WHEN SCHOOL FINANCE "REFORM" MAY NOT BE GOOD POLICY

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For over two decades, courts and legislatures have been embroiled in debate and controversy over the way in which local public schools are financed. Interestingly, this has been an area where the state-level discussion has completely dominated policy deliberations.¹ The federal government has never played an important role in either the general policy development or the actual financing of schools.² And, as a direct result of the United States Supreme Court ruling in San Antonio Independent School District v. Rodriguez,³ the court discussion has been conducted exclusively at the state level. Each state has pursued an independent policy, according to the requirements of its constitution, the preferences of its citizens and legislators, and the wisdom of its courts. Nevertheless, while sometimes obscured by the details of specific state actions, there are common elements to the school finance policy developments in the states. It is worthwhile to assess these common elements, especially since there are important interactions with broader issues of school policy that have recently moved to the forefront.

One important lesson we have learned over time is that school finance court cases, legislative decisions, and school policies in general are more complicated than we once thought. The framework for deliberations on school finance reform was developed in the 1960's and was given national attention through the landmark case in California, Serrano v. Priest.⁴ In the early stages,

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¹ During this time no schooling issue except racial desegregation has received the same attention as financing issues. School desegregation is also the one area of school policy that has been dominated by federal attention and decisionmaking. It has been litigated chiefly in the federal courts and has been almost exclusively a matter of federal, not state, policy.
³ 411 U.S. 1 (1973) (reversing the district court's invalidation of the entire Texas school finance system and rejecting its application of strict scrutiny).
⁴ 5 Cal. 3d 584, 589, 487 P.2d 1241, 1244, 96 Cal. Rptr. 601, 604 (1971) (Serrano I) (finding California's school financing plan in violation of the federal equal protection clause because "it makes the quality of a child's education a function of the wealth of his parents and neighbors"). Less than two years later, the Rodriguez decision foreclosed fourteenth amendment challenges to state educational finance schemes. Note, To Render
two common assumptions provided the basis for the standard interpretation of the issues: (1) traditional school funding, which relies heavily on local funds raised substantially by property taxes, leads to large disparities between the education available to rich (suburban) students and poor (urban and rural) students; and (2) the inequities in the quality of schooling resulting from the fiscal system must be corrected, and the courts are an obvious vehicle to force legislatures to provide the economically and educationally disadvantaged students with better schools. School finance reform tended to be viewed as another element of the War on Poverty where, in this case, the improved schooling believed to result from more equitable funding could be used as an instrument for improving the well-being of poor children. We have discovered, perhaps unfortunately, that much of this simplistic view is misleading if not patently incorrect. Setting effective school policy, either judicially or legislatively, is more complicated than these common assumptions suggest.

This Article concentrates on the policy considerations of altering public school financing. These considerations are complicated by having fifty financing systems, fifty state constitutions, and nearly as many court and legislative histories. This Article does not attempt a systematic analysis of each state's issues. Instead, it concentrates on policy issues that transcend state boundaries. Moreover, it avoids all consideration of legal theories and interpretations that have surrounded the major court cases, except those that intersect with the larger educational policy matters.

The heart of the analysis relates our current knowledge of school operations to traditional school finance discussion and to the development of more effective educational policies. Most school finance discussion, as opposed to school policy discussion, has focused almost exclusively on variations in expenditures per student. This is reasonable if schools are operating


4 See, e.g., R. Berne & L. Stiefel, The Measurement of Equity in School Finance: Conceptual, Methodological, and Empirical Dimensions (1984). This analysis, perhaps the most thorough quantitative analysis of school finance equity issues that is available, devotes less than two of its 300 pages to consideration of equity measured by anything except expenditures on school inputs. See also J. Coons, supra note 5.
efficiently. With efficient operation, the level of expenditure is a good index of performance. However, if schools are not operating efficiently, variations in expenditure levels may or may not indicate variations in school quality.

One fundamental observation and conclusion underlies the discussion in this Article: There is no systematic relationship between school expenditures and student performance. This implies significant inefficiency in the operation of schools and has obvious and profound implications for the discussion about altering school finance arrangements. Legal arguments and policy decisions that allegedly advance educational equity are suspect if based on the conventional assumptions about expenditure variations. Indeed, many popular changes (clinging to the view that expenditures and quality are closely correlated), both proposed and adopted, no longer look like “reform” but instead tend to move away from good educational policy.

School finance discussions have not been oblivious to the potential pitfalls of focusing exclusively on expenditures. Reformers frequently make passing reference to issues of efficiency along with an assertion that the research is ambiguous. But, without clarifying these ambiguities, the reformers then fall back on pragmatic considerations as the underlying justification for the focus on expenditure variations. These include, for example, assertions that expenditure variations are an intuitively reasonable measure of school quality differences or that they are at-

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7 The term “efficient” here is used in the economist’s sense of obtaining the maximum possible performance from any given expenditure of resources. This definition is very different from that employed in a number of legal arguments emanating from state constitutional requirements to provide an efficient system of public schools. See, e.g., Robinson v. Cahill, 62 N.J. 473, 303 A.2d 273, cert. denied, 414 U.S. 976 (1973).

8 See infra text accompanying notes 32–46.

9 See, e.g., J. Coons, supra note 5, where they discuss T. Ribich, Education and Poverty (1968). They state, “Ribich’s painstaking analyses suggest, if anything, a variety of sometimes conflicting relationships between cost and purely economic benefits from added dollar increments.” J. Coons, supra note 5, at 29. They go on to indicate:

There are similar studies suggesting stronger positive consequences from dollar increments, and there are others suggesting only trivial consequences, but the basic lesson to be drawn from the experts at this point is the current inadequacy of social science to delineate with any clarity the relation between cost and quality. We are unwilling to postpone reform while we await the hoped-for refinements in methodology which will settle the issue.

Id. at 29–30.

tractive because they are so easily measured. I will argue that neglecting the evidence on expenditure relationships is likely to cause serious distortion in policies aimed at either improving equity or improving overall school performance.

This Article begins with a discussion of the evidence regarding expenditures and school performance. It then considers how this evidence relates to court cases and overall judgments about a state's schools. It concludes by discussing how court cases, and the corresponding legislative actions, relate to effective policies for school reform.

I. WHAT WE KNOW ABOUT SCHOOL EXPENDITURES

The interpretation of expenditure differences is central to all discussions of school finance. This Part considers in detail the evidence relating expenditures to student performance. It is impossible to ignore these data when the policy objective is either improving overall student performance or advancing the cause of educational equity. This Part begins with a discussion of aggregate data regarding the state of education in the United States, data which reveal the reason for concern over school performance. The aggregate data are followed by an analysis of the results of studies into the relationship between school expenditures and performance.

A. Aggregate Data

Much of the current concern about the performance of our schools is motivated by the fact that student performance has actually fallen during a period in which we have continually increased our spending on schools. Figure 1 illustrates this by

10 See, e.g., J. Coons, supra note 5, at 26. After discussing the difficulty of employing alternative measures of real resource differences (such as education levels of teachers), the authors state: "We have no stomach for such an imbroglio. Ultimately we will need a standard appropriate to the rigors of judicial proof, and the only convincingly quantifiable item in the spectrum is money available for the general task of education in each district." Id.

11 See infra text accompanying notes 55–68.

12 This section draws extensively on the presentation in Hanushek, The Impact of Differential Expenditures on School Performance, 18 EDUC. RESEARCHER 45 (1989), which in turn updates previous analyses in Hanushek, Throwing Money at Schools, 1 J. POL’Y ANALYSIS & MGMT. 19 (1981), and Hanushek, The Economics of Schooling: Production and Efficiency in Public Schools, 24 J. ECON. LITERATURE 1141 (1986) [hereinafter Economics of Schooling].
Figure 1
Real School Expenditures and SAT Scores:
1966-1989

Note: Current expenditures in 1989 dollars per student in average daily attendance.
superimposing the trend in student performance on the trend in educational expenditures. Real expenditures per pupil have risen steadily and dramatically over the past two decades.\textsuperscript{13} Specifically, after allowing for inflation, expenditures per pupil more than doubled between 1966 and 1989;\textsuperscript{14} this corresponds to a 3.5% compound annual growth rate. At the same time, performance as measured by Scholastic Aptitude Test ("SAT") scores fell to a level significantly below the mid-1960\textquotesingle s levels.\textsuperscript{15} Moreover, while there was some recovery in scores from the 1979-80 trough, the marginal gains of the 1980\textquotesingle s have now faded.\textsuperscript{16}

There are reasons (discussed below) for quibbling about these specific statistics for both achievement and spending. But, after allowing for the objections, the overall conclusion that there are serious problems with the current operations of the U.S. schooling system does not change. Expenditures have risen while performance has fallen.

The measurement of performance by SAT scores has been questioned because the test does not rely on a representative sample, because the test-taking population has changed over time, and because the content of the test itself may have changed. Analysis of these objections, however, indicates clearly that real performance declines have occurred. The observed achievement decline is not simply an artifact of that specific test.\textsuperscript{17} Further, declines have been registered on a variety of other tests given over the same time.\textsuperscript{18} Continued international evidence also places U.S. students behind a surprisingly large range of foreign students on math and science performance.\textsuperscript{19} For example, in tests of advanced algebra for

\textsuperscript{13} NAT\textquotesingle L CENTER FOR EDUC. STATISTICS, U.S. DEP\textquoteright T OF EDUC., DIGEST OF EDUCATION STATISTICS 156 (25th ed. 1989) (Table 145) [hereinafter DIGEST OF EDUCATION STATISTICS].

\textsuperscript{14} Id. Current expenditures per student are deflated by the consumer price index.

\textsuperscript{15} See DIGEST OF EDUCATION STATISTICS, supra note 13, at 120 (Table 108).

\textsuperscript{16} Id.

\textsuperscript{17} See CONGRESSIONAL BUDGET OFFICE, TRENDS IN EDUCATIONAL ACHIEVEMENT (1986); CONGRESSIONAL BUDGET OFFICE, EDUCATIONAL ACHIEVEMENT: EXPLANATIONS AND IMPLICATIONS OF RECENT TRENDS (1987).

\textsuperscript{18} CONGRESSIONAL BUDGET OFFICE, TRENDS IN EDUCATIONAL ACHIEVEMENT, supra note 17; CONGRESSIONAL BUDGET OFFICE, EDUCATIONAL ACHIEVEMENT: EXPLANATIONS AND IMPLICATIONS OF RECENT TRENDS, supra note 17.

twelfth graders in 1982, U.S. students trailed students from such countries as Hong Kong and Hungary, bettering only the students from Thailand in the fifteen countries sampled. Thus, there is no doubt that students are performing worse now than they did in the past (when spending on schools was noticeably less).

Similarly, some have argued that the tasks facing schools have changed over time so that the comparisons of expenditures are not strictly appropriate. For example, increased expenditures may partly reflect attempts to educate more expensive students—handicapped students, immigrants, and other educationally disadvantaged students. Again, however, while these changes in student populations undoubtedly have some influence on costs, they are insufficient to explain the substantial aggregate increases that have transpired.

Moreover, it is important to note that actual expenditure patterns in schools over the past several decades show changes that reflect common policy recommendations. Student/teacher ratios have fallen steadily for the past three decades. While there were twenty-five students per teacher in public elementary and secondary schools in 1965, there were fewer than eighteen in 1985. Over the same period, the proportion of teachers holding a master's or higher-level degree rose from under one-quarter to over one-half. Median teacher experience also nearly doubled, rising from eight years in 1966 to fifteen in 1986. The only aggregate input that has not followed this steady pattern is teacher salaries. Real teacher salaries, as best one can tell, have varied: average salaries rose through the 1960's, fell back in the mid to late 1970's, and rose again during the 1980's.

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20 C. McKnight, supra note 19. On the other hand, evidence from international tests in 1964 suggests that U.S. students have historically done relatively poorly. 2 INTER-NATIONAL STUDY OF ACHIEVEMENT IN MATHEMATICS (T. Hsü ed. 1967).

21 Another argument concentrating on why some of the expenditure increases might have occurred is that when the size of the student population declined in the 1970's, some districts resiteted laying off personnel. See, e.g., Murnane, Teacher Mobility Revisited, 16 J. HUM. RESOURCES 3 (1989). Other things being equal, this led to reduced class size and increased per-pupil expenditures. For our discussion, however, the causes of such increases are essentially irrelevant. The point remains that there were increased resources devoted to schools and there was no apparent gain in student performance.

22 DIGEST OF EDUCATION STATISTICS, supra note 13, at 69 (Table 56).

23 Id. at 72 (Table 59).

24 Id. Moreover, only three percent of teachers in 1986 were in their first year of teaching. The aging and stagnation of the teaching force has been the subject of separate concerns.

25 Id. at 77 (Table 66). Teacher salary data over time are provided by the National Education Association, and the sample and reliability of these are unknown.
The aggregate picture is clear. School spending has increased dramatically since the mid-1960's. This increase has largely been the result of instituting policies which educational decisionmakers have proposed as a way of improving student performance. Yet, student performance has actually fallen over the same period. While indicative of substantial problems in the operations of schools, these aggregate data can nevertheless mask important differences among individual school systems. Therefore, it is valuable to corroborate this evidence with observations of the relationship between expenditures and performance at the place where education actually takes place, the school.

B. Individual and School Level Analyses

Detailed studies of student performance in individual schools and classrooms provide more precise information about how school resources relate to student performance. Although research into the determinants of students' achievement takes various approaches, one of the most appealing and useful is what economists call the "production-function" approach, or in other disciplines the "input-output" or "cost-quality" approach. This approach focuses attention primarily on the relationship between school outputs (test scores, attendance rates, etc.) and measurable inputs into the educational process (teacher education levels, class size, expenditures, etc.).

Knowledge of the production function for schools would enable a policymaker to predict results from additions or subtractions of resources and to determine appropriate actions if the prices of various inputs were to change. The problem, of course, is that the production function for education is unknown and must be inferred from data on students and their schools.

The origin of estimations of input-output relationships in schools is usually traced to the monumental U.S. study *Equality*

26 This is contrasted to a more common approach in educational research of "process-outcome" studies, in which attention rests on the organization of the curriculum, the methods of presenting materials, the interactions of students, teachers, and administrators, and the like. An entirely different approach—true experimentation—has been much less frequently applied, particularly when investigating the effects of expenditure differences. Experimentation would employ random assignment techniques to investigate specific interventions. For example, it would be possible to assign students randomly to different-sized classrooms and then to observe subsequent differences in student performance. Such an approach, while conceptually appealing from an analytic viewpoint, is expensive and difficult to do convincingly.
of Educational Opportunity, more commonly known as the "Coleman Report." The U.S. Office of Education produced this report in response to the Civil Rights Act of 1964's requirement of an investigation into the extent of inequality (by race, religion, or national origin) in the nation's schools. The study's fundamental contribution was to direct attention to the distribution of student performance. Instead of addressing questions of inequality simply by producing an inventory of differences among schools and teachers by race and region of the country, the Coleman Report sought to explain those differences. It delved into the relationships between inputs and outputs of schools. Even though it was not the first such effort, the Coleman Report was much larger and more influential than any previous (or subsequent) input-output study. It involved surveying and testing 600,000 students in 3000 schools across the U.S.

The attention given the Coleman Report derived, however, not from its innovative perspective or unparalleled description of schools and students but from its major conclusions. Broadly stated, the Coleman Report found that schools are not very important in determining student achievement. Families, and to a lesser extent peers, were the primary determinants of variations in performance. The findings were controversial and immediately led to a large (but diffuse) research effort to compile additional evidence about the relationship between school resources and school performance. Before turning to the subsequent research, it is worth examining the structure of the statistical analysis.


29 The Coleman Report is a very complicated document, subject to a variety of interpretations. For some indications of the controversy surrounding the Coleman Report along with a discussion of the conclusions, see Mosteller & Moynihan, A Pathbreaking Report: Further Studies of the Coleman Report, in On Equality of Educational Opportunities 3 (F. Mosteller & D.P. Moynihan eds. 1972); see also Moynihan, Educational Goals and Political Plans, Pub. Interest, Winter 1991, at 32.

The underlying model guiding the Coleman Report and most subsequent studies is straightforward. It postulates that the output of the educational process—that is, the achievement of students—is related directly to a series of inputs. Policymakers directly control some of these inputs such as the characteristics of schools, teachers, and curricula. Other inputs such as those of family and friends, plus innate endowments of the students, generally cannot be affected by public policy. Furthermore, although achievement is usually measured at discrete points in time, the educational process is cumulative: past inputs affect students' current levels of achievement. Based upon this model, analysts use statistical techniques, typically some form of regression analysis, to identify the specific determinants of achievement and to make inferences about the relative importance of the various inputs into student performance. These studies of educational production relationships measure output not only by students' scores on standardized achievement tests but also by other quantitative measures, such as school attendance rates, college continuation or dropout rates, and post-school earnings. The general interpretation is that they are all potential indicators of future success in the labor market and society.

The precise statistical models analyzed in different studies have varied widely in detail but have also included many common measures of inputs into the educational process. Family inputs are typically measured by socio-demographic characteristics of the families, such as parental education, income, and family size. Peer inputs, when included, are typically measured by aggregate summaries of the socio-demographic characteristics of other students in the school. School inputs typically include measures of the teachers' characteristics (education level, experience, sex, race, etc.), the schools' organization (class sizes, facilities, administrative expenditures, etc.), and district or community factors (e.g., average school expenditure levels). Except for the original Coleman Report, most empirical work has relied on data, such as the normal administrative records of schools, that were collected for other purposes.

Footnote:
31 For a list of subsequent studies, see infra Appendix.
C. Empirical Results for Expenditure Effects

The production-function approach has been employed broadly to investigate the impact on student performance of the core factors determining expenditures on education. The fundamental objective has been to estimate the changes in output caused by the key "purchased" inputs of schools. Instructional expenditures make up about two-thirds of current school expenditures. Instructional expenditures themselves are determined primarily by the level of teacher salaries and by class size. And, in most U.S. school districts, teacher salaries are directly related to the years of teaching experience and the educational level of the teacher. Thus, the basic determinants of instructional expenditures in a district are teacher experience, teacher education, and class size. Most studies, regardless of what other school characteristics might be included, at a minimum attempt to analyze the effect of these factors on student-performance outcomes. Because the analyses have such common specifications, the effects of the expenditure determinants can easily be tabulated.

The analysis here concentrates on the cumulative results of estimates of determinants of expenditures on student achievement. A total of 187 distinct "qualified studies," the result of an extensive search, were found in thirty-eight separate published articles or books. These studies, while restricted to public schools, cover all regions of the U.S., different grade levels, different measures of performance, and different analytical and statistical approaches. About one-third draw their data from a

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32 DIGEST OF EDUCATION STATISTICS, supra note 13, at 151 (Table 141).
34 Id. at 235.
35 These are also the factors most likely to be found in any given data set, especially if the data come from standard administrative records.
36 A qualified study is a production-function estimate that (1) is published in a book or journal; (2) relates some objective measure of student output to characteristics of the family and the schools attended; and (3) provides information about the statistical significance of estimated relationships. Note that a given publication can contain more than one estimated production function by considering different measures of output, different grade levels, or different samples of students. Different specifications of the same basic sample and outcome measure, however, count as only one study. The search was of studies published through 1988. All studies that could be located through bibliographic searches and that met the criteria listed above were included. Interestingly, results of the Coleman Report could not be included because information about the statistical significance of the different inputs was unavailable.
single school district, while the remaining two-thirds compare school performance across multiple districts. A majority of the studies (104) use individual students as the unit of analysis, whereas the remainder rely upon aggregate school, district, or state-level data. The studies are split about evenly between primary schooling (grades 1–6) and secondary schooling (grades 7–12). Over seventy percent of the studies measure school performance by some kind of standardized test. However, those that use non-test measures (such as dropout rates, college continuation, student attitudes, or performance after school) are for obvious reasons concentrated in studies of secondary schooling. There is no indication that differences in sample and study design lead to differences in conclusions.\(^{37}\)

The available studies all provide regression estimates of the partial effect of given inputs, holding constant family background and other inputs. These estimated coefficients have been tabulated according to two pieces of information: the sign and the statistical significance (five-percent level) of the estimated relationship. Statistical significance is included to indicate confidence that any estimated relationship is real and not just an artifact of the sample of data employed.\(^{38}\)

\(^{37}\) The tabulations in the Appendix yield the same qualitative conclusions whether stratified by grade level, by whether individual or aggregate data were used, by output measure, or by value-added or level form of estimation. The distinction between value-added and level form relates to whether earlier achievement of the student is accounted for or not. When earlier achievement is included in the analysis, the estimates indicate how much achievement is added over and above where the student began.

\(^{38}\) In any statistical analysis, which necessarily relies on a sample of all possible students and classroom environments, an estimated relationship may not be real but only perceived to exist because of the specific sample. Standard regression techniques provide ways of estimating the likelihood of being fooled into thinking there is a relationship when in fact there is not. The shorthand term "statistically significant" means that we would get an estimate of the relationship as large as the one obtained less than five percent of the time when there is actually no relationship. In other words, when the estimate is "statistically significant," we are quite confident that some relationship does indeed exist. In all cases, however, the estimates of statistical significance assume that the "correct" relationship is being estimated; that is, that the model of achievement is properly specified to include the relevant factors determining performance.

Recent critiques of standard regression approaches to analyzing educational achievement have concentrated on the fact that sampled students are clustered in classrooms and schools. See, e.g., Raudenbush, *Educational Applications of Hierarchical Linear Models: A Review*, 13 J. EDUC. STATISTICS 85 (1988). This clustering implies that conventional methods of analyzing statistical significance may be biased. Unfortunately, both the magnitude and direction of bias in the estimated variance of the coefficients are unknown. Analysts have proposed a variety of techniques for estimation of such models (often called hierarchical or multi-level models), but the actual applications have provided little direct information about either the effects of individual resources or their correct statistical properties. For a general discussion of the modeling approach, see *id.* at 85.
The table in the Appendix summarizes the expenditure components of the 187 studies. The left-hand column indicates the specific resource measures identified. According to both conventional wisdom and generally observed school policies, each factor in the table should increase student achievement. More education and experience on the part of the teacher cost more and are presumed to improve individual student learning; smaller classes (more teachers per student) are also expected to be beneficial.\textsuperscript{39} More spending in general—higher teacher salaries, better facilities, and better administration—should also lead to better student performance. The magnitudes of estimated relationships are ignored in the tabulations; only the direction and statistical significance of any relationships are analyzed.\textsuperscript{40} Having a positive sign in a production function is clearly a necessary requirement for justifying a given input or expenditure, but in general would not be sufficient. Here it is not necessary to evaluate the quantitative magnitudes, because, as we shall see, there is little indication of any relationship with the key inputs.

The data in the Appendix provides a picture of how well conventional wisdom and common school policies hold up to analysis. The columns in the table divide the available estimates by direction of effect and by statistical significance. Since not all studies contain estimates of each expenditure component, the first column simply indicates the total number of estimates available. Thus, for example, 152 of the 187 studies include an estimate of the effect of teacher/student ratios, or class size. Of the 152 estimates of the effects of class size, only twenty-seven are statistically significant. Of these, only fourteen show a positive relationship, while thirteen display a negative relationship.\textsuperscript{41} One hundred and twenty-five estimates show that class

\textsuperscript{39} Tabulated results are naturally adjusted for variables measured in the opposite direction; for example, the sign for estimated relationships of student/teacher ratios, instead of teacher/student ratios, is reversed.

\textsuperscript{40} It would be extremely difficult to provide information of quantitative differences in the coefficients because the units of measure of both inputs and outputs differ radically from one study to another. For one attempt to provide quantitative estimates of varying class sizes, see Glass & Smith, \textit{Meta-Analysis of Research on Class Size and Achievement}, \textit{I Educ. Evaluation & Pol'y Analysis} 2 (1979). This work, however, has been considerably criticized, largely because of the ultimate difficulties in doing such analyses. For an overview and evaluation of such quantitative syntheses of research, often called "meta-analysis," see \textit{The Future of Meta-Analysis} (K. Wachter & M. Straf eds. 1990).

\textsuperscript{41} Teacher/student ratios are treated here as being synonymous with class sizes. Most of these studies reflect the situations before school districts implemented expensive
size is not significant at the five-percent level. Among the statistically insignificant relationships, the coefficients have the "wrong" sign by a forty-six to thirty-four margin.\footnote{Note that not all studies report the sign of insignificant coefficients. Forty-five studies report insignificant estimated coefficients for teacher/student ratios but do not report any further information.}

The estimates of the effects of teacher education level tell a similar story. The statistically significant results are split between positive and negative relationships, and in a vast majority of cases (100 out of 113) the estimated coefficients are statistically insignificant. Again, even among the statistically insignificant coefficients, a case cannot be made that greater teacher education will lead to greater student performance.\footnote{Note that only 113 studies report evidence about teacher education. Since data on teacher education are so readily available, it is possible that a number of additional studies investigated teacher education effects but discarded the results without reporting them after finding negative or insignificant effects.}

Teacher experience is slightly different. A clear majority of estimated coefficients point in the expected direction, and almost thirty percent of the estimated coefficients are both statistically significant and of the conventionally expected sign. But these results only appear strong relative to the other school inputs considered; they are hardly overwhelming in an absolute sense. Moreover, these results can be interpreted in different ways. Specifically, positive correlations could result from more senior teachers having the ability to locate themselves in schools and classrooms with better students. In other words, causation may run from achievement to experience, not the other way around, and estimates would be an overstatement of the effects of experience on student performance.\footnote{Experience measures may, on the other hand, confuse the differences in performance accruing to experience for any individual teacher with differences in performance across groups of teachers. For example, if the best teachers all leave teaching within the first five years, any teacher with more experience will simply be a poorer teacher. If this were the case, the studies could underestimate the true effect of added teacher experience.}

Overall, the results are startlingly consistent. No compelling evidence emerges that teacher/student ratios, teacher education, or teacher experience have the expected positive effects on student achievement. We cannot be confident that hiring teachers with more education or having smaller classes will improve programs such as those for disabled children, thus it is reasonable to interpret these ratios as reflecting class sizes. This interpretation may be misleading today. The introduction of extensive requirements for dealing with disabled children in the mid-1970's has led to new instructional personnel without large changes in typical classes.
student performance. Teacher experience appears only marginally stronger in its relationship to student performance.

The remaining rows of the table summarize information on other expenditure components, including administration, facilities, teacher salaries, and total expenditures per student. There are few estimates of positive and statistically significant effects for administrative inputs or facilities. The absence of a strong relationship between quality of administration and quality of facilities on one hand and performance on the other may result in part from variations in how these are measured. The quality of administration is measured in a wide variety of ways, ranging from characteristics of the principal to expenditures per pupil on non-instructional items. Similarly, the quality of facilities is identified both through spending and through many specific physical characteristics. While the estimated effects of quality of administration appear marginally stronger than quality of facilities, the available evidence on both again fails to support the conventional wisdom convincingly.

Finally, the table shows that variations in teacher salaries and expenditures per student do not play an important role in determining achievement. These results are, of course, not surprising because the underlying components of these expenditure items were already seen to be unrelated to achievement.

Based on a reading of only a few of these studies, many previously were led to the conclusion that the results were inconsistent and ambiguous, but a systematic tabulation demonstrates that the findings are consistent. This consistency, however, does not support the conventional wisdom. The research reveals no strong or systematic relationship between school

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45 Information on each of these variables is less frequently available than information on student/teacher ratios, teacher education, and teacher experience. This lack of information is partially explained by reliance on administrative records which do not include expenditure components (except perhaps teacher salaries). The level at which these expenditure components are measured, combined with the underlying statistical samples, offers another explanation; for example, since expenditures per student are generally measured for districts, analyses of individual student data for a single district would not be able to include this variable.

46 The interpretation of salary and expenditure estimates is sometimes clouded by including them in addition to teacher experience, education, and class size. Also, because prices can vary across the samples in the separate studies, it is more difficult to interpret the dollar measures than the real input measures. Finally, 8 of the 13 significant positive expenditure results in the Appendix come from the different estimates of Sebold & Dato, School Funding and Student Achievement: An Empirical Analysis, 9 Pub. Fin. Q. 91 (1981). In this study, imprecise measurement of family inputs suggests that school expenditures may be in fact a proxy for family background.
expenditures and student performance. This is the case both when expenditures are decomposed into their underlying determinants and when they are considered in the aggregate.

There are several obvious reasons to be cautious in interpreting the results of individual statistical studies. First, incomplete information, poor quality data, or faulty research could distort the statistical results of any study. Second, the individual actions of school administrators make detection of any relationship difficult. For example, if the most difficult students to teach were consistently put in smaller classes, any independent effect of class size could be difficult to disentangle from the effects of student characteristics. Finally, statistical insignificance of estimates can result from a variety of data problems, such as high correlations among the different measured inputs. In other words, virtually any study is open to challenge.

Uncertainties such as these about individual results motivated the tabulation of estimates shown in the Appendix. If the resource inputs investigated in the studies were in fact central to variations in student achievement, one would expect the tabulations to show a much stronger pattern in the conventionally expected direction, even in the face of problems with any particular study. The lack of a systematic relationship between the measured variables and student achievement is striking. Furthermore, given the general biases toward publication of statistically significant estimates, the paucity of such results is notable. Although individual studies may be affected by specific analytical problems, the aggregate data provided by the 187 separate estimates lead relentlessly to the conclusion that, after family backgrounds and other educational inputs are considered, differences in educational expenditures are not systematically related to student performance.

Importantly, these generalizations are based on the structure and operating procedures of schools currently observed. An organizational structure with different incentives could produce very different results. For example, almost every economist would support the proposition that increasing teacher salaries would expand and improve the pool of potential teachers. However, any improvement in the quality of teaching would depend on whether schools could systematically choose and retain the best teachers from the pool. Alternatively, salary differentials might demonstrate a stronger relationship to student performance if schools faced a greater incentive to produce student
achievements and if mechanisms for teacher selection were altered. In other words, there seems little question that money could count, but within the current organization of schools, it does not do so systematically.

Moreover, the criterion of consistency used to evaluate the results and the potential for policy improvements does not suggest that money never counts. The results are entirely compatible with some schools using funds effectively and others not. But, unless some way is found to change the districts that would squander additional funds into districts that would use them effectively, added resources are not likely to lead to any improvement in average performance. Good uses of funds are balanced by inefficient uses within the current structure.

These results must also be interpreted in terms of the observed operations of schools. They do not indicate that, for example, unrestricted increases in class size would have no effect on student performance. All of the findings reported rely upon the range of experiences employed by existing public school systems, and so none of these findings gives much indication of what might happen if the current structure of schools were radically changed. In other words, the evidence on class size relates to classes roughly in the fifteen to forty student range and has little to say about the effects of classes with either two students or 300. Moreover, the evidence does not predict what would happen if there were a sudden change in the operating characteristics of schools. If, say, school budgets were cut by twenty percent, performance could deteriorate dramatically, because conditions of schools and their teachers would change significantly from their current operations. Thus, real care is necessary in generalizing from these results to major policy changes that are outside the bounds of our current experiences.

It may also be that expenditures below some minimum level could be consistently important, but there are alternative conceptualizations of minimum expenditures. For purposes of this discussion, minimum conotes a level below which expenditure variations must necessarily result in student performance differences. Other commentators, however, use minimum as a statement of the lowest acceptable spending, a concept more related to preferences than to the actual operations of schools. The preceding evidence also makes it clear that most observed school systems are quite far from minimum expenditure defined in the first way.
D. Other Inputs into Education

Since the publication of the Coleman Report, intense debate has surrounded the fundamental question of whether schools and teachers are at all important to the educational performance of students. The Coleman Report has been commonly interpreted as finding that variations in school resources explain only a negligible portion of the variation in student achievement. If true, it would not matter which particular teacher a student had or which school a student attended—a conclusion most people would have difficulty accepting.

The findings from direct analyses of differences among teachers are unequivocal: teachers and schools differ dramatically in their effectiveness. A number of studies provide analyses of the differential effectiveness of teachers and schools based on estimation of the average gain in performance of each teacher’s (or school’s) students. These studies confirm that there are striking differences in teacher and school performance as measured by average gain in student achievement.

The faulty impressions about the non-importance of teachers and schools left by the Coleman Report and by a number of subsequent studies are the result of a confusion between the measures of effectiveness and true effectiveness itself. In other words, existing measures of characteristics of teachers and schools are seriously flawed and thus are poor indicators of true effectiveness; when these measurement errors are avoided, schools are seen to have important effects on student performance.

These input-output analyses have also investigated a wide variety of other school and non-school factors. Although it is

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48 See, e.g., D. Armor, supra note 47; R. Murnane, supra note 47; Teacher Characteristics, supra note 47; Trade-Off, supra note 47.
difficult to be specific in any summary of other factors because the specifications of the various inputs employed in the statistical analyses are quite idiosyncratic, three generalizations are possible. First, family background is clearly important in explaining differences in achievement.\(^9\) Second, while considerable attention has been given to the characteristics of peers or other students within schools, the findings about their effects are ambiguous.\(^50\) Finally, studies have examined many additional measures of the effects of schools, teachers, curricula, and especially instructional methods on achievement,\(^51\) but no simple characterization of good teachers emerges.\(^52\)

While not systematically addressed by existing research, one plausible interpretation of the combined results of these studies is that an important element of “skill” is involved in being a successful teacher.\(^53\) Skill refers simply to the ability of some teachers to promote higher achievement of students. The evidence previously presented then indicates that it is currently impossible to identify, much less to measure, components or elements of this skill with any precision. Moreover, the direct evidence casts doubt on whether any form of teacher training course could be organized to foster high skill levels in teachers. In simplest terms, if we cannot define or measure it, how can we teach it?

\(^9\) See, e.g., text accompanying notes 29–30.

\(^{50}\) See, e.g., E. Hanushek, Education and Race: An Analysis of the Educational Production Process (1972); V. Henderson, P. Mieszkowski & Y. Sauvageau, Peer Group Effects and Educational Production Functions (1976); Winkler, Educational Achievement and School Peer Group Composition, 10 J. Hum. Resources 189 (1975).


\(^{52}\) Perhaps the closest thing to a consistent conclusion across the studies is that “smarter” teachers, those who perform well on verbal ability or other standardized tests, do better in the classroom. Even there, however, the evidence is not very strong. See, e.g., E. Hanushek, supra note 50; Teacher Characteristics, supra note 47; Murnane & Phillips, supra note 47; Strauss & Sawyer, Some New Evidence on Teacher and Student Competencies, 5 Econ. Educ. Rev. 41 (1986); Trade-Off, supra note 47. Tabulations similar to those in the Appendix indicate that 31 studies have analyzed teacher verbal scores. Of these, eight find positive and significant relationships and another ten find positive but insignificant relationships.

\(^{53}\) The idea of skill differences among teachers is not the only possible interpretation of the data. Differences in achievement across classrooms could reflect differences in teachers, in other classroom-specific factors, or a combination of both. The teacher skill interpretation is suggested by the fact that principals’ ratings of teachers are correlated with the covariance estimates of classroom differences. See D. Armor, supra note 47; R. Murnane, supra note 47. Evidence on the stability of teacher effects across grades, test area, and years for individual teachers further supports the teacher skill interpretation. See Trade-Off, supra note 47. For a discussion of skill differences in the production function context, see Economics of Schooling, supra note 12.
II. IMPLICATIONS FOR SCHOOL FINANCE REFORM

This evidence relates directly to consideration of future school finance reform. Although school finance policy frequently contains many state-specific nuances, this discussion concentrates on two aspects of "reform" common to many states. Most reform programs assume that a basic objective is to limit local variations in school expenditures or, if variations are to exist, to ensure that such variations are not related to the property wealth of the district.

A. The Central Implication for Equity Discussions

The evidence on school performance indicates that variations in school expenditures are exceedingly poor measures of the variations in education provided to students. If student education is the concern, the conventional evidence about interdistrict disparities in spending does not identify where educational deficiencies are to be found, and evidence about spending variations is generally irrelevant for either an equal protection or an educational disparity challenge in court.\textsuperscript{54} Such evidence about differential expenditures simply does not indicate differential quality of education. Therefore, showing how expenditures vary (either independently or with characteristics of districts and students) ought to be irrelevant to any litigation or legislative discussion directed at disparities in student performance.

We must be quite precise about the interpretation of expenditures. As previously noted, most economists would readily accept that differences in spending would be directly related to the quality of education, if schools were operating efficiently. The evidence indicates clearly, however, that it is inappropriate to assume efficient operation of schools. Only the most narrow definition of educational equity would require paying attention to expenditure variations in the face of the evidence that such

\textsuperscript{54} School finance court cases have typically contained two elements. First, the equal protection argument asserts that the school expenditure differences related to variations in the local property tax base are discriminatory. See Underwood, supra note 9. Second, the state constitution "education clause" argument asserts that large variations in expenditures are impermissible. See, e.g., Robinson v. Cahill, 62 N.J. 473, 303 A.2d 273, \textit{cert. denied}, 414 U.S. 976 (1973); Abbott v. Burke, 100 N.J. 269, 495 A.2d 376 (1985). In both instances, the direct evidence provided for the alleged wrong involves variations in expenditures (sometimes linked to other things such as property tax wealth).
expenditure variations are unrelated to the quality of education provided. Indeed, the measure of equity would have to be rigidly linked to expenditures on educational inputs without regard to the effectiveness of the inputs chosen.

B. Other Implications of Equity-Motivated Changes in Spending

There is another side to this discussion. What is likely to happen if policymakers simply make policy on the basis of expenditure differences and ignore the evidence that expenditure differentials may have no effect on student performance? This question is prompted by several arguments of the following type: “The educational problem of the poor is serious, and equalizing expenditures cannot hurt”; or, “We should at least give everyone the same chance to make mistakes.” Unfortunately, the policies flowing from these and similar notions are problematic; they carry a number of implications that, intended or not, raise serious policy concerns.

First, the likely result of actions to ameliorate funding disparities between districts, whether such actions are mandated by the courts or are voluntary moves by legislatures, is to increase overall spending.⁵⁵ The reason is simple: a state legislature, faced with a need to alter expenditure patterns, finds it much easier to redistribute a larger pie than a fixed pie.⁵⁶ The evidence indicates, however, that such added funds will on average be dissipated on things that do not improve student achievement—at least unless other, larger changes are also made.⁵⁷ Teachers, administrators, and, perhaps, taxpayers in

⁵⁵ In some states, where it is believed that a portion of the districts are “below minimum” (defined usually in terms of preferences), see supra paragraph preceding Part I(D), the objective of raising overall expenditures is explicitly discussed, even though the legal case for such activities is generally tenuous.

⁵⁶ In the school finance debate, this is frequently referred to as “leveling up,” bringing the low spending districts up to the spending of the top districts. The arguments behind the policy involve either the need to do more for education across the board or the pure political necessity resulting from pressures of electoral politics. Of course, aggregate expenditures will rise with policies that stop far short of full leveling up. For example, introducing a new financing scheme with a “save harmless” clause (a guarantee that each district receives at least as much as it would have received under the previous policy) would lead directly to aggregate increases. For a discussion of the politics of alternatives, see W. Garms, J. Guthrie & L. Pierce, supra note 2, at 215–47. There is seldom much interest in the idea of “leveling down” because of the potential for disruption and the obvious divisiveness of such a policy.

⁵⁷ See supra Part III.
the districts that gain new funds will probably be happier, but the average state taxpayer and parent will find that the resulting changes do little more than increase tax bills.

Second, there is no assurance that the new funds will go to the schools of poor children. As indicated previously, one of the pervasive views of finance “reform” is that poor children will be helped (or, at least, will have a better chance by virtue of greater funding). But reform schemes designed to follow district wealth patterns can lead to unexpected outcomes, because there is no clear relationship between district wealth and the concentration of student poverty. Some states find that wealthier districts in terms of property wealth per student also have concentrations of poorer families and children. New York State provides a good illustration. The largest districts in the state intervened on the side of the plaintiffs in *Levittown v. Nyquist* and introduced a new argument, municipal overburden, in order to protect their funding. In other states, property wealth and poverty may be negatively correlated; that is, high property wealth tends to be found in districts with a small poverty population, but even in these states the overall pattern clearly does not hold jurisdiction by jurisdiction. Therefore, while not a necessity, it is likely that funds going to many districts with concentrations of poor children actually will be reduced by plans to neutralize expenditures on the basis of district wealth. Moreover, because of a combination of federal

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38 Consider the six largest cities in New York State: New York City, Buffalo, Rochester, Yonkers, Syracuse, and Albany. Albany and Yonkers have tax bases where real property per student is greater than the state average; New York City, Rochester, and Syracuse have tax bases per student only slightly below the state average; and Buffalo is left with a tax base 30% below the state average. *New York State Office of the Comptroller, Financial Data for School Districts (1982)* [hereinafter N.Y. Financial Data]. Yet, all these districts except Yonkers have poverty rates for children above the state average. For example, while the average poverty rate in New York State for children 18 years old or younger in 1980 was 19.0%, it was over 36% in New York City and over 30% in Buffalo. *United States Bureau of the Census, County and City Data Book 756 (1983)* [hereinafter County and City Data Book].

39 The argument of municipal overburden is that excessive demands for non-school expenditures faced by urban districts subtract from what otherwise would be available for schools. Therefore, the state funding formula should recognize these other expenditures in allocating school support. See, e.g., *Levittown v. Nyquist*, 57 N.Y.2d 27, 439 N.E.2d 359, 453 N.Y.S.2d 643 (1982). For an economic analysis, see *Brazer & McCarty, Interaction Between Demand for Education and for Municipal Services, 40 Nat’l Tax J. 553 (1987).*

40 As described supra note 58, there is considerable variation in tax bases and poverty rates within a state. Thus, for example, Albany had a property tax base per student that was 34% above the state average, see N.Y. Financial Data, supra note 58, and yet it also had a poverty rate above the state average, see County and City Data Book, supra note 58, at 756.
and state grants, districts with concentrations of poor students frequently have above-average spending, regardless of their property wealth or overall economic health. Programs to limit variations in expenditure could operate to cut back existing compensatory spending for disadvantaged students.

Third, spending differences may not even accurately reflect the real resources each district is able to deliver (i.e., the actual educational inputs). This is the simple result of possible cost differentials facing individual districts. That is, if districts face different prices for things they might buy, from teachers to buildings and equipment, dollar variations themselves do not indicate variations in available real resources. As a simple example, if the schools in one city were less pleasant and desirable than those in other cities, it would be necessary to pay a higher salary to get a teacher of equal quality. An extension of this involves districts faced with concentrations of students who are more difficult to educate, because of a variety of pre-existing education deficiencies. These, like cost differences for inputs, lead to expenditure variations in districts behaving in an otherwise identical manner.

Fourth, we should not gear educational policies toward districts since residents actively choose their package of housing and local public goods and will move if that package no longer is the most attractive. There is extensive evidence that individuals make choices among districts in part to satisfy their de-

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61 For example, in the New York State situation, each of the six large districts except New York City had expenditures per student above the state average. See N.Y. Financial Data, supra note 58.

62 This situation, called “compensating differentials” by economists, can exist whenever jobs or job locations include different attributes such as riskiness, opportunities for learning, or favorable living conditions in the case of cities. See generally R. Ehrenberg & R. Smith, Modern Labor Economics: Theory and Public Policy (1991). In the context of teachers see Antos & Rosen, Discrimination in the Market for Public School Teachers, 3 J. ECONOMETRICS 123 (1975); Kenny & Denslow, Compensating Differentials in Teachers’ Salaries, 7 J. Urb. Econ. 198 (1980); Toder, The Supply of Public School Teachers to an Urban Metropolitan Area: A Possible Source of Discrimination in Education, 54 REV. Econ. & Statistics 439 (1972). Differences in the attractiveness of areas can also lead to differences in housing and land prices, thus affecting other inputs to education. See, e.g., Roback, Wages, Rents, and the Quality of Life, 90 J. POL. Econ. 1257 (1982).

63 Indeed, many state funding formulae recognize such issues and attempt to adjust for input cost differences or for differences in student preparation, disabled status, and the like. See, e.g., E. Cohn & T. Geske, supra note 51; W. Garms, J. Guthrie & L. Pierce, supra note 2; E. Tron, Public School Finance Programs, 1978–79 (1980); Public School Finance Programs of the United States and Canada, 1986–87 (R. Salmon, C. Dawson, S. Lawton & T. Johns eds. 1988). Nevertheless, making such adjustments is extremely difficult.
mands for various public services. People who place considerable weight on quality schooling search for districts that seem to emphasize that. People interested in other goods or even low public expenditures seek districts that provide the level and pattern of the services they are looking for. Certainly this common method of selecting public services has drawbacks. Moving can be expensive, and some might find it difficult to move to the districts they would like because of housing prices, commuting costs, or discrimination. Nevertheless, individuals generally have considerable latitude in choosing schools. They are not inextricably tied to a particular district and are not doomed to whatever expenditure levels currently exist in a specific district. Finally, individual districts change their expenditures in line with the desires of the population and with population shifts, so that districts may increase or decrease their expenditures over time.64 Thus, policy discussions that speak generally of the population as captives of districts with undesirable spending patterns tend to miss an extremely important feature of the political economy of local jurisdictions.65

Fifth, the preferences and movements of citizens across district boundaries have direct ramifications for the observed distribution of property wealth. Specifically, districts that offer a particularly favorable tax and school-quality package will be attractive to many people. This will lead to a bidding-up of housing prices in desirable jurisdictions, because they are in great demand, other things being equal.66 Otherwise identical houses will sell for different amounts because of citizens’ evaluations of the taxes and school quality being offered. The result is that people pay for their schools up front through the capi-

64 For example, it is possible to trace the shifts in district spending in Indiana between 1977 and 1987. From simple tabulations I have done, only 43 of the 76 top-spending districts in 1977 remained in the top quartile in 1987; only 42 of the 76 bottom-quartile districts remained there from 1977 through 1987.

65 There may be, as noted, particular portions of the population that for one reason or another face especially high moving costs and thus are less mobile than others. Primary concern here focuses on poor and minority groups locked into inner cities. Such mobility constraints are a serious matter that will be considered infra text accompanying note 77.

talization of school quality in the price of their homes. Therefore, some places that initially look attractive from the vantage point of the tax rate are actually less attractive because the low rate is multiplied by a high valuation (relative to the other attributes of the home). This has, among other things, the direct effect of increasing the property tax base of the community. But remember, the property tax base is often brought into the discussion of the "inequities" of the school finance system with an implication that it is independent of the tax and school choices made by districts.

Sixth, reform changes in the funding formula of the state imply distributing somewhat arbitrary capital gains and losses across the districts and citizens in the state. Districts will become more or less fiscally attractive by major changes in the financing laws. The capitalization process described above will yield potentially significant fluctuations in housing values as an unintended result of financing changes. In addition to the inequity of arbitrary gains, school finance reform may disrupt the local housing markets by causing sudden fluctuations in property values and creating uncertainty among buyers and sellers.

Seventh, in most states the actual spending levels reflect a wide variety of things, including the preferences of the citizens. While it is common to argue that local property wealth is the primary determinant of expenditure differences where local property taxes support school spending, that simply is not the case. For example, even though New Jersey and Indiana have relied on local property taxes to fund schools, rough estimates indicate that less than a fifth of the variation in expenditures would be eliminated by equating local property wealth per student.\(^{67}\) This result is caused by the combination of local preferences, differences in student needs, curricular choices, cost differentials, and a variety of other factors. It shows that variations in spending are not dominated by variations in local property wealth.

Eighth, differences in tax rates across communities bear no direct relationship to the degree of educational equity.\(^{68}\) The

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\(^{67}\) These calculations rely on estimates I conducted on the relationship between expenditures per student and wealth per student in districts in these states. The R\(^2\) of simple regression in each state was less than .20. This means that one fifth would be an estimate of the upper bound on the potential for equating spending by eliminating property tax base differences. For an explanation of the statistics involved, see E. Hanushek & J. Jackson, Statistical Methods for Social Scientists (1977).

\(^{68}\) Here we presume that attention is given to "equalized" tax rates. Since assessment
pattern of tax rates may be an issue from the standpoint of various notions of "taxpayer equity," but they seldom have much to do with equity considerations in education. Most importantly, school finance reform has been based on perceived differences in the quality of education available, and the quality of education is not related in any simple way to tax rates. The tax rate provides an indication of the price that residents face to raise funds for schools, and high tax rates might indicate that some districts find it more difficult than others to raise funds through the property tax. But, tax rates differ according to a variety of factors including community preferences, community income and wealth, the amount of non-residential wealth in the tax base, among other factors. Further, while the education clauses of state constitutions may place requirements on states to provide certain levels of education, they never indicate that school tax rates must be equalized across a state.

The thrust of these eight policy concerns is to underscore the point that simple alterations in expenditure patterns can have important and undesirable effects. From what we know about the educational process and about behavior of local jurisdictions, we arrive at the inescapable conclusion discussed in the introduction: that general assumptions behind early school finance reform are at best misleading.

III. Policy Alternatives

Concerns about the directions school finance reform has taken do not, of course, vitiate the undeniable need to improve our public schools. The intentions of finance reformers have been good. Only their approach is questionable. Three critical facts lead to the judgment that structural change in our school systems is essential. First, in absolute terms students are not performing up to expectations. Performance as measured by standardized tests over time, by international comparisons of tests, by various measures of workplace performance, and by common perceptions is currently unacceptable. Second, as indicated earlier, there is overwhelming evidence that the resources devoted to

practices and property valuation for tax purposes can vary widely, the tax rate per $100 of assessed value can vary widely solely because of the underlying assessment practices. In many states, the nominal tax rates levied by individual communities bear little relationship to actual tax burdens.

See supra Figure 1.
schools have been both large and growing, but have not been effectively used. Third, the significantly skewed distribution of educational success, which leaves poor and minority students behind the rest of the population, is incompatible with most people's views on the goals of our society.

The previous sections indicate why the reforms as commonly considered in school finance debates are unlikely to address these primary concerns. Focusing on the distribution of funds between districts distracts attention from the issues of the organization of schools, the incentives for performance, and the goals of the system. Because of the contentiousness of issues surrounding the distribution of funds, school finance debates have the potential for absorbing all the energy devoted to school policy. Thus, in addition to offering few solutions to the problems previously identified, there is a significant opportunity cost in putting off the fundamental restructuring required by the current education problems. This problem of distraction, of course, is not inevitable, but there are strong forces pushing in that direction.

That courts and legislatures have concentrated on finance reform rather than more fundamental policy considerations is not particularly surprising. There is an understandable, albeit erroneous, logic to this choice: expenditure differences are readily measurable; there is a plausible argument behind their importance; there is no obvious alternative focus of policy; and proceeding on the basis of expenditure differences at least represents an effort to improve matters. This logic recognizes that there are serious problems with our schools, and that an attempt should be made to fix things.

This logic fails by mistakenly rejecting the possibility of better policies. As discussed previously, there is no set of simple changes involving either resources or programs that shows a consistently strong relationship to student performance. But it is not necessary to think of policies solely in terms of mandating certain inputs.

There is an alternative formulation of educational policies that avoids the pitfalls of previous approaches and that offers considerably more promise of improvement. The alternative is to

70 Id.
move to organizations and incentive systems which directly reward performance. The current set of policies pursued in most states either directly provides or requires that certain inputs go into its educational system—expenditures, class sizes, teacher training, etc. Districts follow these input policies essentially without regard to their effectiveness, either in the aggregate or in specific contexts. The alternative being proposed is to concentrate on the output—student performance—instead of inputs that we think or hope are important in determining student performance.

A variety of systems have been used or suggested to promote performance-based policies. These include merit pay for teachers, merit awards for schools that perform well, and a variety of plans emphasizing choice of educational institution. The essential common ingredient to the various plans is that resources are directly related to performance: if performance is high, resources are high; if performance is low, resources are commensurately low. For example, merit pay for teachers operates by increasing the salaries of those teachers who perform well but not of those who perform poorly. Similarly, a choice plan, which allows students and parents to choose among alternative schools, works by reinforcing parental judgments about school quality with greater resources flowing to the schools that attract more students.

The focus of each of these policies is on providing incentives that would work to improve performance without needing to specify exactly how schools should be run. By providing tangible incentives for improved performance, most decisionmaking could be improved. The actual operations of hiring, promotion, curriculum, student placement, etc., while not specified or centrally regulated, should respond to incentives. This has been demonstrated by wide ranging research, both in education and elsewhere.\textsuperscript{72} The trick, of course, is getting the incentives

\textsuperscript{72} Responsiveness to incentives has been demonstrated extensively for consumers and workers in the U.S. economy. \textit{See}, e.g., Freeman, \textit{Legal "Cobwebs": A Recursive Model of the Labor Market for New Lawyers}, \textit{57 Rev. Econ. \\& Statistics} 171 (1975). Responsiveness has been shown to relate not only to monetary incentives but to regulatory requirements. (Many school incentives currently in place are regulatory in nature, as opposed to monetary.) For example, it has been demonstrated that mandatory seat belt requirements for automobiles reduce the risk of driving fast, thereby creating an incentive to increase driving speeds and contributing to more pedestrian injuries and deaths. Peltzman, \textit{The Effects of Automobile Safety Regulation}, \textit{83 J. Pol. Econ.} 677 (1975). In examples closer to schools, it has been shown that movement into and out of teaching responds to monetary incentives. Murnane \\& Olsen, \textit{The Effects of Salaries for Teachers} (1981).
correct, and this will take experimentation, bargaining, and evaluation.

There are many different versions of these performance-based plans, particularly in the area of the choice plans. Commonly discussed choice plans range from magnet or special schools, which exist in many urban districts, to full voucher systems, which provide parents with funds to pay tuition at either public or private schools of choice. Other choice plans include choice within public school districts, open enrollment throughout any public school in the state, and tuition tax credits that rebate a portion of any tuition payment to the parents.

Performance-based options have been discussed elsewhere and will not be reviewed here.\textsuperscript{73} Instead, the following will merely highlight key aspects of the options. The central theme of this discussion is that performance-based plans have a number of conceptually appealing elements, but each option has little historical evidence to provide details of either how it should be implemented or the magnitude of gains that might be expected. In other words, there is considerable uncertainty, particularly about details of implementation, because these approaches are largely untried. The uncertainty should not, however, be taken as a reason for avoiding these otherwise promising approaches. It does suggest the necessity of adopting a more interactive approach to policymaking.

The performance-based view of educational policy is very different from the current view. It is also not well suited to judicial implementation and administration because the remedies are difficult to specify explicitly and are not easily tracked. But, a performance-based view offers realistic hopes for school improvement, something that cannot be said for narrow interventions that have focused solely on expenditures and other inputs.

The potential for performance-based plans is supported by a portion of the research into educational performance summa-

\textsuperscript{73} For one outline and evaluation of major alternatives, see Chubb & Hanushek, \textit{Reforming Educational Reform}, in \textit{Setting National Priorities: Policy for the Nineties} 213 (H. Aaron ed. 1990).
ized previously. The research that involved estimation of total teacher effects indicated extremely large and significant variations in the performance of individual teachers and schools. Importantly, while research cannot identify the separate components of successful and unsuccessful teaching, it does support the simple but powerful notion that good performance can be identified by school administrators. This ability would be needed for such options as merit pay for teachers. Further, the potential for performance-based policies is considerably strengthened if one gives credence to individual parents who frequently act like they can tell the difference between good and bad teachers. Such perceptiveness on the part of parents is a basic requirement for choice-based plans.

The point is simple: a range of effective policies appears to be available. They are, however, almost certainly very different from the traditional policies and traditional school finance reform efforts. Moreover, implementing some of these fundamental reforms might take added funds, particularly in the initial phases. But, this investment has a greater potential for return than expenditures aimed at equalizing the same educational inputs that have failed to produce results in the past.

Finally, the restructuring of incentives in schools appears to be the only feasible answer to dealing with the gloomy record of schools in improving the performance of educationally and economically disadvantaged youth. A variety of input-oriented programs, including a large portion of federal school programs, have attempted to deal with the disadvantaged, but there is little evidence that this has had much impact. As pointed out pre-

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74 See infra Appendix and text accompanying notes 32–46.
75 See supra text accompanying note 47.
76 It is important to reiterate that research has concentrated on the value added by teachers and not on the absolute performance levels of students. In other words, the real issue is what a teacher adds to student knowledge and performance. Because students can differ widely, based on different family backgrounds and education in the home, policy must concentrate on the school-specific portion of achievement. The research demonstrates that there can be low value added in a "good" suburban school where the absolute level of achievement is quite high. Similarly, there can be high value added within "bad" central city schools where students come to school quite unprepared but leave with schools having added noticeably to their achievement. See, e.g., Trade-Off, supra note 47.

The identification of teacher performance is rightfully centered on value added and not the overall performance of students. This research indicates that principals can distinguish between value added and general student performance. See D. Armor, supra note 47; R. Murnane, supra note 47.

viously, the economically disadvantaged are handicapped by less ability to secure good schooling through moving—the route to better schooling by middle- and upper-income families. Choice-based programs would directly aid those most at risk now in selecting better schools by effectively breaking the link between residential location and school quality. The alternative to restructuring incentives is to continue expansion of the programs that have thus far been unsuccessful.

The evidence from past analyses demonstrates that good teachers exist in what are commonly thought to be bad, urban districts. Their existence, however, is masked by generally low achievement levels; that is, even though an individual teacher may elicit more than one year of achievement growth within a one-year period, low absolute levels of performance could hide it. The policy problem is that we have not been able to attract, to identify, and to retain sufficiently large numbers of such good teachers to have the kind of influence that is needed. This is just the appeal of performance-based incentive schemes. They are designed to reinforce good performance. We should, at the same time, not have overly optimistic expectations. As has been thoroughly documented, family influences are very powerful in determining achievement levels, so, while specific teachers might have a substantial influence on achievement, they might not overcome deficits arising from factors outside the schools. Indeed, it may take the continued efforts of many good teachers over the course of the student’s school career. This reality, however, should not deter our efforts to provide the best possible education.

IV. CONCLUSION

School finance reform, as commonly understood by courts and legislatures across the country, is likely to work against the improvements much needed by public schools. By emphasizing primarily the distribution of expenditures per student, financing reform is almost certain to exacerbate existing problems of inefficiency in school operations. The discussions of school finance reform typically attempt to distinguish discussions of

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78 See, e.g., D. Armor, supra note 47; R. Murnane, supra note 47; Trade-Off, supra note 47.
79 See supra text accompanying notes 29-30.
efficiency from discussions of equity. Such a distinction is impossible, however, if the quality of the education of children is a factor in evaluating equity. The education of children depends directly on the ability of school districts to translate resources into student achievement. If schools are ineffective at this, simply heaping more resources on poorly performing districts will do little to improve educational equity.

Research has demonstrated conclusively that, within the current organization and operation of schools, there is no consistent relationship between resources and student performance. Common policy arguments, used to justify the plea for added resources to school districts, simply are not supported by evidence. Ignoring the evidence on the lack of relationship between resources and performance is likely to lead to policies that increase the level of inefficiency without increasing student performance. History indicates that while some districts might use additional funds effectively, other districts will probably use them ineffectively—leading to little or no aggregate improvement in education quality from increased funding. The current incentive structure in schools simply does not promote efficient use of resources.

There are large differences in performance among teachers and schools. Evidence indicates that parents and administrators can identify quality teachers and schools. What has been lacking is an effective structure for channeling knowledge about performance into overall school improvement. A variety of structural changes have been proposed, but there is little operational experience with them. It is essential that experimentation with the alternatives begin. However, by primarily emphasizing the distribution of expenditures per student, the current school finance debate detracts attention from the more promising course of structural changes.
### Appendix: Summary of Estimated Expenditure Parameter Coefficients from 187 Studies of Educational Production Functions

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