Rethinking Robin Hood

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Executive Summary

We have analyzed the distribution of education dollars before and after Texas adopted the "Robin Hood" system of financing schools – a system under which taxes are raised countywide and then distributed to school districts. Although supporters say the Robin Hood system was designed to reduce inequality by shifting funds from wealthier to poorer school districts, we find that inequality of education resources has actually increased under the system.

- If inequality is measured on a scale of 0 to1 (where 0 is perfect equality), the distribution of local funding for Texas school districts before Robin Hood had an inequality measure of .419 – roughly the same amount of inequality that is found in the distribution of family income in the United States.

- After state and federal dollars were distributed, the inequality measure fell from .42 to .149 – reducing the inequality measure by more than half.

- If small districts (fewer than 500 students) are omitted, the inequality measure was only .093.

Despite an increase in school property taxes of about $1 billion since the passage of Robin Hood, there was little change in inequality of education financing. In fact, the measure of inequality increased slightly, from .149 to .154.

When the Supreme Court of Texas ruled that the existing system was unconstitutional, it held that equal tax effort in a school district must be rewarded with equal revenue; that is, a penny of local school property tax should yield the same amount of revenue in every district. The court later declared the Robin Hood system to be an unconstitutional way of complying. In response, the Legislature proposed a constitutional amendment to legitimize the Robin Hood system.

Contrary to widespread misconceptions about the court's ruling on school financing and about the proposed amendment to make the Robin Good financing method constitutional:

- The ruling did not require any change in the state constitution, nor did it require an increase in state spending or an increase in state taxes.

- The ruling had nothing to do with equality of spending in districts, but require instead equal revenue for equal tax effort.

- The proposed amendment does nothing to end the court fight over school funding.

This study proposes a "no politics" formula for distributing state funds for education, based on the average value of property on school tax rolls throughout the state. The formula, which could be imposed by the court if voters reject the amendment and the Legislature fails to act, satisfies exactly the standard set by the Supreme Court for financing public schools.

Introduction: The Constitutional Crisis Over Texas Public School Finance

In the case of *Edgewood* v. *Kirby,* the Texas Supreme Court in 1989 and again in 1991 declared unanimously that the system of educational finance in Texas was unconstitutional. The issue arose from the considerable disparity in taxable property values among Texas school districts, ranging from $20,000 per student in the poorest school district to $14 million per student in the wealthiest school district in 1985-86.[1]

Because of these disparities, school districts that made the same tax effort (i.e., had the same tax rate) had access to very different amounts of money. In the poorest school districts, $1.00 of tax per $100 of property generated $200 per student. The same tax rate in the wealthiest school district generated $14,000 per student.

Because local property taxes were the source of about 50 percent of the funds spent on public education in Texas, the court found that reliance on local property taxes led to substantial inequality of resources among school districts. Despite the fact that there was considerable distribution of state funds to offset inequalities at the local level, the court ruled that the system violated the following provision of the state constitution:

> A general diffusion of knowledge being essential to the preservation of the liberties and rights of the people, it shall be the duty of the Legislature of the State to establish and make suitable provision for the support and maintenance of an *efficient* system of public free schools.[2]

What System of Finance Would Satisfy the Court's Ruling? Both in the trial court and in the Supreme Court, the rulings were goal- rather than method-oriented. The opinions stated what the result should be, but neither specified how to achieve that result. The trial court ruled that:

> A constitutional system must provide each school district the *same ability* as every other district to obtain, by state legislative appropriation or by local taxation, or both, funds for educational expenditures, including facilities and equipment ...[3]

The state Supreme Court ruled that:

> There must be a direct and close correlation between a district's tax effort and the educational response available to it; in other words, districts must have *substantially equal access to similar revenues per student at similar levels of tax effort.*[4]

The State Legislature's Solution. In response to the *Edgewood* rulings, the Texas Legislature in April 1991 passed Senate Bill 351, often

"The court ruled that the same tax rates should result in the same revenues in all districts."

called the Robin Hood bill because of its intention to take school tax money from wealthier school districts and transfer it to poorer ones. [See the sidebar on the evolution of *Edgewood*.] This bill established the current system of education finance, which in 1992 was also found by the court to be unconstitutional.

On May 1, 1993, Texans will vote on a controversial constitutional amendment to ratify the Robin Hood solution. If passed, the amendment will authorize continuation of the two-year-old practice of redistributing property taxes within counties and authorize redistribution of funds among counties as well.

Many hope that the adoption of the Robin Hood amendment will resolve the constitutional crisis, end the lawsuit and get the issue of public school finance out of the courts. As we shall see, this hope may be unrealistic. But suppose the amendment does not pass. Is there a solution the court could impose?

A Court-Imposed Solution. The answer is yes. While the Texas Supreme Court has not attempted to reduce its ruling to a mathematical formula, we present here a formula that would satisfy both the spirit and letter of the ruling. Under the formula, school districts would be free to set their own tax rates. But the total amount of revenue they would receive would be determined by the average property value in the state, not by their local property value. The court could simply direct the Texas Education Agency to allocate funds according to the formula.

The Robin Hood Solution

What exactly is the Robin Hood solution? The following is a brief summary.

How Robin Hood Works. Under the current Robin Hood law, schools are financed by a three-tier system. The law created 188 county education districts (CEDs), combining all school districts in a county or counties with a property tax rate set by law — 82 cents per $100 of assessed valuation in 1992-93. Beyond the 82 cents, local districts can set their own tax rates up to a maximum of $1.50.[5] On the first tier, each district is guaranteed $2,400 per pupil from a combination of CED and state funds.[6] On the second tier, for each penny of additional tax rate up to 45 cents, the state guarantees that a district will receive a fixed amount of revenue per pupil — $22.50 in 1992-93 — regardless of property wealth. Revenue from the remainder of the property tax rate — up to 23 cents per $100 of assessed valuation — can be used for local "enrichment."

"Under the Robin Hood system, property taxes are redistributed within counties."

Edgewood v. *Kirby*: Historical Evolution[1]

May 23, 1984	*Edgewood ISD* v. *Bynum;* suit filed to challenge the constitutionality of Texas public school finance.
March 5, 1985	*Edgewood ISD* v. *Kirby;* suit restyled to challenge the Texas school finance system as modified by the reforms implemented by the state Legislature under HR 72.
April 29, 1987	Trial court rules in favor of the plaintiffs, Judge Harley Clark presiding in the 250th District Court, Travis County. This ruling is overturned by the Court of Appeals, then appealed to the Texas Supreme Court.
October 2, 1989	The Texas Supreme Court, by a vote of 9-0, reverses the Court of Appeals and affirms the trial court's ruling, with modifications. Opinion written by Justice Oscar Mauzy.
February 27, 1990	The state Legislature meets in special session to respond to the Supreme Court ruling.[2]
May 1, 1990	Deadline established by the Supreme Court for the state Legislature to find a remedy.
June 7, 1990	Legislature passes Senate Bill 1. Plaintiffs challenge the bill as not satisfactory.
September 1990	Trial court rules in favor of the plaintiffs, Judge Scott McCown presiding in the 250th District Court, Travis County. Appeal is taken directly to the Texas Supreme Court.
January 22, 1991	The Texas Supreme Court, by a vote of 9-0, affirms the trial court's judgment but stays an injunction against funding the schools until April 1, 1991. On a motion for rehearing, the court, by a vote of 5-4, holds that once an efficient system has been created, the Legislature could authorize local districts to supplement their education resources if local voters approve.
April 1, 1991	Deadline established by the Texas Supreme Court for the state Legislature to find a remedy.
April 11, 1991	The state Legislature passes Senate Bill 351 (Robin Hood).
August 27, 1991	Trial court rules Senate Bill 351 unconstitutional, Judge McCown presiding. Appeal taken directly to the Texas Supreme Court and the case consolidated with two similar cases from Somervell and Mitchell counties.
January 30, 1992	The Texas Supreme Court, by a vote of 7-2, holds that Senate Bill 351 is unconstitutional because it imposes a statewide ad valorem tax in violation of the Texas Constitution. By a vote of 5-4, the court also holds that citizens are required to pay the unconstitutional tax for two years. The Legislature is given until June 1, 1993 to remedy the problem.
November 9, 1992	Governor Ann Richards calls the Legislature into special session to deal with the school finance issue. The session closes without agreement.
January 1993	The 73rd Texas Legislature opens its regular session, approves amendment for submission to voters allowing redistribution of property tax revenues and creation of county education districts.

[1]Edgewood Independent School District is in Bexar County (San Antonio). William Kirby was Texas Commissioner of Education. Edgewood ISD eventually was joined by 67 other school districts as plaintiffs in the case. An additional 49 school districts entered the case as respondents.

[2]Neither the governor nor the state Legislature was a party to the case and the court ruling does not literally compel these elected officials to take action. Instead, the ruling prohibits the Commissioner of Education from spending money under an educational finance system that has been ruled unconstitutional.

Why the Court Said No to Robin Hood. When the Robin Hood law was challenged, the Texas Supreme Court found it unconstitutional, reaffirming a 1931 Texas Supreme Court decision in *Love* v. *City of Dallas* that held using property taxes raised in one district to benefit the residents of another to be unconstitutional. The court also held that setting a tax rate for CEDs in effect imposed a statewide ad valorem tax (which the state constitution forbids) and that taxpayers had not been permitted to vote on the imposition of such a tax (as the state constitution requires). Despite the finding that Robin Hood was unconstitutional, the high court said the taxes that resulted from it could be collected for two years.

Amending the Constitution. In an effort to overturn the courts, the Legislature approved a constitutional amendment. If Texas voters agree, this amendment will:

- Allow the formation of county education districts (CEDs) combining "the taxable property of existing school districts in one or more counties combined."

- Provide that the legislature "may set the ad valorem tax rate or may authorize the board of trustees of each school district or CED to set the rate."

- Allow the legislature to redistribute up to 2.75 percent of the total funds from state public school appropriations and local property taxes (this currently would amount to about $400 million to $450 million).

- Limit the CED tax rate to $1 per $100 of taxable value of property unless voters approve a higher rate.

"The Robin Hood amendment would allow the Legislature to set the tax rate for every school district."

The language of the amendment may allow solutions more far-reaching than most voters suspect. For example, the amendment does not require counties to be contiguous in order to be combined. Thus it would be possible for the Legislature to combine all 1,053 of the state's school districts into one gigantic CED. It appears that the Legislature also would be able to set the tax rate for every school district as well as for CEDs, although that power could be delegated to the trustees of the school district or CED.[7] Trustees of the individual districts now set their own tax rates.

Myths About the Court's Ruling

There is a great deal of confusion about what the *Edgewood* rulings require. In some cases, confusion has been intentionally promoted by interest groups. The following is a brief discussion of some of the myths.

Myth: The ruling requires that the state constitution be changed. That would be the equivalent of finding that the constitution was unconstitutional. The high court specifically stated that a change in the constitution was

not necessary to solve the school finance problem, and this opinion was reaffirmed by the district judge who has direct authority over the case.[8]

Myth: The court's ruling requires equal spending per student. The court specifically rejected the concept of equal spending in favor of a standard under which spending is related to tax effort. If the court's ruling could be summarized in a single phrase, it would be, "from each according to his ability, to each according to his effort." Currently, school property tax rates vary widely among Texas school districts. If the Legislature nevertheless managed to equalize spending per student with state funds, this would violate the requirement of a close correlation between school revenues and tax effort.

Myth: Implementing the court's ruling will lead to more equality in spending. The court's opinion focused almost exclusively on the relative positions of students in the wealthiest and the poorest 10 percent of districts. Moreover, the opinion addressed the issue of inequality of available resources in these districts at length. There is no question that under any reasonable interpretation of the opinion, the wealthiest districts will lose funds and many of the poorest districts will gain. However, the court's opinion applies not only to districts at the extremes but also to the 80 percent in the middle. It seems likely that a solution consistent with the court's ruling will lead to *less*, not more, equality among those districts where the vast majority of students attend school.[9] This issue is addressed below.

Myth: The court's ruling requires an increase in state taxes. Ever since the announcement of the *Edgewood* ruling, politicians in Austin have claimed that the decision requires additional state government spending on education. In fact, the Texas Supreme Court went out of its way to discourage such an interpretation.[10] The court's ruling applies only to the *distribution* of educational dollars. It leaves the legislature free to choose the total amount.

Myth: The court's mandate can be met by simply spending more money. A number of people have suggested that the court's mandate could be met without causing discomfort to wealthier school districts. For example, according to William Kirby, the Texas Commissioner of Education at the time of the original *Edgewood* lawsuit,

> Ultimately, the [Texas] Legislature will have to devise a constitutional remedy that gives students in poor school districts access to comparable amounts of money for comparable tax effort. We believe that system cannot be devised without either leveling down to a level of mediocrity for all schools, or leveling up to a level of adequacy and quality for all schools. We prefer the latter, which will cost money.[11]

In fact, the court specifically addressed and rejected this notion.[12] The court's ruling requires a *redistribution* of education dollars. The Legislature cannot achieve the result mandated by the court without taking money away from some school districts and giving it to others. Soon after the *Edgewood* ruling, we calculated that *the amount of additional money needed to satisfy the court's mandate without any loss of state funds by any school district would be at least $450 billion per year.*[13]

Myths About the Robin Hood Amendment

Like the rulings in the *Edgewood* cases, the proposed constitutional amendment that would legitimize the Robin Hood solution has confused many taxpayers and school officials. What follows is a brief discussion of some of the myths about the amendment.

Myth: If voters fail to approve the Robin Hood amendment, the court will close down the schools. District Judge Scott McCown has threatened to close the schools if the Legislature does not devise a constitutional financing approach. However, if the amendment fails, the Legislature could still devise a constitutional solution before the judge's June 1, 1993 deadline. Even if it does not, the court has other alternatives. For example, it could order the state to distribute next year's school funds on the basis of "equal revenue for equal tax effort," using a formula similar to the one proposed in this study.

Myth: Voter approval of the amendment will end the court fight over funding. The proposed amendment would make constitutional the parts of Robin Hood to which the Texas Supreme Court objected, and would make it constitutional to redistribute some funds statewide. However, it ignores the original issue in *Edgewood* and does not specifically declare that the Robin Hood solution constitutes an "efficient" system of educational financing. As a result, litigation over the meaning of "efficient" almost certainly will continue, and attorneys for some school districts have already threatened suits to force "adequate" state funding.

"If voters approve the amendment, that will not end the court fight."

Myth: The amendment will save millions of children from an inferior education. The intent of Robin Hood is to redistribute millions of dollars in school funds. But the quality of education is unlikely to be affected very much. In a simple statistical correlation, there is a negative relationship between spending and test scores. When other variables are considered, as many other studies have shown in Texas and elsewhere over the past 25 years, there is no relationship between what we spend and what we get. An example of this lack of relationship is shown in Figure I.

"The amount of money spent is not related to test scores."

Myth: The Robin Hood amendment would be good for the Texas economy. Since the enactment of the current countywide Robin Hood system, property taxes have increased about $1 billion. Under a statewide system, there are estimates they would increase by as much as $1 billion more. Yet a model of the Texas economy developed by the National Center for Policy Analysis shows that property taxes are among the most harmful taxes we can impose and that Texas already lingers in a continuing recession because we overtax capital relative to other states.[14]

FIGURE I

Ninth-Grade Test Scores And Spending Per Student

(1988-89)

Percent of Students Passing
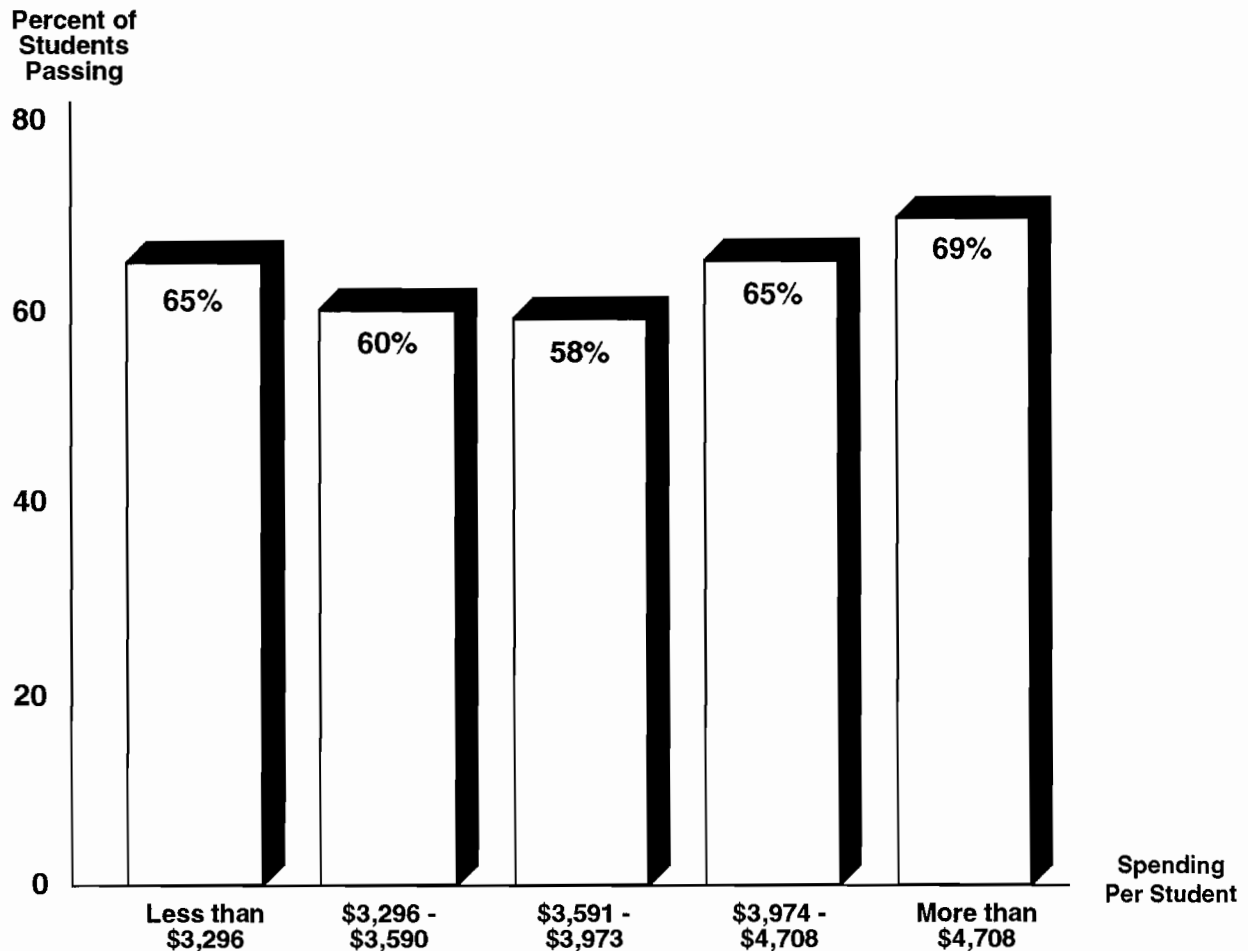
Source: Texas Education Agency, *Texas Educational Assessment of Minimum Skills: Student Performance Results, 1988-1989,* Volume 1, and "Report Card on Texas Schools," National Center for Policy Analysis, NCPA Staff Report, January 17, 1990.

Myth: The amendment will benefit racial minorities. The two largest districts, Houston and Dallas, with student bodies that are about 14 percent and 16 percent white, respectively, could lose the most money under Robin Hood — or under any system designed to provide equal tax revenue for equal tax effort. The same is true of other large districts, most of which have high percentages of minority pupils. The districts that will gain the most money are likely to be largely suburban and mostly white.

How Unequal Is School Financing?

Scholars have developed some common mathematical measures of inequality. [See Appendix A.] Using these measures to describe how education dollars were distributed before and after the Robin Hood solution was imposed, we find that inequality was relatively low in Texas and actually *increased* under Robin Hood.

Inequality Before Robin Hood. Suppose we measure inequality of spending on a scale of 0 to 1, with 1 representing complete inequality (one

FIGURE II

Inequality in Texas School Finance Before Robin Hood
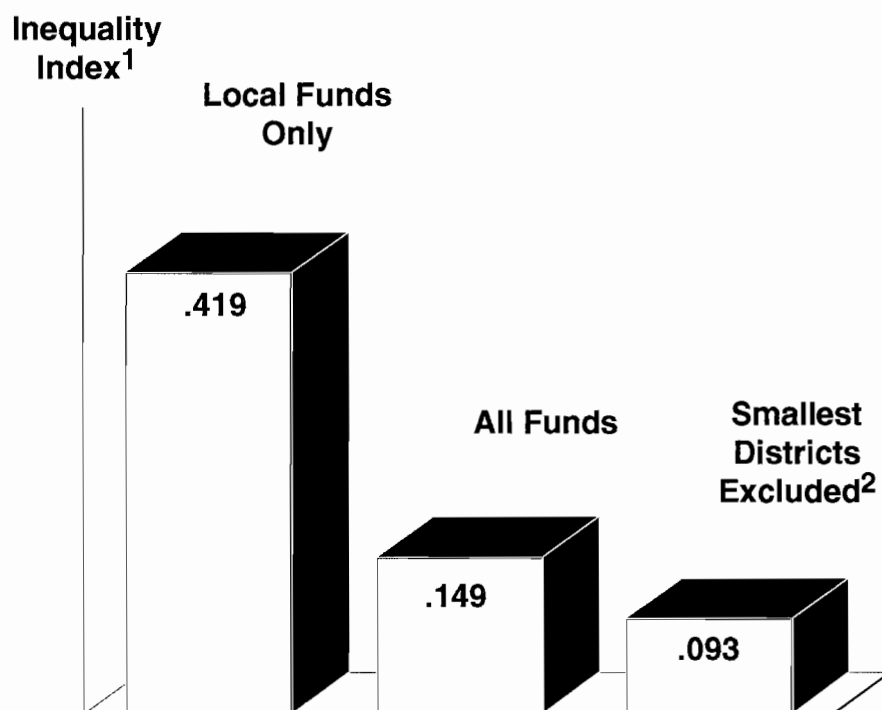
Inequality Index[1]

Local Funds Only
.419

All Funds
.149

Smallest Districts Excluded[2]
.093

[1] Gini coefficient. See the discussion in Appendix A.

[2] Excludes districts with fewer than 500 students.

school district has all of the funds) and 0 representing complete equality (spending per student is identical among all districts). We calculate that the distribution of *local* funds had an inequality measure of about .419[15] in 1989-90. This is roughly the same as for the measure of inequality that is found in the distribution of family income in the United States.

"Texas has one of the most egalitarian school financing systems in the nation."

Before the court ruling and before implementation of the Robin Hood system, Texas already was going to great lengths to offset inequality at the local level through the distribution of state education dollars. Among the 10 percent of school districts spending the least per student, funds from the state averaged $2,697 per student. By contrast, among the 10 percent of school districts spending the most per student, funds from the state averaged only $706 per student.[16] Federal funds also offset local inequalities. After state and federal dollars were distributed, the inequality measure fell from .419 to .149. In other words, state and federal spending reduced the inequality measure by more than half. How this occurred is shown in Table I and Table II:

- If local funds alone are considered, the 10 percent of school districts that spent the most spent more than 14 times as much per student as the lowest spending 10 percent.

- Once state and federal funds were added, however, the ratio fell from 14 to 1 to 2.6 to 1.

Measuring Inequality Without the Smallest School Districts. Texas has more school districts than any other state, even though about one-fourth of all pupils are in just seven large districts. Many districts are in thinly populated areas with only a handful of students — as few as a dozen or less. Because of this, comparisons of extremes in spending — including comparisons used in the state Supreme Court opinion — are misleading.

"The highest spending districts are all small — most of them have fewer than 500 students."

- The 104 districts spending the most per pupil (10 percent of all the districts) contain only 1.0 percent of the state's total school population.

- Only 15 of these districts have as many as 500 pupils, and the largest has only 2,374.

- The highest spending districts, in other words, do not include the wealthy suburbs of Dallas, Houston, Austin and other major cities.

As an example of a high-spending district, take Laureles ISD in Kleberg County. Laureles has revenues of $38,238 per student — the highest in the state and more than 10 times the revenues of the lowest spending district. Yet Laureles has only 12 pupils.

Conditions in Laureles are extremely different from conditions that exist where the vast majority of children go to school. But like Laureles, many districts have few students. Overall, the 418 smallest Texas school districts (about 40 percent of the total) contain only 3.3 percent of the more than three million children who attend public schools in Texas. Public policy objectives for these districts are constrained by geography and population dispersion.

The measures of inequality presented in Tables I and II give the same weight to large and small districts. On the theory that a much clearer picture of Texas public school finance is presented by focusing on school districts containing the other 97 percent of all students, Table III shows the distribution of education dollars among those school districts with at least 500 students. As the table shows, there was considerably more equality in the distribution of expenditures if we disregard the small districts.

- Considering all Texas school districts, the level of inequality in the distribution of Texas school funds was .149.

- Disregarding districts with fewer than 500 students, however, the level of inequality was only .093. [See Figure II.]

"Except for the wealthiest 10 percent, there is not much difference in revenue per student among districts with very different tax bases."

FIGURE III

Average Revenue Per Pupil[1]

Lowest Wealth   Deciles of Property Wealth Per Student   Highest Wealth
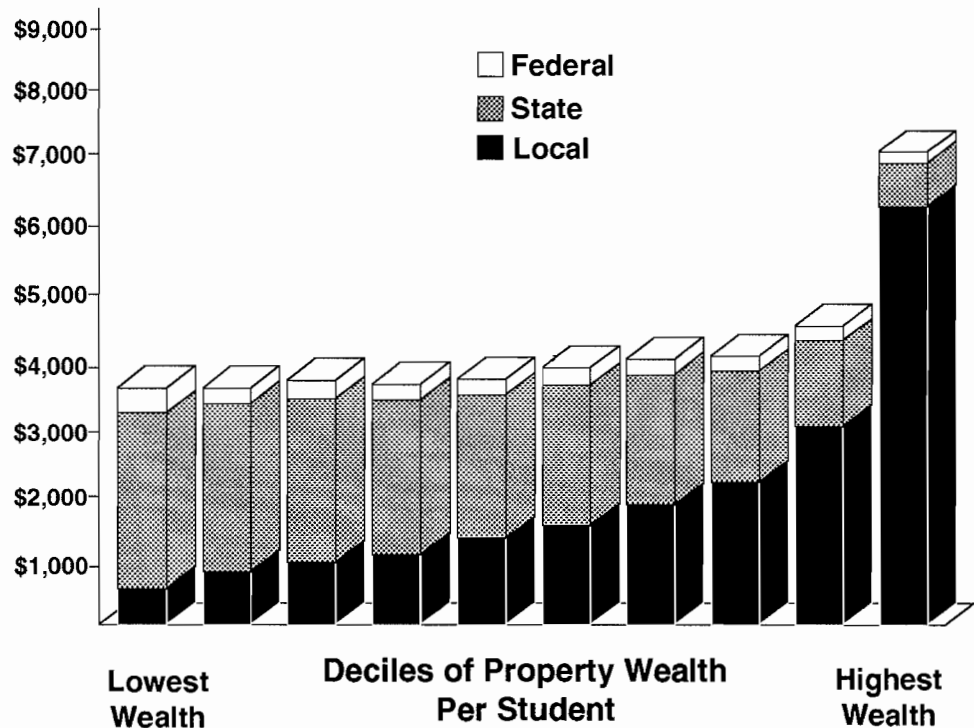
[1] Each decile contains 10 percent of the school districts in Texas, not 10 percent of the pupils.

TABLE I

Average Per-Student Spending Before Robin Hood (1989-90)

(by deciles)

Funds	1	2	3	4	5	6	7	8	9	10
Total	$3,504	$3,792	$3,696	$4,153	$4,336	$4,539	$4,800	$5,179	$5,864	$9,062
Local & State	$3,262	$3,503	$3,684	$3,888	$4,067	$4,270	$4,501	$4,867	$5,530	$8,759
Local & Federal	$904	$1,150	$1,367	$1,589	$1,845	$2,184	$2,598	$3,221	$4,323	$8,284
Local	$565	$859	$1,060	$1,298	$1,549	$1,875	$2,314	$2,942	$4,078	$8,053

Average Per-Student Spending After Robin Hood (1991-92)

(by deciles)

Funds	1	2	3	4	5	6	7	8	9	10
Total	$3,754	$4,100	$4,300	$4,511	$4,697	$4,925	$5,244	$5,656	$6,315	$10,235
Local & State	$3,515	$3,864	$4,005	$4,196	$4,400	$4,640	$4,925	$5,314	$5,931	$9,879
Local & Federal	$1,139	$1,425	$1,666	$1,900	$2,175	$2,486	$2,904	$3,511	$4,532	$8,966
Local	$743	$1,114	$1,334	$1,589	$1,843	$2,170	$2,611	$3,199	$4,250	$8,715

Each column represents 10 percent of the school districts, ranked from the lowest spending to the highest spending districts. Students are not distributed evenly; for example, the districts in decile 10 contain only 1.0 percent of the total student population.

TABLE II

Distribution of Per-Student Spending Before Robin Hood

All School Districts

(by deciles)

Funds	1	2	3	4	5	6	7	8	9	10
All Funds	7.1%	7.7%	8.0%	8.4%	8.8%	9.2%	9.7%	10.6%	11.9%	18.5%
Local Funds Only	2.3%	3.3%	4.3%	5.3%	6.3%	7.6%	9.4%	11.9%	16.5%	33.0%

Distribution of Per-Student Spending After Robin Hood

All School Districts

(by deciles)

Funds	1	2	3	4	5	6	7	8	9	10
All Funds	7.0%	7.6%	8.0%	8.4%	8.7%	9.2%	9.6%	10.5%	11.7%	19.0%
Local Funds Only	2.7%	4.0%	4.8%	5.8%	6.7%	7.9%	9.5%	11.6%	15.4%	31.6%

Each column represents 10 percent of the school districts, ranked from the lowest spending to the highest spending districts. Students are not distributed evenly; for example, the districts in decile 10 contain only 1.0 percent of the total student population.

TABLE III

Distribution of Per-Student Spending Before Robin Hood School Districts with 500 or More Students[1]

(by deciles)

Funds	1	2	3	4	5	6	7	8	9	10
All Funds	7.87%	8.46%	8.90%	9.05%	9.35%	9.80%	9.99%	10.57%	11.04%	14.95%
Local Funds Only	2.57%	4.11%	5.05%	6.03%	7.10%	8.50%	9.99%	12.57%	15.93%	28.15%

Distribution of Per-Student Spending After Robin Hood School Districts with 500 or More Students

(by deciles)

Funds	1	2	3	4	5	6	7	8	9	10
All Funds	7.90%	8.61%	9.00%	9.13%	9.61%	9.91%	10.06%	10.66%	11.38%	13.70%
Local Funds Only	3.01%	4.86%	5.76%	6.71%	7.78%	8.99%	10.42%	12.63%	15.72%	24.10%

Each column represents 10 percent of the school districts, ranked from the lowest spending to the highest spending districts. Students are not distributed evenly; for example, the districts in decile 10 contain only 1.0 percent of the total student population.

FIGURE IV

School Property Tax Rates

(1991-92)
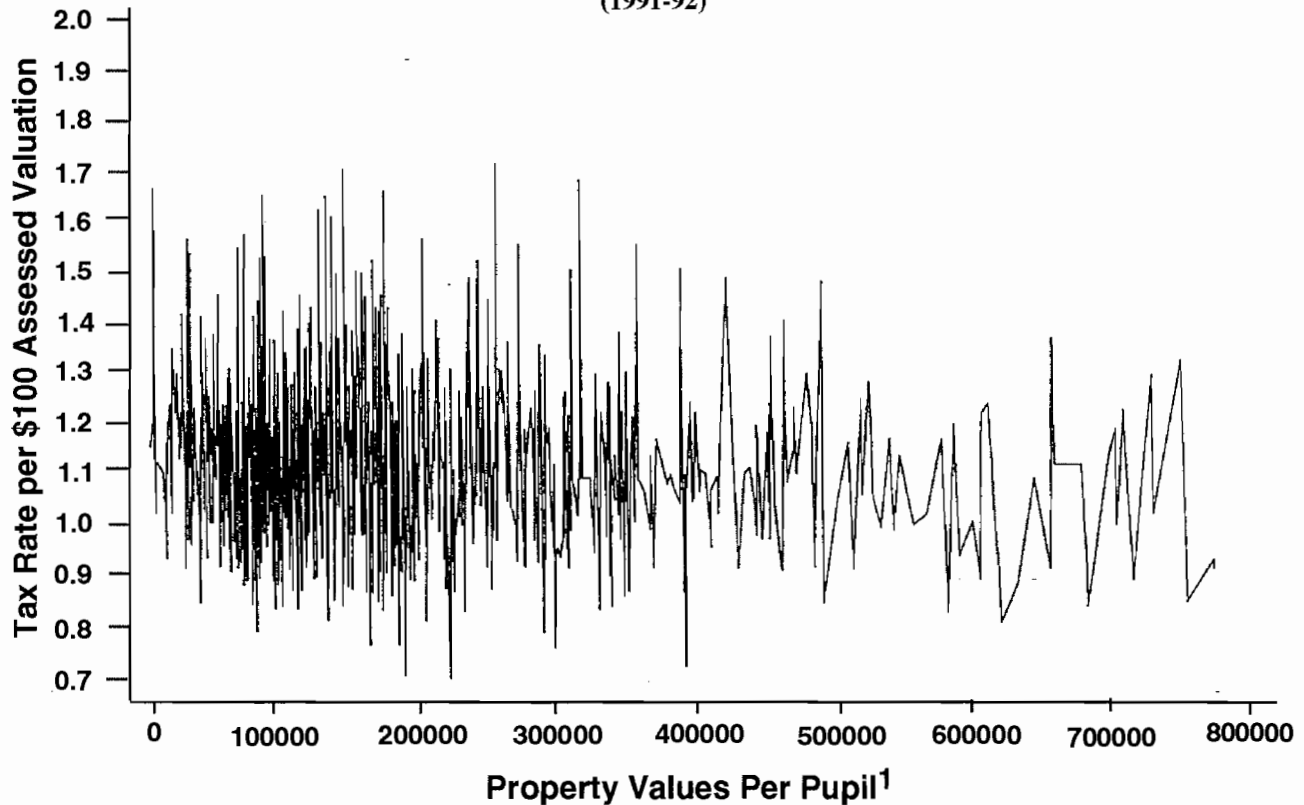
^{1} For purposes of space, the few districts with values over $800,000 are omitted.

"Roughly speaking, differences in tax rates are as important a source of inequality as differences in property wealth."

Tax Rates and Inequality. Implicit in the Texas Supreme Court's opinion is the view that inequality of school revenues is primarily produced by differences in wealth (taxable property) rather than in effort (tax rates). While that may be true for extreme cases, it is not true of the vast majority of school districts. As Figure III shows, there is not that much difference in revenue per student among districts with very different tax bases (when averaged by decile) except for the wealthiest 10 percent. However, as Figure IV shows, there are large differences in tax rates among school districts with similar property values. Roughly speaking, *differences in tax rates are as important a source of inequality as differences in property wealth.*

Inequality After Robin Hood. In the 1991-92 school year, with the Robin Hood financing system in effect, the inequality in the distribution of local funds decreased from .419 to .386. But when state funding and funding from the new county education districts was considered, there was *more* inequality than in the past. The measure of inequality in the distribution of all revenue combined, which had been .149 prior to the new system, increased slightly to .154 in 1991-92. If districts with fewer than 500 students are

FIGURE V

Inequality in Texas School Finance Before and After Robin Hood

[1] Gini coefficient. See the discussion in Appendix A.

[2] Excludes districts with fewer than 500 students.
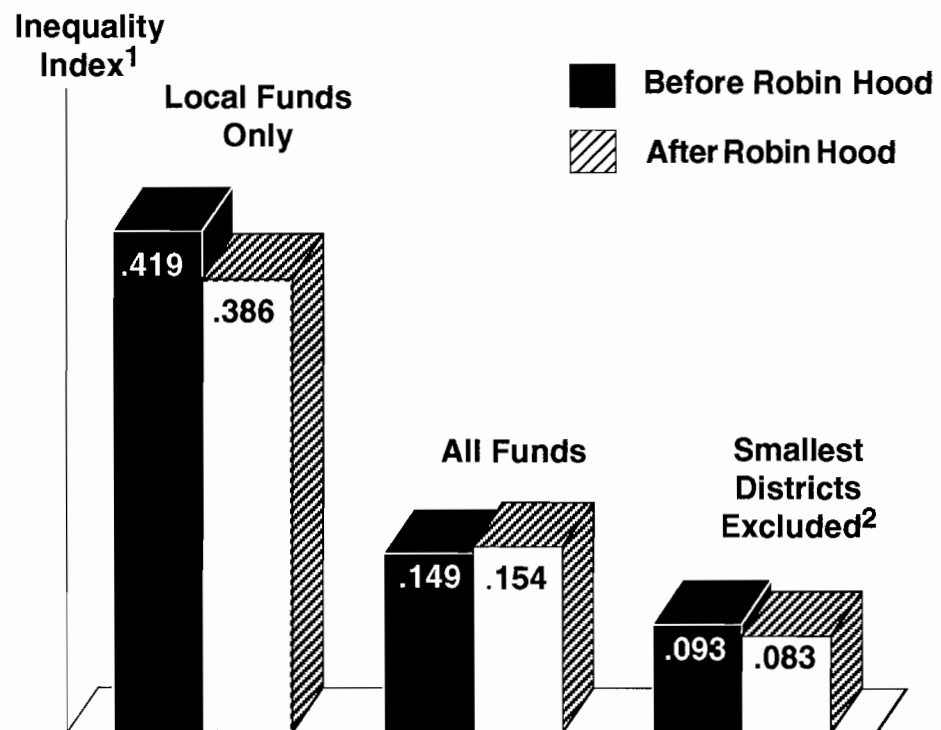
"After Robin Hood, there was more inequality than before."

disregarded, the measure of inequality decreased slightly from .093 to .083. [See Figure V.]

Overall, Texans are now paying about $1 billion a year in additional property taxes. Yet, contrary to widespread impressions, little has been achieved by way of greater equality of spending. Ironically, a recent study concluded Texas has one of most egalitarian systems of school finance in the country.[17]   But it was even more egalitarian before Robin Hood.

The "No Politics" Formula

This study proposes a formula that satisfies the court's standard exactly.[18] [See sidebar.] No constitutional amendment would be needed to implement our formula. The state would not have to raise taxes, but the way in which the state distributes $5.8 billion would be changed. Some districts would gain state funds and others would lose. And 201 districts would lose all state funds.

How the "No Politics" Formula Works. Under the formula, school districts would be free to set their own tax rates. But the total amount of revenue they would receive would be determined by the average property value in the state, not by their local property value. If the school district's local property tax revenue and federal revenue combined did not provide the targeted amount per pupil shown by the formula, the state would make up the difference. If local property tax revenue and federal revenue matched or exceeded the targeted amount, the district would not receive state funds.

The current system provides "weights" supposedly aimed at adjusting revenue for certain types of "high-cost" students, including those in special education, vocational education and compensatory, bilingual and gifted and talented programs. The "no politics" formula omits weighting. If weighting to meet special needs is deemed appropriate or necessary, it can be handled outside the vehicle of general funding for the schools.

"Under the formula, the total amount of revenue a district would receive would be determined by average property value in the state, not the district."

How the Formula Satisfies the Court's Ruling. The "no politics" formula ensures that all school districts receiving state funds have equal revenue for equal tax effort.

- If any two districts have the same tax rate, they will receive the same amount of revenue per pupil.

- If any two districts have unequal tax rates, the ratio of their revenues will equal the ratio of their tax rates; e.g., if one district makes twice the tax effort of another district, the higher taxing district will receive twice as much revenue.

- Between any two districts, the differences in revenue per student will be due solely to differences in tax effort and be independent of the value of taxable property.

- The additional revenue from an extra penny of tax effort per $100 of local property value will be identical.

Excluding the Wealthier Districts. For most local school districts, the "no politics" formula can be met by redistributing funds the state government provides. But the taxable wealth and current tax rate in 201 wealthier school districts is such that their local revenue alone will be likely to give them more than the amount per pupil determined by the "no politics" formula. This being the case, these 201 districts would receive no state funds. Most are rural districts with high property values and few students. There are some notable exceptions, however: Dallas, the second largest district in the state, and the suburban Dallas districts of Highland Park and Plano.

The Problem of Federal Funds. In *Edgewood*, the judges imply that *all* funding sources must be considered in devising an efficient (and therefore constitutional) solution.[19] However, federal law forbids state governments from considering federal funds in any distribution formula. Thus the state court ruling and the federal law appear to be in conflict.

Federal funds should be considered, of course, in evaluating the fairness of a funding system. It is also possible for the state to ask for a federal waiver to get around the rules. The formula proposed here includes federal funds. It could easily be revised to exclude them.

Implementing the "No Politics" Formula

"Under the formula, 201 wealthier districts would receive no state funds."

We have calculated the impact of the "no politics" formula on each of the state's 1,053 school districts[20] based on state funds that were available and local school property tax rates that existed in 1990-91, the year before the Robin Hood bill took effect.[21] The following is a brief summary.

Formula That Satisfies
Texas Supreme Court Ruling

School District

Revenue[1]	**=**	**Local Tax**	**X**	**Mean Value of Property**	**X**	**k**[3]
(per student)		**Rate[2]**		**(per student) in the state**		

[1] Revenue = revenue from all sources.

[2] Tax rate = the rate at which local property is assessed for school revenues for all purposes.

[3] The constant term, k, is chosen to ensure that the state's education budget is in balance.

Note: State funds in any district, i, are assumed to be spent in a manner that satisfies the following equations:

(1) State funds = $r_i (kV_S - V_i) - F_i$

(2) Federal funds = F_i

(3) Local funds = $r_i V_i$

(4) Total funds = state funds + federal funds + local funds = $kr_i V_S$

Where r_i = the tax rate in district i, V_i = the value of property per student in district i, V_S = the mean value of property per student in the state, and k is a constant chosen to maintain the state's education budget at a chosen level.

Major Winners and Losers Under the "No Politics" Formula[1]

Winners

District	County	Gain
		($ Millions)
Cypress Fairbanks	Harris	$34.0
Round Rock	Williamson	28.1
Northside	Bexar	24.9
Klein	Harris	24.2
Alief	Harris	21.2
Aldine	Harris	19.5
Mesquite	Dallas	19.3
Fort Bend	Fort Bend	19.2
North East	Bexar	18.7
Arlington	Tarrant	16.0
Humble	Harris	14.0
Conroe	Montgomery	13.6
Lewisville	Denton	13.6
Katy	Harris	13.4
Abilene	Taylor	12.2

"The biggest gainers would be suburban districts."

Losers

District	County	Loss
		($ Millions)
Houston	Harris	-100.8
Dallas	Dallas	-44.8
Laredo	Webb	-19.1
Austin	Travis	-12.6
Eagle Pass	Maverick	-11.5
Beaumont	Jefferson	-11.0
Richardson	Dallas	-10.8
Plano	Collin	-10.1
Fort Worth	Tarrant	-8.6
San Felipe del Rio	Val Verde	-6.4
Carrollton-Farmers Branch	Dallas	-5.7
Goose Creek	Harris	-4.8
Port Arthur	Jefferson	-4.8
Brazosport	Brazoria	-4.7
Clear Creek	Galveston	-4.6

"Four of the largest districts would be among the big losers."

[1] Relative to pre-Robin Hood funding levels.

Major Winners and Losers. The largest gainers and losers in state funding for school districts are presented in Table IV. As the table shows:

- Four of the state's largest school districts, with about one-seventh of all the pupils in the state, would be among the biggest losers of state funds — Houston ($101 million), Dallas ($45 million), Fort Worth ($8 million) and Austin ($13 million).

- Three districts on Mexico's border, all receiving large amounts of state and federal funds and with low local school property tax rates, would also be big losers of state funds — Laredo ($19 million) and Eagle Pass ($11 million) — (both plaintiffs in *Edgewood* v. *Kirby*) — and San Felipe del Rio ($6 million).

- The biggest gainer would be the Harris County suburban district of Cypress Fairbanks, with an increase of nearly $34 million in state aid.

- All of the biggest gainers would be suburban districts around Houston, Dallas, San Antonio and Austin — all with predominantly white enrollments.

"If tax rates are not altered, inequality of funds available would increase under a formula meeting the court's requirements."

Inequality Grows. Under the "no politics" formula, if tax rates are not altered, inequality of funds available would become more, rather than less, pronounced. As Table V shows, among the major gainers and losers:

- The pre-Robin Hood revenues per pupil ranged from a high of $4,825 in Austin to a low of $3,434 in Aldine, a Houston suburb — a difference of almost $1,400 per pupil.

- Under the "no politics" formula, revenues per pupil will range from a high of $5,675 in Round Rock, an Austin suburb with a high tax rate, to a low of $3,245 in San Felipe del Rio, which has a low tax rate — a difference of more than $2,400 per pupil.

How the Parties to the Lawsuit Will Fare. Sixty-eight school districts joined as plaintiffs in *Edgewood* v. *Kirby*, hiring lawyers and spending money in anticipation of getting more state funds. Under a "no politics" formula, 48 of the 68 actually will lose state funds — eleven of them more than $1 million each. As Table VI shows:

- Laredo and Eagle Pass will lose $19 million and $11 million, respectively.

- The biggest per-pupil losers will be two small districts, Lasara in Willacy County ($2,725) and Star in Mills County ($2,454).

Revenue Gains and Losses Per Pupil
Under the "No Politics" Formula

Gainers

District	County	Pre-Robin Hood Revenue	No-Politics Revenue	Gain of State Funds
Cypress Fairbanks	Harris	4,274	5,050	776
Round Rock	Williamson	4,314	5,675	1,361
Northside	Bexar	3,912	4,391	479
Klein	Harris	4,060	4,956	896
Alief	Harris	4,546	5,224	678
Aldine	Harris	3,434	3,895	461
Mesquite	Dallas	3,576	4,299	723
Fort Bend	Fort Bend	3,765	4,261	496
North East	Bexar	3,875	4,331	457
Arlington	Tarrant	4,027	4,372	345
Humble	Harris	4,211	4,924	713
Conroe	Montgomery	4,112	4,671	559
Lewisville	Denton	3,896	4,514	618
Katy	Harris	4,300	4,956	656
Abilene	Taylor	3,956	4,593	637

Losers

District	County	Pre-Robin Hood Revenue	No-Politics Revenue	Loss of State Funds
Houston	Harris	3,827	3,314	-513
Dallas	Dallas	4,512	4,187	-326
Laredo	Webb	3,884	3,077	-807
Austin	Travis	4,825	4,640	-185
Eagle Pass	Maverick	3,918	2,841	-1,077
Beaumont	Jefferson	4,159	3,624	-536
Richardson	Dallas	4,678	4,346	-332
Plano	Collin	4,740	4,423	-317
Fort Worth	Tarrant	4,177	4,056	-121
San Felipe del Rio	Val Verde	3,909	3,245	-664
Carrollton-F.B.	Dallas	4,949	4,634	-315
Goose Creek	Harris	4,542	4,271	-271
Port Arthur	Jefferson	4,535	4,135	-400
Brazosport	Brazoria	4,115	3,734	-382
Clear Creek	Galveston	4,302	4,100	-202

TABLE VI

Plaintiff School Districts That Lose Funds
Under the "No Politics" Formula

	Total Change In Aid	Change Per Pupil
Laredo	-19,140,032	-807
Eagle Pass	-11,486,918	-1,077
Roma	-2,549,600	-478
Mercedes	-2,250,458	-467
Lyford	-1,720,814	-1,052
Karnes City	-1,705,813	-1,666
Edcouch Elsa	-1,645,910	-397
Rio Grande City	-1,556,126	-218
Goldthwaite	-1,023,247	-1,805
Rosebud Lott	-1,018,398	-1,103
San Saba	-1,003,131	-1,323
Santa Rosa	-891,472	-826
Stockdale	-875,452	-1,269
Copperas Cove	-756,480	-120
Lasara	-672,984	-2,725
Odem Edroy	-668,643	-558
Hico	-622,184	-1,199
Lytle	-609,200	-569
Canutillo	-576,439	-158
Navasota	-567,203	-197
Kenedy	-532,899	-479
Chilton	-514,230	-1,526
Jim Hogg	-514,122	-408
Meridian	-499,015	-1,132
Fabens	-441,391	-183
Farwell	-419,335	-832
Evant	-399,055	-1,642
Early	-380,301	-371
Milano	-359,951	-1,028
La Joya	-358,291	-34
Progreso	-327,034	-1,96
Grandview	-301,156	-394
Trenton	-274,070	-826
Santa Maria	-273,184	-635
Blanket	-264,817	-1,567
Jonesboro	-227,719	-915
Covington	-195,123	-912
Star	-184,073	-2,454
Godley	-171,132	-256
La Feria	-141,568	-60
Palmer	-128,192	-154
Shallowater	-120,680	-118
Brownsville	-118,823	-3
Mart	-102,783	-159
Jarrell	-70,636	-183
Alvarado	-69,085	-29
Crawford	-56,552	-131
Crystal City	-38,045	-18

"Forty-eight of the 68 plaintiff districts would actually lose state funds."

Plaintiff School Districts That Gain Funds Under the "No Politics" Formula

	Total Change In Aid	Change Per Pupil
North Forest	8,778,734	713
Socorro	5,976,655	386
Ysleta	5,523,877	110
San Elizario	4,633,540	2,208
Mission Cons	4,616,331	426
Pharr San Juan Alamo	3,431,290	183
Edgewood	2,395,985	161
Southside	2,264,492	776
Weatherford	1,953,993	349
South San Antonio	1,781,016	169
La Vega	1,254,022	537
Lockhart	776,810	226
Los Fresnos Cons	715,932	148
Harlandale	570,982	38
Burleson	517,742	93
San Antonio	507,120	8
Princeton	422,153	257
Lampasas	223,885	93
Venus	171,712	184
Hutto	110,440	181

"Edgewood, the original plaintiff, would gain about $161 per pupil in state funds."

Defendant School Districts That Lose Funds Under the "No Politics" Formula

	Total Change In Aid	Change Per Pupil
Richardson	-10,877,973	-332
Plano	-10,122,339	-317
Carrollton Farmers Branch	-5,698,314	-315
Grapevine Colleyville	-3,163,175	-337
Longview	-2,308,058	-282
Eanes	-1,865,265	-337
Quitman	-1,363,266	-1,291
Sheldon	-1,360,387	-333
Highland Park	-1,355,850	-316
Rains	-1,312,368	-1,074
Stanton	-1,207,215	-1,432
Coppell	-1,165,312	-299
Carthage	-1,142,960	-341
Andrews	-1,062,707	-281
Lake Travis	-717,054	-375
Riviera	-669,055	-1,274
Rockdale	-636,364	-334
Eustace	-375,978	-355
Hardin Jefferson	-314,784	-151
Hawkins	-262,693	-328
Mirando City	-227,442	-1,777

	Total Change In Aid	Change Per Pupil
Iraan Sheffield	-210,680	-355
Prosper	-189,143	-339
Beckville	-177,722	-317
Lago Vista	-160,517	-339
Rankin	-131,047	-316
Glasscock	-126,982	-314
Wink Loving	-116,626	-298
Sunnyvale	-96,299	-311
Miami	-79,156	-357
Grady	-73,754	-341
Klondike	-73,101	283
Austwell Tivoli	-63,911	-316
McMullen	-45,167	-281

Defendant School Districts That Gain Funds Under the "No Politics" Formula

	Total Change In Aid	Change Per Pupil
Arlington	15,984,924	345
Grand Prairie	7,617,571	451
Duncanville	5,070,079	496
Irving	4,908,219	205
De Soto	4,735,699	761
Hurst Euless Bedford	4,321,487	230
Lancaster	3,923,700	930
Crowley	3,786,618	622
Midway	2,295,438	447
Eagle Mt Saginaw	2,231,152	470
Willis	2,171,352	692
Mansfield	2,102,597	258
Cleburne	1,254,703	218
Pine Tree	915,699	184
Northwest	388,458	112

Note: All changes are relative to pre-Robin Hood funding levels.

"The defendant districts would fare about the same as the plaintiffs."

- The original plaintiff, the Edgewood ISD in suburban San Antonio, will gain $2 million, or about $161 per pupil.

- North Forest, a district in suburban Houston, will gain the largest total amount ($8.8 million) and San Elizario in El Paso County will gain the most per pupil ($2,208).

Ironically, the defendants will fare about the same as the plaintiffs under a "no politics" formula. Thirty-four of the 49 defendant districts will lose state funds under the formula — 14 more than $1 million each — and 15 will gain.

- The biggest losers will be the Dallas suburban districts of Richardson ($10.8 million), Plano ($10.1 million) and Carrollton-Farmers Branch ($5.7 million).

- Three neighboring districts in the Dallas-Fort Worth area will be the biggest gainers — Arlington ($16 million), Grand Prairie ($7.6 million) and Duncanville ($5 million).

Conclusion

"The court ruling does nothing to improve the quality of Texas schools."

This report proposes a formula to ensure that state education funds are spent so that school districts receive equal revenue for equal tax effort. According to our calculations, the formula will require a redistribution of about $800 million in educational funds. Large cities and some of their suburbs tend to gain or lose the largest amounts, as might be expected, and winners and losers are scattered randomly throughout the state.

Ostensibly, the court made its ruling on the education financing system in the name of efficiency. But an efficient system is one that produces the most output (measured by high student test scores and other successes) per dollar spent. After the redistribution of $800 million, will students' test scores in Texas rise? Will the drop-out rate decrease? Will students, on the average, be better prepared for college? The court neither asked nor attempted to answer these questions. Ultimately, "efficiency" is about what Texas taxpayers get in return for the education dollars we spend.

NOTE: Nothing written here should be construed as necessarily reflecting the views of the National Center for Policy Analysis or as an attempt to aid or hinder the passage of any bill before the state Legislature.

Notes

[1] The parties to the suit agreed to use the 1985-86 school year as the test year for the purpose of constitutional review.

[2] Article VII, Section 1, Texas Constitution. Emphasis added.

[3] *Edgewood* v. *Kirby*. Trial court opinion written by Judge Harley Clark April 29, 1987. Emphasis added.

[4] *Edgewood* v. *Kirby*. Supreme Court opinion written by Justice Oscar Mauzy October 2, 1989. Emphasis added.

[5] The tax rates cited are *effective* tax rates on all taxable property. Because of exemptions, such as for a homestead, the *actual* tax rate often is higher.

[6] The guarantees are "weighted" per-pupil guarantees. Because of weights assigned to special education, vocational education and compensatory, bilingual and gifted and talented programs, the actual amount per pupil enrolled is higher. For example, the average amount on the first tier was $2,784 in 1991-92.

[7] The amendment "authorizes the Legislature to create county education districts (CEDs) with the taxable property of existing school districts in one or more counties combined. Authorizes a CED to levy, collect and distribute ad valorem taxes as authorized by general law. Provides that the Legislature may set the ad valorem tax or may authorize the board of trustees of each school district or CED to set the rate. Prohibits the CED ad valorem tax rate from exceeding $1 per $100 of taxable value of property unless a higher rate is approved by the voters of the district."

[8] District Judge Scott McCown, in holding the Robin Hood bill unconstitutional, said, "I want to emphasize that ... we do not have to have a constitutional amendment to fix this problem. This problem is a creature of statute and it can be fixed by statute."

[9] Local school districts may subsequently raise or lower these property tax rates, however, causing the amount of inequality to be lessened.

[10] "Although we have ruled the school financing system to be unconstitutional, we do not now instruct the Legislature as to the specifics of the legislation it should enact; *nor do we order it to raise taxes.*" *Edgewood* v. *Kirby*. Texas Supreme Court opinion by Justice Oscar Mauzy. Emphasis added.

[11] Texas Education Agency press release, dated January 17, 1990.

[12] "More money allocated under the present system would reduce some of the existing disparities between districts but *would at best only postpone the reform that is necessary* to make the system efficient. *A band-aid will not suffice; the system itself must be changed.*" *Edgewood* v. *Kirby*. Texas Supreme Court opinion by Justice Oscar Mauzy. Emphasis added.

[13] Kathy J. Hayes and Daniel J. Slottje, "Equality and Inequality in Texas School Finance," National Center for Policy Analysis, NCPA Policy Report No. 146, February 1990.

[14] John C. Goodman, testimony before the Governor's Task Force on Revenue, June 1, 1991.

[15] This is the value of the Gini coefficient, explained in Appendix A.

[16] State spending also offsets inequalities in spending among school districts with unequal property. Among the 10 percent of school districts with the least property wealth per student, funds from the state averaged $3,136 per student. By contrast, among the 10 percent of school districts with most property wealth per student, funds from the state averaged $257 per student.

[17] See Lawrence D. Picus and Linda Hertert, "A School Finance Dilemma for Texas: Achieving Equity in a Time of Fiscal Constraint," Consortium for Policy Research in Education, Working Paper No. 33, January 1993.

[18] Although the court ruling allows deviations from a strict interpretation, it seems reasonably clear that the burden of proof rests with those who propose the deviation. "This [ruling] does not mean that the state may not recognize differences in area costs or in costs associated with providing an equalized educational opportunity to atypical students or disadvantaged students." *Edgewood* v. *Kirby*. Texas Supreme Court opinion by Justice Oscar Mauzy.

[19] "Of total education costs ... the remainder comes from various other sources including federal funds." *Edgewood* v. *Kirby*.

[20] Only 1,041 districts actually collect locally raised revenues for one reason or another.

[21] If the constitutional amendment fails to win voter approval, the current Robin Hood tax rates will continue to be unconstitutional and districts will presumably revert to pre-Robin Hood rates.

Appendix A

Measuring Inequality in Educational
Resources Across School Districts

There are no a priori reasons for selecting one measure of education resource inequality over another, since any particular inequality measure captures only one aspect of the observed distribution. For this reason, several measures of inequality are employed in this study.

One approach to measuring inequality, without imposing a functional form of statistical distribution on the empirical graduation, is to use Lorenz-based inequality measures. As Kakwani[1] notes, the Lorenz curve is defined as the relationship between the cumulative proportion of units (here, school districts) and the cumulative proportion of resources received when units are arranged in ascending order of their per capita expenditures. Lorenz proposed this curve in 1905 in order to compare and analyze inequalities of wealth in a country during different periods.

The Lorenz curve can be generated by defining the school district units as (say) quantile shares where q_i, i=1, ..., n represents the ith per capita expenditure share and letting

$$0 \le q_1 \le q_2 \ldots \le q_{n-1} \le 1 \tag{1}$$

As a preliminary method of analyzing the inequality among school districts with respect to their per-student expenditures on education (with and without state and federal aid) we show the various empirical Lorenz curves. The plots are presented in Figure A-1. Each curve compares the share of revenues with the ordered share of school districts. If a perfectly uniform (equal) distribution of revenues for education existed across school districts, then the Lorenz curve would lie on the diagonal. In Figure A-1 the Lorenz curve lies below the diagonal, indicating the level of inequality. The larger the space between the diagonal and the Lorenz curve, the greater the level of inequality. From the Lorenz curve ordering, many well-known inequality measures can be formulated. For instance, the Gini measure[2] is defined as

$$G = 1 - \frac{1}{n} - \frac{2}{n}[\sum_{k=i}^{n} (n-k+1)qk] \tag{2}$$

where n is the number of quantiles and q_k is the kth quantile. The Gini measure can be thought of as the average difference of all pairwise comparisons of revenues. It is most frequently criticized for putting more weight on a transfer between middle units than at the tails of a given distribution.[3] This measure is bounded by 0 for perfect equality and 1 for perfect inequality. The relative mean deviation measure is defined as:

$$R = \frac{1}{n} \frac{n}{n-1} [\sum_{k=i}^{n-1} qk - \frac{1}{n}] \tag{3}$$

As Kakwani notes, "If the population is divided into two groups, (a) those who receive less than or equal to mean expenditures and (b) those who receive more than mean expenditures, the relative mean deviation represents the percentage of total expenditure that should be transferred from the second group to the first so that both groups have exactly the same mean education expenditure."[4] It also is a zero-one measure, with 0 again indicating no inequality and 1 indicating perfect inequality.

Theil's[5] normalized entropy measure is defined as:

```
T = 1 + F(1,1n(n)) [ISU(k=i,n-1,q_k) 1n q_k].          (4)
```

Theil formulated his measure based on whether a given physical system was more or less orderly. He reinterpreted this "order" as income levels. The measure has a lower bound of zero (no inequality) and no upper bound. We apply it to education expenditures here.

These alternative inequality measures are the most frequently used in the economic inequality literature.[6] Each measures a different aspect of the distribution, but they are usually highly correlated. For completeness, we analyze each of them in this paper.

We utilize the techniques outlined above to describe the distribution of revenues across school districts in Texas. For all measures, we are considering revenues per student. We will begin by examining some simple statistics about the distribution of revenues, dividing the data into deciles (tenths) to examine each group's education spending patterns. First, we are interested in the distribution of total resources per student. Second, we wish to know how state and federal aid impact that distribution. To examine the impact of aid on the distribution, we first net out federal aid and recalculate the deciles. Subsequently, we net out state aid and recalculate the deciles again. Finally we net out both sources of aid.

This methodology yields four distributions of educational resources. The first, total revenues, represents resources that are actually available. The second distribution, net of federal aid, indicates what the resource distribution would be if the federal programs were not available. We assume that a given district's response would not be to increase its own source revenues. By comparing the distribution of total resources and resources net of federal aid, we can determine the contribution of federal aid in reducing the resource disparities across districts. Similarly, when we net out only state aid, we are able to examine the distribution of resources that would be available if state aid were reduced to zero and school districts did not respond by increasing their own revenues. We compare the current distribution and the distribution without state aid to evaluate the state's contribution to reducing education resource inequality. Finally, the education revenue distribution net of all aid tells us about the distribution of own source revenues. This distribution is very interesting because it yields information about how hard each district is trying, relative to the other school districts, to fund education from its own tax base. In addition, we can compare this distribution to the current distribution to evaluate the importance of state and federal aid in the current distribution of resources.

Thus we are examining four categories of revenues:

1) Total per student revenues

2) Total per student revenues net of federal aid

3) Total per student revenues net of state aid

4) Total per student revenues net of all aid (local funds only)

The data have been provided by the Texas Education Agency and Texas Research League and include all own source revenues, state aid and federal aid. We begin by first examining the mean revenues by decile in each category. These are given in Table I in the text. We note that total revenue per student for the poorest decile is $3,504 relative to an overall mean of $4,924. In the richest decile, the average per student is almost 163 percent more, suggesting severe inequality in the revenues per student across districts. We note that this is due to a few school districts with very high revenues in that decile. In the ninth decile, the average revenue

is 67 percent greater than the average for the first decile. Half of the school districts spend less than 40 percent of the total revenues on a per capita basis.

We can compare this distribution to the distribution without federal aid (in Table I). Without federal aid (state and local resources only), the poorest decile spends on average $3,262 per student or receives about $339 per student from the federal government. We can compare that to the top decile where, without federal aid, the revenues would be about $231 less per student. The cumulative distribution without federal aid is very similar to that of total revenue, suggesting that federal aid does little to assist in the redistribution of education resources in Texas.

Looking at the distribution of revenues without state aid in Table I, we note that state aid is responsible on average for over $2,600 per student in the lowest decile. In the top decile the state contributes around $700 per student on average. Without state aid, half of the school districts spend only 21.5 percent of the total on a per capita basis. When considering total revenues including state aid, half of the school districts spend nearly 40 percent.

The total impact of state and federal aid also can be seen by examining the deciles' revenues for local funds only. Without state and federal resources, the bottom decile would spend only $565 per student (assuming no change in own source effort) and this would be less than 3 percent of total revenues (see Table II). The top decile would spend $8,053 and this would account for about 33 percent of the total revenues. State and federal aid appear to be responsible for considerable redistribution. The bottom decile's share of revenues is 7.1 percent and the top decile's share is 18.5 percent (where 10 percent for each decile would represent equality) after state and federal aid.

Of course what we really want to know is how much inequality is present. Is inequality without state and federal aid considerably different than it is with aid? How much more equal is the distribution of education revenues, due to state aid? Is the distribution altered considerably by adjusting for federal aid?

To answer these questions, we turn to the results for the empirical Lorenz curves that we defined above. Figure A-1 includes the empirical Lorenz curve for the school districts based on own source revenues only. The curve deviates considerably from the diagonal line, which we noted represents total equality. To give this some perspective, recall Table II in the text. We see that the poorest (in the sense of lowest levels of expenditures) 10 percent of school districts in Texas spent only 2.3 percent of the total amount of own source per student expenditures. The next poorest 10 percent spent 3.3 percent of the total, etc. The empirical Lorenz curve reflects that the greater the distance between the curve and the diagonal, the greater the amount of inequality. We can compare this to the Lorenz curve representing current total resources available to the school districts in Figure A-1. It is important to note that these are relative measures. We cannot say that one distribution is twice as unequal as another. But we can clearly see what happens as state and federal aid are taken into account. The answer to our first query is that considerable inequality in per capita revenues appears across school districts before we adjust for federal and state aid.

To answer our second question (Does the distribution of revenues become significantly more equal after adjusting for state aid?), we examine Figure A-1 and Table II in the text. We see from the empirical Lorenz curve that for total resources net of state aid, the Lorenz curve doesn't change very much. One interpretation of our results is that the state aid to the school districts does have a significant impact on the distribution of per capita revenues across school districts. We know this because the variable in question is net of state aid, which means that we have kept federal aid in, so the state's contribution does make a difference. When accounting for all aid, the poorest 10 percent get 7.1 percent of total revenues. When subtracting out state aid this number falls to 2.3 percent. This also answers our last question. Federal aid to local school districts appears to have had a minimal (at best) or insignificant (at worst) impact on the distribution of revenues across

school districts. When we net out federal aid, we can see from the empirical Lorenz curve that federal aid has had little impact on the distribution of school district revenues.

Even though state aid has had a larger redistributive impact than has federal aid, even with both state and federal aid, the inequality of school district revenue remains.

In Table A-1, we present the summary measures of inequality and observe the same results that we found from examining the empirical Lorenz curves. We see that the Gini coefficients (as well as the relative mean deviation measure and Theil's measure) decrease in value when state and federal aid are added to local funds. The Gini falls from approximately .42 to .15. Recall that a value of 0 represents perfect equality (this is the case where the Lorenz curve essentially lies on the diagonal line) to a value of 1 for perfect inequality (intuitively, this would be the case where one district made all the expenditures and the others made none). To put this in perspective, United States income distribution is usually estimated to have a Gini coefficient of approximately .35. Thus the fact that the school districts have a Gini coefficient with a value of slightly less than .15 after adjusting for federal and state aid is not bad. It indicates, however, that inequality remains in the revenues for school districts on a per capita basis. The results are consistent with those discussed above for the empirical Lorenz curves. State aid seems to have been the impetus for a reduction in the level of inequality in the distribution of resources by school districts. We calculated and reported the results for the other two inequality measures as a way to check the consistency of our results. Both measures yield results consistent with those we found for the Gini coefficients: (1) state aid is very important in reducing inequality of education resources, and (2) some inequality still exists in the distribution.

TABLE A-1

Summary Measures of Inequality in the Distribution Of Per Capita Expenditures by School Districts For the Four Expenditure Categories

	Gini Coefficient	Relative Mean Deviation Measure	Theil's Measure
Total Revenue	0.14912	0.07430	0.01868
State & Local	0.15593	0.07696	0.02051
Federal & Local	0.37026	0.19524	0.10249
Local	0.41912	0.22149	0.13046

Notes

[1] N. Kakwani, *Income Inequality and Poverty* (Oxford: Oxford University Press, 1980).

[2] C. Gini, *Variabilià e mutabilità* (Bologna, 1913), cited in Daniel J. Slottje, *The Structure of Earnings and Measurement of Income Inequality in the U.S.* (Amsterdam: North-Holland Publishing Co., 1989).

[3] Slottje, *The Structure of Earnings and Measurement of Income Inequality in the U.S.*
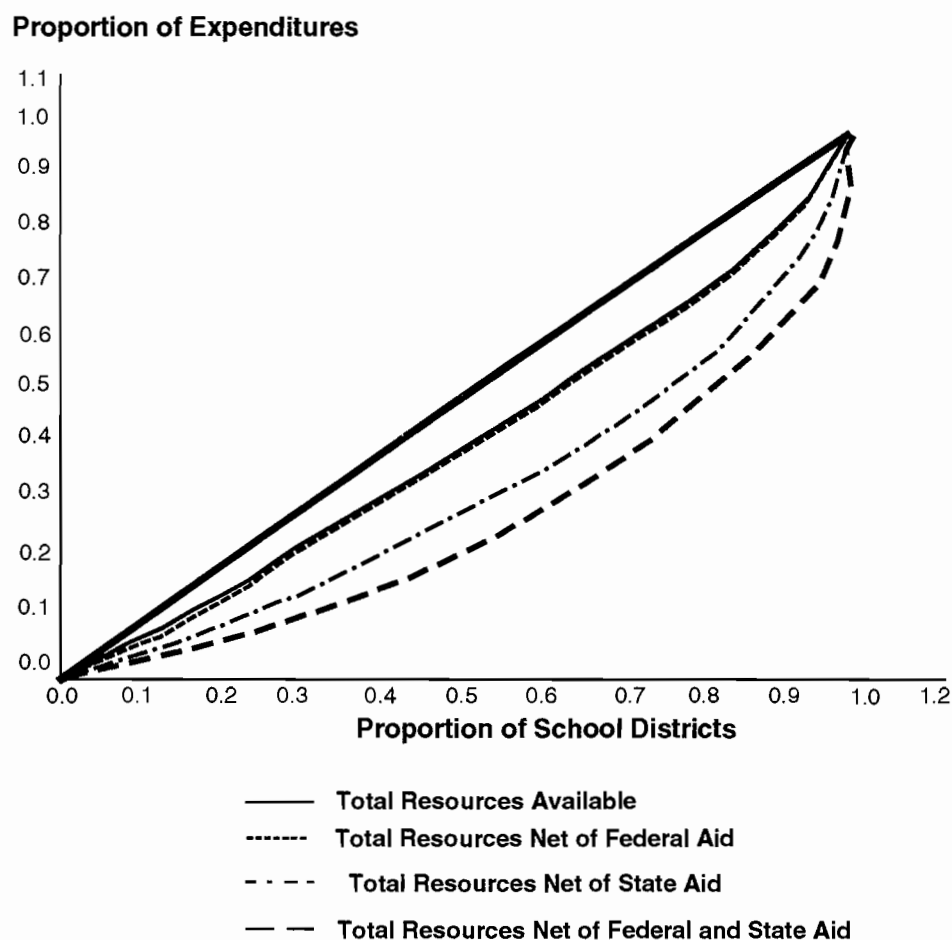
[4] Kakwani, *Income Inequality and Poverty*, p.162.

[5] H. Theil, *Economics and Information Theory* (Amsterdam: North-Holland Publishing Co., 1967).

[6] Slottje, *The Structure of Earnings and Measurement of Income Inequality in the U.S.*

Lorenz Curve:
Texas School Districts' Expenditures

Proportion of Expenditures

Figure A-1. Lorenz Curve: Texas School Districts' Expenditures

Proportion of School Districts

——— Total Resources Available

------- Total Resources Net of Federal Aid

– · – – Total Resources Net of State Aid

— — Total Resources Net of Federal and State Aid

About the Authors

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The National Center for Policy Analysis

The National Center for Policy Analysis is a nonprofit, nonpartisan research institute, funded exclusively by private contributions. The NCPA originated the concept of the Medical IRA (which has bipartisan support in Congress) and merit pay for school districts (adopted in South Carolina and Texas). Many credit NCPA studies of the Medicare surtax as the main factor leading to the 1989 repeal of the Medicare Catastrophic Coverage Act.

NCPA forecasts show that repeal of the Social Security earnings test would cause no loss of federal revenue, that a capital gains tax cut would increase federal revenue and that the federal government gets virtually all the money back from the current child care tax credit. These forecasts are an alternative to the forecasts of the Congressional Budget Office and the Joint Committee on Taxation and are frequently used by Republicans and Democrats in Congress. The NCPA also has produced a first-of-its-kind, pro-free enterprise health care task force report, written by 40 representatives of think tanks and research institutes, and a first-of-its-kind, pro-free enterprise environmental task force report, written by 76 representatives of think tanks and research institutes.

The NCPA is the source of numerous discoveries that have been reported in the national news. According to NCPA reports:

- Blacks and other minorities are severely disadvantaged under Social Security, Medicare and other age-based entitlement programs;

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- Man-made food additives, pesticides and airborne pollutants are much less of a health risk than carcinogens that exist naturally in our environment.

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