1 State Aid and the Pursuit of Educational Equity: An Overview

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1.1 Introduction

In 1971 the California Supreme Court ushered in a new era in education finance by ruling, in *Serrano v. Priest*, that California's system for financing elementary and secondary education violated the state's constitution.[1] Relying heavily on a property tax to finance education was unconstitutional, the court declared, because it made a child's education dependent on the wealth of his or her school district.

Since then, forty-three additional state courts have heard challenges to the constitutionality of the education finance system in their state. Although the legal standards vary from state to state and have shifted over time, seventeen more education finance systems have been declared unconstitutional by state supreme courts since *Serrano v. Priest*.[2] The most recent such decision was in New York in June 2003. In most cases, these court decisions have been followed by significant education finance reforms.

The impact of state courts goes far beyond these eighteen state supreme court decisions. Reforms passed in response to one of these decisions have been upheld by the supreme court in Texas, and further education reform litigation is ongoing in Arizona, California, Connecticut, Kentucky, Massachusetts, Montana, New Hampshire, New Jersey, and West Virginia. State supreme courts also have reversed lower-court decisions rejecting education reform in Idaho, Kansas, North Carolina, and South Carolina, and litigation continues in all of these states.[3] Moreover, the Missouri Supreme Court upheld a reform that was passed in response to a trial court decision,[4] and trial courts in Alaska and New Mexico have rejected their states' systems for funding school facilities.

State supreme courts have upheld the existing education finance systems in eighteen states, but these decisions have not prevented education finance reform or further litigation in many cases. Among the states in this category, for example, additional lower-court litigation spurred major education finance reforms in Colorado (National Center for Education Statistics 2001c) and Maryland (Montgomery 2002), and Michigan (Cullen and Loeb, chapter 7) passed a major education finance reform without any further court involvement. Moreover, voters in two states, Florida and Oregon, responded to state supreme court decisions upholding the education finance systems in those states by passing an amendment to the education clauses of their state constitutions. The Florida amendment calls for "a uniform, efficient, safe, secure, and high quality system of free public schools," which is one of the strongest equity standards in the nation (Advocacy Center for Children's Education Success with Standards 2003). Finally, new education finance litigation is pending in Colorado and Florida.

All this litigation and reform reflects, of course, the dramatic disparities in school spending and student performance that divide school districts in most states. In the average state in 2000, for example, low-poverty school districts spent almost $1,000 more per pupil than did high-poverty districts (The Education Trust 2002). Some evidence on performance gaps is provided in Casserly 2002, which compares 2001 reading and math test scores in large cities, where poverty is concentrated, and the states in which they are located. The gaps in eighth-grade reading and math scores are presented in tables 1.1 and 1.2, respectively.[5] These tables indicate the extent to which large cities lag behind the remainder of their states in bringing eighth-grade students up to a target score on the state's standardized tests. Student performance falls short of the state average in virtually every big city in the United States, and the test score gaps are often very large. In the case of reading, the share of students reaching the target score is almost 70 percent below the state average in St. Louis and more than 40 percent below the state average in eleven other cities. The disparities in math scores are even larger. Milwaukee falls almost 80 percent below its state average in the number of its students reaching the state's target score in math, and twenty-one other cities are more than 40 percent below the averages in their states.

The new state aid programs that were passed in response to the 1971 *Serrano v. Priest* decision (*Serrano I*) and the related 1977 *Serrano v. Priest* decision (*Serrano II*) dramatically reduced the disparities in

Table 1.1
Eighth-grade reading test score gaps between big cities and states, 2001

>60%	St. Louis, Baltimore, Philadelphia
50–59%	New Orleans
40–49%	Milwaukee, Buffalo, Detroit, Providence, Rochester, Denver, Oakland, Newark
30–39%	Boston, Los Angeles, Indianapolis, Minneapolis, Richmond, Fresno, St. Paul, Miami
20–29%	Pittsburgh, Chicago, New York City, Oklahoma City, Dayton, Norfolk
10–19%	Cleveland, Long Beach, Columbus, Atlanta, Dallas, Toledo, Sacramento
0–9%	Austin, Fort Worth, Nashville, Charlotte, San Francisco, Houston, Portland, Greensboro, Seattle
−4–0%	San Diego

Source: Casserly 2002.
Note: Results for cities in Ohio and Tennessee are for ninth-grade scores, and results for Denver, Detroit, St. Louis, and Seattle are for seventh-grade scores.

Table 1.2
Eighth-grade math test score gaps between big cities and states, 2001

>70%	Milwaukee, Rochester, Baltimore
60–69%	Philadelphia, Providence, Denver, New Orleans, Newark, St. Louis
50–59%	Buffalo, Dayton, Cleveland, Chicago
40–49%	Indianapolis, Pittsburgh, Oakland, Detroit, Richmond, Los Angeles, Minneapolis, Boston, New York City
30–39%	St. Paul, Toledo, Columbus, Oklahoma City, Fresno, Atlanta
20–29%	Memphis, Miami, Norfolk
10–19%	Dallas, San Diego, Long Beach, Nashville
0–9%	Austin, Fort Worth, Charlotte, Sacramento, Greensboro, Houston
−17–0%	Portland, Seattle, San Francisco

Source: Casserly 2002.
Note: Results for cities in Ohio and Tennessee are for ninth-grade scores, and results for Denver, Detroit, and Seattle are for seventh-grade scores. The results for Detroit refer to scores on 2000 tests.

spending per pupil across school districts in California. In contrast, these programs do not appear to have significantly reduced across-district disparities in student achievement or raised the performance of students in high-poverty urban districts (see Downes 1992 and Sonstelie, Brunner, and Ardon 2000).

The same patterns emerge in other states that have implemented reforms. Evans, Murray, and Schwab (1997, 1999) and Murray, Evans, and Schwab (1998) demonstrate that court-induced reforms in state aid reduce per-pupil spending disparities across school districts in the state. These reforms have not had nearly as large an effect on disparities in student performance, however, as they have had on disparities in spending. Indeed, some scholars argue that they have not affected performance disparities at all, and the available evidence indicates that students in many districts, especially high-poverty urban districts, still perform far below the state average even after major school aid reform. Tables 1.1 and 1.2 reveal significant test score gaps facing Los Angeles, Oakland, Dallas, and Fort Worth, for example, despite significant education finance reform efforts in California and Texas. There is no agreement, however, about the meaning of this evidence. Some scholars interpret it as a sign that equalization of education financing across districts is ineffective and should not be tried;[6] others, including myself, interpret it as a sign that many existing equalization efforts are flawed and that new approaches are needed.

The persistence of large across-district disparities in educational performance in many states is one of the factors that have pushed state legislatures and education departments toward a new focus on student performance and toward new programs to promote school district accountability. Forty-eight states now require local schools to administer state-selected tests in reading and mathematics (Goertz and Duffy 2001).[7] A majority of states also require tests in writing, social studies, and science.

These tests are accompanied by various types of accountability systems. Goertz and Duffy (2001) classify accountability systems into three categories: public reporting, locally defined, and state defined.[8] Thirteen states fall into the first category, in which requirements are imposed on school districts to report on various performance measures determined by the state. The second category, which involves only two states, is similar, except that in states in this category, each district selects its own performance measures. State-defined accountability systems, which are found in thirty-three states, set targets for student

performance on achievement tests and then reward districts that meet their targets and/or sanction districts that fall short.[9] These rewards and sanctions obviously constitute a new element of the education finance system.

This book provides an overview of the research on state aid to education and a detailed look at state aid reform in five key states: Kansas, Kentucky, Michigan, Texas, and Vermont. The state aid reform efforts in these states are particularly ambitious, and they illustrate the range of recent reform strategies.

To be more specific, part I of the book addresses the general issues involved in state aid reform. Chapter 2, by Anna Lukemeyer, provides an introduction to the court cases and legal theories at the center of state aid reform efforts over the last thirty years. Chapter 3, by David Figlio, examines several central conceptual issues in state aid reform, and chapter 4, by Thomas Nechyba, explores the effects of state aid reform on residential patterns and other noneducational outcomes and the feedback from these effects to education. Part II includes chapters by William Duncombe and Jocelyn Johnston, Ann Flanagan and Sheila Murray, Julie Cullen and Susanna Loeb, Jennifer Imazeki and Andrew Reschovsky, and Thomas Downes on each of the five states mentioned (Kansas, Kentucky, Michigan, Texas, and Vermont, respectively). The book also includes some general reference material: Appendix A describes significant education finance decisions by state courts, Appendix B describes state operating aid programs, and Appendix C describes state building aid programs.

This chapter provides some background information regarding the debate about state aid, introduces the key themes that arise in discussions of state aid reform, and presents a guide to the examination of these themes in later chapters. The rest of the chapter is organized in four sections. Section 1.2 provides background information on some important analytical issues. Section 1.3 reviews the main choices that a state must make in designing a package for reforming its education aid system. Section 1.4 discusses a variety of issues that arise in evaluating the effects of aid reform efforts. Section 1.5 offers some conclusions from the chapter's discussion.

1.2 Background

Any discussion of state aid to education must build on several key concepts and on an understanding of state aid formulas. These topics

are introduced in this section and discussed throughout this book, particularly in chapter 2 (Lukemeyer) and chapter 3 (Figlio).

1.2.1 Selecting a Method for Measuring Education and an Equity Standard

Most scholars agree that any education finance system needs to be based on a method for measuring the education provided by a school district and the selection of an equity standard (see, for example, Berne and Stiefel 1984, 1999; Monk 1990). The three most widely discussed methods for measuring education are *spending* per pupil, *real resources* per pupil, and *student performance* based on test scores and perhaps other measures. Spending per pupil is obviously a simple method to work with, but it is widely regarded as unsatisfactory, because it does not recognize that educational costs vary across districts for reasons outside the control of school officials. The other two methods, however, explicitly account for educational costs.

Measuring education using real resources per pupil is a way to account for the fact that teacher wages (and perhaps other input prices) are not the same in every district. Teacher wages vary across districts for two fundamental reasons that are outside the control of school officials.[10] First, it costs more to attract teachers into education from the private sector in high-wage than in low-wage regions. Second, some districts have to pay more than others to attract teachers of a given quality because they have more disadvantaged students or special-needs students, who pose extra challenges in the classroom (see Chambers 1998; Duncombe, Ruggiero, and Yinger 1996; Duncombe and Yinger 1999; Guthrie and Rothstein 1999; and Odden 1999).

Educational-performance measures, such as test scores, can, of course, stand on their own without any reference to educational costs. However, incorporating a performance-based method for measuring education into a state aid formula requires a translation of spending into performance; in other words, such an incorporation must recognize that it costs more to obtain a given level of performance in some districts than in others. This cost variation arises not only because of teacher wage differences but also because districts with more at-risk students must spend more than other districts to obtain the same student performance (Downes and Pogue 1994b). School districts with a high concentration of poor students, for example, may need lower

student-teacher ratios or additional prekindergarten, health, or counseling programs to overcome the disadvantages their students bring to school.[11]

Spending can be translated into performance in a way that accounts for both of these factors using a comprehensive educational-cost index (see Duncombe, Ruggiero, and Yinger 1996; Duncombe and Yinger 1997, 1998; Reschovsky and Imazeki 1998, 2001). As discussed in the next section, it may also be possible to accomplish this step with an aid formula that gives more weight to at-risk students.

Several standards for establishing the equity of an education finance system have been discussed in court opinions and in the academic literature. The most basic standard is educational *adequacy*, which is said to exist when students in every school district receive an education that meets some minimum standard. The impact of this standard depends, of course, on how high it is set, and as is shown throughout this book, some states have set a much higher standard than others.

Another key equity standard is *access equality*, defined as a situation in which an increase in taxpayer effort, as measured by the effective property tax rate, has the same impact on per-pupil revenue in every district. This standard was proposed in Coons, Clune, and Sugarman 1970, and it played an important role in the original *Serrano* decision (see Sonstelie, Brunner, and Ardon 2000). Access equality is similar to, but distinct from, another standard, known as *wealth neutrality*, which is achieved when district wealth and district education are not correlated. These two standards were initially thought to be the same, but Feldstein (1975) demonstrated that they are not. They differ in that one of them, access equality, refers to school districts' budget constraints, and the other, wealth neutrality, refers to the outcome of decisions made by the school district. Any policy that alters school districts' budget constraints will have an impact on what districts decide to do; the magnitude of this impact is difficult to predict, however, and no particular distribution of education across districts can be guaranteed, no matter how education is measured.

A final standard is *equality*, defined as the same education in every school district. Several state supreme courts have used language that appears to set equality as the required constitutional standard. No court, however, has combined an equality standard with a clear statement about how education should be measured or a clear statement about the steps a state must take to achieve this standard.[12]

1.2.2 Aid Formulas and Equity Objectives

The equity objective of an education finance system is defined by one of these equity standards combined with any of these methods for measuring education. Policymakers in a particular state might decide, for example, that they want an education system that achieves an adequate education as measured by real resources per pupil. After describing the two main types of formulas for awarding state educational aid, I show how these types of formulas can be modified to achieve any combination of these equity standards and education measurements.

1.2.2.1 Foundation Aid The most basic type of education-aid formula is called *foundation aid*. This type of formula sets aid per pupil to district i, A_i, equal to a foundation amount of spending per pupil, E^*, which is the same for all districts, minus the amount of money the district can raise at a state-determined minimum tax rate, say t^*. If V_i is property value per pupil in district i, then this amount is t^*V_i, and the aid formula is

$$A_i = E^* - t^*V_i. \tag{1.1}$$

This standard foundation formula is suited for education as measured by spending per pupil and for an adequacy objective. Specifically, E^* equals the minimally adequate spending per pupil selected by state policymakers.

As shown by Ladd and Yinger (1994), however, this formula can easily be altered to accommodate the other two methods for measuring education. Let W_i be an index of teacher wage costs and C_i be a comprehensive index of educational costs in district i that reflects both wage costs and the extra costs associated with educating disadvantaged students. Then multiplying E^* by W_i is equivalent to measuring education using real resources per pupil, and multiplying E^* by C_i is equivalent to measuring education using student performance.[13] In principle, an equivalent adjustment for the cost impact of student characteristics can be made by giving aid on the basis of "weighted" pupils, such that more disadvantaged students receive higher weight in the funding formula.[14]

This analysis reveals that educational-cost indexes play a critical role in helping education finance systems catch up with the new focus on student performance in the broader debate about education policy. Unless it adjusts for differences in educational costs from district to

district, a state education aid program simply is not compatible with performance objectives. Although scholars do not agree on the best method to account for these cost differences, there is widespread agreement that state aid formulas should include cost adjustments.[15] The need for cost indexes was emphasized, for example, in a recent report by the National Research Council's Committee on Education Finance (Ladd and Hansen 1999). See also Duncombe and Yinger 1999; Guthrie and Rothstein 1999; and Odden 1999.

To design a foundation aid program, a state not only must decide how to measure education, but it also must (1) select a foundation level, (2) select a minimum tax rate for districts, (3) decide whether districts are required to comply with this minimum tax rate, and (4) decide whether to restrict district supplementation of the foundation amount. Selecting the appropriate foundation level corresponds to deciding what level of education the state will regard as adequate. Because a higher foundation level implies a higher budgetary cost, each state must balance the educational benefits of a higher standard against the costs of achieving it.

The higher the minimum tax rate imposed on districts, the higher the local contribution to the education finance system. Thus, one way for a state to lower the burden of local property taxes is to lower t^* and to fund the resulting increases in aid payments required to reach the foundation spending level through state-level taxes. A decision about t^* is therefore one aspect of the broader issue of financing education aid reform, which is discussed in section 1.3.4. So long as the districts are required to impose at least the minimum tax rate, all districts will reach the foundation spending level.[16] If districts are not required to tax at the minimum rate, however, many districts receiving a relatively high amount of aid will cut their tax rates below t^* to free up taxpayers' resources for nonschool purposes.

The final decision, involving supplementation, is perhaps the most controversial. If *adequacy* is the equity standard, there is no reason to prevent spending beyond the foundation amount by the least-needy districts. To achieve educational *equality* across its districts, however, a state would have to prevent any district from spending more than the foundation amount.[17] Other standards may call for some restrictions on supplementation.

One way to reduce supplementation can be built right into a foundation plan. (Other ways are discussed in section 1.3.3.) To be specific, a state can recapture aid from the wealthiest or lowest-cost districts,

that is, from the districts that have negative aid according to the above formula. Making aid payments negative, that is, requiring direct payments from low-need school districts to the state, is not politically feasible and has never been attempted, but a state can accomplish the same thing by eliminating the property tax at the district level and turning it into a state tax. As I show in subsequent sections, a few states have used modified versions of this approach. When a state property tax is used to finance a foundation program, more property tax revenue is collected in low-need school districts than is required to fund their foundation payments. Consequently, shifting to a state property tax lowers the disposable income of voters in low-need districts below the point where it was with a local property tax and therefore lowers their desired level of school spending.[18]

1.2.2.2 Guaranteed Tax Base Aid The second main type of aid formula is called a district power–equalizing or guaranteed tax base (GTB) program. This type of formula is derived from the principle that per-pupil spending in a district, E_i, should depend only on the effective property tax rate the district is willing to impose, t_i; that is, $E_i = t_i V^*$, where V^* is a policy parameter selected by the state. Because aid per pupil, A_i, equals total spending per pupil minus local property taxes per pupil, $t_i V_i$, this principle leads to the following formula for a GTP program:

$$A_i = E_i(1 - V_i/V^*). \tag{1.2}$$

This formula describes a matching grant in which the state's share of spending per pupil (A_i/E_i) is much higher for low-wealth districts than for high-wealth districts. The high rate at which the state matches education spending in low-wealth districts greatly lowers the price of education in those districts, thereby inducing them to increase their spending on education substantially.[19] The price of education falls by a smaller amount in middle-wealth districts, so they have a more modest incentive to raise their education spending.

From a state's point of view, the key issue in a GTB formula is the selection of V^*. If V^* is set equal to property value per pupil in the wealthiest district, then every district in the state except the wealthiest receives some aid through the program, the price subsidy for the poorest districts is very large, and the cost to the state is very high. Lowering V^* lowers the magnitude of the subsidies and the cost to the state.

A state also can use a GTB formula to limit spending by high-wealth districts if it lowers V^* and reclaims funds from districts with negative aid according to the above formula, that is, from the richest districts. As discussed more fully in section 1.3.3, an approach of this type, often referred to as "recapture," is included in the reforms enacted in Texas (Imazeki and Reschovsky, chapter 8) and Vermont (Downes, chapter 9). A recapture provision in a GTB formula limits spending by high-wealth districts because it confronts these districts with a negative matching rate and hence a higher price of education. If a district's property value per pupil is 50 percent higher than V^*, for example, then its matching rate is $(1 - 1.5) = -0.5$, and it must pay the state an amount equal to half of its total spending. This is equivalent to a 50 percent increase in the price of education, which may easily result in a 20 or 30 percent decrease in school spending in the district (see Fisher and Papke 2000).

The standard GTB formula is designed for education measured by spending per pupil. As shown by Ladd and Yinger (1994), however, it can easily be adjusted to accommodate either of the other ways of measuring education simply by replacing the 1 in equation (1.2) with either W_i (for measurement by real resources) or C_i (for measurement by performance). A similar approach, which is used by Texas (Imazeki and Reschovsky, chapter 8) is to express the GTB formula in terms of weighted pupils, with weights for pupils that reflect the higher costs of educating disadvantaged students. Despite the contradiction between a GTB formula based on spending per pupil and the current focus in other realms of education policy on education performance, however, adjustments of this type are rare.

In principle, a GTB formula also could be adjusted to achieve wealth neutrality. As shown by Feldstein (1975), this would require that the (V_i/V^*) term in equation (1.2) be raised to a power that reflects the estimated behavioral response to the matching grant provided by the state under the formula.[20] Because a matching grant is a type of price subsidy, this estimated behavioral response is a type of price elasticity. Alternatively, Duncombe and Yinger (1998) argue that wealth neutrality could be approximated by defining a formula in which the (V_i/V^*) term is raised to a power, say α, and then adjusting α every year until the correlation between district wealth and district education falls below some acceptable threshold.

The recognition that some districts face higher educational costs than others leads not only to a change in the method for measuring

education, but also to a reconsideration of the wealth neutrality standard. A student is just as disadvantaged, after all, by living in a district with relatively high costs as he or she is by living in a district with relatively low wealth. So an alternative, more general equity standard is "fiscal" neutrality, which is said to exist when a district's education is not correlated with the balance between its taxing capacity (i.e., wealth) and spending requirements outside its control (i.e., costs). Duncombe and Yinger (1998) show how the GTB approach can be modified to yield this type of neutrality. To be specific, they measure the balance between wealth and costs in a district using the ratio of its property value index (V_i/V^*) to its cost index (W_i or C_i). Fiscal neutrality can then be approximated by replacing the property value index in equation (1.2) with this ratio and by introducing an adjustable policy parameter, as in the previous paragraph.

Although wealth neutrality is the equity standard that has been set by several state supreme courts and touted by several policymakers, no state has implemented an aid program designed to achieve it, that is, a program that incorporates the adjustments required to account for districts' behavioral responses to the aid formula. Aid programs of this type are simply too complicated to implement. The inconsistency between access equality and a performance-based method for measuring discrimination has been recognized, at least implicitly, by several state supreme courts. In its 1997 decision, *Brigham v. State*, for example, the Vermont Supreme Court calls for access equality but also says that "differences among school districts in terms of size, special educational needs, transportation costs, and other factors will invariably create unavoidable differences in per-pupil expenditures" (p. 22). Nevertheless, Vermont, unlike Texas, does not use a performance-based method for measuring education in its GTB formula, and no state has even considered a performance-based expression of its GTB program's equity objective.

Duncombe and Yinger (1998) also show that GTB formulas are not very good for achieving educational adequacy; even if wealth neutrality or fiscal neutrality is achieved through the implementation of the formula, some districts will decide to levy tax rates that are well below the rate needed to fund any reasonable adequacy target. Moreover, foundation formulas cannot eliminate the correlation between educational outcomes and wealth (or fiscal health) without an extremely high value for the foundation level and a required minimum tax rate. Different aid formulas clearly satisfy different equity objectives.

Table 1.3
Aid formulas and equity objectives

Equity standard	Definition of education		
	Spending per pupil	Real resources per pupil	Student performance
Adequacy	Standard foundation formula (with required minimum tax rate)	Foundation formula with foundation level adjusted for resource costs	Foundation formula with foundation level adjusted for educational costs
Access equality	Standard GTB formula	GTB formula with adjustment for resource costs	GTB formula with adjustment for educational costs
Fiscal neutrality	Standard GTB formula with adjustment for behavioral response	GTB formula with adjustments for resource costs and behavioral response	GTB formula with adjustments for educational costs and behavioral response
Equality	Standard foundation formula with prohibition of supplementation	Foundation formula with adjustment for resource costs and no supplementation	Foundation formula with adjustment for educational costs and no supplementation

1.2.2.3 Summary The foregoing discussion is summarized in table 1.3, which indicates the type of aid formula that is required to achieve each possible combination of the three methods for measuring education and the four equity standards presented in section 1.2.1. Many of the aid formulas specified in this table have never been tried. As I show in section 1.3, however, examples can be found among the states of all the formulas in the first row, and some of these have been combined with restrictions on supplementation that move them toward an equality standard, as in the table's last row. It is not surprising that most of the other formulas in the table have not been tried because, as explained earlier, they involve complex adjustments either for educational costs or for behavioral responses by school districts or both.

1.3 Policy Choices in State Aid Reform

With the background presented in the previous section, we can now turn to a discussion of the themes raised by the chapters in this book. The first set of themes, which is considered in this section, involves the policy choices that states must make in reforming their education finance system. The second set of themes, which is considered in the

following section, involves an evaluation of existing efforts to reform education finance in the states.

1.3.1 What Is the Appropriate Aid Formula?

Perhaps the most fundamental step in any effort to reform education funding is the selection of a formula for awarding a state's educational aid to localities. This selection is usually guided by the legal requirements in court decisions, but of course it also reflects the interests of state policymakers. As discussed in Lukemeyer (chapter 2), many of the early state court decisions in the area of education finance equity focused on access equality. On the basis of these decisions, several states, including California, adopted GTB formulas (Sonstelie, Brunner, and Ardon 2000). Lukemeyer also points out that several state courts have not distinguished among access equality, wealth neutrality, and equality, so that the signals they are sending about the right aid formula to select are, to say the least, confusing.

Recent state court decisions have emphasized adequacy as the objective of the education finance system. According to the widely cited 1989 Kentucky Supreme Court decision in *Rose v. Council for Better Education*, for example, all students have the constitutional right to "an equal opportunity to an adequate education." The recent decision by New York's highest court in *Campaign for Fiscal Equity v. New York* (2003) also emphasized adequacy. According to this decision, the state must provide "schoolchildren the opportunity for a meaningful high school education, one which prepares them to function productively as civic participants" (slip op. at 15). It is perhaps not surprising, therefore, that all five of the states discussed in part II of this book have based their education finance reforms on a foundation plan.

With or without a court case to guide a state in its choice of a method for financing education, foundation aid formulas are very popular. In fact, forty-one states employ a foundation formula (appendix table B.3).[21] In many cases, therefore, "reform" of a state's education finance system involves passing a significant increase in the foundation level (E^*), instead of coming up with a new funding formula altogether.

Regardless of whether the foundation formula in a state is old or new, the generosity of a reform program based on it is determined largely by the foundation level. The *Rose* decision in Kentucky implicitly called for a high foundation level by ruling that the state constitution required an education system providing each student with a set of

seven capacities, such as "sufficient oral and written communication skills to enable students to function in a complex and rapidly changing civilization." Other states have set less ambitious, and hence less costly, standards (see appendix B).

A second key issue in regard to the use of a foundation formula is whether localities are required to impose the minimum property tax rate specified in the formula. As explained earlier, the foundation level of spending in the formula is unlikely to be reached without such a requirement. Although twenty-eight of the states with foundation formulas require a minimum tax rate to be imposed in the state's localities or, equivalently, that localities provide a minimum local share of education costs, the others do not (appendix table B.4).

Only three states, Indiana, Missouri and Wisconsin, rely exclusively on a GTB formula to finance education in the state. However, four of the states considered in this book (Kansas, Kentucky, Texas, and Vermont) combine their foundation programs with a second tier of aid based on a GTB formula. Such an approach is also used in six other states, and Delaware combines flat grants with a GTB-like formula (appendix table B.3). In states that use this type of approach, the foundation aid is given first, and the GTB applies to taxes above the minimum rate in the foundation formula, generally up to some maximum.[22] Such an approach is designed to ensure that a minimum education level is achieved throughout the state via the foundation formula and then to place districts on an equal footing if they want to supplement the foundation level by raising additional taxes. In other words, it combines the adequacy standard with the access equality standard for supplementation.

This type of approach has been recommended by several scholars (Gess et al. 1996; Odden and Picus 1992), but on the basis of the results of some simulations, one of those scholars (Odden 1999) recently changed his mind. These simulations showed that adding a second-tier GTB formula on top of a foundation formula may actually lower the equity of educational outcomes in a state on a variety of measures, despite the large price subsidy it provides to low-wealth districts.[23] This result reflects a point made earlier in this chapter about the tax rate employed in a foundation formula: If districts are not required to tax at this rate at a minimum, many low-wealth districts will decide to set their tax rates below the rate in the formula so that they can free up money for nonschool spending.[24] This type of response is clearly evident in states that impose no minimum tax rate on localities.[25] It

follows that when a minimum tax rate is imposed, most low-wealth districts are forced to tax at a rate that is above the one that they would select if they were unconstrained. When a GTB plan is added, most low-wealth districts find that the required minimum rate is so far above the one they would otherwise prefer that they do not want to increase their tax rate any further, despite the large price subsidy they stand to receive through the GTB plan. As a result, only districts with property values that are relatively high but still below V^* are affected by the GTB plan; these districts do not feel constrained by the requirement of a minimum tax rate and respond to the modest price subsidy they receive from the GTB formula.

This analysis provides a reminder of how important it is to distinguish between access equality and wealth neutrality or any other equity standard based on the distribution of education (however defined) across districts. A second-tier GTB does equalize the ability of all districts in a state to supplement the foundation level of spending, but it does not equalize spending or cost-adjusted spending across districts, because it fails to recognize that the tax rate in low-wealth districts is already far above the level that they would choose if they were unconstrained. In this context, granting access equality is essentially meaningless, because low-wealth districts are not in a position to take advantage of the access they have been given.

When it is used as a second tier on top of a foundation program, therefore, a GTB program is a poor tool for boosting educational spending in an equitable manner. For any equity objective except strict access equality, a better approach is to repeal the GTB program and use the resulting savings to fund a higher foundation level.

1.3.2 Should the Formula Account for Student Characteristics and Wage Costs?

A second key policy choice is whether to bring educational costs into state aid reform. In the terms of table 1.3, the issue is whether to shift the measurement of education from spending per pupil to real resources per pupil or to performance. The highest courts in some states, such as New York and Tennessee, have explicitly rejected spending as a way to measure education because it does not account for educational costs, and many other courts implicitly reject spending by talking about "educational quality" (Lukemeyer, chapter 2).[26]

Perhaps the clearest signals on educational costs have come from New Jersey. In 1998, for example, the New Jersey Supreme Court

ruled, in *Abbott v. Burke* (*Abbott v. Burke V*), that the state was responsible for providing supplementary programs in twenty-eight urban school districts to bring student performance in these districts up to an adequate level (Goertz and Edwards 1999).[27] To be specific, the court required the state to provide these urban schools with whole-school reform, kindergarten, a half day of preschool for three- and four-year-olds, coordination with health programs, and programs to deal with security and technology.[28] Additional requirements for the preschool programs, such as student-teacher ratios, were spelled out in *Abbott v. Burke* in 2000 (*Abbott v. Burke VI*).

All these requirements explicitly recognize that educational costs are higher in urban districts, with their concentration of disadvantaged students, than in others.[29] As the court put it in an earlier decision,

> We have decided this case on the premise that the children of poorer urban districts are as capable as all others; that their deficiencies stem from their socioeconomic status; and that through an effective education and changes in that socioeconomic status, they can perform as well as others. Our constitutional mandate does not allow us to consign poorer children permanently to an inferior education on the theory that they cannot afford a better one or that they would not benefit from it. (*Abbott v. Burke* [1990] [*Abbott v. Burke II*], 385–386)

The New Jersey court has not recognized, however, that educational costs also may vary across nonurban districts (see Lauver, Ritter, and Goertz 2001).

These court decisions, along with the growing emphasis on performance in state education policy, appear to have encouraged states to include cost adjustments in their state educational aid formulas. A recent survey finds that "38 states currently distribute some education funds on the basis of poverty" (Carey 2002, 1), which is a key determinant of educational costs. Of these states, thirteen incorporate district poverty into their main aid formula, eighteen have supplementary aid programs weighted toward districts with poor children, and seven use both of these approaches.[30] Using a slightly broader definition than poverty, the U.S. Census finds that twenty states have categorical "compensatory" programs for "economically disadvantaged" students (appendix table B.2). Aid formulas in several states also reflect other factors known to affect educational costs, such as the cost of living or the share of students with limited English proficiency or with a handicap.[31] For example, thirty-three states have categorical aid programs for handicapped students (appendix table B.2), and only three states

(Delaware, Nevada, and South Dakota) have aid programs that ignore educational costs altogether (appendix table B.3).

Adjusting aid formulas for educational costs is difficult, however, and existing methods for doing so range from ad hoc cost adjustments in many states to a regression-based comprehensive cost index in Massachusetts during the 1980s (Bradbury et al. 1984). To account for the higher cost of educating poor students, sixteen states use pupil weights, five states make cost-based adjustments to their main aid formula, and twenty-four states use categorical grants; these figures include seven states that combine two of these approaches and leave out the twelve states with no cost-based aid (appendix table B.5). Clearly, no consensus has emerged on the best way to proceed, and existing methods almost certainly understate the variation in educational costs across districts.[32] Carey (2002) finds, for example, that the average state provides 17.2 percent more funding for a poor student than for a nonpoor student, whereas existing research suggests that the cost of educating a poor student is at least 100 percent higher than that of educating a nonpoor student.[33] Only one state, Maryland, gives every poor student an additional weight this high (appendix B).

All of the reforms reviewed in this book also involve some form of cost adjustment in the state educational aid formula. Kansas, Kentucky, Texas, and Vermont adjust their basic foundation amount for the share of a district's students in poverty, with special needs, or with limited English proficiency, but the adjustments are fairly ad hoc. Texas also adjusts for the geographic cost of living. Michigan does not include cost adjustments in its foundation amount but does provide categorical programs with ad hoc adjustments for concentrations of poor students or other students with special needs; unfortunately, these programs have never been fully funded and may therefore have relatively little impact on the state educational aid received by high-cost districts (see Cullen and Loeb, chapter 7).[34]

Perhaps the main issue in these cost adjustments, along with the ones in other states, is their ad hoc nature. As a result, existing cost adjustments move states away from the first column in table 1.3 toward the third column (usually in the first row), but none of them can be considered fully consistent with a performance-based method for measuring education. Several of the chapters in part II explore alternative, more accurate ways to account for educational costs.[35] Given the emphasis of state education policy on student performance, this is a key issue for scholars and policymakers to pursue.

Cost adjustments in state aid reforms in the five states examined in part II raise two additional issues. First, the reforms in Kansas, Texas, and Vermont include a cost adjustment that raises the foundation level for the smallest districts. Size adjustments also appear in the aid programs of fourteen other states (appendix table B.5). This type of adjustment is not about transportation costs, which are considered separately. Instead, the rationale for this type of adjustment is the well-known result (surveyed in Andrews, Duncombe, and Yinger 2002) that the per-pupil cost of education is higher in very small districts than in medium-sized ones. It is not clear, however, that a cost adjustment is the appropriate response to this finding, because the cost disadvantage of small districts can be eliminated in many cases through district consolidation (Duncombe and Yinger 2001b). If per-pupil costs can be lowered through consolidation, a state is wasting money by rewarding districts that refuse to consolidate.[36] More research is needed to determine the circumstances under which consolidation of school districts is a cost-effective option.

Second, four of the states examined in this book, Kansas, Kentucky, Michigan, and Texas, provide more aid to districts with a relatively high concentration of "exceptional" or gifted students. The aid programs in thirty other states follow suit (appendix table B.6). These provisions have nothing to do with ensuring adequacy in student performance. An educational cost adjustment is designed to recognize that some districts must spend more than others to achieve a given level of student performance. Districts with many exceptional students may decide to spend money on special programs for these students, but these districts have to spend *less* than other districts to reach any given performance target. Policymakers and courts may want to encourage the creation of programs for gifted students with provisions such as these, but if they do, they should recognize that these provisions are not cost adjustments and have nothing whatsoever to do with achieving performance objectives.[37]

1.3.3 Should Supplementation by Wealthy Districts Be Reduced?

Another key issue facing policymakers is whether education finance reform should reduce the extent to which wealthy (or otherwise low-need) districts supplement the foundation amount specified in the aid formula. The recent emphasis on adequacy in state court decisions indicates that restrictions on supplementation may not be required, but the continuing role of other equity standards in some states, including

some that emphasize adequacy, suggests that reductions in supplementation may be called for in many, if not most, cases.[38] In fact, all five of the reform efforts reviewed in this book explicitly restrict supplementation by high-wealth districts to some degree.[39] These limits tend to be complicated and are often politically unpopular, so the debate on supplementation in these states is likely to continue for many years.[40] Moreover, virtually any aid reform plan includes some provisions that reduce this type of supplementation, even if those provisions are not explicitly designed to do so.

States limit supplementation in five ways. The most direct approach is simply to prohibit supplementation or to prohibit it beyond some limit. The Kansas reform, for example, prohibits supplementation beyond the spending level supported by its second-tier GTB program (Duncombe and Johnston, chapter 5), the Kentucky reform prohibits supplementation beyond 30 percent above the spending level supported by the state's second-tier GTB program (Flanagan and Murray, chapter 6), and the Michigan reform calls for phased-in provisions that will eventually allow only a limited amount of supplementation even in the wealthiest districts (Cullen and Loeb, chapter 7).

These limitations on supplementation build on a long tradition of local tax and expenditure limitations, which exist in one form or another in forty-four states, usually with some form of override provision (O'Sullivan 2001).[41] In fact, all of the states examined in this book except Vermont had school property tax limitations before they implemented their school finance reform plans, and they either replaced their tax limitations with features of the reform plan or, as in Texas, incorporated the tax limitations into their reforms. Five other states with court-mandated school reform also already had school property tax limitations in place before the reforms, and four more states added such limitations after the implementation of a reform ordered by the state supreme court (see Evans, Murray, and Schwab 2001).[42] The last category includes the well-known case of California, which passed a property tax limitation, Proposition 13, in 1978, after the *Serrano I* and *Serrano II* decisions. This proposition dramatically limited school spending (Sonstelie, Brunner, and Ardon 2000).

A second approach to limiting supplementation, used by a few states, involves a second-tier GTB program with a recapture provision that raises the price of supplementation in high-wealth districts.[43] This approach does not forbid spending above the foundation level but instead discourages it by making its price very high. As noted earlier in

the chapter, a large literature demonstrates that school districts are sensitive to price changes, so this approach can significantly lower spending by low-need districts. Versions of this approach are used by Texas and Vermont.

This approach has two weaknesses, however. First, it is likely to be unpopular in wealthy districts, where voters may resent the extra "tax" that it imposes. Second, the amount of revenue that it recaptures depends on the spending decisions of the high-wealth districts and therefore cannot be known when the state aid budget is determined. These problems are illustrated by the original second-tier GTB formula in Vermont, which applied to all revenue above the foundation amount (Downes, chapter 9). Vermont collected recaptured funds in an account and then returned them to districts based on the tax rate they imposed and (inversely) on their wealth. No state funds were involved. The key problem with this design was that it left all districts uncertain about the revenue consequences of their tax rate decisions.[44] This uncertainty was eliminated in 2003, when Vermont switched to a more traditional GTB formula (ACCESS 2003). The recapture provisions in the Texas reforms are less dramatic, primarily because they apply to only 88 (out of 965) school districts in the state (Imazeki and Reschovsky, chapter 8).[45] Moreover, the Texas provisions give wealthy districts five options for meeting their recapture obligations, thereby eliminating the uncertainty that was present in the original Vermont approach.

Both Texas and Vermont use their second-tier GTB formulas both to promote access equality and to limit supplementation. As explained earlier in the chapter, the promise of access equality is an empty one, and a better approach would be to use a GTB solely to promote the second objective. This requires a relatively low value for V^*, as in Vermont.[46] However, lowering V^*, magnifies the negative matching rates in the wealthiest districts and is therefore likely to increase their opposition to a reform plan. One way to mitigate this opposition would be to multiply the matching rate in equation (1.2) by a fraction, thereby lowering both the price increase that wealthy districts face and the reduction in supplementation.

The third way for a state to limit supplementation in low-need districts is to transform the property tax into a state tax and use the revenue to finance the foundation plan. As explained in section 1.2.2.1, this approach lowers the disposable income of high-wealth districts (or low-cost districts, if a cost adjustment is included in the foundation

plan) relative to a foundation plan based on a local property tax. The resulting income effect results in a decline in the desired education spending level, and hence in the level of supplementation, in those districts. Although not definitive, the available evidence suggests that this approach, which operates through an income effect, is likely to have a smaller impact on supplementation than the GTB approach, which operates through a price effect.

The local property tax was transformed into a state tax as part of education finance reform efforts in Kansas (Duncombe and Johnston, chapter 5), Michigan (Cullen and Loeb, chapter 7), and Vermont (Downes, chapter 9), but the impact of these changes on supplementation was mitigated, if not eliminated, by the details of the transformation. In Kansas, the transformation was accompanied by large increases in state aid funded by other state taxes, primarily the sales tax, so that the current state-set property tax rate is below the prereform local property tax rate except in a few wealthy districts. State aid from other sources also increased in Vermont after the transformation, although to a lesser degree than in Kansas. In Michigan, the transformation was accompanied by a dramatic reduction in the property tax rate, so that the condition required to reduce supplementation, namely, a state tax rate above the prereform local tax rate, does not exist in any district.

The fourth way a state can limit supplementation in low-need districts is by redistributing state aid away from these districts toward high-need districts. This approach faces political obstacles, because it involves cutting the aid of low-need districts, but it is a relatively low-cost way to shift a state's focus away from general school support toward an adequacy standard. It builds on the relationship between state aid and local spending, which is another form of an income effect. According to a large literature, cutting aid to low-need districts lowers their effective income and induces them to choose a lower spending level for education (see Fisher and Papke 2000). Moreover, extensive empirical evidence indicates that the impact on school spending of a change in state aid is significantly larger than the impact of an equivalent change in voters' disposable income.[47] As a result, the type of redistribution involved in this approach is likely to have a larger impact on supplementation by low-need districts than is state takeover of the property tax, and it might have a larger impact than a GTB plan with recapture.

Finally, any state aid reform plan that raises state taxes in high-wealth (or otherwise low-need) districts will reduce supplementation in those districts to some degree. The more progressive the increase in state taxes, the larger this effect is likely to be. The education finance reform undertaken in Kentucky falls into this category; the state financed an increase in its foundation level through a significant increase in state taxes, along with an increase in the required minimum local tax rate (Flanagan and Murray, chapter 6).[48] This approach, like the previous two, works through income effects; that is, supplementation is reduced because of a decline in the resources available in high-wealth districts. In this case, however, the changes in financing affect voters in high-wealth districts only to the extent that variables predicting which voters experience an increase in taxes, such as their income, are correlated with district wealth. An income tax increase, for example, will lower supplementation in districts that have high wealth because their residents have high incomes and are able to buy expensive houses, but it will not lower supplementation in districts that have poor residents along with a power plant that results in high property wealth per pupil.

This discussion of ways to limit supplementation leads to four main conclusions. First, it is virtually impossible to reform state aid through an expanded foundation aid program without limiting supplementation by low-need districts. The limits on supplementation can be severe, as are those that have been imposed in Kansas, Michigan, and Vermont; moderate, as is that implemented in Texas; or weak, as is that applied in Kentucky. But the only way to increase the foundation spending level, E^*, in equation (1.1) without limiting supplementation is to pay for the increase entirely through an increase in the required local tax rate, t^*. This approach shifts resources toward the districts with the lowest wealth without influencing districts that are too wealthy to receive funding under the original foundation plan.[49] No existing state aid reform plan has relied exclusively on this approach, although, as noted earlier, it is part of the Kentucky plan.

The literature recognizes that state aid reform can promote educational equity by providing more resources to districts with low student performance (called "leveling up") or by restricting the ability of districts with high student performance to go beyond the provision of basic educational services ("leveling down"). As the cases considered in this book illustrate, all aid reform plans involve elements of both of

these strategies. Scholars disagree, however, on the net impact of the typical reform; that is, they disagree about the impact of reform on spending in the average district or on performance by the average student in the state. Murray, Evans, and Schwab (1998) and Dee (2000) find that the typical reform involves more leveling up, whereas Hoxby (2001) finds that many reform plans, especially the most dramatic, involve more leveling down.[50] According to Hoxby, this outcome reflects the fact that some types of leveling down allow the state to keep its own costs down. As she puts it: "It is expensive to bribe districts that would prefer low spending into spending a lot. It is inexpensive to forbid high spending" (1222).

The analysis presented in this book does not reveal, of course, whether the average reform levels up or levels down, but it does indicate that the choice for policymakers is not whether to reduce supplementation by low-need districts, but instead how much to reduce supplementation using which approach. Some leveling down arises, after all, even when a state uses state taxes to pay for an increase in the foundation spending level. Thus, each state must select the approach to supplementation that best fits the mandates of its courts and its policy objectives.[51]

The second conclusion arising from the discussion of supplementation is that reductions in supplementation by high-wealth districts accompany state aid reforms designed to meet legitimate educational objectives and do not necessarily arise simply from a state's desire to minimize its own costs. It is true, of course, as Hoxby (2001) points out, that a state may be able to minimize how much it must pay to meet an equality standard by explicitly limiting supplementation in high-wealth districts. It is also true, however, that supplementation by high-wealth districts is reduced whenever a state decides, in the name of fairness, to redistribute some of its aid money from wealthy to poor districts or to pay for a higher foundation amount by turning a local property tax into a state tax.

It is tempting to regard reductions in supplementation as part of education finance reform as somehow punitive or inappropriate because they pull wealthy districts below their preferred level of school spending. In fact, however, the level of spending wealthy districts "prefer" is heavily influenced by the education finance system in place prior to any reform. This preferred level of spending is boosted by state aid, for example, and it is boosted by a state's decision to set an extremely low foundation spending level and thereby to forgo the high state taxes

needed to bring foundation spending up to a level courts or education experts regard as adequate. Indeed, this preferred level of spending is even influenced by the way the state draws school district boundaries, which are the principal determinant of a school district's wealth and of the extent to which its students are disadvantaged.[52] As a result, rejecting reductions in supplementation as part of a reform package is equivalent, in many cases, to endorsing the prereform education finance system created by the state.

A better approach to the issue of supplementation would be for a state considering reform to decide on its educational objectives, on constitutional or policy grounds, and then to determine which methods for reducing supplementation by wealthy districts are most consistent with those objectives. The analysis surrounding this determination should recognize that preventing wealthy districts from using their own funds to supplement the state's foundation amount may promote an equality objective but also imposes costs on society in the form of lost educational benefits in those districts.[53] It should also recognize, however, that a state may not be able to meet its constitutional or policy-based equity objectives without removing some of the existing subsidies that wealthy districts receive in the form of state aid or tax relief.

The third conclusion is that supplementation by wealthy districts can be reduced through a variety of policies, but little is known about the relative impact of different approaches. Explicit limits on supplementation may appear to be the most effective policy, but these limits can be set to permit such high levels of supplementation that they have little impact on behavior. Moreover, inferences about the income and price effects of many policies on school district spending can be made on the basis of related studies, but there is no direct evidence on the extent to which supplementation is reduced by GTB programs with recapture, state takeover of local property taxes, redistribution of existing aid funds, or tax increases to pay for a higher foundation spending level. As indicated earlier in the chapter, my own ranking based on existing indirect evidence is that GTB programs and redistribution of existing aid funds have the largest effects on supplementation, followed by state takeover of the property tax, and then by increases in other state taxes, but more research on this topic is clearly needed.

The fourth conclusion is that the reforms in Kansas, Kentucky, Michigan, and Texas all combine some adjustments of aid amounts for differences in educational costs with some limits on supplementation.

In effect, therefore, these reforms bear some resemblance to the entry in the bottom right of table 1.3, which involves full cost adjustment and no supplementation. The actual reforms do not go all the way to the system described in that entry, however, because both their cost adjustments and their equalization efforts are incomplete.

1.3.4 How Should State Aid Reform Be Financed?

Another fundamental issue in any school aid reform plan is how to pay for it. This issue has two parts. The first part is the extent to which the burden for funding a state's schools should be shifted from school districts to the state, and the second part is the choice of taxes to fund the state's share of the burden.

The average state provides half of the revenue for elementary and secondary education, but this share varies widely from state to state (see appendix table B.1). Concern about the state's contribution has been central to the education finance debate since *Serrano I* identified the local property tax as a source of educational inequity. Because other local taxes are generally not available to school districts, any funding plan for education that reduces reliance on the local property tax almost inevitably involves an increase in the state's share of educational funding. With one exception, every education funding reform plan discussed in this book both reduces local property taxes and increases the state's share of the funding burden. The exception is the reform in Kentucky, in which the state share of funding was already very high and, as noted previously, both state and local taxes were increased.

In many states that have undertaken reform of their systems for funding education, including Michigan and Vermont, voter dissatisfaction with high property taxes was also a key motivation for the reform. In Michigan, for example, a frustrated legislature decided to eliminate the state's property tax to force the state to design a better education finance system (Cullen and Loeb, chapter 7). Moreover, concern for high property tax burdens is such a powerful issue in some states that it gets in the way of school aid reform.

Consider the case of New York, which passed a $3 billion School Tax Relief Program (STAR) in 1997. This program takes the form of a state-funded homestead exemption, which exempts homeowners from school property taxes on the first $30,000 of the market value of their home. STAR provides little, however, help for districts with a high concentration of renters, particularly the poor urban districts, which

are the neediest school districts in the state (Duncombe and Yinger 2001a).[54] Its cost represents over 20 percent of the state's budget for education aid. With this much money, New York could have implemented a new state aid program that would have gone a long way toward eliminating the educational inequities that are currently under debate after the *CFE v. New York* decision by the state's highest court.[55] This type of aid increase would also provide property tax relief, because aid increases are not fully translated into spending increases, and it could be designed to promote widely recognized educational-equity standards.

The extent of any shift from local to state funding that results from school finance reform is largely controlled through decisions about the parameters of the school aid formula. With a foundation formula, the key issues are the magnitudes of the foundation spending level and of the required minimum local property tax rate. Raising the foundation spending level with the required tax rate held constant raises the state's share of education funding. Moreover, the lower this tax rate for a given foundation level, the higher the state share of education funding must be.[56] If the property tax is turned into a state tax—that is, if the revenue from the property tax is sent directly to the state rather than to the localities—then the decision about the property tax rate determines the share of education revenue that comes from the property tax, instead of from other state taxes.

One implication of this analysis is that a state can minimize the increase in state taxes (or, if the property tax is a state tax, in other state taxes) needed to finance a higher adequacy standard by raising the minimum required property tax rate school districts must charge. With a local property tax, however, a state obviously cannot fully fund reform in this way, because it places the burden for financing reform on the neediest districts. Moreover, any preexisting voter dissatisfaction with the property tax may undermine this approach, regardless of whether the property tax is collected by school districts or the state.

Policymakers also must decide whether to pay for any increase in the state's contribution to education that may result from education finance reform by increasing the state income tax or the state sales tax. This choice raises complex issues of equity and efficiency that will not be addressed here. Suffice it to say that a debate about the best state tax to use to finance a state aid reform plan is an appropriate, and almost inevitable, part of designing such a plan. One interesting example

comes from Michigan, where the voters explicitly selected a higher sales tax over a higher income tax as a way to pay for education aid reform in the state (Cullen and Loeb, chapter 7).

1.3.5 Should Aid Reform Be Linked to Accountability?

A fourth choice that policymakers designing a plan for state aid reform must make is whether state education aid should be linked to an accountability program. As noted earlier, virtually all states have some type of accountability program, and a majority of states have a program that imposes some type of financial rewards and punishments. The courts did not link accountability to state aid reform until fairly recently, but the Kentucky Supreme Court's *Rose* decision in 1989 threw out the state's existing system of school governance and brought new visibility to accountability programs. Moreover, the recent state aid reforms in Kentucky, Michigan, and Texas have all been accompanied by accountability programs that include district-level rewards and sanctions.

It is now widely recognized that state aid reform and accountability are inextricably linked (Figlio, chapter 3). State legislatures are often reluctant to give more money to school districts without assurances that the money will be well spent, and some scholars have found that increases in state aid are likely to undermine school district efficiency (Duncombe and Yinger 1997, 1998). (In this context, efficiency is a measure of a school district's success in translating inputs into student performance, after accounting for factors outside the district's control, such as concentrated poverty among its students.) Indeed, some scholars have argued that aid increases are unlikely to boost student performance at all, either because their negative impacts on school district efficiency are so large or because additional inputs are unable to influence performance.[57] Because of these concerns it seems reasonable to combine aid increases for needy school districts with accountability programs that preserve the efficiency with which these districts operate and even encourage them to operate with greater efficiency.

The problem is that our knowledge of accountability programs is distressingly limited. Many of the early accountability programs were seriously flawed because they set up rewards based solely on student test scores. Approaches of this sort fail to recognize that poor performance depends both on a school district's efficiency and on cost factors, such as wage rates and student characteristics, that are outside the district's control. An "accountability" system that punishes a district

because it contains many disadvantaged students obviously makes no sense.

Unfortunately, however, it is difficult to separate these two causes of poor performance. Some existing accountability programs have made steps in this direction (Clotfelter and Ladd 1996; Hanushek and Raymond 2001; Ladd 2001; Murnane and Levy 2001), but to some degree all existing programs reward some districts and punish others for factors that are outside the districts' control.[58] These points are nicely summarized by Hansen (2001, 2):

> Research is just beginning into the reliability and stability of different methods of ranking and rating schools for the purposes of determining rewards and sanctions. Differences in school size and in the size of relevant cohorts of students … can result in accountability systems with perverse incentives.… Improperly designed incentives can have serious effects on the morale and motivation of school personnel.

Moreover, there is no compelling evidence on the impact of accountability programs on student performance. One study (Ladd 1999) finds some evidence consistent with a positive impact on student achievement resulting from Dallas's accountability program, but this study observes only a single year before the program was implemented and cannot rule out the possibility that the observed increases in student performance in later years reflect something unusual about this year, instead of the impact of the accountability program. Ultimately, accountability programs themselves must be held accountable. If they do not result in higher student performance, then they should be dropped. There is obviously room for more research on this important topic and for experiments with more accountability programs.

The objective of accountability programs is to give school districts incentives to be more efficient, that is, to improve student performance with no increase in resources. An alternative method for promoting this objective is to mandate certain teaching or management practices that, in the opinion of state officials, will result in higher school efficiency. This approach was taken by the New Jersey Supreme Court, which, as noted earlier, required the state to implement a specific whole-school reform program in twenty-eight (later thirty) low-performing urban school districts. Moreover, in its 1989 *Rose* decision, the Kentucky Supreme Court found constitutional violations in school curriculum and governance, as well as in school finance. The subsequent reforms included major changes in curriculum and management (see Flanagan and Murray, chapter 6).

1.3.6 Should Aid Reform Be Linked to School Choice?

Expanding school choice is another type of policy that is linked to education finance reform in several states. School choice plans, which come in many different forms, give parents alternatives to sending their children to the local public schools in their neighborhood. Choice plans allow parents to send their children to other schools in the same district or to schools in other districts, enable the creation of public charter schools subject to fewer restrictions than existing public schools, or provide vouchers that parents can use to help send their children to private schools. These plans are intended not only to provide parents with choices regarding their children's education but also to promote competition among schools. Some people argue that such competition will force existing public schools to improve, that is, to become more efficient (see chapter 4).

The potential role of school choice in school aid reform is illustrated by the case of Michigan (Cullen and Loeb, chapter 7). The school aid reforms implemented in Michigan in 1994 included strong encouragement of charter schools, and these reforms were complemented with a new school choice plan a few years later. Michigan now has about 180 charter schools, three-quarters of which are run by private, for-profit companies (*New York Times* 2002).

Charter schools and school choice plans are difficult to evaluate, but the limited available evidence does not suggest that charter schools provide significantly better education than other public schools or that competition from charter schools or choice plans forces public schools to become more efficient (Gill et al. 2001). Nevertheless, these approaches continue to have many supporters, and they will undoubtedly continue to be the subject of further experiments and further research.

School vouchers have not been part of any major school finance reform plan implemented to date, but vouchers have been used in several places, including Milwaukee, Cleveland, and Florida. The Florida voucher plan blends the notions of choice and accountability by making vouchers available to students in schools rated "failing" by the state (see Figlio, chapter 3). So far, however, only a handful of students have made use of the voucher option. A 2002 U.S. Supreme Court decision, *Zelman v. Simmons-Harris*, upheld the constitutionality of the Cleveland vouchers, which are used primarily to send children to Catholic schools. As a result, voucher plans may become more widely used in the future.

The available evidence indicates that some existing voucher programs have a small positive impact on the performance of participating students, at least in mathematics, whereas other voucher programs have no impact on performance at all (Rouse 1998). This evidence, however, is difficult to interpret. Rouse (2000) presents some evidence, for example, suggesting that the Milwaukee voucher program has a small positive effect on math performance because of smaller class sizes in the private schools attended by Milwaukee voucher recipients than in the public schools these students would otherwise attend. The cause of this class size difference is not known, however. Voucher proponents might argue that it arises because private schools are more efficient than public schools and can hire more teachers with the money they save. Voucher opponents can counter that these extra teachers could be hired thanks to cost savings associated with a smaller concentration of disadvantaged students in participating private schools than in the public school population as a whole. Moreover, participants in the Cleveland program primarily send their children to Catholic schools because subsidies to these schools from the Catholic Church keep the tuition low enough that the voucher can cover it. Subsidies of this type obviously would not be available in a large voucher program.

1.3.7 Should Capital Spending Be Included?

A final choice for policymakers confronting education aid reform is whether the reform plan should attempt to promote equity in capital spending. With some notable exceptions, most of the court cases have focused on the equity of operating spending in the state, not of capital spending. One important exception can be found in New Jersey, where capital spending was included in the original *Robinson v. Cahill* ruling in 1973 and where the 1997 *Abbott v. Burke* ruling (*Abbott v. Burke IV*) explicitly called for more capital spending in poor urban school districts (Goertz and Edwards 1999).[59] Capital spending was not included in the initial court cases involving school aid reform in Texas, but in its 1995 decision in *Edgewood Independent School District v. Meno*, known as *Edgewood IV*, the Texas Supreme Court ordered the state to deal with inequity in capital spending among the state's school districts (see Imazeki and Reschovsky, chapter 8). Moreover, as noted earlier, a recent supreme court decision in Arizona and recent trial court decisions in Alaska and New Mexico declared that these states' systems for funding capital spending are unconstitutional (see appendix A).

At one level, it obviously makes no sense to eliminate inequities across districts within a state in operating spending but to allow them in capital spending; after all, both types of spending are crucial for providing education. It is also true, however, that capital spending has a less direct connection to student performance than does operating spending and that state formulas for building and operating aid tend to be fundamentally different from one another (Sielke 2001).

Compared to operating aid, for example, building aid relies much more heavily on matching grants (appendix C). In fact, only six states rely exclusively on lump-sum grants for capital spending, whereas twenty-three states use only matching grants, and nine states use a combination of the two. Regardless of the formula used, many of these grants also require that individual building projects be approved by the state. In contrast, eleven states do not provide any building aid to localities at all, and Hawaii, with its state school system, fully funds school capital spending. Finally, building aid programs are far less likely than operating aid programs to adjust for district property wealth. To be specific, only twenty-five states have at least one building aid program weighted toward low-wealth districts.

Unfortunately, the principles behind and the behavioral consequences of these building aid formulas are not well understood. More work by both policymakers and scholars is clearly needed to shed light on inequities involved in capital spending—and on the best ways to alleviate them.

1.4 Analyzing the Effects of State Aid Reform

A second set of themes in this book involves the effects of reforms to state education-aid programs. Are court mandates actually implemented? Do state aid reforms eliminate disparities in spending and in student performance? Do these reforms have unintended consequences, and are they undermined or reinforced by behavioral responses unanticipated by policymakers? We now turn to an examination of these questions.

1.4.1 To What Extent (and Over What Period) Are Court Mandates Implemented?

In most cases, state education-aid reform is stimulated by a state supreme court decision. One of the key factors influencing the effectiveness of the eventual reform, therefore, is the process that leads from a

court decision to an actual aid reform program. This process appears to depend on the willingness of the state's legislative and executive branches to respond to a court decision that overturns the state's education finance system and on the willingness of the state supreme court to impose specific requirements on the other branches of government in the state. To some degree, of course, the legislative and executive branches must defer to the court on constitutional matters, and courts traditionally have deferred to the other branches of government on matters of educational policy. But despite this general standard of deference, the range of outcomes for this process is amazingly large.

In some states, a relatively weak signal from the courts results in dramatic reform by the legislative and executive branches. Kansas (Duncombe and Johnston, chapter 5) provides one example of this type of situation. Maryland provides another. In 1994 a trial court in Maryland approved a settlement that called for the state to increase its funding for Baltimore's schools. In 2000, this court ruled that this decree had not been followed and ordered the state to increase its funding to Baltimore. The legislature and governor did not immediately comply with the court's ruling but instead set up a commission to make recommendations for improving the adequacy and equity of education in Maryland. This commission issued its final report in January 2002 and recommended a dramatic increase in state education aid to localities, particularly for schools with high concentrations of poor students, students with special needs, or students with limited English proficiency. A grassroots campaign convinced the legislature to pass legislation based on the commission's recommendations, and these recommendations were signed into law in April of the same year (Montgomery 2002; Hunter 2003).

Another common route to state aid reform is a clear state supreme court decision that is taken seriously by the legislative and executive branches. This route is illustrated by Kentucky (Murray and Flanagan, chapter 6) and Vermont (Downes, chapter 9). The Vermont case is somewhat unusual in that voter dissatisfaction with high property taxes was reflected in the legislature that was elected right before the state supreme court handed down its decision in 1997 striking down the state's education funding system. As a result, this legislature acted promptly to put a new system in place.

Other states have witnessed a drawn-out tug-of-war between the legislative and executive branches on the one hand and the courts on the other. Texas (Imazeki and Reschovsky, chapter 8) provides one

example of this pattern and Ohio (ACCESS 2003) provides another.[60] The most dramatic example, however, is undoubtedly New Jersey (Goertz and Edwards 1999; ACCESS 2003), which has experienced decades of legislative and executive resistance to reform of the state's school finance system combined with gradual strengthening of requirements imposed on the state by the state's highest court. The original lawsuit challenging the education finance system in New Jersey was filed in 1970, and in 1973 the New Jersey Supreme Court ruled, in *Robinson v. Cahill*, that the state's education finance system did not meet the constitutional requirement in the state for "thorough and efficient" schools. The New Jersey Supreme Court has issued twelve more decisions in the area of education finance since then, and the battle between policymakers and the courts continued into 2003. The legislature responded to the early decisions by increasing the state's share of education funding, but not until *Robinson v. Cahill* in 1976 (*Robinson v. Cahill V*) did the court give tentative approval to a state aid system. Despite this approval, the legislature refused to appropriate money for its own legislation, so the court briefly shut down the schools in the summer of 1976. This action led to a state income tax to fund school aid followed by the reopening of the schools in time for the 1976–77 school year.

A second round of litigation, known as *Abbott v. Burke*, began when the Education Law Center filed a lawsuit on behalf of the state's urban school districts. After a series of preliminary decisions, the court ruled in favor of the plaintiffs; that is, it required education finance reform. Twice the state passed legislation in an attempt to satisfy the court, and twice the court ruled that the new legislation was still unconstitutional. The court's frustration with state policymakers finally led it to impose specific spending requirements on the state. As noted above, the court ruled, in *Abbott v. Burke V* in 1998 and in *Abbott v. Burke VI* in 2000, that the state was responsible for funding a variety of specific programs in urban schools. The long-standing battle between policymakers and the court appeared to end early in 2002, when the new governor of New Jersey, James McGreevey, dropped the state's opposition to the court orders issued in the *Abbott* decisions and set up a panel to oversee the state's implementation of the requirements the court had imposed (Kocieniewski 2002).[61]

Overall, anyone trying to understand state aid reform in a given state would do well to begin by looking into the role of the state courts in the reform process and the interplay between courts and policy-

makers. These factors are, of course, different in every state, but they almost always have a significant impact on the nature of the reform package that is ultimately adopted.

1.4.2 Effects on the Equality of Spending

A key issue in evaluating state aid reform is whether it actually makes school spending more equitable, that is, whether it reduces disparities in spending across school districts, as required by several state supreme court decisions. All five chapters in part II of this book examine this issue, and all find that reform does reduce spending disparities, sometimes substantially, but does not lead to complete spending equality.[62] These chapters build on the work of several scholars who have studied the link between aid reform and spending equality using national data.

Murray, Evans, and Schwab (1998) examine data for over 10,000 school districts in forty-six states over the period 1972 to 1992. During this period, eleven of the states studied implemented court-mandated education aid reforms. Murray and her colleagues find that these reforms significantly reduced spending inequality across districts.[63] The precise results vary with the measure of inequality they use, but all measures suggest large reductions in inequality—on the order of 20 to 30 percent. They also find that these reductions in inequality reflect an increase in spending by the districts that spent the least before the reforms combined with no change in spending in the highest-spending districts. Finally, they find that state aid reform is always accompanied by a significant increase in the share of education spending that is financed by the state government.

Evans, Murray, and Schwab (1997, 1999) explore the impact of court-ordered reform on the sources of revenue in various types of school districts. They find that the lowest-income districts (and the districts with the lowest levels of local revenue before reform) raised less money for education after reform but that the cuts in their local revenue were more than offset by their increased state aid.[64] These results imply that the typical reform did not impose a high minimum tax rate on all school districts.

An alternative approach to the impact of state aid reform on spending equity is provided by Hoxby (2001). Instead of treating state aid reform as an event, she develops a framework for classifying state aid systems, using equations similar to (1.1) and (1.2), and determines the parameters of the aid systems in every state in 1990. Many other

studies have used a similar approach for a single state, but no other study has attempted it for all the states in the nation. This approach allows her to determine how the spending in a school district is affected by the parameters of the state aid system, which differ across states and sometimes across districts within a state, instead of assuming that all state aid reforms have the same effect.

Hoxby finds that per-pupil spending in a school district responds as expected to the parameters of a foundation aid program, and specifically, that it increases with the foundation amount and decreases with the required minimum tax rate.[65] She also finds that spending decreases with the tax price, which is defined as the amount of money a district must raise itself to obtain another dollar of spending per pupil.[66] A standard GTB program lowers the tax price in low-wealth districts, because, as shown earlier, it shifts a share of any spending increase onto the state. Moreover, a GTB program with recapture raises the tax price in high-wealth districts. This result implies, therefore, that a GTB program with recapture will decrease spending where wealth is high and increase it where wealth is low.

Hoxby summarizes these results by showing the impact of each state's education aid system on various measures of spending equality across districts (compared to a system of local finance alone). She finds that the state aid system increases equality in every state. The magnitude of this increase is particularly large in states with dramatic equalization programs.[67] In other words, state aid reform can increase across-district equity in per-pupil spending, but existing state aid systems also promote such equity, even if they do not reflect a major reform.

Overall, there appears to be a broad consensus that state aid reform can reduce across-district inequality in spending per pupil. As discussed earlier in the chapter, however, different aid reforms are linked to different notions of equity. A reform that raises the foundation spending level, for example, promotes an adequacy objective, and adjusting this spending level for educational costs provides a way to express this objective in performance terms. Moreover, the evidence in Hoxby (2001) suggests that all states engage in some equalization. The key issue for policymakers and courts, therefore, is not whether the state should use education aid to make education spending more equitable; instead, the issue is how it should equalize—and how much.

1.4.3 Effects on Equality of Performance

As discussed earlier, the emphasis in the debate about state aid reform has gradually shifted from spending to student performance. Another key question, therefore, is whether state aid reform leads to an increase in student performance, particularly for districts in which performance is relatively low. This question has proven to be difficult to study, however, and no consensus on the answer has yet emerged. Some insight into the complexity of the topic is provided by the chapters in part II of this book, each of which investigates, using the best available evidence, the impact of a particular state aid reform on student performance. Although some of the evidence indicates that state aid reform can boost student performance, none of the findings are definitive, and some of them are quite ambiguous. In Texas, for example, evidence from state-designed tests indicates that aid reform boosted the performance of poor students and students from minority groups, but this result is not confirmed by the evidence from national tests (Imazeki and Reschovsky, chapter 8).

As discussed by Figlio (chapter 3), the main problems confronting any national study of the impact of state aid reform on student performance are (1) the enormous diversity in the nature of state aid reform plans and (2) the paucity of national-level student performance data. One study that addresses the first of these problems is Hoxby 2001.[68] Following the methodology she developed to study the impact of state aid reform on spending equality, Hoxby estimates the impact of various state aid parameters on the dropout rate, which is one dimension of student performance. She finds that a higher foundation spending level is associated with a lower dropout rate. A typical foundation program does not, of course, raise spending in high-spending districts. Thus, Hoxby concludes, "equalization improves student achievement the most (perhaps only) in schools that would have very low spending if left to their own devices" (1228).[69]

Overall, the available evidence suggests that complicated reform plans that involve GTB formulas and recapture have complicated impacts on student performance that are difficult to sort out and that may not always correspond to the effects that were expected when the plans were formulated. This is, in effect, another application of the insight provided by Feldstein (1975) many years ago, namely, that one cannot predict the outcomes of a state aid reform without understanding the incentives it creates for school districts and estimating how the districts

will respond to those incentives. In contrast, the available evidence is also consistent with the view that foundation plans can boost student performance in low-performing districts. Nevertheless, the precise nature of this impact is still unclear, and more research is needed to determine the impact on performance of various state decisions, such as the foundation spending level, whether districts are required to impose a tax that does not fall below a certain minimum rate, and whether the foundation level is adjusted for educational costs.

1.4.4 Effects on School District Efficiency

School district inefficiency is defined by scholars as a situation in which a school district spends more than necessary to achieve a given student performance. School districts are inefficient when they provide services that make minimal contributions to student performance or when they use outmoded management or teaching techniques.[70] Unlike student performance or school spending, however, school district inefficiency cannot be directly measured, and scholars are just beginning to devise methods for studying it. All existing methods have important limitations, and scholars have not reached a consensus on the best method to use (see Bifulco and Bretschneider 2001; McCarty and Yaisawarng 1993).

Using data for New York state, Duncombe and Yinger (1997, 2001a) estimate the impact of state aid on school district efficiency and then simulate the impact on efficiency of various state aid reform proposals. They measure efficiency using a technique called "data envelopment analysis," which determines the extent to which each district spends more per pupil than other districts with the same student performance.[71] They also control for education costs; as noted earlier, a district should not be called inefficient if spends more than other districts due to the characteristics of its students or other factors beyond its control.

Duncombe and Yinger (2001a) find that a school district's efficiency increases when it receives less aid than districts with which it is likely to compare itself, namely, those that are similar to it in terms of property values and student enrollment, or when it is in a class of districts that receives less aid than other classes. These results suggest that low-aid districts make extra efforts to keep up with other, similar districts. In addition, the higher the tax price in a district, that is, the higher the property tax increment voters in the district must pay to increase public services, the higher is district efficiency. This result suggests that

voters monitor school districts more carefully when more of their own funds are at stake.

On the basis of these results, Duncombe and Yinger estimate that introducing a foundation aid program with an adjustment for educational costs, which corresponds to the program type described in the top right corner of table 1.3, would lower the efficiency of the neediest districts, which are, of course, the districts that receive the biggest increment in aid under such a program.[72] In other words, some of the aid provided to these districts "leaks out" in the form of lower managerial efficiency. In some cases, this leakage is substantial, but it never eliminates the benefits from increased aid. Under the current aid system, the efficiency level is 62.2 percent in New York City, about 53 percent in the downstate small cities and suburbs, 72.5 percent in the upstate "big-three" cities, and about 68 percent in the upstate small cities and suburbs.[73] A cost-adjusted foundation program that set the foundation level at the amount of spending required to reach the median of the current performance distribution and doubled the state aid budget would reduce the efficiency index in New York City, which receives the largest increase in aid under such a reform program, to 49.8 percent, and would reduce the efficiency index in the upstate big-three cities to 62.4 percent. Suburbs and small cities in the state, which would receive aid cuts under such a reform program, would experience small increases in efficiency. Even after the reform, however, the average large city would still be more efficient than the average small city or suburb.

Despite these few attempts to study the link between state aid reform and school district efficiency, the gap between policymakers and academics on this issue is still huge. As noted earlier, policymakers formulating education finance reform programs in Kentucky, Michigan, and Texas took the position that state aid reform needs to be accompanied by programs to boost school district efficiency, especially in high-need districts. Many other states are adopting accountability programs without any explicit link to state aid reform. As also noted earlier in the chapter, however, there is virtually no evidence that accountability programs can boost performance without raising costs, which is the same thing as boosting efficiency. Moreover, no study exists to help policymakers design a state aid reform that will minimize negative impacts on school district efficiency, particularly in the neediest school districts. More research on these topics is urgently needed.

1.4.5 Unintended Consequences

Major state aid reform can influence many outcomes other than school spending and student performance. In other words, state aid reform can have many unintended consequences. Three different types of unintended consequence have been stressed in the literature and are discussed in several of the chapters in this book: changes in property values, movement to private schools, and increased funding from private educational foundations.

1.4.5.1 Impacts on Property Values As many scholars have pointed out, state aid reform can affect property values. More specifically, property values are likely to rise in school districts that receive more state aid because of the reform and to fall in districts that receive less aid. These property value changes may reflect property tax rate cuts that are made possible by reform or reform-induced increases in educational performance, either of which increases the amount people are willing to pay for housing in a given school district. Clear evidence that state aid reform affects property values is provided by Dee (2000) and Hoxby (2001), and Nechyba (chapter 4) simulates the impact of various aid reform plans on property values.[74] Dee finds, for example, that state aid reform has a large, positive, statistically significant impact on property values in school districts with relatively low local school revenues, that is, in the districts most likely to be aided by the reform.[75] Dee also finds that state aid reform boosts apartment rents in these districts.

The impact of property tax rates and school quality on house values, which is known as capitalization, is of interest to policymakers because, as emphasized by Wyckoff (1995, 2001), it alters the distribution of gains and losses from state aid reform. People who own property in districts that gain from reform are winners, and people who own property in districts that lose from reform are losers. People who move into either type of district in the future, however, are likely to be unaffected by the reform. If they move into a district that gained from reform, for example, they will have to pay for access to this gain in the form of a higher housing price (or a higher rent). As a result, the winners and losers are a very specific set of people, namely, those who owned property at the time the reform was announced.

Although the primary purpose of state aid reform is to alter educational outcomes, a few state supreme courts have also expressed tax equity objectives for the education finance system. Indeed, the notion

of access equality can be thought of as a form of tax equity. However, the tax equity standards expressed by courts and policymakers have to do with tax rates and revenue-raising ability, not with capital gains and losses. One could argue, following Wyckoff, that capitalization should be considered in any analysis of tax equity, but it seems unlikely that it actually will be.

Nevertheless, capitalization is an important unintended consequence of state aid reform, even if the reform does not have any expressed tax equity objectives. The capital gains and losses potentially generated by a particular reform plan are likely to influence political support for the plan, and they have real fairness consequences that scholars should continue to investigate.[76]

1.4.5.2 Movement to Private Schools School aid reform also might have the unintended consequence of encouraging some parents to send their children to private schools.[77] This issue is examined in detail by Nechyba (chapter 4). This type of consequence is, of course, particularly relevant for state aid reform plans that limit supplementation in wealthy districts. Hoxby (2001) estimates that the most extreme reform plans in this category could boost private schooling in the wealthiest districts by as much as three percentage points. Because the national average private school attendance is about 11 percent, this is a fairly large effect. In contrast, Sonstelie, Brunner, and Ardon (2000) do not find a significant increase in private school attendance in California, one of the states with an extremely equalizing aid system.

The potential for increases in private school enrollment as a result of school finance reform is obviously of great interest to policymakers, because it can place a limit on their ability to achieve certain educational equity objectives. If attempts to achieve educational equity through leveling down drive many children from high-income families into private schools, then more equality within the public education system may be attained at the cost of less equality in the elementary and secondary education system taken as a whole. Unfortunately, however, the available evidence on the impact of aid reform on private school attendance is ambiguous, and this topic is certainly worthy of further investigation.

1.4.5.3 New Funding through Private Educational Foundations Another unintended consequence of state aid reform might be the creation of private education foundations in wealthy districts. Because

these foundations are private organizations, they are not subject to the same constraints as public schools, and they can, in principle, replace some of the funds that are eliminated in wealthy districts by restrictions on supplementation. On the surface, this appears to be exactly what happened in California. In 1971, the year of the *Serrano I* decision, California had only 6 education foundations; now it has over 500 (Sonstelie, Brunner, and Ardon 2000). A careful look at these foundations reveals, however, that they have a relatively small impact on education finance in the state. In 1994 they raised only $45 per pupil, on average, and over 90 percent of the students in the state were in districts in which annual contributions were less than $100 per pupil (Sonstelie, Brunner, and Ardon 2000).

As in the case of increased recourse to private schooling, the creation of private foundations is of concern to policymakers because these foundations can, in principle, undermine educational-equity outcomes. Some educational-equity goals cannot be achieved if restrictions on supplementation through tax revenue are offset by supplementation through private foundations. The available evidence indicates, however, that so far, at least, this type of response to education finance reform has not been large enough to warrant serious concern.

1.4.6 General Equilibrium Effects

Finally, a state aid reform can have complex consequences and feedback effects that are relevant for the reform's objectives. This type of feedback, called a general equilibrium effect by economists, is explored by Nechyba (chapter 4).

As Nechyba makes clear, the most basic type of general equilibrium effect arises from the link between school quality and residential location. Under most circumstances, the only children eligible to attend a particular public school are children who live in the school district in which the school is located. As a result, households compete for housing in desirable school districts, and high-income households generally outbid low-income households for housing in the districts that have the best schools. State aid reform can have a direct impact on this sorting process. By improving schools in low-wealth or high-cost districts or by limiting supplementation in high-wealth or low-cost districts, state aid reform can alter the relative attractiveness of various districts and alter the type of households each district contains. If more high-income households are attracted to a high-poverty district, for example, the poverty concentration in that district will decline, thereby

lowering the cost of education. This decrease in educational costs will magnify the initial impact of state aid reform. Nechyba also shows that movement to private schools can have a similar type of feedback effect: By altering the mix of students in public schools, such movement can alter educational costs.

One important example of a general equilibrium effect, which was first pointed out by Inman (1978) and Inman and Rubinfeld (1979) and which is simulated by Nechyba (chapter 4), arises in the case of a GTB program. Under this type of aid formula, the aid a district receives depends on its tax base, but its tax base, that is, the value of its property, depends on the aid it receives. Low-wealth districts, which receive a large increase in aid when this type of aid formula is implemented, experience a property value increase, which leads, in turn, to a decrease in their aid, thereby undermining the reform effort. The opposite outcome, which also undermines the reform, occurs in high-wealth districts.[78]

Stricker and Yinger (2003) point out that this type of negative feedback does not arise with a foundation aid program, at least not if the foundation level is set high enough. A foundation plan is insulated from this type of effect because it specifies the amount a district must spend on education. Moreover, under some foundation program designs, capitalization can actually enhance the equalizing impact of the program. This type of enhancement occurs when property value increases in low-wealth districts result in higher local revenues and thereby allow the state to boost the foundation level with no increase in the state aid budget. Stricker and Yinger also show that the impact of foundation aid on school district efficiency could result in feedback effects that either enhance or undermine a reform plan's equity objectives.

The general equilibrium issues raised by Nechyba in chapter 4, particularly the link between school quality and residential location, are also important for understanding the impacts of vouchers, which, as pointed out earlier, might be included in future school finance reforms. As Nechyba carefully explains, voucher programs make it possible for many students to attend public or private schools in districts other than the one in which they live. This mobility weakens the link between school quality and property values and alters the way households are sorted across school districts. For example, the introduction of a voucher program might encourage some wealthy families that send their children to private schools to move to previously low-wealth

school districts, thereby boosting those districts' school tax revenue and school performance.

Nechyba uses simulation techniques in chapter 4 to build a strong case for the view that policymakers and academics need to pay more attention to the general equilibrium effects of state aid reform. Unfortunately, however, there is virtually no empirical evidence on the magnitude of these effects. More work on this topic is clearly needed.

1.5 Conclusions

State supreme courts, policymakers, and scholars appear to have reached a consensus that a foundation plan with a foundation level based on a generous notion of educational adequacy, a required minimum tax rate, and some kind of educational cost adjustment that provides extra funds for high-need districts forms the core of an acceptable reform of state education finance.[79] This emerging consensus still leaves a lot of room for debate, of course. Exactly how high should the foundation level be? What is a reasonable minimum tax rate? Should the tax required for funding the reform be a state tax (to facilitate recapture) or a local tax (to facilitate local control)? What type of cost adjustment is appropriate? Nevertheless, this consensus regarding the centrality of a foundation plan narrows the debate considerably, and a great deal has been learned in recent years about some of these unresolved issues, such as the features of various approaches to cost adjustments.

Beyond this emerging consensus on the use of a foundation plan, however, there is little sign of agreement. Perhaps the most contentious question is whether a foundation plan is sufficient to achieve educational equity, particularly in the eyes of state supreme courts. The answer would appear to be affirmative if a state's supreme court decides that the state can meet its constitutional obligations simply by providing an adequate education in every district. In fact, however, few courts have issued a clear-cut ruling of this type. Instead, many courts have hinted at broader equity objectives without being clear, or, in some cases, even consistent.[80] Moreover, a foundation plan could be sufficient to meet a strong equality objective if its foundation level were set high enough. The problem, of course, is that such a high foundation level would require an enormous increase in state aid, and hence in state taxes, or else an extremely high required minimum local tax rate. No state has yet been willing to follow either of these routes.

Hence, many states have decided to move beyond an adequacy standard, usually by turning to limits on local property tax revenues, a GTB formula with recapture, or some other active method to reduce supplementation by high-wealth districts.[81] Although reducing supplementation may cut the increase in state taxes necessary to achieve a strong equality objective, it also may impose a cost on society in the form of poorer education performance in high-wealth districts. The more stringent the limits on supplementation, the higher this cost will be. The challenge facing policymakers is to design a reform plan in which the equity gains resulting from the reform outweigh these costs. Moreover, programs that limit supplementation may push parents in high-wealth districts to send their children to private schools or to set up private educational foundations that provide the supplementation that is not allowed through property taxes. Although the size of such responses does not appear to have been large in the case of existing reforms, they do have the potential to undermine the equity objectives of future aid reform efforts.

A consensus on the reforms that should accompany a new foundation aid program might be easier to achieve through a shift away from the question of how to reduce supplementation to the question of how to share the financial and other burdens imposed by school finance reform. Regardless of the constitutional and/or policy objectives it is designed to achieve, any school finance reform imposes burdens on some state residents. Reforms that raise the minimum required local property tax rate impose a burden on the low-wealth or high-cost districts the plan is presumably most designed to help. A reform plan can also impose a burden on high-wealth or low-cost districts if it includes cuts in their state aid, recapture provisions, state takeover of the property tax, or limitations on their ability to raise local school taxes. And of course, any reform plan that raises state taxes to pay for an increase in state aid imposes burdens on state taxpayers in all school districts; the distribution of these burdens depends on the incidence of the new taxes. Every state needs to find a way for these three (overlapping) groups to share the burden that is perceived to be fair and that meets the state's constitutional requirements.

A related issue is the considerable confusion that still appears to exist about the access equality standard. Some state supreme courts have endorsed access equality, but many of these courts also appear to believe that access equality is the same thing as wealth neutrality or even the same thing as equal outcomes. This is clearly not the case.

Access equality refers to the nature of a district's budget constraint, not to any educational outcome. The same type of confusion arises when aid programs add (or scholars recommend) a GTB program as a second tier on top of a foundation plan, then justify this as a way to promote an outcome-based equity standard. In fact, such an approach appears to be a poor tool for promoting any standard of this type, at least in its current forms.

All of the participants in the school aid debate, including courts and policymakers and scholars, appreciate the value of a simple formula, and GTB programs undoubtedly linger because they are based on a simple formula with considerable intuitive appeal. In fact, however, standard GTB programs do not fit with the performance focus of current education policy, revised GTB programs that account for the link between spending and performance are rare, and revised GTB programs that account for the behavioral responses of school districts to the programs are too complicated to be adopted. Thus, GTB programs helped to focus attention on the possibility for state aid reform in the years right after the *Serrano I* decision, but it is not clear what role they can or should play today.

Finally, a key emerging issue is whether to combine state aid reform with an accountability program. Such an approach has great intuitive appeal; the available evidence indicates that state aid increases lead to greater school district inefficiency, and state policymakers want to take steps to ensure that new aid funds are well spent. Unfortunately, however, the available evidence also indicates that existing types of accountability programs are likely to undermine, not enhance, the equity objectives of state aid reform. Programs that set high student performance standards without giving high-cost, low-wealth districts the resources they need to meet these standards are a recipe for these districts to fail. Programs that reward districts on the basis of student test scores without formally and explicitly accounting for the impact on these scores of student characteristics and wage costs, which are not the product of school district actions, inevitably penalize those districts that need help the most. Basing rewards on test score gains appears to be a step in the right direction, but these gains may also be influenced by factors that are outside a district's control. States that are serious about improving the performance of students in high-cost districts should move cautiously on accountability programs until these programs can distinguish between managerial inefficiency and high

spending caused by a concentration of disadvantaged students or a high-wage environment.[82]

Federal legislation passed in 2001 declares, through its title, that no child should be left behind. This legislation notwithstanding, the sad truth is that many children are being left behind, particularly in large, poor urban school districts. How can states help these children? Some state policymakers, usually spurred on by state courts, have made considerable progress in reforming the education finance system that contributed to the educational disparities that exist in their state, but many other states, including some that have passed so-called reforms, have not made much progress at all. The chapters in this book are designed to build on past experience as a guide to help all states move toward more equitable education finance systems.

Notes

This chapter has benefited greatly from the presentations and comments made by the participants in the Conference on State Aid to Education, which was held at the Maxwell School, Syracuse University, in April 2002. Indeed, many of the ideas expressed in this chapter are based on something I learned at this conference, and I am very grateful to the people who participated, including the authors of the other chapters in this volume. I would particularly like to single out the discussants at this conference, Katharine Bradbury, Timothy Gronberg, Robert Inman, Therese McCarty, Robert Schwab, David Sjoquist, Leanna Stiefel, and Robert Strauss, who did a wonderful job of highlighting important issues in the papers presented at the conference and identifying themes that appeared in several of the state reform plans. Moreover, the discussants ran a very informative wrap-up session designed to bring out the key themes of the conference. Other participants, many of whom also made helpful remarks during the conference discussion, are listed in the preface. In addition, I received helpful comments on earlier drafts of this chapter from Julie Cullen, Tom Dee, Bill Duncombe, Peg Goertz, Anna Lukemeyer, Therese McCarty, Jerry Miner, Dick Murnane, and Allan Odden. Although my debt to all of these people is large, none of them should be held responsible for anything I say.

1. Strictly speaking, the California Supreme Court was responding to a trial court's ruling that even if the facts alleged by the plaintiffs in *Serrano* were true, they did not establish that California's school financing system was unconstitutional. The 1971 *Serrano* decision, referred to as *Serrano I*, overturned this ruling and sent the case back to the trial court for further discussion of the facts. The facts were compelling, however, so the legislature interpreted this ruling as a rejection of the existing system and passed Senate Bill 90, which set up a new system, in 1972. This new system was definitively rejected by the California Supreme Court in 1977 in a decision referred to as *Serrano II* (see Sonstelie, Brunner, and Ardon 2000). The 1971 decision was based on both the U.S. Constitution and the California constitution. A 1973 U.S. Supreme Court decision in *San Antonio Independent School District v. Rodriguez* effectively overturned that portion of *Serrano I* that was based on the U.S. Constitution but left standing the conclusions based on the state constitution (see chapter 2). Because of this U.S. Supreme Court decision, educational-finance equity is now debated exclusively in state courts.

2. All significant state court decisions on education finance, including these supreme court decisions and the decisions discussed in the following paragraphs, are summarized in appendix A (with full legal citations).

3. The North Carolina case is back before the state supreme court.

4. Before the most recent litigation in Kansas, the state supreme court there also upheld an education finance reform stimulated by a lower-court decision. See chapter 5 and appendix table A.2.

5. The figures presented in tables 1.1 and 1.2 include all the big-city school districts in Casserly 2002 that have data on the share of students that passed the reading and math tests required by the state in which they are located. These figures understate the difference in test scores between big cities and the rest of their states because the big cities' results are included in the state averages.

6. Fischel (2001), for example, concludes that "court-ordered centralization of school finance and the supposed fiscal disparities that have driven it are largely wrongheaded" (161).

7. The remaining two states, Iowa and Nebraska, require tests in these two subject areas but allow each district to decide which tests to administer. See Goertz and Duffy 2001.

8. See also Meyer et al. 2002, which provides up-to-date details about states' accountability systems.

9. This approach has been picked up at the federal level, too. The No Child Left Behind Act of 2001 includes rewards and sanctions for individual school districts based on changes in student performance in the district. See Robelen 2002.

10. Wages also vary across districts because of variation in districts' generosity and in teachers' negotiating skills. It obviously is inappropriate for state aid to reflect wage variation from either of these sources, so state aid formulas should make use of wage cost indexes, not actual teacher wages.

11. Evidence that class size affects performance is provided by Krueger (1999, 2002) and Krueger and Whitmore (2001). Evidence that prekindergarten programs can boost performance in later grades for children who are poor or otherwise at risk is provided by Karoly et al. (1998).

12. In addition, Hawaii has a state-run education system, which at least suggests educational equality, and as noted previously, the recent constitutional amendment in Florida explicitly requires "uniform" schools. It is not clear, however, how Florida courts will interpret this requirement.

13. Hoxby (2001) contrasts "school finance equalization" (SFE) programs, which are defined as programs that link aid to property values, with "categorical" aid programs, which are defined as programs that link aid to student characteristics or other school district characteristics. For example, she specifically defines foundation aid to be a scheme that "is like flat categorical aid *except* that it redistributes among districts based on per-pupil property values, not on sociodemographic characteristics of households" (1194–1195, emphasis in original). She also argues that "categorical aid has been almost entirely replaced by SFE for major redistribution" (1193). As shown in this chapter and as illustrated by the reforms in Kansas, Kentucky, and Texas, however, student characteristics can easily be incorporated in an SFE program, such as foundation aid.

14. I say "in principle" because many states use pupil weights that are ad hoc and not associated with an attempt to estimate an educational cost index. As shown by Duncombe and Yinger (2003), however, the empirical procedures used to obtain a comprehensive cost index can also be used to determine per-pupil weights that result in approximately the same adjustment for the cost impact of student characteristics as does the cost index.

15. Scholars do agree on several issues regarding cost indexes, however. For example, there is widespread agreement that a cost index should not give districts an incentive to place students in a "special-needs" category (see chapter 3). Similarly, it is generally agreed that a cost index should not reward a district for paying overly generous wages (see Duncombe and Yinger 1997, 1998).

16. One qualification to this statement is that relatively inefficient districts might not meet a performance target. See Duncombe and Yinger 1998. I return to the link between aid and efficiency in section 1.4.4.

17. This approach would not literally ensure equality by any of the definitions of education, because district budgets can be supplemented with private contributions, which cannot be prohibited by the state. As discussed in section 1.4.5.3, such private supplementation has appeared in many districts in California.

18. State aid that is funded through state taxes other than the property tax also involves redistribution across districts and may also influence supplementation. I return to this issue in section 1.3.3.

19. Many studies have demonstrated that school districts respond to this type of price incentive. For a recent review see Fisher and Papke 2000.

20. Feldstein also demonstrated, no doubt inadvertently, that such behavioral responses are difficult to estimate; in fact, his estimates differ significantly from others in the literature. See Fisher and Papke 2000 and Duncombe and Yinger 1998.

21. An alternative, earlier classification effort came to a similar conclusion, namely, that 80 percent of the states at the time of the study used a foundation formula (Gold, Smith, and Lawton 1995).

22. In Texas, for example, the GTB matching aid is capped at a specified local tax rate, which turns out to be the maximum allowable rate under the state's property tax limitation measure. See chapter 8.

23. This may not occur in all cases, of course; that is, some second-tier GTB programs may increase educational equity. The ability of these programs to promote equity is quite limited, however, because, as explained earlier in the chapter, they have little power to influence educational spending in high-need districts unless the required minimum tax rate is set below the rate high-need districts would otherwise select. Note that this limit on equalizing effectiveness does not arise with a stand-alone GTB program, which always increases spending by low-wealth districts. As noted earlier in the chapter, however, this increase in spending is generally not sufficient to bring all low-wealth districts up to any reasonable adequacy standard. Indiana and Missouri address this issue by combining a GTB program with a minimum required local property tax rate. See appendix B.

24. This explanation for Odden's simulation result is mine, not his. He presents the simulation results with no explanation.

25. A large literature shows that increases in state aid go partly toward reductions in local taxes. See Fisher and Papke 2000. The simulations by Nechyba (chapter 4) show the impact of such a response on the outcomes of state aid reform, and evidence on this issue for New York is provided by Duncombe and Yinger (1998, 2000).

26. For more on the Tennessee Supreme Court decision and the reforms it generated, see Cohen-Vogel and Cohen-Vogel 2001.

27. The New Jersey court made its first pronouncement on this issue in 1973 when it said, "Although we have dealt with the constitutional problem in terms of dollar input per pupil, we should not be understood to mean that the State may not recognize differences in area costs, or a need for additional dollar input to equip classes of disadvantaged children for the educational opportunity" (*Robinson v. Cahill* [1973], 72). In its 1995 decision, *Campbell County School District v. State*, the Wyoming Supreme Court also explicitly required extra spending for disadvantaged students. See Lukemeyer (chapter 2).

28. A 2000 trial court decision in North Carolina (*Hoke County v. State*), which is being appealed by the state, also called upon the state to fund prekindergarten programs for all at-risk four-year-olds (ACCESS 2003). (Recall that the benefits of prekindergarten programs are reviewed in Karoly et al. 1998.) Whole-school reform programs, which attempt to alter many aspect of school life, such as curriculum, management techniques, and parental involvement, are widely used, but evidence concerning their effectiveness in improving educational outcomes is quite mixed. See Ladd and Hansen 1999 and Berends, Bodilly, and Kirby 2002. The New Jersey Supreme Court actually required a particular whole-school reform plan, Success for All, with its extension, Roots and Wings (Goertz and Edwards 1999). This plan has shown signs of effectiveness in some studies, but few of them were conducted by independent scholars. One recent independent study (Bifulco et al. 2002) finds, for example, that Success for All actually lowers elementary math performance in New York City schools while having no impact on reading. As the National Research Council's Committee on Education Finance puts it, some whole-school reform "[d]esigns have achieved popularity in spite rather than because of strong evidence of effectiveness and replicability" (Ladd and Hansen 1999, 213). Moreover, whole-school reform programs appear not to work very well when they are imposed on a school instead of being selected by the teachers and administrators at the school (Berends, Bodilly, and Kirby 2002). Indeed, there is some evidence of this outcome in New Jersey (Hendrie 2001).

29. This argument is echoed by New York's highest court in *CFE v. New York* (2003), in which the court says, "[W]e cannot accept the premise that children come to the New York City schools ineducable, unfit to learn" (slip op. at 42–43).

30. Gold, Smith, and Lawton (1995) estimate that two-thirds of U.S. states use an aid formula that contains some form of extra compensation for low-income students. A few states also have cost adjustments in their building aid formula. See appendix table C.4.

31. See appendix table B.4 and Carey 2002, table 1b. One troubling feature of the aid formulas in nine states is that they give more aid to districts with lower student test scores, presumably on the grounds that low test scores reflect a concentration of disadvantaged students (appendix table B.6). Test scores also reflect the quality of education the district provides, however, and such provisions serve to reward incompetent districts. These provisions clearly should be replaced with educational-cost adjustments based on factors outside district control.

32. No state currently uses a statistically based adjustment for educational costs. Moreover, the share of the state aid budget that goes to categorical aid programs for economically disadvantaged students (for handicapped students) is only 3.9 percent (6.6 percent) in states with such programs. Only four states spend more than 5 percent of their aid budgets on categorical programs for at-risk students (appendix table B.2).

33. Carey cites Maryland Commission on Education Finance, Equity, and Excellence 2002; Reschovsky and Imazeki 1998; and Duncombe 2002. In these studies the cost of educating a poor student is between 97 and 159 percent higher than the cost of educating a nonpoor student.

34. Categorical aid programs serve a similar purpose and face a similar restriction in California. See Kramer 2002. See also Carey 2002 and appendix B.

35. An alternative analysis of educational costs in Texas is provided by Alexander et al. (2000).

36. This statement implicitly holds educational quality constant; that is, the issue is whether a consolidation lowers per-pupil costs without cutting educational quality.

37. As shown in appendix B, several states also give more aid to districts that have more highly qualified teachers. This provision is presumably designed to encourage districts to raise their teachers' qualifications. This type of aid never covers the full cost of hiring more qualified teachers, however, and in practice it serves to reward wealthy districts, which can afford to hire highly qualified teachers. In other words, this is another type of antiequalizing aid program.

38. An example of court signals on supplementation is provided by the New Jersey Supreme Court's first education finance decision: "Nor do we say that if the State assumes the cost of providing the constitutionally mandated education, it may not authorize local government to go further and to tax to that further end, provided that such authorization does not become a device for diluting the State's mandated responsibility" (*Robinson v. Cahill* [1973], 72–73).

39. As indicated in appendix table B.4, twenty-eight states restrict supplementation through an explicit tax or expenditure limit, a recapture provision, or some other provision stronger than simply requiring voter approval.

40. Many scholars have argued in favor of an equality standard, which generally requires restrictions on supplementation. See Kramer 2002 for a recent example.

41. Evidence from Massachusetts (Cutler, Elmendorf, and Zeckhauser 1999) indicates that the voters most affected by tax limitations are the most likely to take advantage of overrides, if they are available.

42. Fischel (2001) claims that school finance equalization leads to tax limitations. Evans, Murray, and Schwab (2001) show that this is not the case. Specifically, they identify seven states other than Vermont that have an education finance system reformed in response to a court order but no property tax limitation and nine states that have a tax limitation but have not reformed their school finance systems.

43. McCarty and Brazer (1990) recommended building recapture into a GTB program. A GTB program can also be designed to recapture funds from districts with a high ratio of wealth to educational costs.

44. By refusing to use state funds for this provision, Vermont shifted the budgetary uncertainty from the state to the school districts. However, the state is in a much better

position to handle this uncertainty. After all, state officials cannot make a budget without forecasting the revenue from each source, after accounting for the relevant behavioral responses to the tax. The only difference between the GTB revenue source and others is that the forecast must consider the behavioral responses of school districts, instead of the behavioral responses of individuals or firms.

45. These reforms apply only to a few districts because V^* in the Texas version of equation (1.2) is set not far below the property value per pupil in the state's richest district. In Vermont, V^* is set near the property value per pupil in the average district.

46. One possibility is to set V^* in the GTB formula at the wealth level at which foundation aid falls to zero and to use the GTB formula solely to determine recapture from districts with wealth above V^*, not to determine aid for districts with wealth below V^*, all of which receive aid through the foundation program.

47. This difference is known as the flypaper effect; money given directly to a school district is more likely to remain in a school district's budget than is a change in income that has exactly the same impact on voters' budget constraints. For a review of the literature on this topic, see Hines and Thaler 1995.

48. As shown by Flanagan and Murray (chapter 6), this combination of policies resulted in virtually no change in the state's share of education spending.

49. Even this approach limits supplementation by districts that received foundation aid under the original plan but do not under the revised plan.

50. For further evidence on this debate, see Downes and Shah 1995; Manwaring and Sheffrin 1995; and Silva and Sonstelie 1995.

51. Moreover, the long-run consequences of supplementation are poorly understood. Loeb (2001) shows that unlimited supplementation might undermine state voters' support for a high state-funded foundation level. In other words, some limits on supplementation might be needed to sustain adequacy. Even with limits on supplementation, however, the high cost of sustaining a generous foundation aid program may result in waning voter support for state education spending over time. This appears to be the case in Kansas (see Duncombe and Johnston, chapter 5).

52. As emphasized by Fischel (2001), a school district's wealth also might be influenced by its ability to attract or retain various types of property, a factor that does not reflect decisions by the state.

53. More formally, a district will not use its own resources for education unless the marginal benefits of doing so exceed the marginal costs. As a result, limits on supplementation impose a net cost whenever they prevent supplementation using local taxes that a district would otherwise choose. Measures of this type of loss are not available for school finance reform, but they are documented for property tax limitations. See Bradbury, Mayer, and Case 2001. Transferring state aid from wealthy to poor districts also lowers educational benefits in wealthy districts, but these losses are presumably offset by increased educational benefits in poor districts.

54. One particularly troubling feature of the STAR program is that it gives a higher property tax exemption to taxpayers in high-wealth counties. I know of no equity standard that can justify this provision. In addition, the STAR program is accompanied by a state-funded credit on the New York City income tax, which goes to both renters and owners. Other cities in the state, however, which also have relatively large renter populations, do not receive any extra payments. See Duncombe and Yinger 2001a.

55. In 1999, New Jersey passed a property tax exemption modeled on the New York plan that used $1 billion in state funds that could have been used to meet the New Jersey Supreme Court's mandate to improve educational equity. See Gray 1999. The New Jersey case is discussed in more detail later in the chapter.

56. With a GTB formula, the state's contribution is determined largely by the value of the V^* parameter and by whether the formula includes a recapture provision.

57. This sentence refers, of course, to the debate about whether money matters. For an argument that it does not, see Hanushek 1996 and Hanushek 1997; for arguments that it does, see Ferguson 1991; Ferguson and Ladd 1996; Krueger 1999; Krueger 2002; and Krueger and Whitmore 2001.

58. Even programs that base rewards and punishments on *changes* in average student scores (instead of on levels) run into serious problems. See Ladd and Walsh 2002. Among other things, these programs, which include the federal No Child Left Behind Act of 2001, punish schools that were efficient in the past and therefore have less room for improvement. Moreover, schools with high costs must spend more than other schools to obtain the same *increase* in student scores, just as they must spend more to attain the same performance target.

59. As the New Jersey Court put it in 1973: "The State's obligation includes as well the capital expenditures without which the required educational opportunity could not be provided" (*Robinson v. Cahill* [1973], 72).

60. The saga in Ohio recently took a strange new twist. In December 2002, the Ohio State Supreme Court upheld earlier decisions overturning the state's reliance on the property tax, but then in May 2003, it prohibited the trial court from enforcing those decisions. See ACCESS 2003 and appendix table A.2.

61. The battle hasn't quite ended. The New Jersey Supreme Court responded to the state's budget crisis of 2002 by granting a one-year delay in the requirement for full implementation of its programmatic requirements. Then, in April 2003, the court required both parties in the suit to participate in mediation concerning state-requested changes in the programmatic requirements imposed by the court. See appendix A and ACCESS 2003.

62. Kramer (2002) provides an alternative look at the impact of state aid reform on spending equity in two of these states, Kentucky and Texas, and in California.

63. Murray and her colleagues measure "reform" either with a dummy variable that equals one in a year after a court-ordered reform has been implemented or with a variable to measure the number of years since the last implementation of this type. These two approaches yield qualitatively similar results. The text discussion is based on the first approach.

64. Using national data for 1990 alone, Dee (2000) essentially replicates a key finding of Evans, Murray, and Schwab (1997). To be specific, he finds that court-mandated reform raises spending in low-spending districts but has little impact on high-spending districts.

65. Although her theoretical discussion (as well as equation (1.1)) implies that school district behavior is affected by net aid (the foundation amount minus the required minimum tax rate multiplied by the local tax base), Hoxby estimates separately the effects of the foundation amount and of the required minimum tax rate (and does not, as called for by her theory, interact the tax rate with the local tax base). This approach leads to the following misleading statement: "The introduction of a stringent FA [foundation aid] scheme might increase the foundation tax rate by 30 mills, or 0.030. The coefficient

indicates that a 30 mill increase would generate a 6.4 percent fall in per-pupil spending" (1216). In fact, however, a scheme that raises the foundation tax rate without also raising the foundation amount is *antiequalizing*; any scheme that raises net aid will raise spending.

66. This definition leaves out the voter's tax share, usually measured as the ratio of the median to the mean property value, which is included as part of the price of education in most studies. See Inman 1979; Ladd and Yinger 1991; and Fisher and Papke 2000.

67. Hoxby also finds, however, that state aid makes a majority of the poorest districts (those with mean household income or with per-pupil property values below the 20th percentile) worse off in the two states with the most dramatic equalization programs in 1990 (California and New Mexico).

68. Other relevant studies include Card and Payne 2002; Downes 1992; and Downes and Figlio 2000. These studies and others are reviewed in Evans, Murray, and Schwab 1999.

69. Hoxby also estimates another model in which the dropout rate is a function of per-pupil spending, and the foundation amount and other state aid parameters are used as instruments to deal with the simultaneity of spending and performance. Because spending is not statistically significant in this model, Hoxby claims that the evidence linking the foundation amount to the dropout rate is "mixed" (1228). However, this alternative model, which she calls an "education production function," is not compelling. In an education production function, performance is a function of inputs and student characteristics (often called "fixed inputs"). Hoxby's approach relies on the strong assumption that spending is a good proxy for inputs purchased by the school, such as teachers, after controlling for student characteristics. Several other variables in the model, including income and the share of the district population over sixty-five years old, are often considered demand variables, and some scholars argue that they do not belong in the regression (Dewey, Husted, and Kenny 1999). In my view, however, these are efficiency variables, which should be included.

70. For example, Strauss et al. (2000) discuss the efficiency consequences of outmoded procedures for hiring teachers.

71. The results of this analysis obviously depend on the definition of student performance. Duncombe and Yinger measure performance using the share of students meeting state-determined standards on elementary math and English tests, high school graduation rates, and the share of students that graduate from high school with a Regents diploma, which requires them to pass certain state tests.

72. Duncombe and Yinger (1998) present simulations of GTB programs that account for the impact of these programs on tax prices and hence on school district efficiency. With a standard GTB program, for example, a low-wealth district receives a high matching rate, which corresponds to a large reduction in its tax price, and therefore becomes much less efficient.

73. Note that efficiency is lower in the small cities and suburbs than in the large cities. This result reflects the fact that small cities and suburbs provide a wider range of educational programs, some of which, such as music and art programs, make only minimal contributions to the performance objectives specified in note 71. This efficiency result undoubtedly would be different if student performance in these programs were included in the performance standards. To the best of my knowledge, however, all existing state accountability systems use performance standards similar to the ones used in Duncombe and Yinger's analysis.

74. There is also a large literature on the capitalization of property tax rates and school performance without reference to state aid reform. This literature is reviewed in Ross and Yinger 1999. For a recent contribution see Downes and Zabel 2002.

75. Dee (2000) claims that studies of capitalization provide insight into the impact of state aid reform on school quality. Under the assumption that aid reform does not result in property tax reductions in poor districts, he interprets reform-induced property value increases as a sign of an improvement in student performance or in some other dimension of education that homeowners care about. Unfortunately, however, Dee does not test this assumption, and the evidence in support of it is mixed, at best. Evans, Murray, and Schwab (1997, 26) conclude, for example, that "successful litigation will lead the state government to provide the lowest revenue districts additional state aid of $700 per student 10 years after reform. These districts reduced local revenue by $190, and thus total revenue rose by $510." Dee's approach cannot rule out the possibility that property value increases are due solely to the $190 cut in local revenue. His approach does work, however, for a foundation-based reform plan that requires a minimum tax rate at or above the rate used by high-need districts before the reform—as do the reforms implemented in several states.

76. As noted in section 1.3.4, a state aid reform plan must select a method of funding, and the choice of a funding method also has fairness consequences. A few studies investigate the impact of state aid reform on tax incidence. See Cullen and Loeb (chapter 7).

77. Of course, state aid reform also lowers the incentive of parents in needy districts to send their children to private school. See chapter 4. This type of response is not as important, however, because few parents in needy districts send their children to private schools to begin with.

78. Hoxby (2001) also mentions this type of feedback, along with two others. First, the parameters of an aid reform program are sometimes functions of behavioral outcomes, such as mean per-pupil spending in the state. Second, movement to private schools could lower voter support for state aid or for local property taxes in high-spending districts.

79. For an analysis of this consensus in court cases, see Minorini and Sugarman 1999a; Rebell 2002; and chapter 2; for a view on the scholarly consensus, see Odden 1999 or Guthrie and Rothstein 1999.

80. Perhaps the clearest ruling of this type comes from the 1976 *Serrano II* decision by the California Supreme Court, which affirmed a lower court's ruling that wealth-related spending could not be more than $100 higher per pupil in any one district than another. This approach obviously requires severe limits on supplementation. It also does not recognize variation across districts in the cost of providing education; however, categorical aid is not wealth related, so it could, in principle, still be used to offset educational cost differences across districts.

81. Recall that any increase in state taxes to pay for a higher foundation level reduces supplementation in wealthy districts to some degree. The point here is that many states have selected policies that go beyond this minimal reduction in supplementation. See appendix B.

82. The caution also applies to federal legislation, but it obviously was not heeded by the people who wrote the No Child Left Behind Act of 2001. This act devised rewards and penalties that do not account for student characteristics or wage costs.