

Property Taxation and Equity in Public School Finance

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This article reviews the relationship between property taxation and public school finance. The principal use for property taxes in the United States is support of primary and secondary education. An overview of the importance of property taxation is presented, and the court cases over the past 40 years that have had an impact on how the property tax is used in paying for local schools are examined. Examples for many states are discussed.

In recent years as state courts have looked more toward *adequacy* and less toward *equity* in school finance, the concerns about property taxes have changed; this change is evaluated. Finally, a case study of property taxation and school finance in West Virginia is provided.

Probably the most overlooked issue in school finance is the role of equalization of property valuations. The use of

foundation formulas, which include local property tax effort, for state support of local schools and the role of sales ratio analysis are discussed. The article contends that equalization of values using sales ratio analysis in foundation formulas for state aid should be an imperative in the continuing search for more equitable and adequate systems to pay for local schools.

Importance of Property Taxes in School Finance

Since the beginning of free public education in the United States during the nineteenth century, the property tax has been a principal source of support. Springer, Houck, and Guthrie (2008) report that local property levies were almost exclusively the source for funds for local schools until the 1920s, when most states began to give flat grants to

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local districts based on the number of students. That practice continued during the 1930s until after World War II, when foundation formulas, which recognized local financial capacities, started.

According to the most current data on allocations for school support (2004–2005), of the \$519.4 billion spent on local education, 46.9 percent came from state sources, 44 percent from local sources, and 9.2 percent from federal sources (NCES [National Center for Education Statistics] n.d.). These percentages have changed since 1989–1990 when total spending was \$335.3 billion. At that time, 47.1 percent was from state funding, 46.8 percent local, and 6.1 percent federal. For the local share, property taxes account for 78 percent with the remainder coming from fees, tuition, and other local taxes. Reliance on property taxes varies widely, with the most reliance being in the Northeast (45.7 percent) and the least in the West (23.9 percent). But even within regions, state-to-state variations are considerable. In addition, 14 states have state property tax levies (NCSL [National Conference of State Legislatures] 2008a). Of these, at least five (Michigan, Montana, New Hampshire, Vermont, and Wyoming) dedicate all or a portion of the state property tax to the support of local schools.

The importance of property taxes to school finance is greater than indicated by these statistics, however, for two reasons. First, the amount raised for local schools from state property levies is not counted in the local property tax effort; thus, the financial importance of property tax is underestimated. Second, in *dependent* school districts, where schools are funded by another level of government (usually a large city), it is not possible to determine how much of that contribution comes from the property taxes generated by the superior government (McGuire and Papke 2008). Since this property tax contribution and the state contributions are not included in

the local property tax totals, it can be concluded, as did McGuire and Papke, that the property tax has been and will remain a primary source of funding for schools in the foreseeable future.

School districts in most states are *independent*; that is, they can levy their own taxes and have another jurisdiction collect them based on the district's budget. While the property tax is used by all independent school districts, some have the option of using other taxes such as sales, income, or utility taxes as well (NCSL 2008a). Often independent districts do not share boundaries with other governmental units, creating overlaps in the levying and collection of property taxes.

Legal Issues in School Finance

Across the nation, state courts have become a major factor in determining both the adequacy and equality of school finance (Ladd, Chalk, and Hansen 1999; Yinger 2004a). Federal courts have been mostly silent, ruling that disparities in spending on education among districts did not violate the U.S. Constitution's due process clause (*San Antonio v. Rodriguez* 1973). As the National Conference of State Legislatures (2008a) described the situation, "*Rodriguez* effectively removed the constitutional burden for providing public education away from the Federal Government and placed it squarely on the state's finances."

As a result, the litigation has been relegated to state courts, where the challenges have been based on state equal protection clauses or other constitutional provisions related to adequate or efficient education (Minorini and Sugarman 1999a). Starting in California with *Serrano v. Priest* (1971), more than 40 cases were brought in state courts, with plaintiffs prevailing in about half. In other states, litigation or the threat of it produced reforms to more nearly equalize per-pupil spending capacity (Kenyon 2007; Lukemeyer 2004).

Property taxation has been the root

cause of the disparities addressed by the state courts. One example was the decision by the Kentucky Supreme Court in *Rose v. Council for Better Education* (1989), in which the plaintiff contended that the finance system supporting local schools placed too much emphasis on property taxes and other local revenue sources. This reliance caused the schools to be both unequal in opportunity for all students and inadequate in the quality provided. The decisions of other state courts, while differing in wording, have established four criteria (Lukemeyer 2004, 66):

1. *Minimum adequacy*. All schools must provide some minimum level of spending per pupil.
2. *Equality*. Expenditures per pupil (or some other measure) must be equal among districts.
3. *Access equality*. States must counter differences in tax bases across districts and equalize revenue-raising abilities.
4. *Wealth neutrality*. The property tax base cannot vary systematically among districts if it results in widely different levels of ability to support local education.

When the courts determined the last criterion was not met and property wealth between districts varied widely, in most states, an equalization formula was required in which the state would supplement those districts with low per-pupil property wealth (Goertz and Natriello 1999). The variations of state equalization programs are discussed later in this article.

According to Briffault (2007), Clune (1994), and Enrich (1995), however, starting in the mid-1980s a new theory began to emerge that also influenced school finance and property taxation. Usually termed *educational adequacy*, this concept looks at student *needs* and notes that within districts there may be variations in student needs that require

differentials from the equal per-student spending. Among those differences would be a high percentage of low-income families or of students who require English as a second language instruction or have special education needs. This standard focuses more on equality of outcomes than on equality of resources.

Resources were to be provided in each district so that every student achieved a *high minimum* of educational attainment; that is, the formula would have to recognize the varying needs of different pupils (State Aid Working Group 1999). The recognition that “some students need greater resources to achieve at appropriate levels” (Minorini and Sugarman 1999b, 193) would require that financial resources per pupil vary based on the presence of high-need students.

This concept of adequacy has been accepted in many states but rejected in others (Campaign for Fiscal Equity 2008). In some situations, both equality and adequacy have been required by the courts. When adequacy has been accepted, the legislative response has been to provide either categorical grants to districts with high populations of needy students or to add weights to foundation formulas so that needy students are given a value of more than one for formula distribution (Berne and Stiefel 1999).

In the determination of what is an adequate education, states have taken different approaches to meeting the various state court-imposed requirements (Minorini and Sugarman 1999b, 193). Regardless of the approach, each required a policy judgment based on establishing the student learning or achievement levels to be attained and the resource requirements for each school that were likely to achieve those levels. In one of the first of these cases, the West Virginia Supreme Court spelled out eight levels of achievement that each student was to obtain (*Pauley v. Kelley* 1971). In Wyoming, the legislature established a “basket of goods and services”

that constituted an adequate education (Catchpole 1996). Kenyon (2007, 30) writes,

The specificity of state court mandates is another dimension. ... Massachusetts had one of the more general mandates, but those in New Hampshire and New Jersey include specific requirements about curriculum, capital construction, permissible tax structures and school aid formulas.

Research has identified three methods for determining what should be included to meet the adequacy standard (Downs and Stiefel 2008, 222–237; Griffith 2007; Guthrie and Rothstein 1999, 213–262; Rose 2001, 29–44).

- *Measuring adequacy by statistical analysis* relates observed student outcomes to resources and assumes that if the resources are there, the results will emerge. This maximizes the freedom of local districts to devise their own approaches to adequacy with the full knowledge the resources are there to achieve the outcomes. Statistically this results in different amounts of support being available in each district (or perhaps each school), depending on the correlation between the costs of providing those inputs (teachers, facilities, and so on) and student achievement. In a comprehensive review of the literature, Costrell, Hanushek and Loeb (2008) found no evidence that this approach identified the proper relationship between the amount spent and student achievement.
- *Measuring adequacy by empirical outcomes* defines acceptable outcomes and identifies the schools or districts in which those outcomes are achieved. The amount those districts

spend is viewed as adequate and that level of support is provided to each district. The assumption in this approach is that, given the same resources, what one school or district does, another can do as well. This method was adopted by Ohio following court action declaring its education support system inadequate and is used in 12 other states (CFE [Campaign for Fiscal Equity] 2008). Odden and Picus (2008) call this the evidence-based approach, but they believe that allowing local discretion in the use of these funds, rather than requiring the funds be targeted to enhance specific practices, does not produce the desired results.

- *Measuring adequacy by the experts* uses professional judgment to establish an *ideal* delivery system. There are no statistical tests involved in determining the components of this system. Once the components are agreed upon by the experts, costs are assigned to the component and funding sufficient to cover those costs is made available in each district. Guthrie and Rothstein are advocates of this approach: “We cannot conclude that statistical modeling is a more precise means of estimating the cost of adequacy than is the informed judgment of policymakers and professionals.” (1999, 223)

Regardless of the alternative measure chosen by a state, the result has always been the same. More funding for education is required to meet the adequacy test whether from property taxes or state aid. What is confounding, however, is the conclusion reached by Greene and Trivitt (2008, 233): “Unfortunately, the data consistently shows that judicial

involvement in school spending has yielded no improvements in student outcomes.” Similarly, Hanushek (2006) and West and Peterson (2007) found that judicial activism in school finance, either in the name of equity or adequacy, had not influenced student performance. At best, Betts (2002) found the evidence inconclusive.

Models of State Aid

State aid to local school districts takes a variety of forms. Some states continue to use flat grants per pupil, but they are incorporated into foundation programs. As Yinger (2004b) mentions, *foundation aid* has become the standard, with all states using some variant to support local schools. The basic formula for foundation programs is state aid equaling the difference between the amount of designated funding per pupil (or other measure) and the local effort, which is the tax rate times the taxable valuation. The lower the local effort, the greater the amount of state aid received in a district. This explains why equalization of assessed values at the legal level between districts receiving aid is necessary to prevent competitive under-assessment.

Huang (2004) has summarized the different state aid formulas with regard to how each state determines the amount of required funding and the methods for determining local effort. For the nation, foundation aid constitutes 68 percent of school state support, but this varies from 93 percent in Tennessee to 25 percent in South Carolina.

All states except two (Nevada and South Dakota) include cost adjustments in their formula programs to reflect student needs. In the other states there is recognition that costs based on the average student in an average district do not represent need. As a result, cost adjustments are made, usually for educating disadvantaged students or for attracting teachers into certain locations and/or possessing certain skills and qualifications. At least seven states in-

clude cost-of-living adjustments in their formulas (Fowler and Monk 2001).

States also support local schools by categorical aid, although use of this approach is decreasing (ECS [Education Commission of the States] 2008). Under these programs additional money is allocated based on the presence of students with certain characteristics such as disabilities, English as a second language, or eligibility for free lunches (Griffith and Hancock 2006). Other states compensate for these students by using weights in their formulas rather than categorical grants (Lankford and Wyckoff 1996). Other states weight their formulas based on grade level, assuming that costs associated with certain grades (high school) are higher than others (elementary) (Griffith 2005).

Most states with differences in district per-pupil density provide additional aid either in their formulas or through categorical grants, with districts having less dense student populations receiving greater amounts of aid. Thirty of the 50 states also provide categorical grants to support vocational education.

A different approach is the guaranteed tax base (GTB) program (Picus, Goertz, and Odden 2008). Unlike foundation programs, which guarantee a fixed level of funding, the GTB provides the same amount of revenue per pupil from a specified property tax base. In any district where the assessed values do not equal that amount, the district is eligible for state equalization.

Local districts are free to levy whatever rate they decide in some GTB states as long as taxable values have been equalized. While this maximizes local discretion, it does not equalize per-pupil spending. This approach retains the potential problem of low-property-wealth districts levying higher taxes than high-property-wealth districts yet producing a lower number of dollars for each student. In some states, a minimum levy is required to overcome this problem. Equalization of property values remains

an issue even though property tax bases have been equalized. The importance of ensuring that property tax assessments among overlapping districts are equalized at the statutory level is paramount unless the state is content to subsidize poor assessment.

Some states have a combination foundation/GTB approach. The GTB portion provides for at least an equalized level of property tax availability per pupil, while the foundation part ensures a base level of spending per pupil. For example, Missouri provides that each school district has nearly the same property tax capacity per pupil by setting the standard at the 95th percentile of property wealth for all districts. The foundation formula then requires a minimum local effort to be compensated by state aid to achieve the desired minimum level of per-pupil spending (Gardner 2006).

Kentucky uses a three-tiered combination in which the foundation base is set at about 77 percent of the statewide average. The GTB is 150 percent of the statewide average, but districts cannot spend more than 15 percent above the base unless approved by the voters. The additional 15 percent, if approved, is matched by the state. If voter approval is given, then local taxes can go as high as an additional 15 percent above the base, but if they do, the district does not receive support under the GTB for the additional 15 percent. While tax capacity is equalized, spending is not; however, a minimum level of support is provided (Odden, Fermanich, and Picus 2003).

Texas is another state that has implemented a combination approach (Imazeki and Reschovsky 2004). The Texas system uses a foundation formula, a GTB, plus caps on the tax capacity of property-rich districts as follows:

- The foundation formulas provide each school district with a guaranteed amount of money per pupil if the district levies a minimum property tax rate. The formula is adjusted for

higher costs associated with small districts, student density, students with limited English proficiency, students from low-income families, and students with disabilities.

- Under a GTB formula, each district is guaranteed a certain amount of money for each additional cent of property tax raised.
- A recapture provision caps the revenue-raising ability of property-rich districts at a given amount per pupil (now \$302,000) and establishes a property tax rate cap. Money raised in property-rich districts is recaptured and distributed to property-poor districts under a system of power equalizing.

The property-rich districts have five options:

- Consolidating with a property-poor district.
- Giving property-rich territory to a property-poor district.
- Contracting for educating students from property-poor districts.
- Consolidating property tax bases with a property-poor district.
- Buying *attendance credits* from the state.

The Texas system was again challenged in 2005 in *Neely v. West Orange*. While finding that the Texas system of financing K–12 education did not violate the state constitution, the Texas Supreme Court did find that the system in effect established a state property tax in violation of the Texas Constitution (Kenyon 2007). Wooten (2008) reported that, faced with the possibility of the court abolishing the entire system of education support, the legislature passed corrective legislation

in 2006. Under that legislation, the state business franchise tax was raised to supply more state aid. In addition, the rate for districts levying the 1.5 cents per \$100 valuation maximum was rolled back in two steps to 1.0 cent. For districts not at the maximum, the levy was rolled back by a percentage of 1.5. A new maximum was set at 1.17 cents per \$100 with voter approval, although districts could go as high as 1.04 cents without seeking voter acceptance.

Vermont also adopted in its Equal Education Opportunity Act a means of eliminating the inequities created by variations in property wealth (Saas 2007). Under the new system, education is funded by both a state-share property tax and a local-share property tax. The state tax is designed to cover the majority of local education costs through a block grant. The amount above the block grant, as determined by the formula, is to be funded by the local tax.

All districts in Vermont use the same local-share property tax rate regardless of property wealth. In property-wealthy districts, this generates more revenue than what is needed. This excess is placed in a municipal sharing pool, which guarantees that each district receives the same yield above the block grant for each penny on its local-share tax.

An issue arose in Texas and Vermont similar to one described by Kenyon (2007) in New Hampshire. To meet court-imposed mandates, New Hampshire passed a statewide property tax designed to raise half of the required funding for the new school aid formula. While most of the tax remained in the district where it was collected, in *donor* districts, characterized by high per-pupil property tax bases, some of the local tax was redistributed to *recipient* districts. This led to a voter uprising in the donor districts and a change in legislation that eliminated all but a few districts from the redistribution.

Some states have moved away from exclusively using property as a measure

of wealth in their school aid formulas. In Virginia, a local composite index (LCI) has been created merging three measures of wealth and economic activity: true valuation (indirect equalization), Virginia-adjusted gross income, and taxable sales (Driscoll and Salmon 2008). The LCI is used to determine the amount of required local effort. New York uses a combined wealth ratio, which is inverse to wealth and considers, in equal measure, both assessed property valuation and personal income in the district (New York Office of the State Comptroller 1995).

Property Assessment Equalization

Often neglected in the research on property taxation and school finance are the quality and equality of property taxation to support the schools. Not only can there be variations among jurisdictions in the amount of property taxes available per pupil, but also the assessment ratios and other quality measures of the property taxes can vary. As Dornfest and Thompson (2004) noted, all states use, to various degrees, some form of sales ratio study to equalize tax assessments on classes of property within jurisdictions and among jurisdictions.

This equalization creates a particular issue for school aid from the state. Under most foundation programs, there is a required local effort and the state fills the gap between the local taxes raised and the required spending in the district (Picus, Goertz, and Odden 2008). While this allows per-pupil spending to be more equal among school districts, districts that assess near or at the required level receive less aid than those jurisdictions that assess at a lower percentage. This can create *competitive under-assessment* because a local unit can benefit itself at the expense of the state or another jurisdiction, particularly in instances in which assessors or those who oversee the assessment process are elected.

This assessment at less than the required ratio can be costly to a district or

a state. A Missouri study found the severe inequalities of assessment between counties did not allow for the proper distribution of the \$5 billion in state aid under that state's new legislation (Gardner 2006). In West Virginia, the estimated additional cost to the state due to under-assessment was \$61 million (Kent and Setliff 2005).

To remedy the situation, most states use the ratio study for either direct or indirect equalization (IAAO 2007, 21–22). State oversight agencies use direct equalization to adjust initial assessments that do not meet set appraisal performance standards. Using an adjustment factor produces “effects mathematically identical to those derived through the application of ‘trending’ or ‘index factors’” (IAAO 2007, 21). Under direct equalization, the values of under-assessed properties are raised to the legal requirement. Applying this adjustment to property classes, political subdivisions, or other geographic areas generates results that are most often more transparent and work to remove inequalities among property values in different strata. While direct equalization corrects overall inequities *among* different strata, it also can magnify vertical inequity and does not improve uniformity *within* a given stratum.

Indirect equalization uses an adjustment factor for an entire jurisdiction based on appraisals that are either too high or too low as determined through the ratio study. If the target is full market value, assessed values can be divided by the assessment-to-sales ratio to determine the proper equalization factor. When the target is less than full value, this factor can be determined by dividing the target by the assessment-to-sales ratio. Although less transparent than direct equalization, indirect equalization makes “...fairer funding apportionment because the overall appraisal levels of the taxing jurisdictions tend to vary.” (IAAO 2007, 22)

Nebraska uses both direct and indirect equalization (Almy, Gloudemans, Jacobs, and Denne 2004). Two ratio studies are compiled every year. One reports the ratio by the county and class of property in each county. When the ratio study reveals that the standards are not being met, the Tax Equalization and Review Commission can step in to make the necessary corrections. The other study is for each school district as school districts overlap assessment jurisdictions. The Commission uses the study to estimate the tax capacity of each district to determine allocations under the school aid formula. These equalized values, rather than actual values, are then used to determine state aid under the foundation formula.

Use of Sales Ratio Studies in School Finance

Periodically Dornfest and Thompson (2004) survey states and Canadian provinces on their use of assessment sales ratios. Of the states responding to the 2003 survey, 41 indicated that they conduct ratio studies annually and the others, at periods from 2 to 5 years. Except in Hawaii and Delaware, these studies are used for state oversight of local assessing practices. For school finance in the United States, in 31 states the studies are used to equalize funding; in 43 states, to advise local officials of the quality of their assessments; in 30 states, to order reappraisals; and in 26 states, to adjust locally established assessed values.

According to Dornfest and Thompson's review, 37 states have legal provisions mandating the studies. Some statutes are specific about what is to be tested, while others are more general by simply requiring the study. What is mandated varies significantly, from sampling, to inclusion of adjustments (time, financing, and personal property), to standards and permitted variances. Another update is in progress.

Legality of Property Equalization by Assessment Sales Ratios

At the federal level, provisions in the Fifth Amendment, the Commerce Clause, and the Fourteenth Amendment of the U. S. Constitution plus the *Tax Injunction Act* (28 U.S.C. § 1341 [1948]) provide for uniform treatment of taxpayers (IAAO 2007, 58). The most important piece of federal legislation is the *Railroad Revitalization and Regulatory Reform Act of 1976* (49 U.S.C. § 14501 et seq. [2006]). That legislation requires that railroad property be assessed at no more than 105 percent of the level for commercial and industrial property in the jurisdiction and specifically designates the use of ratio studies for equalization purposes (§ 14502). Additional national-level legislation has extended the same protection to airlines, motor carriers, and bus property in interstate commerce (§ 14502; § 40116).

The legality of states using ratio studies to adjust assessed valuations was discussed in a New Hampshire case (*Sirrell et al. v. New Hampshire* 2001). Olabisi (2006, 3) summarizes the situation,

Even though municipalities controlled the assessment, collection and spending of property tax revenues, the Court declared the property tax a state, rather than municipal tax because it was used to fund what the Court determined was the state government's constitutional obligation to provide education.

After consulting decisions in other states (Massachusetts, New Mexico, Kansas, Pennsylvania, and Montana), the court upheld New Hampshire's procedure for equalization of property values through the use of a sales ratio analysis. In a 3–2 decision, the court rejected the claim of the plaintiffs that their property taxes violated the state constitution. Because they were taxed at a higher percentage of market value than taxpayers in other jurisdictions, the plaintiffs claimed discrimination. The state property tax was used to support the

school district, which overlapped jurisdictions. The court found no “widespread scheme of intentional discrimination” that would merit declaring the education funding system unconstitutional. Further, the court noted the plaintiffs did not contest that their own property taxes were improperly levied and did not supply evidence that they had been disadvantaged.

The minority of justices, in dissent, found 80 percent of the property in some of the affected jurisdictions had not been reassessed in decades, creating assessment inequalities. This deficiency in the assessment process violated the state constitution for a statewide property tax for school support that relied on local assessments that were not uniform. Olabisi (2006) commented that the majority opinion has created “constitutional uncertainty,” as local jurisdictions do not follow the state's constitutional mandate to revalue all property every 5 years.

School Finance and Property Tax Relief

The public demand for lower property taxes has occurred simultaneously with court directives for greater equity and adequacy in school finance (Blankenau and Skidmore 2002). While school finance is not the only factor leading to tax and expenditure limitations (TELEs), Blankenau and Skidmore's analysis found “strong empirical support for the hypothesis that education finance reform has played an important role in the tax revolt.” (2002, 61) Yinger's research indicated that 75 percent of increased state aid to education resulted in reduced property taxes with only 25 percent resulting in additional aid (Yinger 2006). TELEs and school finance are seen by many as ways to both achieve more equality in education and reduce property taxes by shifting the burden to the state.

At least three states have eliminated local property taxes for local school support almost entirely.

In 1993, the Michigan legislature removed local school property taxes for general support of the schools. Vermont did the same in 1998 but instituted a state property tax and income tax (Spigel 2000). According to Dornfest (2008), Idaho recently abolished use of the property tax for general support of schools in favor of state financing. With voter approval, local districts can still use the property tax for capital expenditures and a few other functions, but the operating expenses for the districts are now a state responsibility.

Since its first enactment, the property tax has been resisted by the public. These words from Welch are as true today as they were 40 years ago: "... the property tax is the most unpopular of all major taxes now employed in the United States." (1969, 203) Decades later Dornfest agreed "... the public continues to express resentment toward this tax and politically empowered groups whittle it away through demand for exemption or other favored treatment." (2003, 10–17)

Faced with this hostility, states have devised various mechanisms to whittle down the school tax burden. Based on data from Baer (2003) and Cico et al. (2008) and on the latest publicly available information (IAAO 2007; NCSL 2008b), property tax relief programs can be summarized as follows:

- *Homestead exemptions* now exist in 40 states and the District of Columbia. These reduce the amount of assessed property value subject to taxation. As the NCSL report shows, these range from dollar exemptions (up to a certain ceiling) given to all homeowners or are restricted to the aged, disabled, veterans, and low-income households. The quality of assessment plays a major role in homestead exemptions. If an exemption is based on assessed value and property is assessed at less than

market value, the worth of the exemption increases. Objections to the homestead exemption revolve around the loss of school revenue and their being granted to individuals who have the ability to pay but fall into the privileged class.

- *Homestead credits* are available in 14 states and apply the credit to property taxes. Like the homestead exemption, homestead credits can be granted to all or limited to only those who fall into designated categories. Exemptions and credits share a malady for school finance: they reduce the amount of property tax available as well as discriminate among taxpayers.
- *Circuit breakers* have the strongest support among economists (Brunori 2003). Thirty-five states plus the District of Columbia now use them. Circuit breakers relieve the property tax burden by setting a property tax payment threshold as a percentage of income. Most tie into some measure of poverty and vanish as income rises. Usually there are caps on the total amount of relief. Circuit breakers do not reduce local tax bases, because the relief is paid by the state either directly or as a credit on income tax liability. Being based on income, the circuit breaker does not reward under-assessment or erode the property tax base.
- *Property tax deferrals* permit homeowners (usually only older or disabled individuals) to postpone payment of all or some of the tax until the property is conveyed to another. In 24 states and the District of Columbia, the unpaid tax is a lien on

the property with interest being added. School districts do not receive any revenue until the lien is satisfied.

- *Tax limits, caps, and/or freezes exist* in 42 states and the District of Columbia. These methods work by freezing values or taxes, limiting increases in assessed values, or establishing maximum tax rates. They are related either to property value or to taxpayer income. In some states, only owner-occupied homes are covered, while in others the limits apply to all property. Some of these methods apply only to school taxes and others only to non-school taxes. In most instances they are statewide and not based on any eligibility criteria. In all cases, they limit a school district's ability to raise revenue.
- *Property tax classifications* are also used. In this approach, either lower assessment levels or lower tax rates are applied to specific types of property. Usually residential property is favored over other classifications. Personal property is a frequent classification for partial or complete exemption. As is the case with all exemptions except the circuit breaker, the local district's property tax base is undermined.
- *Use valuation* is employed in most states for agricultural property. By using a measure of productivity, farm land is appraised based on its potential income yield, not on its market value. In particular, farms surrounding fast-growing cities or suburbs receive a significant benefit as long as the property is not converted to other than

agricultural use. Some states do have partial recapture provisions when the property is no longer used as agricultural land. Timberland and mineral property also receive use valuation in some states.

Recent studies in other states confirm reforms in school finance do not meet expectations of either adequacy or equity. Probably the most restrictive limitation on property taxes was the result of Proposition 13 in California (Sheffrin 2005). The assessed value of property can be raised by no more than 2 percent a year until the property is sold. At that point it is assessed at market value. This means that not only are schools deprived use of increased valuations but also newly purchased property is assessed substantially above the levels for properties that have not been sold, creating a severe case of horizontal inequality.

In their review of the California situation, Glenn and Picus (2007) related that after the voters adopted Proposition 13 in response to the *Serrano* (1971) decision, California went from one of the top states in per-student support to one below the national average. Proposition 13 reduced the property tax rate to 1 percent of the 1976 value and set a limit on the rate of increase in property taxes to 2 percent each year. Glenn and Picus (2007, 283) wrote,

Post-Serrano California suffers from a host of school finance problems. It is argued that less than adequate funding causes children to attend schools that lack the resources necessary to educate students. The relative decrease in funding over the past 30 years dovetails with the plummet in student performance.

Izraeli and Murphy (2007) evaluated the effects of Proposal A in Michigan, which went into effect in 1994. Under this voter-approved initiative, homestead property taxes were set at 6 mills and other property was capped at 24 mills with a local option of 3 mills. State taxes,

primarily those on sales, were raised to compensate for the loss of local revenue. Izaraeli and Murphy found that although the state now carried 75 percent of the school finance burden, it did not lead to a significant increase in school funding and there was little reduction in the inequality of distribution of school resources.

The West Virginia Situation

An example of how states limit the capacity of school districts to raise money is West Virginia. Popularly elected county assessors are responsible for appraising real and personal property in residential, commercial, and agricultural classes (W. Va. Code § 11-2-1). The Tax Commissioner is responsible for real and personal property in natural resources and industrial classifications (W. Va. Code § 11-1(C)-1 et seq.). For taxation purposes, West Virginia law defines the four classes of real property as follows:

- Class I. All tangible personal property employed exclusively in agriculture.
- Class II. All property owned, used, and occupied by the owner exclusively for residential purposes; all farms.
- Class III. All real and personal property situated outside of municipalities.
- Class IV. All real and personal property situated inside of municipalities.

Through the Property Tax Limitation and Homestead Exemption Amendment of 1982, the Constitution of West Virginia mandates that “all property subject to ad valorem taxation shall be assessed at sixty percent of its value.” (W. Va. Const. art. X, § 1) Exemptions to the taxation of property are provided in §11-3-9 of the West Virginia State Code.

Each county assessor is expected to maintain current values and accurate rolls of property for appraisal and to reappraise all real property every 3 years

(W. Va. Code § 11-1(C)-9). The tax rates levied on property are determined by each county and municipality within the limits set by the state constitution. For property employed exclusively in agriculture, the constitution provides that the aggregate of taxes assessed in any year cannot exceed 50 cents per \$100 valuation (W. Va. Const. art. X, § 1).

In addition, aggregate taxes on homesteads and agricultural property are limited to \$1 per \$100 of valuation (W. Va. Const. art. X, § 1). “All other property situated outside municipalities” and “all other property situated within municipalities” are limited to \$1.50 and \$2 per \$100 of valuation, respectively (W. Va. Const. art. X, § 1). Maximum tax rates by class and taxing authority must conform to the limits set forth in the West Virginia State Code (§ 11-8-16(a); see table 1).

Currently local school levies are capped below the maximums (W. Va. Code § 11-8-6(c)). Class I is 21.01 cents; Class II is twice the Class I rate; and Classes III and IV are four times the Class I rate. These caps are part of a school finance reform that allows districts to count only 90 percent of their property tax collections as local effort under the foundation program.

In addition to regular levies, governing bodies including school districts can levy additional excess levies. The school excess levy must pass with a simple majority. Excess levies cannot continue for more than 5 years without being resubmitted to the voters (W. Va. Code § 11-8-14(b) to -8-16(a)).

Table 1. Maximum property tax rates

Taxing Authority	Property Tax Rate (cents/\$100)			
	Class I	Class II	Class III	Class IV
State	0.25	0.50	1.00	1.00
County	14.30	28.60	57.20	57.20
Schools	22.95	45.90	91.80	91.80
Municipal	12.50	25.00	NA	50.00
Total	50.00	100.00	150.00	200.00

NA = not applicable

Source: Tax Commissioner of West Virginia (2006)

The primary exemption from the residential property tax in West Virginia is the homestead exemption. This exempts the first \$20,000 of assessed value from “a homestead used and occupied by owner exclusively for residential purposes when owner is 65 years or older, permanently and totally disabled, and has been or will be a resident of the State for two consecutive calendar years preceding the tax year (W. Va. Code § 11-6(B)-1). This exemption cost school districts \$30 million in revenue for 2006 (State Tax Department 2006).

In 2007, West Virginia enacted an income-based circuit breaker, which provides for a refundable income tax credit for real property taxes paid on any owner-occupied residence in excess of 4 percent of income broadly defined (W. Va. Code § 11-8-17). To be eligible, the homeowner must have an income 150 percent or less of the federal poverty level. The credit is capped at \$1,000 and first applied to the state personal income tax with any excess being refunded by the state.

West Virginia State Code also provides for the Property Valuation Training and Procedures Commission (PVC) to train those working in assessor’s offices, to establish uniform standards for assessment of property, and to determine the information to be used in the distribution of state funds (W. Va. Code §§ 11-1(C)-3 and 11-1(C)-4).

West Virginia county assessors are required to complete a sales ratio analysis in such a manner as prescribed by the Tax Commissioner (W. Va. Code § 7-7-6(a)). The PVC has established that the median ratio must be between 90 and 100 percent of market value and the coefficient of dispersion (COD) less than 15 for residential improved property and less than 20 for all other property (State Tax Department 2007a). Since the PVC provides any county whose median is 10 percentage points either below or above 100 percent to be in compliance, most counties assess at 54 percent (State Tax Department 2007b).

For the distribution of state aid under the school foundation program beginning in 2010, West Virginia has enacted indirect equalization (W. Va. Code § 11-1(C)-5(b)). Funds will be distributed to local districts assuming that property is assessed at 60 percent of market value. The sales ratio study conducted by the state will make that determination. Counties that are not in compliance will have 98 percent of their property taxes counted as the required contribution for state aid rather than 90 percent.

Unlike other states where the amount of state aid to education is determined by a foundation formula and the formula may or may not be fully funded, in West Virginia the state is responsible for funding the full amount determined under the formula after local effort is established (W. Va. Code § 18-9A-11). This provides a higher priority for local education support than most other state programs and explains why this aid is now the largest single item in the state budget (State Budget Office 2008).

Conclusions

From this review of the relationship between property taxation and school tax reform and one completed by Augenblick (2008), the following conclusions can be drawn:

- Property taxes have been, are, and will continue to be a major source of support for local schools in the United States as long as the nation maintains a primarily subnational education system. There are those who suggest that such a decentralized system violates the U.S. Constitution (Liu 2006). They contend that because education finance has been altered to provide more financial equality within the states, it should be further changed to achieve equality among the states based on the Fourteenth

Amendment's guarantee of equality in national citizenship. If this contention is accepted, the property tax would play a diminished role in school support.

- All states have adopted foundation programs to provide state aid to local districts. These foundation programs require a property tax effort on the part of the recipient to be eligible for state funding. This has led to a significant increase in state funding for education, a trend that is likely to continue. Nevertheless, the existence of a foundation program in and of itself does not meet either the equity or adequacy standards required by many state courts. Foundation formulas may be underfunded or the base set so low that sufficient support is not available.
- State courts have been the primary force behind school finance reform, finding that unequal property tax bases provide unequal educational opportunities in violation of state constitutions. In other states, courts have rejected this judicial interference because they consider school finance reform a legislative issue (Starr 2007). Education court cases continue to be filed, however, despite the evidence that judicial mandates are ineffective in improving student performance.
- The concept of educational *adequacy* has replaced financial *equity* as the basis for state court-ordered school finance reform. It is difficult to precisely define what adequacy means, and none of the tests used in the states is fully satisfactory. In all cases, adequacy is tied to the financial

base needed to create it—the local property tax and state support. West and Peterson (2007, 12) have reflected: “The greatest deficiency (in the discussion) ... is the failure to consider that education might be improved not by increasing resources but by improving the efficiency with which they are used.”

- The ability of the property tax to support local schools has been eroded by exemptions, classifications, credits, limitations, and other tax relief methods. The disfavor of the general public toward the property tax is likely to increase this erosion. Further, these erosions shift the burden of local schools from residential to business and commercial property.
- Considering the importance of the property tax in school finance, it is imperative that it be properly administered to achieve both horizontal and vertical equity. If not, a capricious assignment of tax burdens exists. While all states perform sales ratio analyses, there is continued need for expansion of their use and enforcement if equity and adequacy in the use of property taxation for school finance are to be achieved. Adoption of the IAAO *Standard on Ratio Studies* (2007) in those states that have not done so or that have only partially accepted them as well as rigorous enforcement in those states that have adopted them is the first undertaking.

References

Almy, Gloudemans, Jacobs, and Denne. 2004. *Review of sales ratio studies*. Prepared for Nebraska Department of Property Assessment and Taxation. Lincoln, NE.

- Augenblick, J. 2008. *School finance and property taxes: A continuing, if changing, linkage*. Denver, CO: National Conference of State Legislatures.
- Baer, D. 2003. State programs and practices for reducing residential property taxes. *Fair & Equitable* 1 (11): 6–11.
- Berne, R., and L. Stiefel. 1999. Concepts of school finance equity: 1970 to the present. In *Equity and adequacy in education finance: Issues and perspectives*, ed. H.F. Ladd, R. Chalk, and J.S. Hansen, 7–33. Washington, DC: National Academies Press.
- Betts, J. 2002. Discussion. In *Education in the 21st century: Meeting the challenges of a changed world*, ed. Y. Kodrzycki, 11–12. Boston, MA: Federal Reserve Bank of Boston.
- Blankenau, W., and M. Skidmore. 2002. The relationship between education finance reform and tax and expenditure limitations. *Journal of Regional Policy and Analysis* 32 (1): 49–66.
- Briffault, R. 2007. Adding adequacy to equity. In *School money trials: The legal pursuit of educational adequacy*, ed. M.R. West and P.E. Peterson, 25–54. Washington, DC: The Brookings Institution.
- Brunori, D. 2003. *Local tax policy: A federalist perspective*. Washington, DC: Urban Institute Press.
- CFE. 2008. Ensuring all children the opportunity for a sound basic education: A costing-out primer. <http://www.cfequity.org/cost-out.html> (accessed July 22, 2008).
- Catchpole, J. 1996. *Accreditation guide*. Cheyenne: Wyoming Department of Education.
- Cico, D.C., S.C. Robnett, E.W. Saltzman, and H.H. Ulbrich. 2008. *Property tax relief programs in the United States*. Clemson, SC: Clemson University, Strom Thurmond Institute of Government and Public Affairs.
- Clune, W. 1994. The shift from equity to adequacy in school finance. *Educational Policy* 8 (4): 376–394.
- Costrell, R., E. Hanushek, and S. Loeb. 2008. What do cost functions tell us about the cost of an adequate education. *Peabody Journal of Education* 83 (2): 198–223.
- Dornfest, A.S. 2003. Overcoming property tax demons and mystery. *Fair & Equitable* 1 (1): 10–17.
- Dornfest, A.S. 2008. Personal conversation between tax policy supervisor, Idaho State Tax Commission, and Calvin Kent. August 4.
- Dornfest, A.S., and D.C. Thompson. 2004. State and provincial ratio study practices: 2003 survey results. *Journal of Property Tax Assessment & Administration* 1 (1): 31–70.
- Downes, T., and L. Stiefel. 2008. Measuring equity and adequacy in school finance. In *Handbook of research in education finance and policy*, ed. H.F. Ladd and E.B. Fiske, 222–237. New York: Routledge.
- Driscoll, L.G., and R.G. Salmon. 2008. How increased state equalization aid resulted in greater disparities: An unexpected consequence for the Commonwealth of Virginia. *Journal of Education Finance* 33 (3): 238–261.
- ECS. 2008. Funding formulas. ECS education policy issue site. <http://www.ecs.org/html/issue.asp?issueID=48&subIssueID=43> (accessed July 29, 2008).
- Enrich, P. 1995. Leaving equality behind: New directions in school finance reform. *Vanderbilt Law Review* 48: 101–194.
- Fowler, W.J., and D.H. Monk. 2001. *A primer for making cost adjustments in education*. Washington, DC: National Center for Education Statistics, U.S. Department of Education, Office of Education Research and Improvement.
- Gardner, S.M. 2006. *Disparity of assessment results: Why Missouri's school funding formula doesn't add up*. St. Louis: University of Missouri, Public Policy Research Center.

- Glenn, W.J., and L.O. Picus. 2007. The Williams Settlement and the prospects for future school finance adequacy and litigation in California. *Journal of Education Finance* 32 (3): 382–394.
- Goertz, M., and G. Natriello. 1999. The impact of court-mandated school finance reform. In *Equity and adequacy in education finance: Issues and perspectives*, ed. H.F. Ladd, R. Chalk, and J.S. Hansen, 104–112. Washington, DC: National Academies Press.
- Greene, J., and J. Trivitt. 2008. Can judges improve academic achievement? *Peabody Journal of Education* 83 (2): 224–237.
- Griffith, M. 2005. State education funding formulas and grade weighting. In *ECS state notes: Adequacy/Core cost*. Denver, CO: Education Commission of the States.
- Griffith, M. 2007. A survey of finance adequacy studies. In *ECS state notes: Adequacy/Core cost*. Denver, CO: Education Commission of the States.
- Griffith, M., and J. Hancock. 2006. A survey of state ELL/ESL funding systems. In *ECS state notes: Bilingual/ESL*. Denver, CO: Education Commission of the States.
- Guthrie, J., and R. Rothstein. 1999. Enabling “adequacy” to achieve reality: Translating adequacy into state school finance distribution. In *Equity and adequacy in education finance: Issues and perspectives*, ed. H.F. Ladd, R. Chalk, and J.S. Hansen, 213–262. Washington, DC: National Academies Press.
- Hanushek, E. 2006. *Courting failure: How school finance lawsuits exploit judges’ good intentions that harm our children*. Stanford, CA: Education Next Books.
- Huang, Y. 2004. A guide to state operating aid programs for elementary and secondary education. In *Helping children left behind: State aid and the pursuit of educational equity*, ed. J. Yinger, 331–366. Cambridge: Massachusetts Institute of Technology.
- IAAO. 2007. *Standard on ratio studies*. Kansas City, MO: International Association of Assessing Officers.
- Imazeki, J., and A. Reschovsky. 2004. School finance reform in Texas: A never-ending story? In *Helping children left behind: State aid and the pursuit of educational equity*, ed. J. Yinger, 251–281. Cambridge: Massachusetts Institute of Technology.
- Izraeli, O., and K.J. Murphy. 2007. The impact of Proposal A on school financing, equity, and quality of public schools in the State of Michigan. *Journal of Education Finance* 33 (2): 111–129.
- Kent, C., and G. Setliff. 2005. *An evaluation of local assessment of property for the Public School Support Program in West Virginia*. Prepared for Subcommittee C, Interim Education Committee, West Virginia Legislature. Huntington, WV: Marshall University, Center for Business and Economic Research.
- Kenyon, D. 2007. *The property tax-school funding dilemma*. Cambridge, MA: Lincoln Institute of Land Policy.
- Ladd, H., R. Chalk, and J. Hansen, eds. 1999. *Equity and adequacy in education finance: Issues and perspectives*. Washington, DC: National Academies Press.
- Lankford, H., and J. Wyckoff. 1996. The allocation of resources to special education and regular instruction. In *Holding schools accountable: Performance-based reform in education*, ed. H.F. Ladd, 221–257. Washington, DC: The Brookings Institution.
- Liu, G. 2006. Education, equality, and national citizenship. *Yale Law Journal* 116 (2): 330–411.
- Lukemeyer, A. 2004. Financing a constitutional education: Views from the bench. In *Helping children left behind: State aid and the pursuit of educational equity*, ed. J. Yinger, 59–86. Cambridge: Massachusetts Institute of Technology.
- McGuire, T., and L. Papke. 2008. Local funding of schools: The property tax and

- its alternatives. In *Handbook of research in education finance and policy*, ed. H.F. Ladd and E.B. Fiske, 359–372. New York: Routledge.
- Minorini, P., and S. Sugarman. 1999a. School finance litigation in the name of educational equity: Its evolution, impact, and future. In *Equity and adequacy in education finance: Issues and perspectives*, ed. H.F. Ladd, R. Chalk, and J.S. Hansen, 34. Washington, DC: National Academies Press.
- Minorini, P., and S. Sugarman. 1999b. Educational adequacy and the courts: The promise and problems of moving to a new paradigm. In *Equity and adequacy in education finance: Issues and perspectives*, ed. H.F. Ladd, R. Chalk, and J.S. Hansen, 193. Washington, DC: National Academies Press.
- NCES. n.d. National Public Education Financial Survey 1989–2004. Common core of data (CCD). <http://nces.ed.gov/programs/coe/2008/section4/table.asp?tableID=926> (accessed August 3, 2008).
- NCSL. 2008a. Education finance. <http://www.ncsl.org/programs/educ/NCSLEducationFinance.html> (accessed July 23, 2008).
- NCSL. 2008b. *Property tax compendium*. Denver, CO: National Conference of State Legislatures.
- Neely v. West Orange-Cove Consolidated Independent School District*, 2005 WL 3116298 (Tex., 2005).
- New York Office of the State Comptroller. 1995. *School finance reform—A discussion paper*. Albany: New York Office of the State Comptroller.
- Odden, A., M. Fermanich, and L. Picus. 2003. *A state-of-the-art approach to school finance adequacy in Kentucky*. Frankfort: Kentucky Department of Education.
- Odden, A., and L. Picus. 2008. *School finance: A policy perspective*, 4th ed. New York: McGraw Hill.
- Olabisi, O. 2006. *New Hampshire's quest for a constitutionally adequate education*. Discussion Paper 06-2. Boston: MA: New England Public Policy Center and Federal Reserve Bank of Boston.
- Pauley v. Kelly*, 255 S.E.2d 859 (1979).
- Picus, L.O., M. Goertz, and A. Odden. 2008. Intergovernmental aid formulas and case studies. In *Handbook of research in education finance and policy*, ed. H.F. Ladd and E.B. Fiske, 257–275. New York: Routledge.
- Rose, H. 2001. The concept of adequacy and school finance. In *School finance and California's master plan for education*, ed. J. Sonstelie and P. Richardson, 29–44. San Francisco: Public Policy Institute of California.
- Rose v. Council for Better Education*, 790 S.W.2d 186, 60 Ed. Law Rep. 1289 (1989).
- Saas, D.R. 2007. *School finance in Vermont: Balancing equal education and fair tax burdens*. Discussion Paper 07-1. Boston, MA: New England Public Policy Center and Federal Reserve Bank of Boston.
- San Antonio v. Rodriguez*, 411 U.S. 1 (1973).
- Serrano v. Priest*, 5 Cal. 3d 584, 487 P.2d 1241 (1971).
- Sheffrin, S.M. 2005. Property tax, real property, residential. In *The Encyclopedia of Taxation and Tax Policy*, ed. J.J. Cordes, R.D. Ebel, and J.G. Gravelle, 317–319. Washington, DC: Urban Institute Press.
- Sirrell, et al. v. State of New Hampshire, et al.*, 99-E-692 (2001).
- Spigel, S. 2000. *School finance and property tax reform*. OLR Research Report. Hartford, CT: Office of Legislature Research.
- Springer, M., E. Houck, and J. Guthrie. 2008. History and scholarship regarding United States education finance and policy. In *Handbook of research in education finance and policy*, ed. H.F. Ladd and E.B. Fiske, 3–23. New York: Routledge.

- Starr, K.W. 2007. The uncertain future of adequacy remedies. In *School money trials: The legal pursuit of educational adequacy*, 307–321. Washington, DC: The Brookings Institution.
- State Aid Working Group. 1999. Introduction to the concept of adequacy. New York State Education Department. <http://www.oms.nysed.gov/faru/Articles/adequacyprinciples.html> (accessed July 22, 2008).
- State Budget Office. 2008. *State of West Virginia FY 2009 executive budget*. Charleston, WV: Office of the Governor.
- State Tax Department. 2006. *West Virginia tax expenditure study*. Charleston: State of West Virginia Tax Department, Research Division.
- State Tax Department. 2007a. *Guide for county assessor, State of West Virginia*. Charleston: State of West Virginia Tax Department, Property Tax Division.
- State Tax Department. 2007b. *County monitoring summary 2007*. Charleston: State of West Virginia Tax Department, Property Tax Division.
- Tax Commissioner of West Virginia. 2006. *West Virginia tax laws. Forty-seventh biennial report*. Charleston, WV: Department of Tax and Revenue, Office of the Secretary.
- Welch, R.B. 1969. Property taxation: Policy potentials and probabilities. In *The property tax and its administration*, ed. A.D. Lynn, Jr., 203–214. Madison: University of Wisconsin Press.
- West, M., and P. Peterson, eds. 2007. The adequacy lawsuit: A critical appraisal. In *School money trials: The legal pursuit of educational adequacy*, 1–22. Washington, DC: The Brookings Institution.
- Wooten, T. 2008. Phone conversation between policy executive assistant, Property Tax Division, Texas Comptroller of Public Accounts, and Calvin Kent. August 28.
- Yinger, J., ed. 2004a. *Helping children left behind: State aid and the pursuit of educational equity*. Cambridge: Massachusetts Institute of Technology.
- Yinger, J. 2004b. State aid and the pursuit of educational equity: An overview. In *Helping children left behind: State aid and the pursuit of educational equity*, ed. J. Yinger, 10–15. Cambridge: Massachusetts Institute of Technology.
- Yinger, J. 2006. *Education finance reform and property tax relief*. New York: Education Finance and Accountability Program.

Additional Sources

- Haveman, M., and T.A. Sexton. 2008. *Property tax assessment limits: Lessons from thirty years experience*. Cambridge, MA: Lincoln Institute of Land Policy.
- Heckman, J.J., and A.B. Krueger, eds. 2003. *Inequality in America*. Cambridge: Massachusetts Institute of Technology Press.
- Plimmer, F., W.J. McCluskey, and O. Connellan. 2000. *Equity and fairness within ad valorem real property taxes*. Cambridge, MA: Lincoln Institute of Land Policy.
- Youngman, J. 1994. Introduction to legal issues in property valuation and taxation. *Assessment Journal* March/April: 60–77.

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