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ABSTRACT

School finance is a highly visible issue. Recent sweeping state supreme court decisions have overturned finance structures in New Jersey, Texas, and Kentucky. There are 16 additional states with active or planned cases making school finance litigation, fiscal inequalities, and school finance reform major issues in the state education policy agenda. This paper discusses the changing contours of school finance through the 1970s and 1980s and outlines key financial issues for the 1990s. Issues of the 1970s and 1980s include the complexity of school finance, equity changes, litigation, constitutional validity, and landmark state decisions. For the 1990s, issues include sources of revenue growth, efficiency, cost effectiveness, program productivity, school finance, and educational reform. (78 references) (RR)

POLICY WHITE PAPER

The Changing Contours of School Finance

1991

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The Changing Contours of School Finance

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Introduction

After taking a back seat to education program reform during the 1980s, school finance has returned as a highly visible issue. With the recent, sweeping state supreme court decisions overturning school finance structures in New Jersey, Texas, and Kentucky, and active or planned cases in 16 additional states, school finance litigation, fiscal inequities, and school finance reform have rebounded to high places on state education policy agendas. This policy white paper discusses the changing contours of school finance through the 1970s and 1980s, and outlines the key school finance issues for the 1990s.

I. School Finance in the 1970s and 1980s

School finance inequities derive from the way states finance public elementary and secondary schools. Local property tax dollars are a major source of school revenues. Indeed, early in the twentieth century, property taxes provided nearly all school revenues, with states providing only small amounts, and the federal government providing barely any revenues.

Table 1 shows that nationally, local revenues still constitute a substantial portion (44 percent) of education revenues. Except for California, local property taxes account for significant portions of education revenues in the Far West Laboratory region. The pattern in Arizona is quite close to the national average, with local revenues — primarily property taxes — making up 43 percent of the total. Local revenues constitute the bulk (56 percent) of education revenues in Nevada and 40 percent in Utah.

Table 1
Sources of Public School Revenues, 1986-87, in Arizona, California, Nevada, and Utah [1]

State	Federal	State	Local and other
National Average	**6.4%**	**49.8%**	**43.9%**
Arizona	9.0	48.3	42.7
California	7.1	69.5	23.5
Nevada	4.4	39.5	56.0
Utah	6.1	54.4	39.6

Heavy reliance on local property taxes produces fiscal inequities because the property tax base is not distributed equally across school districts. As a result, the property tax base is large in some districts and small in others. Thus, at a given tax rate, wealthy districts raise more money per pupil than districts where property values are lower. In many states, this unequal ability to raise local revenues is substantial, varying by a factor of up to ten to one.

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[1] Source: National Center for Educational Statistics, Digest of Educational Statistics: 1989: Washington, D.C.: U.S. Department of Education, 1989.

A variety of school finance programs can eliminate these local revenue raising inequities. But states typically implement programs that only reduce, rather than eradicate the problem. Consequently, revenues (from local and state sources) per pupil vary considerably in most states, the differences correlated directly with the local per pupil property tax base. High revenue-per-pupil districts usually are rich in property wealth and levy a below-average tax rate, while low revenue districts usually are poor in property wealth per pupil and levy an above-average tax rate.

School Finance During the 1970s

These types of fiscal disparities were the subject of several court suits in the 1970s, beginning with the *Serrano v. Priest* case in California. Drawing from both equal protection and state education statutes, cases were filed in several states arguing that it was unconstitutional for local property wealth to be linked with revenues per pupil, given that revenues are accepted as a proxy for education quality. Though a 1973 U.S. Supreme Court decision in *Rodriguez v. San Antonio Independent School District* held that these inequities did not violate the federal constitution, cases were refiled in state courts, including California and Arizona. In about a third of the cases (including California) between 1971 and 1985, state courts overturned school finance structures; in other cases, state courts (including Arizona) found that school finance systems, with similar fiscal disparities, did not violate the constitutional requirements.

Changes in School Finance Structures

Actual or threatened court mandates led over 35 state legislatures to enact fundamental changes in school finance structures between 1971 and 1985 (Odden, McGuire and Belsches-Simmons, 1983; Odden, 1984). These reforms had five major characteristics. First, they revamped the school finance formula, sending more state funds to property poor, lower spending districts. Second, they increased the overall state role in funding schools. Third, they increased state funding for special needs students in state compensatory, special and bilingual education programs. Fourth, the reforms often increased aid for the extraordinary needs of large, urban districts. Fifth, many reforms were accompanied by education tax and spending limitations that restricted local fiscal control over tax rates and curbed annual increases in expenditures per pupil.

While riveting attention on the fiscal inequities that derived from unequal property tax bases, school finance court cases and subsequent school finance policy reforms left two major policy issues unresolved, both concerning the specific nature of the school finance problem. Was the

problem a variation in the tax base; i.e., in the ability to raise revenues? Or was it differences in spending per pupil?

If the problem is disparity in the local tax base, it can be remedied by enacting a Guaranteed Tax Base (GTB), or district power equalizing, program. Under GTB programs, all districts can function as if they had the tax base guaranteed by the state. All districts then, rich or poor, would raise the same amount of money per pupil by levying the same tax rate. But GTB Programs let local districts decide how high a tax rate to levy. Different tax rates produce different expenditures per pupil. Thus, *GTB programs allow for spending differences*; the differences are related to tax effort though — not local property wealth.

There is a lack of clarity over the nature of the school finance problem.

If the school finance problem is defined as differences in spending per pupil — whether because of differences in tax bases or differences in local preference for education — the remedy is a school finance system that mandates equal spending across all school districts (albeit with appropriate adjustments for different pupil needs and different education prices). Examples are California's and Hawaii's systems.

The Complexity of the School Finance Problem

This lack of clarity over the nature of the problem has plagued school finance for decades. States need to decide on their definitions. If the problem is unequal access to raising local revenue, then the solution is a program providing equal access to revenues but allowing for differences in expenditures per pupil. If the problem is disparity in expenditures per pupil , a program to mandate equal spending is the answer.

State response to school finance court mandates during the 1970s reflected indecision over these two goals. Most studies of the impact of school finance reform found only modest reduction in overall per pupil expenditure disparities and similarly small change in the relationship between expenditures and local property wealth (Odden, Berne and Stiefel, 1979; Carroll and Park, 1983).

The clearest school finance trend in the 1970s was change in sources of school revenues, as shown in Table 2. Local revenues dropped from over 50 percent of total revenues in 1970 to 43.4 percent in 1980, while state revenues rose from about 40 to 47 percent. The trend clearly was toward higher revenue from states. Only the state can determine the local education tax base or school spending across districts.

Table 2
Percent Revenues by Source for U.S. K-12 Public Education: 1960 to 1988 [2]

Governmental Level	1960	1970	1980	1988
Federal	4.4%	8.0%	9.8%	6.3%
State	39.1	39.9	46.8	49.5
Local and Other	56.5	52.1	43.4	44.1

School Finance Equity Changes

Despite the school finance reform ferment in the 1970s, school finance did not change much during the 1980s, particularly with respect to sources of revenues and the typical fiscal inequities. As indicated in Table 2, sources of education revenues at the end of the 1980s were about the same as at the beginning; although state sources became slightly more pronounced (rising to almost 50 percent of the total), and federal sources declined somewhat.

Further, as shown in Table 3, school finance inequities across the country did not change much from the mid-1970s to the mid-1980s. The disparity in expenditures per pupil broadened somewhat, while that between revenues and wealth declined, but both statistics remained high. While expenditure disparities in states in the Far West region are below the national average, the link between revenues and wealth is above the national average. Generally, structural fiscal inequities did not change much.

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[2] Source: National Center for Educational Statistics, *Digest of Educational Statistics: 1989:* Washington, D.C.: U.S. Department of Education, 1989; and National Center for Education Statistics, *Public Elementary and Secondary State Aggregate Nonfiscal Data, by State, for School Year 1988-1989; and School Revenues and Current Expenditures for Fiscal Year 1988*. Washington, D.C.: U.S. Department of Education, 1990.

Table 3
Measures of School Finance Inequities, 1977 to 1985, in the Nation and in Arizona, California, Nevada, and Utah [3]

	Coefficient of Variation in Expenditures Per Pupil		Correlation Coefficient between Revenues and Property Wealth	
	1977	1985	1977	1985
National Average	0.16	0.19	.55	.50
Arizona	n.a.	.17	n.a.	.53
California	n.a.	.13	n.a.	n.a.
Nevada	n.a.	.10	n.a.	.65
Utah	n.a.	.16	n.a.	.68

n.a. = not available

The end of the 1980s saw one of the most intense periods of school finance litigation of the last two decades.

School Finance Litigation During the 1980s

One of the surprises of the 1980s was the resurgence of school finance litigation. While litigation was light at the beginning of the decade, by its end court cases were filed or planned in nearly 20 states, making the late 1990s one of the most intense periods of school finance litigation in 20 years. The Texas and New Jersey cases represented a "second round" of litigation, each state having experienced a court suit during the 1970s. And in Kentucky, major new directions were set by a case that not only overturned the state's school finance system, but upended its entire education system — from organization to structure to programs and finance. This section briefly summarizes these legal trends.

States Are Finding School Finance Systems Unconstitutional

During the 1980s, state supreme courts in Arkansas, Kentucky, Montana, New Jersey, and Texas found school finance systems unconstitutional. Cases are pending in 11 other states* and are being developed in another six states.** Three aspects of the 1980s school finance litigation are worth noting.

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[3] Source: Myron Schwartz and Jay Moskowitz, *Fiscal Equity in the United States*. Washington, D.C.: Decision Resources, 1988.

*Alaska, Connecticut, Indiana, Kansas, Massachusetts, Michigan, Minnesota, North Dakota, Oklahoma, Oregon, and Tennessee.

** Alabama, Illinois, Missouri, Pennsylvania, Virginia, and Wyoming.

Three important trends are emerging:

- *Courts are not averse to rendering a "second decision."*
- *Courts are becoming more restrictive in the magnitude of fiscal disparities allowed.*
- *States are focusing more on spending differences rather than just on the relationship between spending and wealth.*

First, courts are not averse to rendering a "second decision." Indeed, even during the 1970s, courts in Connecticut and Washington found systems unconstitutional in a second case. The Texas case was noteworthy in two ways. The earlier Texas situation — *Rodriguez* — had reached the U.S. Supreme Court which eliminated federal courts as a route for challenging school finance inequities. Moreover, with several newly-elected, conservative justices, the Texas Supreme Court surprised the state — and the country — with a unanimous decision finding the Texas school finance structure unconstitutional.

Second, courts may be becoming more restrictive in the magnitudes of fiscal disparities allowed. In both the Kentucky and Texas cases, the vast majority of districts spent close to the state average. The systems were overturned, in part, because of the larger disparities between the lowest and the highest spending districts.

Third, there seems to be a developing trend to focus more on spending differences per se, rather than on just the relationship between spending and wealth. The Texas decision hinged on differences in spending between the bottom 50 and top 50 districts. The Kentucky decision requires a much higher per pupil spending base across all districts and the decision stated that "equality is the key word. . . ." And the New Jersey decision requires the spending of the bottom districts to be equal to that of the top districts. The balance may be tipping towards requiring equal expenditures per pupil (again, with legitimate adjustments for pupil need and education price differences) rather than just requiring equal access to a local property tax base.

Two Important State Decisions — New Jersey and Kentucky

The most intriguing decisions were those made in New Jersey and Kentucky. In New Jersey, the court focused its decision on the poorest 28 school districts and found the system *unconstitutional only for those districts*, which happen to be primarily large, urban school systems that are poor in property wealth per pupil, and have high concentrations of poor and minority students. The decision requires New Jersey to make the per pupil spending in these districts "substantially equal" to the spending in the highest wealth suburban districts. However, it is likely that it will be politically difficult for the legislature to enact changes just for these 28 districts. *A political reading of the New Jersey decision suggests that a strong movement towards equal spending for all districts may be required as the primary thrust of the legislative remedy.*

In Kentucky, the court went far beyond just ruling on the school finance system, and may set a precedent for the direction of school finance

Kentucky could portend the future not only of school finance reform, but also of education policy reform.

litigation — as well as education policy — during the 1990s. The court essentially ruled that disparities in local tax bases and dollar inputs were only part of the problem; the entire Kentucky system was unconstitutional. The court required the state to redesign the entire education system — structure, governance, program and finance.

The Kentucky response could portend the future not only of school finance reform, but also of education policy reform. The state created an outcomes-based, rewards and sanctions oriented, site-based managed system that includes eight key components:

1. Student performance outcomes that stress thinking and problem solving.

2. A new performance assessment system for grades 4, 8, and 12.

3. Rewards to schools for meeting student outcome objectives, with a teacher salary bonus of up to 45 percent of salary.

4. Sanctions for schools not meeting student outcome objectives including (in the most severe cases) teacher dismissal and loss of tenure and teaching credential.

5. Site-based management and decision making, including hiring and firing of professional staff, scheduling and grouping students, and curriculum and instructional decision making.

6. Vastly expanded professional staff development.

7. Pre-school programs for students who need them in order to give more attention to the developmental needs of poor students.

8. Integrated health and social services, including a family resource center in each elementary school or youth resource center in each high school with a student poverty enrollment that exceeds 20 percent.

Kentucky's new school finance structure includes a much higher foundation per pupil spending level, an equalized second tier under which *the local school board* can increase spending by 15 percent over the base, and an unequalized third tier under which voters can increase spending by another 15 percent. The latter component clearly is "out of sync" with all other components; if tapped, it could bring the state back to court in the future. Nevertheless, attention is being given to the programmatic changes and the hike in base spending to implement those changes.

Clearly, this is a new type of "school finance reform." It unites the fiscal concerns of the 1970s with the program concerns of the 1980s. It redirects the policy (and perhaps legal) concern from dollar inputs to student outcomes — what students know and can do. It connects the finance system to the programs needed to produce those outcomes. And it provides incentives for schools to meet those goals and sanctions if they do not. These directions could well portend the contour of school finance and education reform for the 1990s.

Further, this new type of school finance raises the issue of whether school finance — and school finance litigation — can limit itself in the 1990s to fiscal issues and dollar inputs. Can we continue to ignore student outcomes and educational productivity. Or will the evolving nature of school finance now allow a focus on the disparity in student outcomes and an analysis of how education programs, uses of fiscal resources, and level of funding can be restructured to lessen disparity in the basic levels of what students know and are able to do?

Put another way, now that the country has shifted its focus from just equal educational opportunity to percentages of students expected to perform at basic, proficient, and advanced levels on assessments of student achievement, it may be time to refocus education finance on these issues as well. School finance decision makers for the 1990s may pay less attention to the variation in education dollars per student, and more to how the level and uses of dollars allow schools to meet new and ambitious national and state education goals.

II. The New School Finance for the 1990s

In addition to the Kentucky school finance response inextricably and finally linking education finance with education programs and student outcomes, three other additional school finance topics stand out for the 1990s. The first is the likely level of revenues that will be available. The second is intense interest in increasing the productivity of the large current and likely new amounts of dollars spent on public elementary and secondary schools. The third includes the many and complicated school finance issues of the evolving education reform agenda.

Contrary to conventional wisdom, one of the enduring features of elementary and secondary education finance is that each decade, revenues per pupil rise substantially in nominal and real terms. Americans seem to like their schools, believe that education is a way to improve society, and continue to put money into their schools. In no recent decade have revenues increased marginally. During the latter half of the 20th century, real education revenues per pupil rose a minimum of 25 percent each decade, and in some decades much more.

Table 4 shows current expenditures per pupil in nominal and real terms from 1960 to the present. Nationally, current expenditures per pupil, adjusted for inflation, i.e. in real terms, increased by 70 percent between 1960 and 1970, by another 35 percent between 1970 and 1980, and again by another 24 percent between 1980 and 1990. Other research shows that between 1980 and 1990, real revenues per pupil increased by more than 26 percent (Odden, 1990). In other words, the good news is that whether enrollments rise or fall, whether the "external threat" is defense or international economic competition, U.S. education revenues rise each decade by large percentages.

One of the enduring features of elementary and secondary education finance is that, each decade, revenues per pupil rise substantially in nominal and real terms.

Table 4
Current Expenditures Per Pupil
in Nominal and Real Terms, 1960 to the Present [4]

	Current Exp. Per Pupil (nominal)	Current Exp. Per Pupil (1986-87 dollars)	Real % Change During Previous Decade
1960	$ 375	$ 1,420	—
1970	$ 816	$ 2,403	70%
1980			
U.S. Aver.	$ 2,272	$ 3,255	35%
Arizona	1,971	2,824	
California	2,268	3,249	
Nevada	2,088	2,992	
Utah	1,657	2,374	
1990			
U.S. Aver.	$ 4,448	$ 4,044	24%
Arizona	3,660	3,327	18%
California	4,392	3,993	23%
Nevada	3,648	3,316	11%
Utah	2,516	2,287	-4%

The Far West Region

The 1980s education funding increases for the states in the Far West Region were quite varied. Generally, they differed from the national average. Real per pupil funding, while rising only 11 percent in Nevada and 18 percent in Arizona, actually dropped four percent in Utah, a state experiencing rapidly rising enrollments. Table 4 shows that California's education funding rose by just under the national average.* In general, revenues rose substantially in nominal and real terms, except for Utah.

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[4] Source: National Center for Educational Statistics, *Digest of Educational Statistics: 1989:* Washington, D.C.: U.S. Department of Education, 1989; National Center for Education Statistics, *Key Statistics for Public Elementary and Secondary Education; School Year Ending 1989-1990.* Washington, D.C.: U.S. Department of Education, December 1989; and authors' calculations. Consumer price index used to adjust figures to 1986-1987 dollars and tax rate increases.

* PACE research (Guthrie, Kirst and Odden, 1989) shows that California's real per pupil funding increase was only 5 percent between 1980 and 1990. PACE deflated the figures by the GNP deflator for state and local government services, not the consumer price index. While nationally, the different indices do not produce substantially different results (Odden, 1990), they do in California.

Maintaining a healthy national and state economy is the primary route to increasing education revenues.

Sources of Revenue Growth

There were two main sources of this revenue growth: (1) a healthy national economy which produces natural increases in tax revenues; and (2) tax rate increases.

Economic growth. While some (Odden, 1987) suggested that education reform produced the real education revenue increases during the 1980s, recent research (Hawkins, 1989) found that economic growth was the primary variable. Hawkins analyzed whether education reform, economic, or demographic variables accounted for changes in education revenues across the states. Her analyses showed that economic variables — economic growth — dominated and that none of the education reform variables were statistically significant. She concluded that the country's and as a corollary a state's economic heath, was the major factor in producing education revenue increases during the 1980s. She did not disparage the saliency of education reform; that reform impetus she suggested, helped to keep education on state policy agendas. But her statistical results documented the strength of economic over political variables. The policy implication is that maintaining a healthy national and state economy is the primary route to increasing education revenues.

Tax rate increases. While a growing economy was the major factor in producing increased education revenues, hikes in tax rates also played a role at the state and district levels. At the same time, the 1980s witnessed major declines in national tax rates, particularly income tax rates.

At the state level, increased state sales tax rates were the most popular strategy. States such as Arkansas, Florida, South Carolina, Tennessee, Texas, and Utah all raised the sales tax rate and generally used the proceeds to help fund major education reforms. In addition, many states mandated increases in local property tax rates to produce additional revenues.

Non-broadly-based tax sources. New education revenues from sources other than income, sales, and property taxes — always the hope of many — were tried in some states and local school districts but produced only small amounts of funding. There is much talk of a rise in the number of local school foundations, i.e., nonprofit fund raising organizations for a local school. But even in affluent communities, they produce marginal amounts — less than one percent of the budget (Meno, 1984).

Several states have enacted lotteries in the past decade. But lotteries are very inefficient revenue raisers and generally produce only small amounts of new revenue (Mikesell and Zorn, 1986). In general, every

dollar of lottery sales produces only 35 cents of net revenue. In California, which dedicates its lottery to K-12 education, the lottery only produces about $150 per child in a total budget of about $4000 per child, or about 3.75 percent. While this amounts to a large total — currently about $750 million — it still constitutes a small percentage of the overall budget. Put differently, if big money is the goal, lotteries and local school foundations are not the answer.

Dedicated revenue sources. Another strategy for producing education revenues has been to "dedicate" a revenue source (such as the sales tax) or a tax rate increase (such as the one cent sales tax increase in Arkansas and South Carolina) or even a portion of the state general budget (such as California's Proposition 98) to education. The theory is that dedication will insure that all the revenues will go to education, and that over the medium and long run, dedication will mean more money for the schools. But the short conclusion is that dedication does not work. In a recent review of this issue, Gold (1990) concludes that whether the money is earmarked for education or any other function, there are simply too many legislative ways around dedication requirements.

Prognosis for the 1990s

There is no perfect crystal ball for predicting the course of education revenues for the 1990s. While pessimists and optimists abound, past history shows that real revenues always rise in large percentages. Furthermore, if economic growth and tax rate increases are the major engines that produce school funding, there seems to be sufficient reason for a modest optimism. American industry has substantially restructured itself to be more productive, U.S. exports are rising and reducing the trade deficit, interest rates are expected to drop, and the stock market was rising until August 1990.* In general, the economic prognosis is favorable, but particular states may face sporadic slumps limiting revenue growth.

Moreover, California's recent approval of a constitutional proposition to modify its state expenditure limit and raise taxes to improve its highways has been interpreted as a signal of the end of the tax limitation movement and the beginning of a new era of addressing pressing social needs.

Finally, education reform is still firmly entrenched as a priority on state and national policy agendas, supported by a broadening spectrum of the politically powerful. The business community increasingly sees elementary and secondary education improvement as key in world market

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* Of course, the events in the Mideast may have negative impact on these aspects of the economy.

economic competitiveness. The President and the nation's governors have set ambitious national education goals, including becoming first in the world in mathematics and science. These goals can only be accomplished with increased educational investments.

The key policy issue for the 1990s is how to strategically and productively invest new revenues.

Assume the modest scenario that real per pupil education revenues will rise in the 1990s at about 30 percent — the approximate rate of increase in both the 1980s and 1970s. That is substantially more than a marginal increase.

Given the fiscal history of the past 40 years, the policy question may be how to use substantially — not just marginally — increased education dollars. In addition to reducing traditional school finance inequities, answering this question in a way that markedly improves student achievement and the productivity of a state's public education system is the key school finance agenda for the 1990s. Even if funds do not rise in large amounts, strategic and productive investment of new revenues will be critical.

Efficiency, Cost-Effectiveness, and Program Productivity

Deciding how best to use new educational resources can be approached in three major ways: 1) assessing education generally as an investment strategy; 2) analyzing the trade offs between prevention and remediation programs; and 3) identifying effective uses of education dollars by analyzing such options as consolidation, reduced class size, restructured curriculum, innovative use of time, and new ways to organize schools and classrooms.

Education as a public investment. Education in this country is generally viewed as a good public investment. Research shows that both private (individual) and social (governmental) rates of return on investments in education are sizable, ranking with other conservative or governmental investment opportunities. Murphy and Welch (1989) note that the wage premium of a college education, after falling somewhat during the 1970s, increased dramatically in the 1980s. Cohn (1979) showed that the returns on a high school education in the 1970s was far above yields on long-term government bonds.

Prevention versus remediation programs. Programs designed to prevent school failure or enhance school success, especially for poor children, are widely viewed as good public investments. Research shows that preschool programs for poor children have long-term benefits (Slavin, Karweit and Maden, 1989) and are highly cost-effective. Even when future benefits are discounted to present values, investments in comprehensive, early childhood programs for poor four year-olds have benefit-cost ratios

of up to six-to-one (Barnett, 1985). For early childhood programs serving poor three year-olds, such ratios are up to three-to-one (Barnett, 1985).

Research also shows that extended day kindergarten (i.e., full day kindergarten for poor children) can enhance student performance in elementary grades. In fact, student achievement test scores can improve by up to a half a standard deviation (Slavin, Karweit and Madden, 1989). Combining early childhood programs and extended day kindergarten also helps poor children succeed in elementary school. It is clear that fully funding both preschool and extended day kindergarten for poor children would substantially help "deliver" on the national goal of ensuring that all students start school ready to learn.

Dropout prevention programs are also cost effective. Levin (1989) shows that programs designed to help low-achieving students (i.e., students at-risk of dropping out) remain in high school and earn a diploma, have positive benefit-cost ratios. One three-year California dropout prevention program had a two-to-one benefit-cost ratio (Stern, et al, 1989). While the ratios are lower than for prevention programs, even late remediation programs clearly "pay off" in the long run.

So it is smarter to invest in prevention programs (early childhood education for low income three- and four-year-olds and extended or full day kindergarten programs for low income children) but also wise to invest in remediation programs that work.

General educational productivity. While the general educational production literature has been inconclusive, several important findings point to ways to save money. Other research on educational intervention effects identifies programs where investments will bolster student performance.

The conventional conclusion from most educational productivity research is that few educational resources consistently relate to student performance, and that increased spending rarely leads to better student performance (Hanushek, 1989). *The important message is that if additional education revenues are spent in the same way as current education revenues, student performance increases are unlikely to emerge.* New revenues need to support new strategies in order to produce significant student achievement gains. The message is not that money does not matter. The message is that the way money is used matters. Even Hanushek (1989) argues that raising teacher salaries will likely recruit more able individuals into teaching, and that more able individuals are better teachers.

A "kinder and gentler" interpretation of the *education production function* literature has been provided by Murnane (1983). He identified five factors

New revenues need to support new strategies in order to produce significant student achievement gains.

from this literature that are consistently associated with increased student learning:

- teacher verbal ability
- at least some teacher experience, between 3 and 5 years
- effective teaching strategies
- teacher attitudes and expectations
- socio-economic composition of students

These findings generally reinforce comments below on how to pay teachers. Higher beginning salaries will help recruit more able (e.g., higher verbal ability) individuals into teaching. A compensation structure that pays for professional expertise is one that rewards the use of effective teaching strategies and indirectly rewards experience — the longer a professionally oriented individual is in teaching, especially in effective schools, the greater the professional expertise that person develops.

Scale economies. A prevailing belief among education policymakers is that larger school districts and larger schools are better — more cost effective — than smaller districts and schools. Indeed, the country and the FWL-region states have been consolidating schools and school districts over the entire 20th century. Fifty years ago, there were 100,000 local school districts; today, there are approximately 16,000 nationwide.

The evidence that scale economies occur above a minimum size is quite scarce, however. Monk (1990) generally concludes that scale economies are unresolved for school district size, and rarely can be documented for elementary or secondary schools above 400 students! While scale economies do exist for schools with enrollments up to 400 students, they are hard to document for larger schools. This finding is especially disconcerting given the size of most U.S. metropolitan high schools where an enrollment of 2000 students is considered modest, and the largest city districts enroll 4000-5000 students.

The implication is to skirt consolidation except for very tiny schools, and certainly not to create large schools with enrollments over 1000, even at the high school level. In terms of the scale economies research, smaller is better (although tiny is not).

Class size. Another tenet of U.S. education is that small classes produce higher achievement and greater teacher satisfaction. Smaller classes are

an expensive policy option. But here, too, the research base is thin, if not misinformed. The Glass and Smith (1979) meta-analysis of class size and student achievement concluded that class size below 20, and especially down to 15, produces significant gains in student performance. Slavin (1984), however, criticized this research on three grounds. First, a meta-analysis includes all studies, both those that are methodologically sound and those that are not. Slavin argues that only studies with methodologically sound research designs should be analyzed. Second, even for such a reduced sample, the meta-analysis includes several studies where student achievement is not academic but physical, such as learning to play tennis. Slavin argues that these studies should also be excluded, and that only studies investigating class size and student academic achievement should be analyzed. Third, Slavin shows that the effects for classes with fewer than 20 students are statistical artifacts not based on empirical examples. Classes with between 14 and 18 students had very modest impacts on student achievement; there were no classes with between three and 14 students, and the classes with large achievement gains were essentially one-to-one or one-to-two tutoring programs. Finally, the Glass and Smith review did not include any studies on the impact of class size reduction over a number of years. It is inaccurate to assume that the impact of a one-year class size reduction can simply be multiplied by a number of years to indicate the long-term effect. Indeed, the recent Tennessee class-size reduction experiment showed that the small class effect was produced in the first two years and had no additional impact in the next two years (Folger, 1990).

Slavin (1989), Tomlinson (1989), and Odden (1990) conclude that the research evidence for small class size only supports one-to-one or small group (up to three students) tutoring. Further, Slavin, Karweit, and Madden (1989), along with Odden (1990), argue that one-to-one tutoring in grades one and two can be a powerful intervention, with achievement impacts of more than 0.5 standard (up to one full) standard deviation. Such tutoring can keep children in these grades performing at grade level. In short, the research on class size and student achievement primarily supports one-to-one tutoring, especially for students in the early grades.

Time and curriculum. While many 1980s education reform reports called for extending the school day and year, few states have done so in dramatic ways and the research evidence supporting those recommendations is, again, thin at best. Such reforms are expensive. Since the school year is about 180 days in most states, it would take a ten percent increase to extend the year to 200 days and another ten percent to extend it to 220 days, the length of the year in many other countries. The costs, roughly, would be 10 and 20 percent of the current expenditures, or between $20 and $40 billion: a huge increase.

But research analyzing differences in achievement across countries shows that time variables, such as the length of the school day and year, are insignificant and that the content of the curriculum is the key determinant of achievement differences (McKnight, et al., 1989). These studies suggest that U.S. student achievement would be much better if the curriculum were restructured to cover more topics and concepts and to focus on problem solving rather than basic skills. The California curriculum frameworks and the National Council of Teachers of Mathematics (1989) standards are good examples of new, ambitious, and restructured curriculum. Rather than lengthening the school day or year, the policy implication is to improve the curriculum program.

Student promotions. Another "time" policy proposal in the U.S. has been to eliminate "social promotions"; i.e., to retain students until they achieve acceptable levels. But research is also quite conclusive that this strategy does not work (Holmes and Matthews, 1984; Smith and Sheppard, 1987). When some students are held back and exposed to the previous grade's curriculum, while similar students are promoted and exposed to the new grade's curriculum, the promoted students achieve at a higher level, do better on the previous grade's topics, and know more of the new grade's topics. The cost of holding children back, moreover, is high: it is equivalent to providing an entire extra year of school. A much cheaper and more cost-effective policy would be to promote them and provide supportive assistance; the costs would be lower and the effects would be higher.

Allocation of time. As with money, then, the real issue is not how much time but how time is used. A large body of research shows that the greater the student academic learning time — i.e., the amount of time allocated for instruction during which the student is engaged at high success levels — the greater the learning (Dunham and Liebermann, 1980; Rosenshine and Stevens, 1986; Brophy and Good, 1986; Levin 1984; Walberg, 1990). This research shows, moreover, that a large portion of time allocated for instruction is not used productively. The conclusions imply that if current time were to include research-based effective teaching strategies, significant improvements in student achievement would result. This conclusion, combined with the information on exposure to curriculum content, suggests that major curriculum restructuring combined with wider use of effective teaching practices — within current school time allocations — would produce impressive gains in system performance. These policy changes, moreover, are relatively low cost.

Other programmatic interventions. In addition to the programmatic deployment of resources outlined above, there are three other strategies — all generally low cost — peer tutoring, adult tutoring, and cooperative learning.

Peer tutoring. This program involves students, usually older students, in tutoring usually younger ones in academic subject areas. This type of program requires organizational mechanisms at the school level to facilitate implementation. Some initial staff training is needed in how to structure the program and help students play the tutor roles.

Adult tutoring. Adult tutoring is similar to peer tutoring except that adults, with modest amounts of training, perform the tutoring function. In a comparison of several programmatic interventions, Levin, Glass, and Meister (1987) found that both peer and adult tutoring were more cost effective than extending the school day, lowering class size, or computer-assisted instruction. Other research (Slavin, 1989; Slavin, Karweit, and Madden, 1989) shows that peer tutoring produces large achievement gains (usually more than one-half a standard deviation) for both tutor and tutee.

Cooperative learning. Cooperative learning (Slavin, 1983) is another classroom organizational strategy that produces large gains (more than one-half a standard deviation) in student performance. Moreover, cooperative learning entails heterogeneous groups (with both high and low achieving students in each group) working together on tasks, which foster learning gains for all students, both high and low achievers. Since cooperative learning also produces improvements in affective domains, including greater respect for other cultures, ethnicities, races, and dominant language use, it is an effective intervention strategy with diverse student bodies.

Summary. Research suggests that new educational investments in the following are likely to produce large improvements in student achievement: 1) pre-school and extended-day kindergarten for children from poverty backgrounds; 2) extra services to increase the high school graduation rate; 3) one-to-one tutoring for first and second graders; 4) a thinking and problem-oriented curriculum program; 5) staff development in effective instructional strategies for this curriculum; and 6) cooperative learning, peer and adult tutoring.

School Finance and Educational Reform

Additional school finance issues are related to a series of new topics on the education reform agenda. While these issues, too, are part of the previous discussion of how wisely to allocate new educational revenues during the 1990s, they have components that deserve special attention. This section reviews the several finance dimensions of three major new education reform topics: 1) incentive programs, including formula, school performance, and budget incentives, 2) new teacher salary or compensation structures; and 3) school choice programs.

Site-based incentives have potential for improving the efficiency of resources as well as student performance.

School-based incentives. Education finance has evolved toward the use of three major policy instruments: 1) fiscal capacity equalization formulas that have been used for over 80 years; 2) categorical programs for special pupil and district needs that expanded in the 1970s and 1980s; and 3) school-based incentive programs that were recently introduced during the 1980s education reforms. While we really do not know how they work, they are increasingly popular among the educational policy community and were promoted by the National Governor's Association in its recent reports on the status of education reform.

Recent research on school improvement (Fullan, 1982 and Fullan, 1985), effective schools (Purkey and Smith, 1983; Good and Brophy, 1986), and site-based management (Hentschke, 1986; Malen and Ogawa, 1989) suggests that the school site is the locus for education improvement and site-based incentives have potential for dramatically improving the efficiency of resource use as well as student performance. An emerging consensus argues that state governments should set clear and specific student performance objectives, develop and disseminate curriculum frameworks that outline the school curriculum to which all students should be exposed, use student performance assessments linked to those frameworks to assess the status of student achievement, and use a variety of incentives to let schools sites decide how to meet those performance objectives. The example of a state that is doing these things in Kentucky.

The current round of education incentive programs began with merit pay and career ladder programs. The intention was to reward individuals in the education system who were doing an especially good job. Merit pay and career ladder programs have been studied extensively and reported on. (Richards, 1985; Murnane and Cohen, 1986; Johnson, 1986)

There are more effective ways incentive mechanisms can be more effectively designed, however. Policymakers need to consider three approaches: 1) the use of intergovernmental grant theory to build incentives directly into the education finance formulas; 2) the design, implementation and impact of school-based performance incentives; and 3) budget incentives built into site-based management programs.

School finance formula incentives. Picus' (1988) study of the school finance formula incentives built into California's 1983 education reform shows how intergovernmental grant theory can be used to analyze, as well as design, incentives within the formulas that states use to distribute funds to districts and schools. Formulas can: require local financial matching; require targeting funds to students or programs; stimulate extra funding; or simply replace local money with state money. Since most states used flat grants to distribute categorical program dollars

allocated under 1980s reforms, a fresh analysis of formula design could stimulate local reform and increase the productive impact of new education resources in the 1990s.

School-based fiscal incentives. These pose different issues. While a novelty in education, they are increasingly used in the private and public sectors. In addition, the approach being taken is not individually focused incentives, but incentives for operational units (production divisions or departments — schools or academic departments are the education analog). Instead of linking incentives to the productivity of the entire firm, individual units are rewarded on the basis of their performance over a multiple year time period (Stansberry, 1985; Swinford, 1987; Goggin, 1986; Blinder, 1990). Further, in the private and public sector and in the school environment, there is growing recognition that individual incentive plans can work against to the kind of team effort required to develop and sustain a productive organizational climate (Swinehart, 1986; Conley and Bacharach, in press, Rosenholtz, 1989).

Economic theory can predict that marginal financial incentives would stimulate marginal improvements in work effort and productivity when the risk to participate is low (Richards, 1985). Further, relatively small financial inducements may cause multiplier effects in organizational performance when the organization is inefficient — as are many schools that in fact have disincentives to focus on organizational effectiveness (Boyd & Hartmann, 1988). So incentive programs that focus the school organization on an appropriate array of desired outcome measures (Rowan, 1984; Richards and Shujaa, 1989) might help the school focus resources and faculty on improving those outcomes.

Several states, including South Carolina, Pennsylvania, Utah and, for a while, California, tried different forms of school incentives. Picus (1990) outlines the many design issues that incentives must address: size, criteria, how allocated, restrictions on use, time period to quality, etc. This analysis shows how design itself can affect the ways incentives operate. States need to learn more about how these programs work and seriously consider developing a range of school incentive mechanisms.

New budget incentives. These reflect a 20-year trend in general management thinking to grant local managers greater financial discretion in exchange for more explicit accountability on outcomes (Arrow, 1971; Jensen and Mecklin, 1976). This budgeting trend has spread into educational management (Guthrie, 1986; Greenhalgh, 1984; Hentschke, 1988) and the nation's governors have also offered this "deal" to local school districts. Instead of telling local school managers how to spend money and overriding their valuable local knowledge, revenue providers try to create

incentives for local managers to use that knowledge in accomplishing system goals.

Consequently, two perennially countervailing forces are being reconciled in new ways. Under the "old system," revenue providers maximized preferences by instituting resource distribution rules when allocating resources to local managers. For example, the rules might be one high school counselor for every X number of students. Under the "new system," resource providers identify desired outcomes and provide lump sum budgets, but let local managers decide how to deploy those resources. This approach to budgeting goes by many names: site-based management, school-based management or — in higher education — responsibility or revenue center management (Curry, 1985). Thompson (1988) outlines more than 22 areas in which budget authority can be delegated to local schools, and Hentschke (1988) describes the several types of management changes that must occur for budget incentives to "work." Site-based budget incentives are another potential productivity-enhancing element of the new school finance in the 1990s.

Funding new teacher salary structures. Another potentially costly, yet very important use of education dollars is teacher salaries. The U.S. has given teacher policies considerable attention over the past five years, and several ways to transform teaching into a full profession have been proposed (Carnegie Forum on Education and the Economy, 1986; The Holmes Group, 1986). But the costs of these proposals are high, approaching in the U.S. an extra 26 percent in real U.S. dollars (Odden, 1990). Moreover, the actual teacher compensation structure has received little analytic discussion. And many proposals for recruiting and retaining able teachers both undershoot and overshoot the mark.

For example, *loan forgiveness programs generally have been ineffective* (Arfin, 1986). While popular across the states, such programs are unlikely to function as powerful incentives for recruiting teachers. Prospective teachers first must pay all college costs and sign loan notes. Loan forgiveness programs are economically similar to a $2,000 to 4,000 salary bonus after a teacher begins to work — not all that large an increment. Research on similar programs to recruit individuals into rural health professions showed them to be ineffective (Arfin, 1986).

On the other hand, *fellowship programs with service paybacks are effective recruitment strategies*. In both the health and military professions, these programs, which defray college costs, provide an immediate benefit and are successful recruiting devices (Arfin, 1986). They also have been especially effective in recruiting individuals to the health professions in rural areas. The student cost is to work in the profession for a fixed

number of years or if he or she decides not to work in the profession, to pay back the college costs often at more than a one-to-one ratio.

Another effective way to recruit people into teaching is to have good beginning salaries. The higher the beginning salary, the greater the quantity and quality of individuals recruited. Research on beginning teacher salaries (Ferris and Winkler, 1986 and Jacobson, 1989) as well as beginning salaries in other professions (Ferris and Winkler, 1986) show that higher beginning salaries help recruit more — and more talented — individuals into the profession.

Thus, raising beginning teacher salaries is a productive policy goal. But the policy issue for the 1990s is whether there is a target for beginning teacher salaries. *Should beginning teacher salaries simply be as high as possible, or is there a recruitment pool that can be identified as the primary universe from which teachers are recruited?*

This issue is being raised in the U.S. (Odden and Conley, forthcoming). Most new teacher policy proposals suggest that all teachers, especially K-8 teachers, should have a solid liberal arts education (e.g., Holmes Group, 1986). These proposals also suggest that advanced technical knowledge is not the critical teacher ingredient, again at least for grades K-8. A broad education in the liberal arts, with either a humanities or mathematics/science concentration is what is needed. By implication, then, *beginning teacher salaries should be equivalent to beginning salaries for individuals with a BA degree. This policy target would put teaching on an equal beginning salary basis in recruiting individuals into teaching*. Many states, including California and Arizona, have met this salary target and now can shift attention to the overall teacher compensation structure.

An overhaul in the design of the teaching profession's compensation structure is needed. The traditional practice of giving salary increments for education and experience is not the best way to reward or retain outstanding teachers. Research has shown that these teacher characteristics are not strongly related to system productivity (Hanushek, 1986). At best, teachers with some experience are more productive than teachers with no experience. Murnane (1981) articulated the strongest argument for basing compensation on experience. He argued that in organizations like schools, were productivity requires cooperation, paying for experience helps — at least indirectly — to support collegial work relationships. Merit pay also does not work for teachers and education (Murnane and Cohen, 1986).

Bacharach, Conley and Shedd (1986) suggest that the *preferred approach to teacher salary structures is to pay for professional expertise — content knowl-*

A teacher compensation structure based on teacher professional expertise helps retain the best teachers in the profession.

edge, pedagogical expertise, and proof of knowing when to apply different teaching strategies. They argue that the greater the professional expertise, the more successful teachers are in producing student achievement, the key goal of the education system. Developing professional expertise also requires collegial interactions within schools; "worker" participation in technical decision making has been shown by research in both education (Rosenholtz, 1989) and non-education (Blinder, 1990) to improve system productivity. Collegial interactions over the "business of teaching and learning" help engender continual development of professional expertise which leads to improved student achievement, teacher satisfaction, and teacher decisions to remain in teaching, according to Rosenholtz (1989). McLaughlin and Yee (1988) also show that career-oriented teachers view rewards as opportunities to engage in professional development activities. A compensation structure based on teacher professional expertise not only reinforces system goals — student achievement — but also stimulates teacher interaction, satisfaction, and decisions to remain in teaching. In short, such a compensation structure is good for the education system, is good for teachers, and helps retain the best teachers in the profession.

Schools of choice. Another major new policy initiative that now accompanies education reform is school choice, i.e., allowing students (or parents for grade K-8 students) to choose which public school to attend. While there are many variations of this theme (Education Commission of the States, 1989; Raywid, 1985), the new policy is one that shifts the attendance decision from the school system to the parent or the child. Despite controversy, several states have enacted forms of interdistrict open enrollment programs.

The financing of public school choice, however, has received little attention. The key funding issue pertains to the decentralized nature of the country's school structures (i.e., how much money will a student carry in attending a school outside the district of residence?). The problem concerns the mismatch between a *district-based funding structure and a school-based attendance policy*. Odden (1990b) proposes to remedy this mismatch with a new, two-tiered funding system. The state would provide all districts (and schools within them) with adequate revenues to deliver a quality base education program. In contrast with the current system, districts would be prohibited from spending above the base, and local fiscal control would revert to schools. Each school would be allowed to enact an income surcharge, with the per pupil yield set by the state at a higher level than the amount of revenue raised at any school. This approach begins to place a small "price" on choice because parents of all children attending any school would be subject to the income tax surcharge. This new funding approach would need to be attached to some state (or federal) tax, preferably the income tax that shelters the poor, and a per pupil yield schedule

backed by state (or federal) government, so that all schools with a similar surcharge would receive the same amount of extra revenues per pupil. Further, it is a mechanism that any state could implement.

Conclusion

School finance cannot afford to stay dormant in the 1990s as it did in the 1980s (Barro, 1987). States need to address many new school finance issues. Key among them is how to invest and reallocate resources to meet ambitious state and national goals of bringing all students up to adequate performance levels To accomplish this, school finance in the 1990s must push beyond fiscal inequities and determine connections among student outcomes, education programs, and education funding. School finance may have "ducked" those issues in the past but cannot afford to do so in the future.

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