

Exploring Alternatives for School-Based Funding

Catherine Clark and Laurence Toenjes

*Texas Center for Educational Research
Austin, Texas*

About the Authors

Catherine Clark is the director of the Texas Center for Educational Research (TCER) in Austin, Texas. She specializes in elementary and secondary education finance and research on school management and governance. She has recently co-directed a study of program weights and adjustments in the Texas school funding formula, and has been co-director of a study of Texas open-enrollment charter schools.

Prior to joining TCER, Dr. Clark served as a senior research associate at the Southwest Educational Development Laboratory, and prior to that as an educational specialist at the Texas State Property Tax Board. She has been an adjunct professor at the University of Southern California and the LBJ School of Public Affairs. She is a former middle school teacher.

Dr. Clark serves on the editorial board of the *Journal of Education Finance* and served on the Board of Directors of the American Finance Association from 1993 to 1996. Dr. Clark is a graduate of Stanford University with a doctorate in education (1978).

Laurence Toenjes is a research faculty member of the University of Houston's Department of Sociology. His current work is focused on the disparities in student performance among Texas campuses of comparable socio-economic characteristics.

Dr. Toenjes has been an active participant in school finance analysis in Texas during the past decade, and has also participated, as a private consultant, in school finance policy analyses in several other states. He has created computerized school finance models for the states of Illinois, Texas, Missouri, and Nebraska.

A primary interest of Dr. Toenjes is the development and use of interactive computer graphics software to display and analyze school finance and student performance data and to use of such techniques to communicate findings to policymakers.

Dr. Toenjes has received his doctorate in economics from Southern Illinois University.

**Selected
Papers in
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Introduction

Recent studies report that school finance and governance mechanisms in large school districts are weakly linked to effective operations of modern schools.¹ Central offices and boards of education determine budgets, hiring policies, textbook purchases, curriculum, hours of operation, personnel evaluation systems, and student assessment policies. Individual schools respond to central policies and directives, with the result that decision making authority for those closest to students is limited and direct accountability for results is compromised.

A similar conclusion set forth by school finance and governance experts is that district resource allocation is inappropriately aligned with areas in which decisions should be made to improve student performance.² Allocation formulas fail to consider current and past performance or state and local performance ex-

pectations. Experts argue that because existing financing mechanisms focus on inputs rather than outcomes, they exacerbate the problems arising from the disconnection of decision making and school purposes. For example, larger districts allocate resources to campuses using mathematical formulas that take into account grades served, school size, class size, and attendance.³ In most large districts, teacher positions are allotted to schools according to enrollment and class-size requirements rather than academic strengths and weaknesses of students.⁴ Counselors and nurses may be assigned on the basis of total enrollment. Supply and material budgets may be allocated based on enrollment by grade, rather than on the basis of program need. The practical effect of this approach is that most school principals have their input units identified and purchased for them before school begins in the fall. Many administrators and edu-

¹ See Twentieth Century Fund Task Force on School Governance (1992); Chubb and Moe (1990); and Bimber (1994).

² See Guthrie (1996); Odden (1993); and Wohlstetter and Van Kirk (1996).

³ See Kehoe (1986) and U.S. Department of Education (1989).

⁴ See Mosteller (1995).

To improve equity and instructional efficiency as well, . . . districts [could] allocate a higher percentage of resources to schools directly in dollars, not in staffing positions and allotments keyed to school size characteristics.

cators view this approach as an even-handed way to share resources, but the end result is that campus administrators have very few resources with which to respond to unique campus needs. Further, the situation creates an environment where central decision makers may decide to respond to educational needs by increasing spending and responsibility at the central level, for example, by adopting a reading program for all elementary schools in the district rather than providing resources directly to schools to respond to instructional needs.

According to Guthrie (1996), the problem of disjuncture in decision making and school operations is most acute in large school districts which rely on formulas to distribute resources and services to schools.⁵ And despite the belief that formula funding is fairer, there are wide disparities of per-pupil resources reported among schools in large districts.⁶ Guthrie suggests that the major source of disparities is the teacher salary system. A school with experienced and higher-paid teachers gets more resources in the typical system than a school with many inexperienced teachers. If teachers with seniority can select where they work, the least desirable schools will be left with less experienced teachers and fewer total resources. To improve equity and instructional efficiency as well, Guthrie (1996) recommends that districts allocate a higher percentage of resources to schools directly in dollars, not in staffing positions and allotments keyed to school size characteristics.⁷ Schools will then determine what inputs are needed and specify the quantity they want to purchase, including the number and expertise of the teachers. One approach could be a funding system where a high percentage of state resources flows directly to schools in block grants.⁸ Another ap-

proach is to establish law or policy requiring school districts to allocate a fixed percentage of revenue directly to schools.⁹ If a fixed percent were allocated to schools, districts would pass along all but a fraction of total revenue to the schools.

This study examines the practical application of targeting a large percentage of school district resources for direct pass-through to schools. A background section sets the context for the study and describes the data sources. We use data from Texas school districts and campuses to explore expenditure patterns among districts and campuses under current law. Then, again using Texas data, we simulate the results of pre-established allocation percentages. The study also explores the relationship between teacher salaries and expenditures to test the hypothesis that teacher salaries are the major driver of resource differences. The final portion of the study describes two approaches to school-based funding in Texas. We conclude with a summary of the issues and problems related to the school-based funding approaches.

Background

Micro-level School Finance

Numerous studies have explored the levels and uses of resources directed toward the school.¹⁰ Micro-level studies examine the equity of resource distribution across campuses and analyze the efficiency of resource use at the site level. Using data from the 1987–88 Schools and Staffing Survey and the U.S. Bureau of the Census, Census of Governments, 1987, Picus (1994) examined district as well as school spending patterns. He found spending patterns to be similar across districts, re-

⁵ Guthrie (1996) p. 10.

⁶ See Hertert (1996).

⁷ Guthrie (1996) pp. 10–11.

⁸ See Odden (1993).

⁹ See Guthrie (1996) and Odden (1993).

¹⁰ See Cooper (1993); Monk (1992); Rossmiller (1983); and Odden (1993).

ardless of other characteristics, but patterns among individual schools were different.¹¹ Overall, he found that when real per-pupil resources increased, the additional revenues were spent primarily at the school level. About 40 percent were allocated toward reducing class size (with more teachers) and 10 percent to increasing teacher salaries. The remaining 50 percent provided more services for schools and students. Additional studies underway at Cornell University (Monk), Fordham University (Cooper), and the University of Wisconsin (Odden and Busch) will add to understanding of resource distribution across schools within districts or systems.

Micro-level school finance has become a productive field of study for enhancing our understanding of where and how dollars make a difference in producing educational outcomes. Better use of limited resources for improving educational attainment for all students will require administrators and teachers to know the most productive and effective application of resources.¹² Studying school-based funding is a first step along this path.

Sources of Data to Study School-Based Funding

Several issues have confronted those who are exploring equity and efficiency of school-level funding. A major concern is the quality of the data to be used for such studies.¹³ They should be accurate, complete, comparable across schools within a district, and comparable across schools within a state. Researchers also hope they will be easy to obtain and use.¹⁴ The quality of information for individual schools may be good within individual districts, but there are disparities from district to district regarding function and object defi-

nitions, collection time periods, and data base formats for the school-level data. In some instances, accounting practices are primitive, making it difficult to gather data from the schools and compounding problems with cross-school comparisons.¹⁵ In fact, many states have no school-level data available. In the face of these obstacles, many researchers who are working in this field gather data by visiting individual districts because states do not have detailed campus budget and expenditure data in a form that can be used for research.

Texas data for school districts is of high quality and has been used repeatedly for studies of school finance.¹⁶ Many Texas districts code expenditures for campuses as well, but procedures for campus allocations are not uniform, and the state does not audit campus expenditure reports for conformity across schools or districts. However, fiscal reporting for an indicator system that was established in 1990 has provided a source of reliable campus information that is available to researchers. The Academic Excellence Indicator System (AEIS) includes some of the school data collected in Texas through the Public Education Information Management System (PEIMS) and the Texas assessment system. To create PEIMS, school districts report information about finance, personnel, student characteristics, attendance, and student course enrollment. The Texas Comptroller of Public Accounts provides tax rate and property value information. Testing contractors provide the Texas Education Agency with detailed score reports for the standardized tests that are administered statewide. Within Texas, AEIS is used for accountability ratings for each of over 6,400 schools and 1,044 districts in the state. Report cards are also produced for each school using the

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¹¹ Lawrence O. Picus, "The \$300 Billion Question: How Do Public Elementary and Secondary Schools Spend Their Money?" paper presented at the Annual Meeting of the American Educational Research Association, April 1994.

¹² See Odden (1996) and Monk (1992).

¹³ See Busch and Odden (1997).

¹⁴ See Picus (1997).

¹⁵ See Herrington (1996).

¹⁶ For example, see Picus and Hertert (1993); Picus (1993); Legislative Education Board (1992); Public Education Team (1997); and School Finance Working Group (1997).

data, and the Agency prepares district profiles each year in a publication called “Snapshot.”

This study uses the 1994–95 school year AEIS data set available at the Texas Education Agency site on the Internet or by request from the Agency. The AEIS data are in two major groupings, one set of files pertaining to districts and the other to schools. AEIS further subdivides the data into several subject matter files within the district and campus groupings. We created a school-level research data base for this study using only variables of interest, eliminating many of the program and student demographic characteristic variables in the larger data set. Several of the variables in our data base are district-level values that were either extracted from one of the AEIS district files or else aggregated across all of the campuses of each type (elementary, middle, and high school) in their respective districts. District values were then entered into the records of each campus for ease of use. For example, we created a district size variable to be included in each campus record. The district-level data in the campus files also include the district identification number, the district total enrollment, the sum of teacher salaries for each type of campus, the sum of enrollment for each campus type, and the number of campuses in the district of the same type.

The resulting data set included 1,043 school districts and 5,949 schools serving elementary, middle and high school grades. We excluded Houston Independent School District (ISD) with 263 campuses because the data set for that district was incomplete. We also excluded another 250 schools either because they were special schools, had missing data, or were not of a “type” that was easy to categorize as elementary, middle, or high school. For example, we excluded schools serving only early childhood and kindergarten grades. Our data set included 99 percent of Texas districts and 92 percent of Texas schools.

¹⁷ See Casey (1995).

¹⁸ See Picus and Fazal (1996).

¹⁹ See Picus (1997).

Many of the expenditure analyses in the following sections are applied to the set of schools in all Texas districts and then separately to schools in the set of 200 large districts, excluding Houston ISD. Examining the effect on all districts permits us to consider implications for system wide change. We examine the largest districts separately because it may be practical to consider school-based funding only for districts that are large enough to have several campuses.

Expenditures in Texas School Districts and Schools

We were interested in exploring the effect on Texas districts and schools of allocating a fixed percentage of district resources directly to schools. In order to do this, we describe the current pattern of resource allocation to Texas schools, followed by an analysis of the revenue shifts when fixed percentages of resources move to the school level.

The first task was to examine current expenditure patterns reported by Texas school districts in 1994–95. State average operating expenditures per student are shown by object of expense in table 1. State average operating expenditures per student by function appear in table 2.¹⁷

By function, roughly 60 percent of operating expenditures are related to instruction. This is consistent with findings from other states and from national studies.¹⁸ Payroll costs form the object of most expenditure functions. Unfortunately, school-level data by object and function are not available in AEIS data files. Other researchers have also reported this difficulty, but have not developed a standard way to prorate costs to districts.¹⁹ Researchers could ask for school-level PEIMS files, but the size of the data base makes it impractical for use in many environments.

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Table 1.—Texas school district operating expenditures per student, by object

Object	1994–95 state average, budgeted	Percent of total
Payroll	\$3,648	81%
Purchased and contracted services	399	9%
Supplies and materials	375	8%
Other operating expenditures	102	2%
TOTAL	\$4,524	

SOURCE: *TASB/Bench Marks 1994–95* (Austin, TX: Texas Association of School Boards, 1995), p. 7, Table 2.

Table 2.—Texas school district operating expenditures per student, by function

Function	1994–95 state average, budgeted	Percent of total
Instructional services	\$2,635	58%
Instructional-related services	\$123	3%
Pupil services, co-curricular, transportation	\$695	15%
Administration	\$537	12%
Plant maintenance and operations	\$520	11%
Community services	\$14	1%
TOTAL	\$4,524	

SOURCE: *TASB/Bench Marks 1994–95* (Austin, TX: Texas Association of School Boards, 1995), p. 7, Table 3.

The AEIS data include campus total instructional expenditures and certain operating expenditures. Using the research data set, we aggregated operating expenditures across schools for each district. These data were then merged with additional operating expenditures reported only at the district level to create a measure of the full level of operating expenses. We then calculated the percentage of total district operations expense accounted for by the campuses. Calculations were conducted for all school districts in Texas and separately for the largest districts, based on student enrollment. The 199 largest districts enroll 3,800 or more students.

In Texas, roughly two-thirds of total operations expenditures are allocated to schools, mostly in the form of personnel assignments and supply allocations. Total operations expenditures in Texas in 1994–95 were \$17.3 billion, with \$11.8 billion or 68.1 percent attributable to campus-level operations. Total enrollment was 3,468,000. Dividing campus operations expense (\$11.8 billion) by enroll-

ment (3,468,000) yields average school operations expenditures per student of \$3,402. Table 3 displays operating expenditures as a percent of total expenditures for all districts and for the set of large districts.

We explored the distribution of operations expenditures in more depth for the largest districts in Texas. First, to determine the distribution of school-level operations expenditures, we grouped the districts by decile according to percentages of operations expenditures attributable to the school. Our results in table 4 show that at the 90th percentile district, 71 percent of expenditures are tied to the school. In other words, in ten percent of the districts the percentage of operating expenditures attributable at the school level exceeds 71 percent. Of the largest districts, the maximum value was 75.3 percent. This means that to distribute more than 75.3 percent of total district resources for operations to the schools goes beyond the current experience of most Texas districts.

Table 3.—Percentage of operating expenditures allocated to schools in Texas: 1994–95		
School operating expenditures	All districts	Largest districts
Mean percent	68.1%	68.8%
Standard deviation	4.0	2.7
Minimum percent	48.6	59.6
Maximum percent	83.0	75.3
SOURCE: Derived from the Academic Excellence Indicators System data set, 1994–95, Texas Education Agency.		

Figure 1 shows the relationship between district enrollment and the percentage of total district expenditures for operations that occur at the school level for the largest school districts.

Table 4.—Percentage of operations at the school level, by decile, for Texas school districts		
Percentile	All districts*	Largest districts*
10	64.9	65.3
20	65.2	66.7
30	66.7	67.8
40	67.9	68.6
50	68.2	69.0
60	69.0	69.4
70	69.8	70.2
80	70.4	70.7
90	70.9	71.9
*Mean operating expense, school level.		
SOURCE: Derived from the Academic Excellence Indicators System data set, 1994–95, Texas Education Agency.		

The horizontal line at 68.8 percent represents the mean of these averages. The logarithm of district enrollment was plotted on the horizontal axis. (The logarithm compresses the values horizontally.) The most extreme right-hand point represents Dallas ISD, the second largest district in the state. The only visible relationship between the variables is a reduction in the variation around the mean as district enrollments increase. If it were sup-

posed that in the larger districts the district administration and other activities would encompass increasingly larger proportions of total operations expenditures, the figure would look different. There would be an upward trend to the data as size increases. The data show that the highest as well as the lowest percentages are found among the smaller of these districts (districts with fewer than 10,000 students).

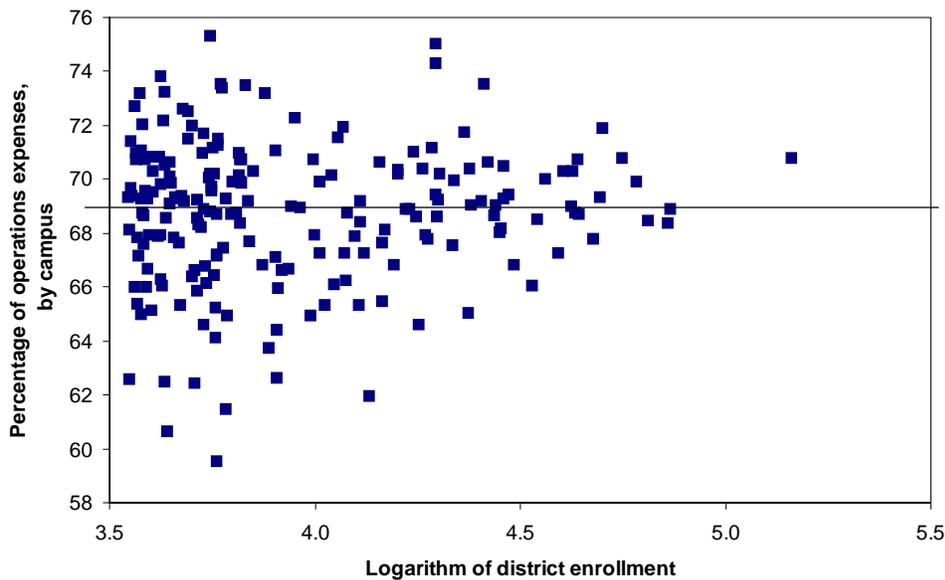
Simulation of Direct Allocations to Schools

After we determined current expenditure patterns, we explored the effect of transferring more operating resources to the school level. Previous calculations indicate that, on average, 68 percent of total operations expenditures take place at the campus level. We performed calculations for all districts, estimating on a district-by-district basis the amounts that would have to be transferred to the campus level (or to campus control) in order that schools in each district would be collectively responsible for 75 percent, 85 percent and 90 percent of total district operations expenditures.

Tables 5 and 6 present descriptive statistics for reallocation of resources at three fixed percentages. Table 5 shows 1,043 districts, and Table 6 presents information for the largest districts. The variables are defined as:

- **% CHANGE SCHOOL** Percentage change in school-level operations spending when the district allocates 75 percent, 85 percent, or 90 percent of operations spending to the schools.
- **% CHANGE DISTRICT** Percentage change in district-based operations spending as a result of moving 75 percent, 85 percent, or 90 percent of operating expenditures to the schools.

Figure 1.—Relationship between percentage of operational expenses by campus and district enrollment



SOURCE: Derived from the Academic Excellence Indicators System data set, 1994–95, Texas Education Agency.

- **\$ CHANGE PER PUPIL** Change in dollars allocated from the district to the school on a per-pupil basis when 75 percent, 85 percent, or 90 percent of expenditures are allocated to the schools.

Tables 5 and 6 show similar patterns of results. Allocating 75 percent of resources, instead of 68 percent, moves less than \$500 per pupil to the school level, but the percentage change at the district level is close to 20 percent. A shift to 85 percent campus-level allocations would increase the average operating expenditure at the school to \$4,401 (\$3,402 plus \$999) in the case of all school districts, or \$4,190 (\$3,402 plus \$788) among the largest districts. Under Guthrie’s recommended scheme, 90 percent of resources would move directly to schools. In Texas, \$11.8 billion (68.8 percent) currently flows from districts to schools. Moving 90 percent of resources to schools would result in an additional \$3.6 billion, or \$15.4 billion in total, flowing to schools. School operations expenditures

would increase by 32.6 percent, representing an additional \$1,290 per student. Resources per student at the school would rise to about \$4,692 (\$3,402 plus \$1,290). In large districts, the increase is \$1,031, and the total amount per pupil is \$4,433. District offices would have roughly 68 percent of their resources redirected. The effect on administration and support strategies would be dramatic. Most likely, school district offices would eliminate many central programs and services, and schools would have to undertake many of those activities themselves or contract with the district office or other providers.

Given the magnitude of changes displayed in the tables, it would be most practical to implement a change of this type gradually, increasing the percentage by perhaps 5 percent each year, with an end-goal of 90 percent school-based funding after 5 years. This would permit schools and central offices time to adjust to new levels of resources and changing responsibilities.

Table 5.—Results of changes allocating a greater percentage of operating expenditures to schools*			
	75 percent	85 percent	90 percent
% Change school	10.51%	25.24%	32.61%
% Change district	- 20.39%	- 52.23%	- 68.16%
\$ Change per pupil	\$416	\$999	\$1,290
*All Texas school districts (n=1043).			
SOURCE: Derived from the Academic Excellence Indicators System data set, 1994–95, Texas Education Agency.			

Table 6.—Results of changes allocating a greater percentage of operating expenditures to schools*			
	75 percent	85 percent	90 percent
% Change school	9.21%	23.77%	31.06%
% Change district	-19.36%	-51.62%	-67.74%
\$ Change per pupil	\$303	\$788	\$1,031
*Largest Texas school districts (n=199).			
SOURCE: Derived from the Academic Excellence Indicators System data set, 1994–95, Texas Education Agency.			

Expenditures and Teacher Salaries, Experience, and Pupil-Teacher Ratio

Salaries and Experience

Guthrie suggests that teacher seniority is a major source of variation in current campus expenditure levels. We use Texas data in an attempt to verify this assertion. Texas law requires school districts to pay teachers at least a minimum monthly salary for a 10-month contract year. In 1994–95, the salary schedule for first-year teachers started at a minimum salary of \$1,700 per month. The schedule was constructed so the monthly base increased every year for ten years. Veteran teachers received at least \$2,840 per month.²⁰

In practice, many districts pay above the base in order to attract teachers and compete in local labor markets. In addition, many district salary schedules do not mirror the struc-

ture of the state’s minimum schedule. So long as a district pays at least the minimum for each step in the scale, it remains in compliance with the law. The state does not dictate the structure of a district’s locally adopted pay schedule once the minimum is met.

In order to examine the strength of the relationship between salary and years of experience, we specified a linear relationship where average teacher salary per pupil (TSAL) at the school is the dependent variable and average teacher years of experience (YREXP) at the school is the independent variable.

$$TSAL = a + b_1 YREXP + e$$

Regressions were computed for all districts and for large districts according to school type. Table 7 reports the adjusted R-squared values.

²⁰ Texas Education Code §16.056 (1994) governed teacher salaries for the period during which these data were gathered. Texas Education Code which took effect September 1995 requires a 20-step schedule. The schedule was adjusted upward in 1997 to reflect increased resources appropriated for the foundation program (Texas Education Code §21.402).

Data in table 7 reveal that in Texas teacher salaries are weakly related to years of experience, despite a salary schedule that rewards seniority in the early years. Information gathered from an annual school board and administrator survey suggests that pay practices in Texas school districts vary widely, with some districts offering high starting salaries to attract new teachers and others offering stipends for advanced degrees, regardless of years of experience. About 10 percent of districts pay extra to teachers who complete continuing education, to teachers who take on extra academic teaching duties, and to teachers who have good attendance. A few districts offer hiring bonuses.²¹

At least two other features of Texas salary data may affect the computations that underlie table 7. First, Texas has experienced teacher salary compression over the past 10 years. This results when many currently employed teachers are at the top of the salary scale and when school districts establish pay practices that compress salaries. The average experience for Texas teachers is 11.5 years, so teachers in districts that pay the base salary do not receive compensation increases with years of experience beyond the first decade of teaching. In districts with pay practices that differ from the state schedule, the relationship of compensation to experience once teachers pass the ten-year mark is a matter of locally established policy. Second, Texas teachers are not organized for collective bargaining. This may result in salary variation within the state that is not strongly related to experience. The weak relationship between experience and salaries indicates that there are characteristics of the Texas data that make it less suitable for testing Guthrie's hypothesis about the dominant effect of teacher salaries, particularly those of experienced teachers. It also may indicate that the specification of the mathematical relationship between salaries and experience requires further scrutiny.

Table 7.—Relationship of teacher salaries to years of experience	
School level	Adj. R-squared
Elementary school	
All districts	0.031
Largest districts	0.032
Middle school	
All districts	0.035*
Largest districts	0.044*
High school	
All districts	0.001
Largest districts	0.002
* Indicates significance at 0.01 level or better.	
SOURCE: Derived from the Academic Excellence Indicators System data set, 1994–95, Texas Education Agency.	

The Effect of Teacher Salaries on School-Level Expenditures

In order to explore the relationship between average teacher salaries and school resource levels, we first computed the Pearson correlation coefficients between salary and two resource variables: instructional expenditures per pupil (INEXP) and operating expenditures per pupil (OPEXP). Table 8 shows the results.

Salary and operating expenditures are strongly and positively correlated. The strength of the relationship increases when salary is correlated with instructional expenditures.

The Effect of Teacher Experience and Pupil-Teacher Ratios on School-Level Expenditures

Next, we specified a linear expression where expenditure per pupil at the school level was the dependent variable and teacher experience (YREXP) and pupil-teacher ratio (PTRATIO) at the school were the independent variables. We used the two measures of school expenditures that appeared in the previous computation: instructional expenditures per pupil and total school operating expenditures per pupil.

²¹ See Texas Association of School Boards (1996).

Table 8.—Correlation between average teacher salary per pupil and expenditures*

	All districts	Largest districts
Elementary		
INSTR	0.710	0.707
OPEXP	0.660	0.678
Middle school		
INSTR	0.737	0.827
OPEXP	0.688	0.788
High school		
INSTR	0.718	0.717
OPEXP	0.686	0.700

* All correlations are statistically significant at the .01 level.

SOURCE: Derived from the Academic Excellence Indicators System data set, 1994–95, Texas Education Agency.

$$\text{INEXP} = a + b_1(\text{YREXP}) + b_2(\text{PTRATIO}) + e$$

$$\text{OPEXP} = a + b_1(\text{YREXP}) + b_2(\text{PTRATIO}) + e$$

The value of adjusted R-squared was computed for the set of data with all campuses, by grade groups. Table 9 shows the results. Table 10 shows the results using schools by grade level for the largest Texas districts.

In both sets of regressions, the coefficients for years of experience and pupil-teacher ratio show the expected signs, where teacher experience is positively related to expenditure levels, and higher expenditures are related to lower pupil-teacher ratios. However, the combined effect of teacher experience and pupil-teacher ratio (a proxy for class size) is not powerful in explaining expenditures. Only the values for middle school are large enough to be important.

We assumed that instructional and operating expenses would be driven by teacher experience and class size, but this study suggests that there may be other important factors at work affecting this relationship. What might explain these results? One possibility is that

the relationships between salary and pupil-teacher ratios are not correctly specified by the simple model presented here.²² Another explanation is that pooling campus data across a wide range of districts obscures meaningful statistical relationships that result from policies or practices within individual districts. For example, districts may provide stipends for service in difficult school settings, regardless of teacher experience. Or, districts may establish class-size policies related to types of programs offered, something we could not explore with AEIS data. It may be useful to look at school-level data within large districts rather than across them. From our previous work, we believe that levels of school operating expenditures and teacher salaries are probably highly dependent on the resources schools have to spend.²³ This, in turn, is largely a function of tax rates and revenue in Texas school districts which we did not include in this analysis.²⁴

An Approach to Implementing School-Based Funding in Texas

In this section, we present ideas and concepts for restructuring the Texas school finance system to implement school-based funding. The first approach calls for the state to calculate a “campus foundation program allotment” at the same time it calculates the foundation school program allotments for school districts described in current law. Districts would direct campus foundation program allotments to the schools in the form of budget dollars rather than resource inputs. Calculations for this approach reflect the basic scheme in Texas law for equalizing resources based on pupil needs, district wealth, and tax rates. The major difference in the system is the state directive to districts to shift most of their state and local resources to the schools.

²² The appendix to this article discusses the mathematical relationship among teacher salaries, average salaries, and teacher-pupil ratios.

²³ See Clark and Casey (1994); Picus and Toenjes (1994).

²⁴ See Toenjes (1996).

Table 9.—Relationship of school expenditures to teacher experience and pupil-teacher ratio for schools, by type, for all Texas school districts

Dependent variable	Independent variable		Adj. R-squared
Elementary schools (n=3,531)	<u>YREXP</u>	<u>PTRATIO</u>	
INEXP	74.4 (1.51)	-189.3 (-4.32)*	0.006
OPEXP	74.6 (1.42)	-240.6 (-5.13)*	0.007
Middle schools (n=1,225)			
INEXP	204.7 (6.38)*	-437.9 (-14.97)*	0.174
OPEXP	1133.4 (6.13)*	-1386.7(-8.23)*	0.075
High schools (n=1,193)			
INEXP	1.86 (0.01)	-108.4 (-2.96)*	0.006
OPEXP	1.67 (0.01)	-159.9 (-2.81)*	0.005

* Indicates significance at the .01 level or better.

SOURCE: Derived from the Academic Excellence Indicators System data set, 1994–95, Texas Education Agency.

Table 10.—Relationship of school expenditures to teacher experience and pupil-teacher ratio for schools, by type, for the largest Texas school districts

Dependent variable	Independent variables		Adj. R-squared
Elementary schools (n = 2,550)	<u>YREXP</u>	<u>PTRATIO</u>	
INEXP	87.5 (1.26)	-262.8 (3.81)*	0.006
OPEXP	94.1 (1.27)	-319.3 (-4.33)*	0.007
Middle schools (n= 758)			
INEXP	334.4 (6.90)*	-615.4 (-14.57)*	0.251
OPEXP	1910.4 (6.35)*	-2152.1 (-8.21)*	0.120
High schools (n = 565)			
INEXP	-63.6 (-0.25)*	-205.3 (-2.82)*	0.011
OPEXP	-86.2 (0.22)*	-302.8 (-2.67)*	0.009

* Indicates significance at the .01 level or better.

SOURCE: Derived from the Academic Excellence Indicators System data set, 1994–95, Texas Education Agency.

The second approach requires the state first to restructure the tax and revenue system to generate more state funding for schools. The state would then calculate school allotments in the form of block grants based on enrollment and programs. School districts would be required to raise additional resources for administrative activities, central services, and tax administration.

These descriptions are intended to illustrate the basic mechanisms by which equalized funding to schools could be achieved, if desired; they are not recommendations for action.

The Campus Foundation Program

The state would gather PEIMS and tax data to compute foundation school program allotments for school districts as described in current law.²⁵ School districts would levy taxes for the local funding requirement of the foundation program and for enrichment funding beyond that level. Districts would continue to levy a property tax for voter-approved debt. School tax laws would not change under this scenario.

At the same time it computes district foundation program allotments the state would use PEIMS data to calculate a campus foundation program (CFP) allotment for each public school in Texas. Policymakers would establish a “campus basic allotment” or minimum per-student funding level for the regular education program. The campus basic allotment (CBA) should reflect the cost of a basic, accredited education in Texas. As a practical matter, it would be less than or equal to the basic allotment in law.²⁶ In current law several district adjustments are made to the basic allotment to reflect the geographic variation in known resource costs, costs of education due to factors beyond the control of the school district, and adjustments for district size and

population sparsity. Such adjustments would continue to be part of the district foundation program calculation but would not be included in the CFP calculation.

The CFP calculation would begin with computation of the cost for students in the regular education program by multiplying regular program ADA by the CBA. Then special program allotments would be calculated, as shown below, using program weights. The state could use weights in current law or some other weighting system. In current law, full-time-equivalent (FTE) student counts in career and technology education have a weight of 1.37; students identified for gifted and talented education receive a weight of .12; students identified for bilingual and ESL programs receive a weight of .10; special education FTEs are assigned a weight based on the services received; and students identified for compensatory education (those who qualify for the federal nutrition program) have a weight of .20.

These weighted funds represent, roughly, the first tier of the Texas foundation program excluding the transportation allotment. An additional calculation should be included to account for operating revenue that flows from tier two, otherwise the CFP allotment is likely to be an amount less than the resource level currently allocated to campuses (68 percent). A simple approach is to assign a fixed percentage of second tier dollars for allotment to the campuses, such as 90 percent. That portion could be distributed to the schools based on enrollment, ADA, or weighted ADA.

Using our AEIS data set for 1994–95, we estimated the results of calculations for the seven steps shown above for each campus. We added \$1,170 per student to the result, or roughly 90 percent of the revenue that would flow through the second tier of the finance system, as estimated for 1994–95. The result-

²⁵ Texas Education Code, Chapter 42, subchapters B, C, E, and F.

²⁶ The basic allotment is \$2,387 (Texas Education Code §42.101).

These descriptions are intended to illustrate the basic mechanisms by which equalized funding to schools could be achieved, if desired . . .

Campus Foundation Program (CFP) allotment for Texas public schools

1. School regular program allotment = $CBA \times \text{regular program ADA}$
2. School career and technology allotment = $CBA \times \text{FTE students} \times 1.37$
3. School gifted and talented allotment = $CBA \times \text{students} \times .12$
4. School bilingual/ESL allotment = $CBA \times \text{ADA} \times .10$
5. School special education allotment = $CBA \times \text{FTE} \times \text{weight}^{27}$
6. School compensatory education allotment = $A \times \text{ADA} \times .20$
7. School technology allotment = $\text{ADA} \times \$30$

ing calculation was a statewide average CFP per student of \$4,007. This is about 78 percent of operations expense. Table 11 shows this result and compares it with percentage allocations estimated above (Table 5).

The correlation of CFP values for each campus with the campus allocation of expenses computed using the AEIS data set was 0.74. If our system for computing allocations to campuses perfectly mirrored reported allocations to campuses, the correlation would be 1.00. Variation due to local policies related to school allocations and special circumstances of schools due to location or student characteristics may weaken the relationship.

CFP values for elementary, middle, and high schools are \$4,087, \$4,016, and \$3,792,

respectively. Computed CFP allocations to elementary schools are somewhat higher because elementary students are more likely to be identified for compensatory education funding and because school districts tend to concentrate funds for bilingual education at the elementary level. Correspondingly, the high school CFP is likely to be lower because students may be under identified for certain programs that receive higher funding. The correlation of computed CFP values with actual campus allocations for 1994–95 was 0.76 for elementary, 0.68 for middle school, and 0.63 for high school. These correlations are still strong, but somewhat weaker than the overall correlation.

If it were desired to increase the percentage of district resources allocated to schools through CFPs from about 78 percent to 85 percent or higher, additional resources would have to be loaded into the CFP calculation process. There are many candidates for weights and adjustments—high poverty concentrations, school size, student performance, class size ratios, alternative education students, and others. At this time, we have research to suggest weights for class size and alternative education programs that could be incorporated into a CFP.

Texas requires classes in grades K through 4 to have no more than 22 students. This imposes certain inefficiencies on operations. Research by state agencies more than a decade ago suggested an add-on factor of .20 for each student in grades K through 4 to compensate for the inefficiencies, although such a factor has not been used in Texas school finance formulas. We suggest that it be incorporated here with the qualification that schools should not receive this funding when the class size mandate is not met.²⁸

Class size allotment = $CBA \times \text{K-4 ADA} \times .20$

²⁷ In Texas, funding weights are assigned to different special education instructional arrangements. Homebound education has a weight of 5.0; resource room has a weight of 3.0; off-home campus has a weight of 2.7; mainstreamed students and speech therapy have a weight of 1.10 per ADA (not hospital class, and self contained home FTE), vocational adjustment class has a weight of 2.3, and non-public day school has a weight of 1.7

²⁸ See Walker (1988).

Texas now requires every district to establish an alternative education program (AEP) for disruptive and violent students. An AEP may be offered within an existing school or in a separate program location. Typically, students spend a portion of the school year in an AEP and return to a regular campus when their behavior problems are remediated. Research completed in 1997 reported that the costs for all AEP arrangements exceed foundation program costs for the regular program because of the necessary separate arrangements and because the district must create two educational environments for the student—the regular school that sent the student and will enroll him again, and the AEP. The researchers recommend an add-on weight of 2.09 per FTE student in an AEP, although this weight has not been considered for inclusion into the school finance formula.²⁹

$$\text{School AEP allotment} = \text{CBA} \times \text{FTE} \times 2.09$$

Policymakers may want to include an element in the calculation of the CFP that recognizes the school's results on the state accountability system. In this way, funding could be used to reward performance, and it could also be used to target resources to particular student learning needs.

The CFP system described here preserves current inter-district equity levels in Texas school finance and could improve intra-district equity as well. Schools would have control over significant amounts of money and be able to respond to unique local circumstances,

but they would also gain responsibility and accountability for managing large budgets. Based on state aid and formula elements for the 1996–97 school year, the statewide average CFP allotment per student would be \$4,007. For a school with 400 students, that represents a campus budget of about \$1.6 million. A school with 1,500 students could have a budget of over \$6 million.

Policymakers could choose to incorporate other funding elements into a school-based system. Special program funding could be complemented with categorical programs to which either the district or campus could apply. For example, a school or a district could apply for optional extended-year grants in the way Texas districts do now.³⁰

State Block Grants to Schools

The approach outlined for this alternative would permit the state to achieve two goals: implementation of school-based funding, and substantial increase in the state's share of public education funding.

The approach is keyed to tax restructuring to increase state revenue. This has proved to be a difficult task. In 1997, the Texas Legislature explored changing the tax system to increase the state's share of school support and to provide tax relief to homeowners. The House Select Committee on Revenue and Public Education Funding drafted a bill that split the tax roll for purposes of funding school maintenance and operations. Homeowners

Table 11.—Estimates of school-based resources under different calculations					
	1994–95 Actual	1994–95 School operations expense, computed			1994–95 CFP, computed
Percent allocated to schools	68.1%	75%	85%	90%	78%
Amount per student	\$3,402	\$3,818	\$4,401	\$4,692	\$4,007
SOURCE: Derived from the Academic Excellence Indicators System data set, 1994–95, Texas Education Agency.					

²⁹ See Lieblong and Hooker (1997).

³⁰ Texas Education Code §29.082.

would have had a local school property tax rate of \$0.50 (per \$100 of value) and business property owners would be taxed by a state tax rate of \$1.00 (per \$100 of value). Both of these rates fall below the average maintenance and operations tax rates adopted by school districts in 1996. Debt service taxes for schools would be levied on all property, business and residential, using locally determined rates. To replace lost property tax revenue the bill proposed raising more state revenue through elimination of numerous sales tax exemptions, expansion of the state business franchise tax, a change in the calculation of the portion of the tax owed by multi-state business operations, and other features. The net effect of the legislation, in the initial draft, was to shift state funding from about 47 percent to 85 percent, and individual homeowners would receive substantial property tax relief. The bill did not pass through the legislature, even in an amended form. The Texas House expects to consider tax reform again in 1999.³¹ Research conducted for the Texas Legislature in 1997 shows that Texas could create a school finance system funded 85 percent by the state. The major barrier is taxpayer reluctance to support major tax shifts that might affect them or their businesses.

If state resources were available, the state could implement school-based funding by providing state resources in block grants to schools. Using PEIMS data, the state could determine the appropriate grant level using a foundation program calculation similar to the one devised for the campus foundation program approach. This would permit the grant to vary, depending on student program needs. Alternatively, it could devise a different method.

One alternative is for the state to determine the base cost of education per student at the elementary, middle, and high school lev-

els, taking into account increased graduation requirements, the performance expectations in the new Texas Essential Knowledge and Skills, and other mandates and requirements. The base costs would include teachers, administration, utilities, building maintenance and repair, transportation, food service, technology, books and materials for the regular program, security, insurance, and other factors that would apply to any school, regardless of the special program needs of students. The sum of base costs per student would be the campus base cost to which would be added program cost factors. Program costs could be handled like categorical allocations or they could be computed using a system of weights applied to the base cost. New research to determine the additional cost of programs could yield the information needed to construct the formulas. A system of weights could resemble the system in current law or be revised to reflect new priorities such as early elementary reading, or high school Advanced Placement programs.

The state would estimate school block grants in the spring when schools and districts begin budget planning. Final estimated blocks would be calculated in the summer so that schools and districts could complete the regular budget process in August. Payment directly from the state to schools could flow in equal quarterly payments or some other form that would permit school operations to flow smoothly.

School boards would levy a maintenance and operations tax and use it to fund central administrative functions, services to schools, tax administration, and other activities. Local support for schools would be equalized using a guaranteed yield approach. Districts would set a minimum tax rate of roughly 25 cents, and the state could guarantee a yield of \$28 per penny of tax per student. The result would be that in every district, a 25 cent tax rate would

. . . the state could implement school-based funding by providing state resources in block grants to schools, . . . [determining] the appropriate grant level using a foundation program calculation.

³¹ The Interim Charge for the Select Committee on Revenue and Public Education Funding, prepared September 24, 1997, calls for the Committee to continue the study of methods and formulas by which schools are funded and to review the laws and rules that govern all state and local taxes. The Committee must study the relative tax burden on various sectors of the Texas economy and consider economic development incentives.

. . . the school-based approach provides an opportunity to link funding to school performance as reported on the Texas accountability system.

yield \$700 per student from a combination of state and local resources. Districts could be given some flexibility to adopt tax rates of up to 30 or 35 cents to fund schools or administrative functions. With this alternative, the state could create a fully equalized system by requiring revenue recapture from districts with a tax yield exceeding \$28 per student per penny of tax (districts with taxable wealth of more than \$280,000 per student). If school property values change because of split tax rolls, little or no recapture may be required.

This type of system could be part of an overall tax and governance restructuring effort. Policymakers would be confronted with a requirement to examine the real cost of education since the state would be responsible for supporting most of it. It might be an attractive approach for those who want to put an end to “business as usual,” though the system would present new challenges, not the least of which could be increased overall funding and reconsideration of systemwide equity. Additionally, the school-based approach provides an opportunity to link funding to school performance as reported on the Texas accountability system. Because of the indeterminate nature of tax reform, it was not practical to estimate block grants to compare with actual student computations, as we did for the CFP system. Block grant funding would be a *de novo* approach, and policymakers could establish virtually any funding goals and expectations, so long as the revenue could be raised.

Issues and Problems in School-Based Funding

The two approaches outlined here are sketchy and fail to account for many important features of school finance systems such as facility funding; educator salaries, retirement, and benefits; tax rate limitations; unequalized local revenue; transportation revenues; and federal funds and programs. However, these approaches suggest, in broad terms, some of the cross-cutting issues that school-based funding raises.

One issue is the preparation of school personnel to plan and manage large budgets. School professionals currently receive little or no training in managing public funds so they would need special preparation. The state could work with educator associations and institutions of higher education to mount a program of training. Alternatively, schools could seek to hire operations managers from the existing labor pool of individuals with general management experience to handle purchasing, contracts, budgets, investments and so forth. In the short run, finding such managers would not be an adequate solution because the supply of qualified professionals is probably not sufficient to staff over 6,400 public schools.

A second issue concerns the hiring and compensation of professional staff. One key to school control is the ability to configure and manage staff to gain the desired outcomes. Would schools have the freedom to hire both certified and non-certified employees, as Texas open-enrollment charter schools do now? What about the salary schedule in law? Should it be retained? This research suggests that teacher salaries represent a sizeable percentage of school inputs. Being able to adjust salaries and terms of employment would give principals or school administrative officials flexibility to use dollars in ways that appear to be more effective. However, the response of over 250,000 Texas teachers to elimination of the salary schedule is likely to lead to low morale and general unrest. Even if schools indicated they would pay teachers higher salaries, the change could drive some professionals from teaching to other careers, an undesirable result in a state with high growth. A practical approach to turning control of personnel matters over to schools would be to implement the change gradually and institute safeguards. Hiring and compensation systems could become more flexible over time.

A third issue is whether thousands of small operating units—the schools—will be more efficient than 1,044 school districts. If schools

can better match resources with needs, efficiency can be improved and student performance may increase. If schools spend more time and money in administrative activities, and if they pay more to purchase smaller quantities of supplies and materials, efficiency may be reduced. We expect that schools would, over time, form purchasing cooperatives and find ways to stretch their dollars, but the efficient management of individual schools may present a greater challenge. It is likely that school staff would link funding to student learning by purchasing more staff development and improved technology. However, it is also possible that some schools will focus efforts on increasing salaries and benefits.

Determination of formula parameters such as the basic allotment, weights, and other elements is a critical prerequisite to establishing a system that provides high-quality education for all children. School districts will not be able to prop up under-funded programs if they must direct nearly all funds to the schools. The schools themselves will be unable to raise taxes to cover shortfalls. It is important to get the formula parameters right so that program quality and student performance do not decline.

Governance of districts and schools would change dramatically if school-based funding were implemented. Schools would assume much greater authority and legal liability for decisions related to finance, personnel, and policy. The public in large districts and cities would be likely to find that keeping up with matters in public education is much more complicated. Even if budget and policy decisions are considered during open meetings at schools, stakeholders in the community will have more difficulty following what is going on. This, in turn, may drive support from the public schools or increase public cynicism about the system itself. To protect the interests of children, oversight and responsibility needs to be established either through traditional school board mechanisms, or some

other approach. This is particularly important in the early years of implementation.

Summary and Conclusions

This study examines the practical application of targeting a fixed percentage of school district resources for direct pass-through to schools. In Texas, roughly two-thirds of total operations expenditures are already allocated from districts to schools. Total operations expenditures in 1994–95 were \$17.3 billion, with \$11.8 billion or 68.8 percent attributable to campus-level operations. If 90 percent of resources move directly to schools, an additional \$3.6 billion would flow to schools, and school-level operating expenditures would increase by 32.6 percent. At the same time, district-level resources would drop by more than 68 percent. Given the magnitude of this change, it would be most practical to implement a change of this type gradually, increasing the percentage each year to reach a desired level.

One possible explanation for current variations in school-level expenditures is teacher compensation and class size. Using Texas data to explore this idea, we determine that Texas teacher salaries statewide are weakly related to years of experience. Certain features of Texas salary data may affect these results. Salary compression has occurred because of the structure of the state minimum salary schedule and district pay practices. In addition, salary variation may be related to other aspects of teaching, such as extra duty, advanced degrees, incentives, and bonuses. While teacher salaries are strongly and positively related to expenditures, teacher experience and class size are not, by themselves, strongly predictive of expenditures at the school level. We suspect that school and district policies also affect school-level expenditures.

School-based funding approaches can be devised that maintain school finance equity and that recognize student need and program costs. This study outlines two different approaches

It is important to get the formula parameters right so that program quality and student performance do not decline.

to restructure Texas school finance to implement school-based funding. The first is a campus foundation program allotment that would flow revenue from the district to each school, based on calculations of campus allotments. The second is a block grant system that depends on major tax restructuring to generate additional state revenue for education. Both hypothetical systems present major challenges in areas of school capacity to plan and manage budgets, hire and compensate staff, and use resources more efficiently.

Appendix

The relationship among teacher salaries, average salaries, and teacher-pupil ratios is at one level an identity and can be expressed as

$$(1) TTS = (\sum SAL_i/nT)(nT/nP)nP$$

where TTS is total teachers salaries, SAL_i is the salary of the i^{th} , nT is the number of teachers, and nP is the number of pupils. The summation sign indicates a sum going from 1 to nT (in this instance and below).

A simple form of teacher pay schedule can be described as

$$SAL_i = A + BY_i,$$

where A is beginning teacher salary, B is additional salary for each year of experience, and Y_i is number of years of experience or seniority of the i^{th} teacher. If this expression is summed over all nT teachers at a given campus, or within a given district, we get

$$\begin{aligned} \sum SAL_i &= \sum (A + bY_i) \\ &= \sum A + \sum BY_i \end{aligned}$$

or

$$(2) \sum SAL_i = (nT)A + B \sum Y_i.$$

If (2) is substituted into (1) for the $\sum SAL_i$ term, we have

$$(3) TTS = [(nT)A + B(\sum Y_i)/nT](nT/nP)nP.$$

To put (3) in terms of total teacher salary per pupil, we divide by nP and simplify further, obtaining

$$(4) TTS/nP = (A + B\bar{Y})(nT/nP).$$

In (4) \bar{Y} is the average number of years of experience on the campus, which came from the total years experience summed for all teachers, $\sum Y_i$, divided by the number of teachers nT .

Note in (4) we are no longer dealing with individual teachers at the campus, but are instead dealing with the campus-wide concepts \bar{Y} and teacher-pupil ratio (nT/nP), base salary (A), and annual salary step (B). It is assumed that A and B are district policy parameters, while \bar{Y} and the teacher-pupil ratio are unique to each campus within the district. It is also likely that A and B would vary by type of campus (elementary, middle, and high school).

If data are pooled across districts (for campuses of the same type) as we have done in this study, it becomes difficult to ascertain consistent relationships between total teacher salaries per pupil, average number of years of experience, and teacher-pupil ratios. Districts with different levels of resources are likely to

have different starting salaries (*A*) and/or different annual steps (*B*). Therefore, the simple relationship between salaries and teacher-pupil ratios expressed in (4) becomes obscured when data are pooled among different districts. If data from campuses of different types are also included, the relationship becomes even more obscured.

Equation (4) makes explicit that various combinations of beginning salary, step schedules, and teacher-pupil ratios could all result in the same observed average teacher salary per pupil.

References

- Bimber, B. 1994. *The Decentralization Mirage: Comparing Decisionmaking Arrangements in Four High Schools*. Santa Monica, CA: Rand Corporation.
- Busch, C. and A. Odden. 1997. "Introduction to the Special Issue: Improving Educational Policy and Results with School-Level Data—A Synthesis of Multiple Perspectives." *Journal of Education Finance*. 22: 225–245.
- Casey, D. 1995. *TASB/Bench Marks, 1994–95*. Austin, TX: Texas Association of School Boards. p. 7.
- Chubb, J. and T.M. Moe. 1990. *Politics, Markets and America's Schools*. Washington, DC: The Brookings Institution.
- Clark, C.P. and D.T. Casey. 1994. "Adequacy or Suitable Provision in Texas." *Journal of Texas Public Education*. 2: 25–38.
- Cooper, B. 1993. "School-Site Cost Allocations: Testing a Micro-Financial Model in 23 Districts in Ten States." Paper presented at the Annual Meeting of the American Education Finance Association.
- Guthrie, J.W. 1996. "Reinventing Education Finance: Alternatives for Allocating Resources to Individual Schools." Paper presented at the Annual Meeting of the American Education Finance Association.
- Herrington, C.D. 1996. "The Politics of School-Level Finance Data and State Policy Making," in *Where Does the Money Go?* Lawrence O. Picus and James L. Wattenbarger (eds.) Thousand Oaks, CA; Corwin Press. pp. 236–252.
- Hertert, L. 1996. "Does Equal Funding for Districts Mean Equal Funding for Classroom Students? Evidence from California," in *Where Does the Money Go?* Lawrence O. Picus and James L. Wattenbarger (eds.) Thousand Oaks, CA: Corwin Press. pp. 71–84.
- Kehoe, E. 1986. "Educational Budget Preparation: Fiscal and Political Considerations," in *Principles of School Business Management*. R. Craig (ed.) Reston, VA: Association of School Business Officials International. p. 164.
- Leiblong, M.C. and R. Hooker. 1997. *An Inquiry into the Funding of Alternative Education Programs in Texas*. Austin, TX: School Finance Working Group. p. 67. Unpublished.
- Legislative Education Board, Legislative Budget Board, Educational Economic Policy Center, and Texas Education Agency. 1992. *Public Education Special Cost Studies*. Austin, TX: Legislative Education Board.
- Monk, D.H. 1992a. "Education Productivity Research: An Update and Assessment of its Role in Education Finance Reform." *Educational Evaluation and Policy Analysis*. 14: 307–332.
- Monk, D.H. 1992b. "Resource Allocation Within Schools and School Districts: A Case Study Research Design." Paper prepared for the Finance Center of the Consortium for Policy Research in Education.
- Mosteller, F. 1995. "The Tennessee Study of Class Size in the Early School Grades." *The Future of Children*. 5.

Odden, A. 1993. "Decentralized Management and School Finance." Paper presented at the Annual Meeting of the American Educational Research Association.

Odden, A. 1996. "Productive Discussions About the Education Dollar." *Education Week*. p. 66.

Picus, L.O. 1993. "The Local Impact of School Finance Reform in Texas." Working paper no. 36. Center for Research in Education Finance. Los Angeles, CA: University of Southern California.

Picus, L.O. 1994. "The \$300 Billion Question: How Do Public Elementary and Secondary Schools Spend Their Money?" Paper presented at the Annual Meeting of the American Educational Research Association.

Picus, L.O. 1997. "Using School-Level Finance Data: Endless Opportunity of Bottomless Pit?" *Journal of Education Finance*. 22: 317–330.

Picus, L.O. and L. Hertert. 1993. "Three Strikes and You're Out: Texas School Finance After Edgewood III." *Journal of Education Finance*. 18(4).

Picus, L.O. and L.A. Toenjes. 1994. "Texas School Finance: Assessing the Equity Impact of Multiple Reforms." *Journal of Texas Public Education*. 2: 39–62.

Picus, L.O. and M.B. Fazal. 1996. "Why Do We Need to Know What Money Buys? Research on Resource Allocation Patterns in Elementary and Secondary Schools," in *Where Does the Money Go?* Lawrence O. Picus and James L. Wattenbarger (eds.) Thousand Oaks, CA: Corwin Press. pp. 1–19.

Public Education Team. 1997. *Foundation School Program Funding Elements*. Austin, TX: Legislative Budget Board.

Rossmiller, R.A. 1983. "Resource Allocation and Achievement: A Classroom Analysis," in *School Finance and School Improvement*. Allan Odden and L. Dean Webbs (eds.) Cambridge, MA: Ballinger. pp. 171–191.

School Finance Working Group. 1997. *An Executive Summary of Findings on School Finance Research Conducted in Preparation for the 75th Legislative Session*. Austin, TX: Texas Association of School Administrators.

Texas Association of School Boards and Texas Association of School Administrators. 1996. *Salaries and Benefits in Texas Public Schools*. Austin, TX: Texas Association of School Boards. p. 3.

Toenjes, L.A. 1996. "Report on Research on the Basic Allotment, Tier I, and Tier II Levels, and State/Local Share Levels of the Texas Foundation School Program." Austin, TX: School Finance Working Group. unpublished.

Twentieth Century Fund Task Force on School Governance. 1992. *Facing the Challenge*. New York: Twentieth Century Fund Press.

U.S. Department of Education, Office of Educational Research and Improvement. 1989. *Making Sense of School Budgets: A Citizen's Guide to Local Public Education Spending*. Washington, DC: U.S. Government Printing Office.

Walker, B.D. 1988. "Foundation Program + Power Equalization: Prototype III." Austin, TX: Texas Center for Educational Research.

Wohlstetter, P. and A. Van Kirk. 1996. "Redefining School-Based Budgeting for High Involvement," in *Where Does the Money Go?*, Lawrence O. Picus and James L. Wattenbarger (eds.) Thousand Oaks, CA: Corwin Press. pp. 212–235.

