
School Money Trials

*The Legal Pursuit of
Educational Adequacy*

Martin R. West

Paul E. Peterson

editors

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*The Alchemy of "Costing Out"
an Adequate Education*

HOLDING SCHOOLS ACCOUNTABLE for student performance has highlighted a simple fact: many students are not achieving at desired levels. Significant achievement gaps by race and income persist, and concerns abound about whether most schools are on the path to improving the achievement of all students. While people of diverse perspectives have offered reform plans and solutions, a prevailing argument is that the schools lack sufficient resources to support academic success, and a variety of parties have sued states to compel them to provide greater funding for education. A key question in those lawsuits—"What will it cost to improve student achievement?"—has led courts and legislatures to seek out a scientific determination of the amount of spending required by schools. And there has been no shortage of consultants offering to provide one.

Consultants have developed four distinct methods for "costing out"—that is, estimating—the additional spending necessary to secure an adequate education. They are generally referred to as the "professional judgment," "state-of-the-art" (or "evidence-based"), "successful schools," and "cost function" methods. Costing out studies are frequently contracted for by plaintiffs or other

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interested parties who desire increased levels of spending for education, although defendants may commission one in an attempt to neutralize a rival study. This chapter describes the main features of each method and explains why they all fall short of scientific standards of inquiry and validity.

The Origin of School Finance Lawsuits

The judiciary's involvement in the evaluation of education funding schemes has prompted a significant shift in policy discussions about school finance. All state constitutions mandate a statewide educational system and prescribe a legislative process for determining state and local government funding for public elementary and secondary education (and for the many other public services that these governments provide). Nationwide, less than 10 percent of spending on education comes from the federal government, with the balance split roughly equally between state and local governments. The exact distribution of fiscal responsibility differs significantly from one state to the next, but in almost all states, local governments, usually independent school districts, raise their share mainly through the local property tax. States generally distribute their funds so as to compensate, at least partially, for differences in local property values that affect the ability of local school districts to raise funds.

Following the California court case *Serrano v. Priest*, initially decided in 1971, a majority of states saw legal actions designed to equalize funding across districts. The plaintiffs in those cases argued that some school districts—by virtue of a low property tax base or unwillingness to support school funding—spent significantly less than other, often more advantaged, districts. That disparity created an equity concern because children growing up in a low-spending jurisdiction might thereby receive an inferior education.

The outcomes of the suits, argued under separate state constitutions, were mixed, with some state courts finding such disparities to be constitutional and others not.¹ Whether or not they were successful, the lawsuits tended to increase the state share of funding and brought about more equalized funding within states, with many state legislatures acting without being pressured to do so by a court judgment.² Interestingly, although school funding suits were based on the assumption that an inferior education put students at a disadvantage, until recently virtually no scholars had examined whether student test scores or other educational outcomes tended to be more equal after spending was equalized. In fact, the few investigations of this issue that have been conducted show that the spending increases produced by equity lawsuits have had little or no effect on student achievement.³

Adequacy Litigation

Beginning in the 1980s, some plaintiffs argued that children might not be getting a constitutionally acceptable level of education even when spending across a state was more or less equal. Alabama, the target of a 1993 case, *ACE v. Hunt*, epitomized this situation: spending across districts was quite equal but student achievement levels were near the bottom for the nation. The juxtaposition of an equitable system and poor performance led to a new legal and policy goal, described as "adequacy." The plaintiffs in adequacy lawsuits argue that students' low achievement stems from insufficient public funding and ask the courts to correct that fiscal inadequacy.

The new focus on adequacy dovetailed with the accountability and standards movement, which has asked states to track student educational proficiency relative to state standards or goals. The federal No Child Left Behind Act of 2001 (NCLB) has reinforced and extended this movement, requiring testing in grades three through eight and once in high school to give the public detailed information on how well students are performing in school. Plaintiffs engaged in adequacy litigation have been able to use that information to assert that a state has failed to meet its constitutional obligations as described in the educational clause of its constitution. They then find it easy to argue that the state is not investing the necessary resources to ensure that students are reaching the proficiency standards the state itself has set. Costing out studies purport to show what it will cost for students to reach proficiency.

Costing Out Approaches

In court, adequacy litigants present such costing out studies as "scientific" evidence of the amount of money needed to obtain an adequate education. Such studies have been conducted or are in progress in a vast majority of states, and the demand for new ones has only continued to rise as adequacy lawsuits proliferate.⁴ Plaintiffs have discovered that there is great value in presenting to the court and the public a specific "number" for total "required" state spending, which they want to be treated as the amount that is both necessary and sufficient.⁵ Courts have clearly been influenced by this strategy, as judges have been willing to write that specific number, derived from costing out studies, into the remedies that they order.⁶ Legislatures also consistently use the studies to guide their appropriations.

Before describing and assessing the various costing out methods, it is worthwhile to discuss some of the terminology that they use and a fundamental

problem common to them all. School finance discussions are punctuated by certain terms, whose meaning in this context often differs greatly from its generally accepted meaning. Most notably, the concepts of *cost* and *efficiency* have been redefined to suit the argument at hand. Ordinarily, ensuring "efficiency" (sometimes called "cost efficiency") requires finding the least expensive way of achieving one's objective, but adequacy consultants have not only ignored this definition but also refashioned it to support their case that more money—indeed, as much money as is politically feasible—should be spent on education.

The overarching problem stems from the nonexistence of empirical evidence on which to base estimates of the costs of adequate student proficiency. The consultants' work would be simple if scholars could show, repeatedly, something like the following: an additional expenditure of \$1,000 per pupil will translate, on average, into a 15 percent gain in student proficiency. Unfortunately, such studies do not exist. Research has not shown a clear causal relationship between the amount that schools spend and student achievement.⁷ After hundreds of studies, it is now generally recognized that *how* money is spent is much more important than *how much* is spent. This finding is particularly important in considering judicially ordered changes in school finances, because such alterations offer little control over how any new moneys are spent.

A simplistic view of this argument—conveniently raised by spending advocates as a straw man to be beaten down—is that "money never matters."⁸ The research, of course, does not say that. Nor does it say that "money cannot matter." It simply underscores the fact that historically a set of decisions and incentives existing in schools have blunted any impacts of added funds, leading to inconsistent outcomes. That is, more spending on schools has not led reliably to substantially better results on the tests that states use to determine whether students are proficient—the same tests that plaintiffs use to document inadequacy in a state's educational system.

The absence of a systematic positive relationship between spending and achievement also underscores the challenge facing the consultants who purport to describe the spending necessary to achieve adequate levels of student achievement. Because looking at a state's schools—where spending a lot shows little relationship to the desired performance—is fraught with embarrassment, they must find some way around current reality. Each of the costing out methods takes a different approach for dealing with this dilemma. As might be guessed, these methods fall far short of standards for scientific validity, even if they demonstrate some considerable ingenuity in crafting arguments with surface plausibility.

Professional Judgment Approach

Perhaps the most commonly applied approach is the "professional judgment" method.⁹ With a few nuances, the approach involves asking a chosen panel of educators—teachers, principals, superintendents, and other education personnel—to develop an educational program that would produce certain specified outcomes. Their efforts typically produce "model schools," defined in terms of class size, guidance and support personnel, and other programs that might be necessary. The analysts undertaking the study then provide missing elements (for example, central administration costs or computers and materials) and employ externally derived cost factors (for example, average teacher or principal salaries) to determine the total cost of the model schools. The panel may or may not provide guidance on extra resources needed for disadvantaged children, special education, or the like.

Professional judgment panels generally are instructed not to consider where revenues would come from or any other restrictions on spending. In other words, they are allowed to "dream big," unfettered by any sense of reality or thought of trade-offs. Indeed, one motivation for filing adequacy lawsuits is to resolve financial questions in an arena other than that provided by state legislatures or local school boards, which are not single-issue oriented and of necessity take such practicalities into account. If courts can be induced to ignore practical constraints, more money for education might well be obtained. A 2003 study by Augenblick, Palaich, and Associates not only illustrates the issue but also shows the kind of interplay that occurs between consultants and professional judgment panels (this time in North Dakota): "We worked hard to push people to identify resources they thought were needed to help students meet state and federal standards in spite of their natural tendency to exclude items because local voters might not approve of them or schools could 'get by' without them."¹⁰

Admonitions to professional judgment panels to dream big amount to a fundamental redefinition of the term *cost*. Whether one is discussing the purchase of a car, home, or service, the term *cost* is usually understood to mean the *minimum* expenditure necessary to achieve a given outcome.¹¹ The idea is to establish the desired level of quality and determine the least amount of money required to obtain it. By contrast, professional judgment panels are effectively encouraged to identify the maximum expenditure imaginable, in the hope that the amount will be enough to produce adequately proficient students. A 2004 New York study conducted by a consortium of researchers from two groups—the American Institutes for Research and Management Analysis and Planning, Inc. (AIR/MAP)—even used a two-stage process in which a superpanel was

given the results from separate subpanels that had each estimated the desirability of some educational component. The superpanel then aggregated the results, input by input, from each of the subpanels. This design effectively maximized expenditure estimates by ensuring that any trade-offs between programs and resources made by the individual subpanels were ignored and that the resulting recommendation would be the maximum possible. The very design of the study, though couched in scientific terms, reflected the underlying policy goal of increasing spending on education.

Courts relying on professional judgment studies to mandate spending levels assume that the panelists' model school will produce the desired results just because that was the panel's objective. None of the reports ever test that assumption. In fact, the reports often admit that there is little reason to expect that students will achieve at the desired levels. The AIR/MAP team's November 2002 proposal to conduct its costing out study promised that the consultants would answer the question "What does it actually cost to provide the resources that each school needs to allow its students to meet the achievement levels specified in the Regents Learning Standards?" Yet the 2004 study based on that proposal includes a disclaimer that the courts apparently overlooked:

It must be recognized that the success of schools also depends on other individuals and institutions to provide the health, intellectual stimulus, and family support upon which public school systems can build. Schools cannot and do not perform their role in a vacuum, and this is an important qualification of conclusions reached in any study of adequacy in education. Also, success of schools depends on effective allocation of resources and implementation of programs in school districts.¹²

The 2003 study conducted by Augenblick, Palaich, and Associates with data from North Dakota illustrates the extent to which costing out studies using the professional judgment method ignore empirical evidence.¹³ The authors of this study prescribe the necessary spending level for each of the K-12 districts in North Dakota in 2002. Two points are important: first, there is wide variation in the calculated needs of districts. Second, a number of districts were spending *more* in 2002 than the consultants (through their professional judgment panels) thought necessary to achieve the full 2014 performance goals.

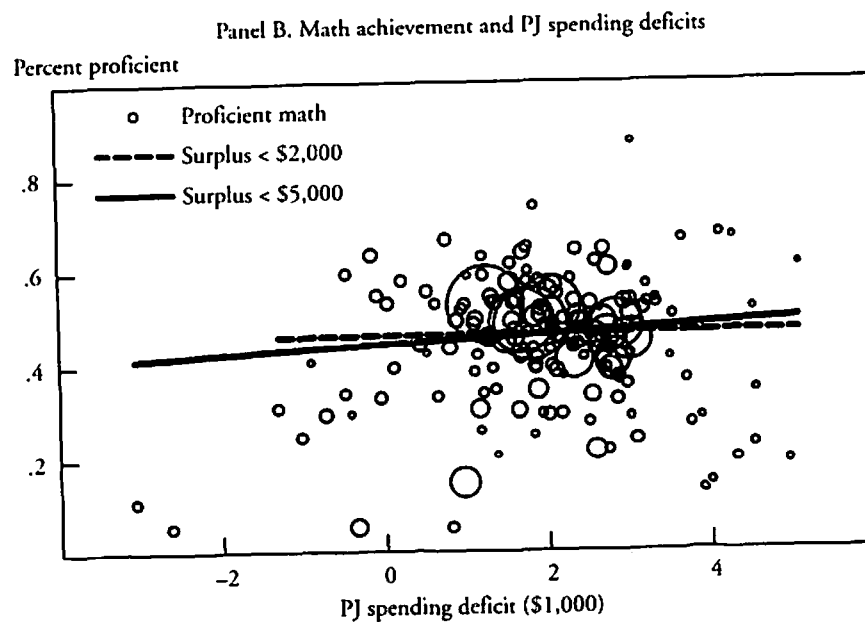
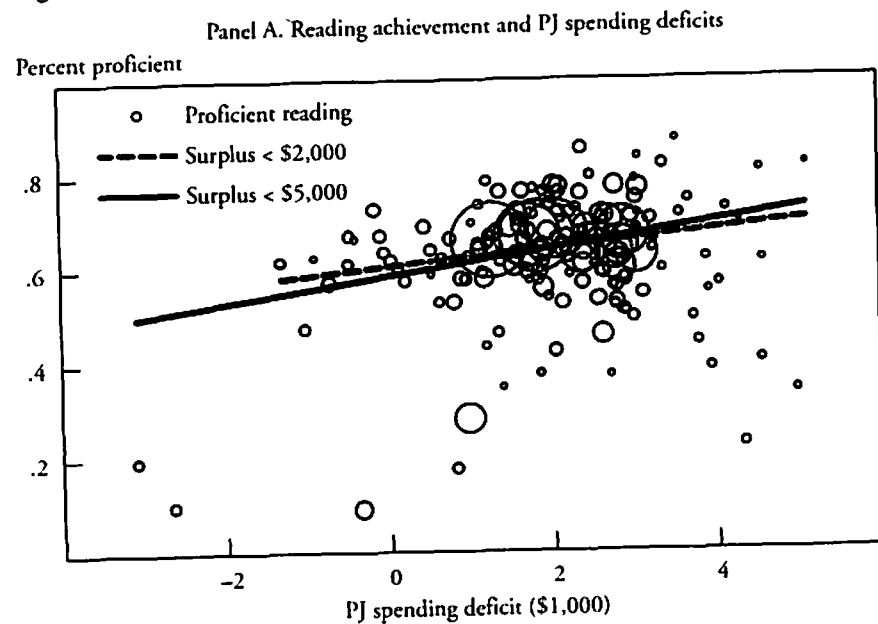
Because information is available on students' actual performance in North Dakota for 2002, the relationship between performance and the fiscal deficits and surpluses that were calculated by the professional judgment (PJ) model can be seen. (Here, spending less than the study found necessary is termed a

"PJ deficit"; spending more is termed a "PJ surplus.") It seems natural to expect that student performance within districts with PJ surpluses would exceed their panel's achievement goals. It is also plausible to expect that districts with larger PJ fiscal deficits would be further from achieving their goals than those with smaller PJ fiscal deficits. Such expectations are appropriate, since the methodology was designed to adjust for needs that arise from the concentration within a district of a disadvantaged population, variation in school size, and the like.

Yet what is observed is exactly the opposite of what might reasonably be expected. A regression of reading or math proficiency percentages of North Dakota districts on the PJ deficits indicates a *positive* relationship between a PJ deficit and student achievement. In other words, the larger the PJ deficit, the higher the students' performance. The positive relationship between deficits and achievement results remains the same even after trimming off all surpluses and deficits greater than \$2,000 to ensure that the analysis is not distorted by outliers (figure 4-1). Moreover, in terms of simple averages, student achievement in districts with a PJ surplus was significantly lower than that found in districts with a PJ deficit. In other words, the information given by PJ deficits is worse than no information, because the deficits are inversely related to "needs" as indicated by student performance.

Incredibly, the Augenblick, Palaich, and Associates 2003 study actually discusses the lack of empirical validation of the professional judgment approach in North Dakota: "The advantages of the approach are that it reflects the views of actual service providers and its results are easy to understand; the disadvantages are that resource allocation tends to reflect current practice and there is *only an assumption, with little evidence, that the provision of money at the designated level will produce the anticipated outcomes* [emphasis added]."¹⁴

In sum, the professional judgment model lacks all empirical grounding. The professional educators called on for their judgment generally lack expertise in designing programs to meet objectives that are outside of their experience. While they may have experience making trade-offs within current budgets, they do not have the research knowledge or personal experience to know how resource needs will change if they design a program for higher student outcomes or for different student body compositions. Most important, the direct conflicts of interest are palpable: the outcomes may directly affect participants' compensation and working conditions, creating an incentive for them to distort whatever judgments they might otherwise make. The professional judgment approach could be more accurately described as the *educators' wish list* model.

Figure 4-1. *North Dakota Professional Judgment Results^a*

a. Size of circle indicates student population in district. PJ = professional judgment.

State-of-the-Art or Evidence-Based Approach

If the professional judgment model relies on self-interested experts, the second costing out approach relies on the judgments of the analysts involved. This approach has been immodestly called “state-of-the-art” by the major firms using it.¹⁵ Seeking to give their study scientific cachet, they also refer to it in more recent applications as the “evidence-based” method. The consultants involved sort through available research, select specific studies that relate to elements of a model school, and translate those studies into precise estimates for resource needs. A set of model schools are subsequently costed out in the same manner as the professional judgment model schools.

The state-of-the-art approach relies on the consultants’ conclusions about the best evidence on the effectiveness of different policies. The early studies simply listed findings of research they found that showed some program or resource that was related in a statistically significant way to achievement.¹⁶ The more recent versions of the evidence-based model quantify their assessments of the effectiveness of components that they include in their model school.¹⁷ This new information thoroughly impeaches the evidence and vividly shows its selective and biased nature. It also shows why the consultants do not use their own evidence to make any projections of achievement.

One way of seeing the problems with their work is simply to take their analysis at face value. They design a school around a series of programs that have surface plausibility: smaller class size, full-day kindergarten, expanded summer school, more professional development for teachers, and the like. They report what they believe to be the best evidence about how much achievement would be improved with each component. They then advocate including all of the components.

Looking at their evidence, however, it is easy to see why these consultants never provide an explicit projection of how achievement would improve with their model school. The programs that they advocate would, by their reporting of the evidence, lift the achievement of the average student beyond that of today’s best-performing student.¹⁸ By looking at past policy outcomes, it is obvious that the consultants’ programs—which are simply repackaged versions of preexisting programs—will not have any such results. The easiest interpretation of this summary of their work is that the evidence is not reliable. The consultants have either selected a particularly biased set of program evaluations or the program evaluations in the area are deeply flawed.

The simplest conclusion is that the evidentiary base on which the evidence-based analyses are built is insufficient to provide policy guidance. The usual response when confronted with such evidence is simply to say that “while the

evidence may not be perfect, it is the best we have." If it is that bad, however, it should never be used for policymaking.

This methodology again specifically eschews taking costs into account or attempting to calculate the minimum costs of achieving any level of achievement. In fact, their analysis shows more of the spirit of maximizing expenditures, which can be seen through in their programmatic recommendations. The specific programs (repeatedly recommended across states) include ones that, according to their evidence, have widely varying effectiveness and costs. Yet, instead of recommending programs that yield high achievement per dollar invested, the consultants recommend doing everything. Some parts of their programs, however, would purportedly produce ten times the achievement of others for each dollar spent. Rational government decisionmaking would never make programmatic decisions in this manner (unless one really believed that cost efficiency was irrelevant).

The only empirical bases for state-of-the-art analyses come from a small number of selected research studies that do not necessarily reflect the experience in the individual state being sued. And, most important, because those studies have been selected from the research base to suit the consultant's own purposes, there is no reason to believe that they provide an unbiased estimate of the empirical reality more generally. Indeed, given the consultants' selectiveness, the state-of-the-art model would more appropriately be termed the *consultants' choice* model.

Successful Schools Approach

The "successful schools" approach begins by identifying schools—or districts—in a state that are effective at meeting established educational goals. Various methods may be used to identify successful schools. Typically, the process concentrates on student achievement, occasionally with some allowance for student background.¹⁹ Spending on special programs—say, remedial education or special education—is stripped out of budgets in order to obtain a "base cost" figure for each district. Typically, then, exceptionally high- or low-spending schools are excluded, and the base costs for the remaining schools are averaged to arrive at a level of spending that can feasibly be expected to yield high performance. To get the full costs of the school, expenditures on special programs are then added back in, based on the distribution for each school of students with such special needs.

The method used for selecting successful schools is obviously important. The typical method is to take the highest-performing schools in the state, defined by student test scores and other educational outcomes. While that

may seem appropriate, it ignores the many non-school factors that affect student performance, such as family background, peer relationships, and previous schooling experiences. When the consultants ignore such considerations, they can hardly conclude that the high performance in successful schools is driven by the amount of spending on those schools. There is no reliable evidence that equivalent spending in other social contexts would yield similar levels of student performance. Indeed, there is powerful evidence to the contrary.

Quite apart from such considerations, the successful schools approach attempts to predict the future from what is known about the present. The consultants are asked to project the future levels of student proficiency that would occur if spending were increased. Yet the methodology is rooted in a school's current operations. Therefore, it can say something about meeting the performance goals that states have established under NCLB *only if* some subset of schools is currently achieving at the level that NCLB requires. However, no district has yet reached the standards that NCLB has set forth. Because the approach relies on observations about one set of schools with a given level of success, it has no way to project those observations to any higher performance level. Assume, for illustration, that in the set of schools identified as successful, 70 to 80 percent of students perform at the proficiency level. There is no way to extrapolate those results to a 95 percent level.²⁰

Policy decisions should be based on the joint consideration of program effectiveness and costs. Although most analyses of public decisionmaking take for granted that *efficiency*—achieving a given outcome, such as a given amount of learning, at the minimum cost—is a desirable goal, efficiency often has a bad name in education discussions. In part this results from its being taken, wrongly, to mean least cost without regard to outcome.²¹ When it comes to consideration of school achievement, however, it is simply not possible to ignore efficiency.

Using an efficiency standard in education requires acknowledging that different schools operate at different levels of efficiency. Presumably, a court would want to compel only additional expenditures that can and will be used efficiently. Yet the very range of expenditure levels found among "successful" schools (those meeting a prescribed student output standard) implies that not all school systems are using their funds as effectively as others. Should the starting point of discussion be current spending, accepting whatever is being done, or should there be some attempt to deal with the efficiency issue?

The panel of referees appointed by the trial court judge in the landmark New York case *Campaign for Fiscal Equity (CFE) v. State* addressed the idea of efficiency, but their approach was only a little less than bizarre. The plaintiffs presented to the referees the professional judgment cost estimates of the

AIR/MAP team discussed above. The state, which used much lower estimates provided by Standard & Poor's School Evaluation Service, had suggested that it was reasonable to concentrate on the spending patterns of the most efficient of the successful schools—those with high levels of student performance at lower levels of expenditure. In making their calculations, the S&P analysts therefore excluded the top half of the spending distribution for the successful districts. But to reconcile the state's recommendation of \$1.9 billion with the AIR/MAP estimate of more than \$5 billion, the referees insisted on adding back in the higher-spending successful districts, even when those districts did not produce better academic outcomes. After all, the referees reasoned, "there was no evidence whatsoever indicating that the higher spending districts . . . were in fact inefficient."²² In other words, spending more to achieve the same outcome should not be construed as being inefficient. One might then ask what, if anything, would indicate inefficiency. The significance of their reasoning is clear: if spending must be sufficient to bring up achievement regardless of how efficiently resources are used, the amount is likely to be a very large number.

The successful schools approach calculates costs for a unique subset of successful schools. The chosen subset of schools conflates the various reasons why achievement may be high, including the family background of those attending the schools. This approach is better labeled the *successful students* model, because it does not separate the effects of school expenditures from other, external factors that are probably much more important.

Cost Function

The "cost function" approach, sometimes also referred to as the "econometric" approach, relies on current spending and achievement patterns across the full set of schools in a state. In economics and other quantitative sciences, one variable is said to be a function of another if its level is shown to vary, whether positively or negatively, in response to changes in another variable—for example, when the price of gas increases, demand for gas goes down; demand for gas is therefore a function of price. The cost function label reflects the assumption made in these studies that the level of required spending in a district varies predictably along with various observable characteristics of its students and the desired achievement level.

The methodology is similar to that of the successful schools approach in its attempt to characterize districts that are meeting desired achievement standards. Consultants use statistical methods to estimate the relationships statewide between spending levels and different combinations of student

achievement levels and student characteristics. They then use the results of the analysis to derive appropriate spending levels for each district. Cost function studies may or may not attempt to distinguish between efficient and inefficient producers of outcomes—that is, between districts that spend more for some given level of achievement and those that spend less.²³

For all their scientific pretensions, however, all cost function studies fail to adequately identify the causal relationship between student performance and spending. As noted above, there is a large body of statistical research examining how various measures of the resources available influence student achievement, taking into account differences in a range of background characteristics. This research has generally found little in the way of a consistent relationship between spending and student outcomes. Among just the estimates that do suggest a positive spending-achievement relationship, the estimates typically show only a very small effect of spending on student outcomes.²⁴ The obvious implication of this literature is that, absent other reforms that would make the education system more efficient, large spending increases are required to obtain a noticeable achievement gain.

Consultants conducting cost function studies turn that analysis on its head. They begin by estimating a statistical relationship between spending (as the dependent variable) and achievement and characteristics of the student population (as the explanatory variables).²⁵ That is, they reverse the usual relation of spending and achievement in standard evaluations of education policy, which typically predict achievement based on spending and various other student characteristics.²⁶ Although consultants refer to these results as the "cost function," they actually just describe the existing spending patterns across districts with different achievement levels.²⁷ Unless one can assume that all districts are spending money wisely—an assumption broadly contradicted by existing research—their studies cannot be interpreted as finding minimum costs.²⁸ They can simply indicate that the current pattern of spending is not very productive.

Yet this is just the most obvious of the problems plaguing these studies. Cost function analyses have to deal with the fact that frequently there are no districts that achieve at the performance levels defined as adequate. In such cases, the consultants typically assume that the relationship between spending and achievement remains the same regardless of achievement level. That is, if they observe proficiency levels to be increasing by 10 percentage points for every additional \$1,000 per pupil spent in a set of districts with a maximum proficiency rate of 60 percent, they assume that the relationship remains unchanged as districts near the target of 100 percent proficiency. There is, of course, no way to know whether that is true.

Finally, cost function analyses also have to make analogous assumptions about the way in which various factors based on student characteristics, such as the percentage of low-income students in a district, affect required costs. The cost function studies' apparent strength—the fact that they draw on all the available data on performance and spending in a state—here becomes a weakness. It is unclear whether the evidence from Westchester County is at all informative about how to improve student achievement in the Bronx or about precisely what adjustments would have to be made to account for the many differences in the two locations. Yet that is exactly the kind of analytic leap of faith that cost function studies conducted in New York State are forced to make. Indeed, taking this leap leads William Duncombe and John Yinger to suggest, apparently seriously, that New York City should spend 3.5 times as much per student to obtain the same level of achievement as other districts in New York state.²⁹

The cost function approach cannot identify the costs of an adequate education, as they do not even attempt to trace out the necessary cost of a given performance level. Instead, their name should reflect the fact that they simply capture the *expenditure function* for education—how much schools now spend to achieve at current levels.

Additional Causes for Concern

The four approaches to determining the costs of an adequate education each have some superficial appeal, but the methodological flaws outlined above render their conclusions unreliable. Several additional issues—the process for choosing a method, the definition of an outcome standard, the assumptions used in developing cost estimates, and the lack of evidence that greater funding brings its intended results—raise further questions about the validity of their calculations.

Choosing a Method

The costing out approach to be used is generally chosen by the party requesting the analysis. It appears that the choice made might be quite purposeful, given that many costing out studies are funded by parties with an interest in the outcome.³⁰ For example, a review of analyses by Augenblick and his colleagues in four states where they applied both professional judgment and successful schools methods found that the professional judgment method yielded systematically higher estimates of “adequate” expenditure.³¹ That finding

apparently has influenced the choice of methodology by clients, who almost uniformly prefer to begin with the professional judgment approach.³²

A recent compilation of estimates of necessary per-pupil expenditures for an adequate education across states and studies underscores the arbitrariness of these estimates.³³ Even after one adjusts for geographic cost differences across states and puts the estimates in real (inflation-adjusted) dollars for 2004, they differ by more than a factor of three. If the methods systematically produce very different results when addressing the same question, they obviously cannot be taken as a reliable and unbiased estimate of the resources required. It is difficult to imagine what true underlying differences could drive such disparities, given the many similarities in the school systems of different states. A more plausible explanation for the differences is that methods are chosen in order to provide politically palatable estimates for different state deliberations.

Defining an Outcome Standard

Organizations that commission costing out studies appear to recognize the importance of the outcome standard chosen. The courts, in contrast, seldom focus on the standard employed by the consultant and instead tend to concentrate on the cost figures. Yet the outcome standards that are embedded in adequacy calculations clearly should have a significant impact on the cost analysis. For example, the state of New York's goal of ensuring that all New York State public school students graduate with an elite “regents diploma” is one of the loftiest goals of any state in the nation.³⁴ This standard is substantively different from the constitutional requirement of a “sound basic education.” Each of the methods for costing out adequacy explicitly or implicitly bases its calculations on a particular definition of desired outcomes, yet the political judgments involved in defining those outcomes are seldom admitted.

NCLB has only complicated matters. It is now popular to link costing out studies to achieving the goals of NCLB, even though NCLB achievement goals have no obvious relationship to the language or intent of state constitutions that provides the legal basis for adequacy lawsuits. By declaring proficiency the goal nationwide, the law would seem to have set in place a universal outcome standard. Yet although NCLB requires all states to ensure that every student is “proficient” by 2014, it leaves the task of defining proficiency to the states. As a result, proficiency in one state differs markedly from proficiency in another.

Before NCLB, some states chose to establish very high achievement standards—what might be termed aspirational goals. Others chose modest standards that did not exceed by much the standards that many students already

were meeting. Deciding what level of achievement constitutes "proficiency" is, then, a political choice that almost certainly changes over time. Thus, when adequacy suits are pinned to a state proficiency level, it is important to consider where the standard came from and how it should be interpreted.

The plaintiff in the New York City adequacy suit, the Campaign for Fiscal Equity, hired two consulting firms, AIR and MAP, to cost out an adequate education in New York City under the New York state constitutional requirement for providing a "sound basic education."³⁵ The consultants chose instead to evaluate the costs of meeting the regents learning standards. The governor's commission adopted a lower standard in its estimation of costs, conducted for it by Standard & Poor's School Evaluation Service. The judicial referees, who were appointed by the court to advise it on the appropriate decision, were pleased by the consistency of the two estimates (after they made adjustments for their own disregard of "efficiency"), even though the estimates used different outcome standards and should not have been the same according to the logic of costing out.³⁶ The referees even went on to recognize that the highest court said that the regents learning standards were inappropriate, even as they ignored that statement in reviewing the cost estimates.³⁷

In Kentucky, three separate studies were conducted in 2003 by two firms: Verstegen and Associates and Picus and Associates, which conducted parallel studies using a professional judgment and a state-of-the-art approach. Picus and Associates let the professional judgment panels interpret the seven constitutional requirements of education laid down by the Kentucky Supreme Court.³⁸ Verstegen and Associates added to those seven an extensive set of input and process requirements included in the current Kentucky school regulations.³⁹ These are simply arbitrary choices made by the consultants.

An analysis by Augenblick and others that was written into the judgment of the Kansas State Supreme Court provides insight into the consultant's role in establishing an outcome standard:

A&M worked with the LEPC [Legislative Education Planning Committee] to develop a more specific definition of a suitable education. We suggested using a combination of both input and output measures. For the input measures, it was decided that the current QPA [Quality Performance Accreditation] requirements would be used, along with some added language provided by the LEPC. This additional language included vocational education as a required course offering, and identified other programs and services that might be provided as part of a suitable education. Next we set the performance measures that would

be used. Again, A&M worked with the LEPC. Together we determined which content areas and grade levels would be used. The math and reading tests are given in the same grade levels every year[;] the writing, science, and social studies tests are given in alternating years. A&M felt that the reading and math tests, which are given every year, gave us the most flexibility in setting the output measures.⁴⁰

Perhaps more interestingly, the definition of adequacy is not always related to outcomes. In North Dakota, Augenblick, Palaich, and Associates, the successor firm to Augenblick and Myers, noted that the state did not have explicit outcome standards but instead had input requirements. For their analysis, they simply added a set of outcomes that were related to state goals under the No Child Left Behind Act.⁴¹

Duncombe, Lukemeyer, and Yinger analyzed the impacts of different goals on the estimated costs under alternative estimation approaches. They demonstrated that reasonable differences in the loftiness of educational goals can lead to a 25 percent difference in estimated costs within their cost function analysis and to a 50 percent difference across alternative approaches to costing out, including the professional judgment approach.⁴²

No matter how one judges the analytical capabilities of the consultants, their expertise does not extend to deciding the educational requirements of the state constitution. The plaintiffs and other interested parties can, of course, argue these matters in court, but they invariably attempt to submerge the centrality of the choice of output standards and goals in the costing out studies.

Assumptions Used in Developing Cost Estimates

All approaches use information about current spending of schools—generally with important modifications—to estimate what resources are needed to bring students up to the desired level of proficiency. But using existing spending, within existing structures and under existing incentive systems, is a dubious way to begin. That is never more evident than it is when one estimates the cost of obtaining higher-quality teachers.

If one wished to hire teachers of higher quality than those currently employed, what would it cost? The answer depends markedly on whether one reproduces the current single-salary schedule—which pays teachers the same salary, except for differences in education and experience, and does not recognize differences in teachers' effectiveness in the classroom—or whether one introduces a different pay and incentive scheme.

The same holds for often-noted shortages, say in mathematics and science or language teachers. The "cost" of addressing these issues depends crucially on whether a district pays all teachers higher salaries in the hope of attracting those in shortage areas or whether it just pays bonuses or higher salaries to fill the demand in the shortage areas.

The calculation of salaries is a particularly interesting point of comparison across different studies. Sometimes the consultants simply use the average salaries for existing teachers⁴³ or increase them by some amount (for example, 10 percent in North Dakota in one study and 18 percent in Arkansas in another),⁴⁴ arguing vaguely in terms of what other states spend. They then imagine that such increments will improve teacher quality. In other cases, the consultants dream up a bonus for teachers.

While the widely varying teacher salary factor has obvious and powerful effects on any cost estimates, none of the various costing out studies provides any evidence about the current quality of teachers as measured by their impact on the achievement gains of individual students. Nor is there *any* research that shows that teacher salaries are related to the ability to raise student achievement. So any salary adjustment is a whimsical act based on the consultant's personal sense of whether average salaries are high enough for some unspecified quality level. If consultants want to improve teacher quality, they simply increase the average salary by some arbitrary percentage.

Lack of Evidence of Higher Achievement

As previously noted, virtually none of the reports actually says that it has calculated the level of resources necessary to yield desired outcomes. When it comes time to write the reports—and to produce a document by which the consultants might be judged—the language generally changes to providing an "opportunity" to achieve a standard, not actually achieving it.

The motive for undertaking a costing out analysis is that children are not learning at a putative constitutional level (or an NCLB level or a state standards level), but the reports essentially never say explicitly that the resources identified in the study are either necessary or sufficient to achieve that level. Instead, they say that the resources will provide an opportunity to meet the standard established.

That change of language means that the consultants are not predicting any level of achievement if the stated resources are provided. In fact, none of the reports states that the added resources will yield achievement that is any higher

than currently observed. The reports provide no predictions about outcomes, and thus they are *completely unverifiable*. Put differently, there is no scientific basis for deciding among alternative estimates, because data on student outcomes are not informative.

Interestingly, this is true for the consultants' choice model, even though the consultants purport to know how achievement will change under the components of their program. Presumably they realize that their selective reporting of evidence yields results that are not credible, and they make sure that the research evidence is never linked with any prediction of results on their part.

The same failing is seen in all of the methods used and in all of the currently available reports. A possible exception is some of the successful student or expenditure projection studies, in which the authors might suggest that a given school could achieve a given level of performance *if it could figure out why some other school achieved that level and if it could reproduce it in another setting*. Yet no guidance on either the source of achievement or the way to reproduce it is ever given.

If the costing out studies do not provide any clear view of the outcome expected, they become just the whim of the consultant—even when based on a methodology that has previously been applied or has a "scientific" air to it. There is no way to judge among alternative spending projections based on any evidence about outcomes, thus putting each in the category of personal opinion and not science. There is no obvious reason for giving deference to the personal opinion of consultants hired by interested parties in the debate.

Such studies also do not help the political and legislative debate on school finance. They are designed to give a spending number; they do not indicate how achievement is likely to be different from the current level if such an amount is spent. Neither do they suggest how achievement—or even opportunity—would differ if a state spent 25 percent more or 25 percent less than the consultant's personal recommendation about how much to spend.

Returning to the courts' dilemma, the terms of the "Does money matter?" debate are central. Simply stating that money can be effective if it is spent in the right way is tautological. Without a proven strategy for using money wisely, the existing evidence overwhelmingly indicates that just adding money is likely to be broadly ineffective. The historical record indicates that left to their own devices, districts have not ensured that added money is spent wisely. Moreover, with the possible exception of the consultant's choice model (which, as described above, is not credible), none of the approaches even attempts to offer any guidance about setting up effective programs or policies that would provide for enhanced achievement when broadly employed.

Conclusions

Early school funding lawsuits centered on equity, defined simply as equal per-pupil funding across school districts.⁴⁵ That has given way to an emphasis on adequacy, as measured by student performance and other educational outcomes, moving the courts into areas in which they are completely unprepared to go. They cannot simply mandate a given level of student achievement. Instead, the courts must define their remedy in terms of instruments that are expected to lead to desired outcomes, instruments that can be monitored by the court. The easiest thing to monitor is the amount that states are spending, which has led to an inevitable focus on the financial resources committed to education. But how much money is enough? To answer that question, the courts have come to rely on outside consultants, who frequently are hired by interested parties. Those consultants, and the people who hire them, suggest that "costing out" exercises provide a scientific answer to a simple question: "How much does it cost to provide an adequate education?"

The methodologies that have been developed lack all semblance of a scientific determination of what a court needs to know—how much is needed to reach a desired level of proficiency. They do not provide reliable and unbiased estimates of the costs necessary to achieve desired goals. Nor do they provide any reason to expect that once the financial remedy is ordered the desired educational goal will be achieved. In many studies, especially those that use the popular professional judgment model, the results cannot be readily replicated by others. And they obfuscate the fact that they are unlikely to provide a path to the desired outcome. Even the consultants themselves admit the weakness of such studies' underlying premise:

The effort to develop these approaches stems from the fact that no existing research demonstrates a straightforward relationship between how much is spent to provide education services and performance, whether of student, school, or school district.⁴⁶

All of the methods rely crucially on existing educational approaches, existing incentive structures, and existing teacher hiring and retention policies. Each calls for doing more of the same—reducing pupil-teacher ratios, paying existing teachers more, retaining the same administrative structure and expense. Thus, they reinforce and solidify the existing structure, which is arguably incapable of bringing about the kinds of improvements that they purport to cost out.

As the courts typically have no expertise in the institutions, funding, and incentives of schools, they generally are quite eager to have somebody tell them the answer; they jump on "the number," even while recognizing it may not be correct. Costing out studies do not and cannot provide rational support for such judicial decisionmaking.

Those who wish the courts to be more deeply involved in the appropriations process—faced with evidence that the existing costing out methods lack credibility—frequently push for an alternative. After all, they note, it is necessary to have some method of determining how much should be spent on schools. But, in fact, historically there has been a method. Duly elected legislatures, local school boards, and other officials are charged with resolving differences of opinion on education issues, including those regarding education funding. Certainly, the outcome of even a democratic decisionmaking process will not satisfy everyone, but, as currently conducted, costing out studies do not provide a scientific alternative.

There simply is not any reliable, objective, and scientific method to answer the question of how much it would cost to obtain achievement that is noticeably better than that currently seen. The courts can judge the constitutionality of legal provisions relating to the schools, but they should show some humility in their attempts to change the outcomes radically. Judging by the historical record, their chosen instrument—the level of funding for schools—simply is not the key to solving the current achievement problem.

Notes

1. An early suit in federal court, *Rodriguez v. San Antonio*, was brought under the Fourteenth Amendment to the U.S. Constitution, but the U.S. Supreme Court ruled in 1973 that state funding arrangements in Texas did not violate the U.S. Constitution. The nature of the ruling implied that the result would generally hold for other states also, leading to the emphasis on state constitutions.

2. Sheila E. Murray, William N. Evans, and Robert M. Schwab, "Education Finance Reform and the Distribution of Education Resources," *American Economic Review* 88, no. 4 (September 1998): 789–812.

3. See, for example, Thomas A. Downes, "Evaluating the Impact of School Finance Reform on the Provision of Public Education: The California Case," *National Tax Journal* 45, no. 4 (December 1992): 405–19; Eric A. Hanushek and Julie A. Somers, "Schooling, Inequality, and the Impact of Government," in *The Causes and Consequences of Increasing Inequality*, edited by Finis Welch (University of Chicago Press, 2001), pp. 169–99; and William Duncombe and Jocelyn M. Johnston, "The Impacts of School Finance Reform in Kansas: Equity Is in the Eye of the Beholder"; Ann E. Flanagan and Sheila E. Murray, "A

Decade of Reform: The Impact of School Reform in Kentucky"; Julie B. Cullen and Susanna Loeb, "School Finance Reform in Michigan: Evaluating Proposal A"; and Thomas A. Downes, "School Finance Reform and School Quality: Lessons from Vermont," in *Helping Children Left Behind: State Aid and the Pursuit of Educational Equity*, edited by John Yinger (MIT Press, 2004), pp. 148–93, 195–214, 215–49, 284–314.

4. A review of past costing out studies can be found in *Education Week's* annual report for 2005: "Quality Counts 2005: No Small Change: Targeting Money toward Student Performance," *Education Week*, January 6, 2005. See also the ACCESS Project website (www.schoolfunding.info), a project of the Campaign for Fiscal Equity (CFE), the plaintiffs in the New York City adequacy case *Campaign for Fiscal Equity v. State*. CFE states that its primary mission is to "promote better education by conducting research, developing effective strategies for litigation and remedies (including cost studies), and providing tools for public engagement." The count of prior costing out studies came from the ACCESS Project website (September 13, 2006).

5. This explains why the websites for advocacy organizations give top billing to costing out studies. For an example, see the ACCESS Project website.

6. See, for example, *Campaign for Fiscal Equity v. State* and *Montoy v. State of Kansas*.

7. Eric A. Hanushek, "The Failure of Input-Based Schooling Policies," *Economic Journal* 113, no. 485 (February 2003): F64–F98.

8. Outside the courtroom, most discussion of the "money never matters" debate, a controversy of a decade ago, has subsided. For the historical framing of the question, see the following exchange: Larry V. Hedges, Richard D. Laine, and Rob Greenwald, "Does Money Matter? A Meta-Analysis of Studies of the Effects of Differential School Inputs on Student Outcomes," *Educational Researcher* 23, no. 3 (April 1994): 5–14, and Eric A. Hanushek, "Money Might Matter Somewhere: A Response to Hedges, Laine, and Greenwald," *Educational Researcher* 23, no. 4 (May 1994): 5–8.

9. Examples of this include Augenblick and Myers, Inc., *Calculation of the Cost of an Adequate Education in Indiana in 2001–2002 Using the Professional Judgment Approach*, Prepared for Indiana State Teachers Association, 2002; John Augenblick and others, *Calculation of the Cost of a Suitable Education in Kansas in 2000–2001 Using Two Different Analytical Approaches*, prepared for Legislative Coordinating Council, Augenblick and Myers, Inc., 2002; Augenblick, Palaich, and Associates, Inc., *Calculation of the Cost of an Adequate Education in North Dakota in 2002–2003 Using the Professional Judgment Approach* (North Dakota Department of Public Instruction, 2003); American Institutes for Research and Management Analysis and Planning (AIR/MAP), *The New York Adequacy Study: Determining the Cost of Providing All Children in New York an Adequate Education*, 2004; Lawrence O. Picus, Allan Odden, and Mark Fermanich, *A Professional Judgment Approach to School Finance Adequacy in Kentucky*, Lawrence O. Picus and Associates, 2003; and Versteegen and Associates, *Calculation of the Cost of an Adequate Education in Kentucky*, prepared for the Council for Better Education, 2003. A majority of these reports are available from the websites of the relevant states.

10. Augenblick, Palaich, and Associates, *Calculation of the Cost of an Adequate Education in North Dakota in 2002–2003 Using the Professional Judgment Approach*.

11. The terms *cost*, *cost efficiency*, and *efficiency* often are used interchangeably to indicate the minimum spending required to achieve a given outcome. For example, in comparing different programs that are designed to achieve the same outcome, the most cost-efficient program would be the one requiring the least spending. It is important, however, to understand that the "most cost-efficient" description applies only to one of various alternative ways of achieving the same

objective. If one wished to compare programs that yielded different outcomes, the most efficient one would not necessarily be the one requiring the smallest expenditure.

12. AIR/MAP, *The New York Adequacy Study*.

13. Augenblick, Palaich, and Associates, *Calculation of the Cost of an Adequate Education in North Dakota in 2002–2003 Using the Professional Judgment Approach*.

14. *Ibid.*, pp. 11–3.

15. See Allan Odden, Mark Fermanich, and Lawrence O. Picus, *A State-of-the-Art Approach to School Finance Adequacy in Kentucky*, Lawrence O. Picus and Associates, 2003.

16. Eric A. Hanushek, "The Evidence on Class Size," in *Earning and Learning: How Schools Matter*, edited by Susan E. Mayer and Paul E. Peterson (Brookings, 1999), pp. 131–68.

17. See Allan Odden and others, *An Evidence-Based Approach to School Finance Adequacy in Washington*, Lawrence O. Picus and Associates, June 30, 2006. This repeats the analysis of an earlier study for Wyoming: Allan Odden and others, *An Evidence-Based Approach to Recalibrating Wyoming's Block Grant School Funding Formula*, Lawrence O. Picus and Associates, November 30, 2005.

18. The technical basis for this conclusion comes from their assessment of the "effect sizes," or the predicted standard deviations of improvement in achievement. (An effect size of 1.0 means that achievement would improve by one standard deviation; an improvement of one standard deviation would move the average student to the 84th percentile.) Their model school is reported to have a total effect size of 3.0 to 6.0 standard deviations, a completely implausible outcome that would place the average beyond the 99.9th percentile of the prior distribution.

19. See, for example, Augenblick and Myers, Inc., *Recommendations for a Base Figure and Pupil-Weighted Adjustments to the Base Figure for Use in a New School Finance System in Ohio*, 1997; John L. Myers and Justin Silverstein, *Successful School Districts Study for North Dakota*, Augenblick, Palaich, and Associates, Inc., 2005; and Standard & Poor's School Evaluation Service, *Resource Adequacy Study for the New York State Commission on Education Reform*, 2004.

20. A second extrapolation problem frequently occurs. Schools identified as successful just on the basis of student proficiency levels on state tests tend to have students whose parents are of higher socioeconomic status (SES). These parents have provided considerable education to their children that, although it is reflected in student scores, is not appropriately attributed to the school. The methodology concentrates on base spending for a typical successful school but then must indicate how much remedial spending would be necessary to bring schools with students of lower-SES backgrounds up to the proficiency of the higher-SES schools. The appropriate way to do this is entirely unclear within this methodology, because again the impact of SES is mostly outside of the successful schools analysis.

21. The classic misstatement of efficiency in education is found in Raymond E. Callahan, *Education and the Cult of Efficiency* (University of Chicago Press, 1962). Callahan failed to hold outcomes constant but instead looked at pure minimization of spending.

22. John D. Feerick, E. Leo Milonas, and William C. Thompson, *Report and Recommendations of the Judicial Referees* (Supreme Court of the State of New York, 2004).

23. Gronberg and others explicitly analyzed the efficiency of districts, but their analysis was not well received in the courtroom; see the decision of Judge John Dietz in *West Orange-Cove Consolidated Independent School District et al. v. Neeley et al.*, November 30, 2004. Timothy J. Gronberg and others, *School Outcomes and School Costs: The Cost Function Approach* (Texas A&M University, 2004).

24. Hanushek, "The Failure of Input-Based Schooling Policies."

25. Note that these estimates bear little relationship to classic cost functions in microeconomic theory, which uses an underlying assumption of optimal firm behavior to translate the production function (achievement related to various inputs) into a cost function that describes how cost relates to the price of inputs. None of the work in education observes any variations in input prices (for example, teacher wages, textbook costs, and the like). The empirical work in education described here relates spending to outputs and inputs such as the number or type of teachers and the poverty rate.

26. Some approaches to cost estimation are not done in this way but instead use various optimization methods to obtain the minimum cost of achieving some outcomes. They are nonetheless subject to the same interpretative questions about causation.

27. There are some serious statistical complications in this work. The econometric methodology places requirements on the modeling that are almost certainly violated in this estimation. The cost function estimation essentially assumes that districts first specify the outputs that they will obtain and that those desired outputs and the characteristics of the student body determine the spending that would be required (that is, achievement is exogenous, in statistical parlance). This approach, while summarizing the average spending patterns of different districts, is inconsistent with the interpretation that the level of resources available to a district determines student outcomes. The specific data and modeling also are very important. As Gronberg and others state, "The measurement of efficiency in producing a set of outcomes is directly linked to the particular set of performance measures that are included in the cost model and the particular set of input measures." Gronberg and others, *School Outcomes and School Costs: The Cost Function Approach*.

28. Other techniques found in the scholarly literature have been developed to consider cost minimization. See Eric A. Hanushek, "Publicly Provided Education," in *Handbook of Public Economics*, edited by Alan J. Auerbach and Martin Feldstein (Amsterdam: Elsevier, 2002), pp. 2045–141. Even when considered, it is generally impossible to describe how efficiency is achieved. See Gronberg and others, *School Outcomes and School Costs: The Cost Function Approach*.

29. William Duncombe and John Yinger, "Financing Higher Standards in Public Education: The Importance of Accounting for Educational Costs," CPR Policy Brief 10/1998 (Center for Policy Research, Syracuse University, 1998). Their subsequent estimates of adequacy for New York City are lower but still far above those of the other costing out studies for New York. See, for example, William Duncombe, Anna Lukemeyer, and John Yinger, "Financing an Adequate Education: A Case Study of New York," in *Developments in School Finance: 2001–02*, edited by William J. Fowler (Washington: National Center for Education Statistics, 2003), pp. 129–53.

30. See, for example, Eric A. Hanushek, "Pseudo-Science and a Sound Basic Education: Voodoo Statistics in New York," *Education Next* 5, no. 4 (Fall 2005): 67–73.

31. *Education Week*, "Quality Counts 2005," p. 36.

32. For example, Thomas Decker describes the choice of the professional judgment model for the costing out study to be commissioned by the North Dakota Department of Public Instruction: "The professional judgment approach we were aware would probably produce a higher cost estimate for achieving adequacy than [the] successful schools [approach]." Transcript of Deposition of Thomas G. Decker in *Williston v. State of North Dakota*, August 17–18, 2005, p. 312.

33. *Education Week*, "Quality Counts 2005."

34. New York state traditionally granted two different diplomas with different requirements. In 1996, the New York Regents determined that all students would have to qualify for a regents diploma (the previously optional high-standard diploma sought by roughly half of the public school students in the state). This requirement has seen a very long phase-in period with altered testing requirements.

35. Details of the costing out exercises in the CFE case can be found in Hanushek, "Pseudo-Science and a Sound Basic Education."

36. Ibid. The referees made \$1.9 billion equal \$5 billion by adding back all high-spending schools that the Standard and Poor's analysis excluded on efficiency grounds.

37. Feerick, Milonas, and Thompson, *Report and Recommendations of the Judicial Referees*.

38. Instructions regarding what was needed were given to the panelists: sufficient oral and written communication skills to enable students to function in a complex and rapidly changing society; sufficient knowledge of economic, social, and political systems to enable students to make informed choices; sufficient understanding of government processes to enable students to understand the issues that affect their community, state, and nation; sufficient self-knowledge, including knowledge of students' own mental and physical health; sufficient grounding in the arts to enable each student to appreciate his or her cultural and historical heritage; sufficient training or preparation for advanced training in either academic or vocational fields to enable each student to choose and pursue life work intelligently; and sufficient level of academic or vocational skills to enable public school students to compete favorably with their counterparts in surrounding states, in academics or in the job market. Picus, Odden, and Fermanich, *A Professional Judgment Approach to School Finance Adequacy in Kentucky*.

39. Versteegen and Associates, *Calculation of the Cost of an Adequate Education in Kentucky*.

40. Augenblick and others, *Calculation of the Cost of a Suitable Education in Kansas in 2000–2001 Using Two Different Analytical Approaches*.

41. Augenblick, Palaich, and Associates, *Calculation of the Cost of an Adequate Education in North Dakota in 2002–2003 Using the Professional Judgment Approach*.

42. William Duncombe, Anna Lukemeyer, and John Yinger, "Education Finance Reform in New York: Calculating the Cost of a 'Sound Basic Education' in New York City," CPR Policy Brief 28/2004 (Center for Policy Research, Syracuse University, 2004).

43. See Odden, Fermanich, and Picus, *A State-of-the-Art Approach to School Finance Adequacy in Kentucky*.

44. See Augenblick, Palaich, and Associates, *Calculation of the Cost of an Adequate Education in North Dakota in 2002–2003 Using the Professional Judgment Approach*, and Odden, Fermanich, and Picus, *A State-of-the-Art Approach to School Finance Adequacy in Kentucky*.

45. In most cases, it is not truly equal spending but equal spending after adjusting for extra needs such as special education, disadvantaged background, language deficiencies, and the like. It might also include adjustments for other circumstances such as diseconomies of scale in small urban districts.

46. Augenblick and Myers, Inc., *Calculation of the Cost of an Adequate Education in Indiana in 2001–2002 Using the Professional Judgment Approach*.