Retrieved December 21, 2009 from
http://educationnext.org/do-districts-fund-schools-fairly/

Roza, M., and Hill, P. (2005, March 7). Why Equal Funding isn't as Easy as Apple Pie. *Christian
Science Monitor*. Retrieved December 21, 2009 from
http://www.csmonitor.com/2005/0307/p09s01-coop.html

Rubenstein, R., Schwartz, A. E., Stiefel, L., and Bel Hadj Amor, H. (2007). From districts to schools:
The distribution of resources across schools in big city school districts. *Economics of Education
Review*, 26(5), 532-545.

Schwartz, A. E., Stiefel, L. (2004). Immigrants and the Distribution of Resources
Within an Urban School District. *Educational Evaluation and Policy Analysis*, *26*(4)
303-327.

Stiefel, L, Rubenstein, R., and Berne, R. (1998). Intra-District Equity in Four Large Cities: Data,
Methods and Results." *Journal of Education Finance*, *23*(4), 447-467.

Taylor, L. L., and Glander, M. (2006). *Documentation for the NCES Comparable Wage Index Data File*
(EFSC 2006-865). U.S. Department of Education. Washington, DC: National Center for
Education Statistics.

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