Equity in School Finance: State Aid to Local Schools in New England

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Disparities in school spending have been the key school finance problem for decades. Americans have a long tradition of universally available public education, thought to play an important role in "leveling the playing field" by providing equal educational opportunity to rich and poor alike. However, because education is provided locally and because localities differ in both resources and preferences, expenditures on schooling vary noticeably from one area to another. Most states provide considerable funding to local school districts and attempt to use these funds to equalize spending, but disparities in spending between rich and poor districts remain sizable within many states. In Rhode Island, for example, the richest district spends about twice as much per pupil as the poorest district.

Spending disparities have not disappeared, despite considerable attention and a fair degree of consensus on the ideal of equal educational opportunity, for several reasons. First, state-provided or state-mandated uniform schooling runs counter to another tenet of U.S. public education, local decisionmaking. Second, various factors muddy the equating of equal educational opportunity with equal dollars.

Against a background of recent school finance trends, this paper discusses concepts of equity in school finance—the trade-off between equality and local control and the difficulties involved in using spending as an indicator of educational opportunity (Part II). Parts III and IV lay out the types of school aid formulas that states employ to promote such equity and the factors that influence the way local districts' final spending decisions respond to aid. Part V summarizes the key issues in recent school finance court cases. The remaining sections of the paper then describe current school aid programs in the New England states, examining intrastate patterns of school spending and local tax rates to evaluate the aid's equalizing effects.

I. Recent Trends in School Finance

Public elementary and secondary schools in the United States have historically been operated at the local level, by cities, towns, counties, and independent local school districts. State governments, however, have long had an important role in *financing* local schools, as well as setting standards or otherwise regulating local school systems. Table 1 shows the growing role of state governments in financing elementary and secondary education in the United States. State government funding surpassed the local share in the 1970s, and states now finance almost half of K–12 school spending nationwide.

The state role varies widely across the states, however. Hawaii's public schools are operated by state government; at the other end of the spectrum, New Hampshire's local public schools receive less than 10 percent of their funds from the state (Table 2). While New Hampshire is extreme, all the New England states except Maine have retained an above-average *local* role in revenue-raising for schools.

States have provided more funds to local school districts over the years in large part to foster inter-district equity by offsetting the unequal distribution of local resources. (For school districts in most states, property taxes are the major—if not the only—local resource.) In providing funds, most states have attempted to ensure an adequate education for all public-school children, but they have gone about it in a variety of ways. Furthermore, a number of state legislatures have revised their aid formulas in response to court decisions, sometimes repeatedly. As discussed in part V below, such decisions have typically found that existing aid programs did not provide a sufficient offset to the spending disparities that result from local districts' dependence on the property tax, and thereby ran counter to state constitutional provisions requiring universal access to "adequate" or "equitable" public schooling. Court decisions requiring school finance reform picked up in the 1990s "in a flurry of activity not seen since the early 1970s" (Kosterlitz 1990), and a number of additional cases, including one in Massachusetts, are currently being heard.

The difficulty state governments face is that a remedy is not obvious. When local districts control the final spending decision, the policy tool available to state government is school aid; states can design their aid formulas to provide incentives for districts to behave in desired ways, but no formula can guarantee a specific outcome. The next two sections outline

Table 1

Public School District Revenues by Source of Funds
Percent of Total

School Year	Federal	State	Local
1939–40	1.8	30.3	68.0
1949–50	2.9	39.8	57.3
1959–60	4.4	39.1	56.5
1969–70	8.0	39.9	52.1
1979–80	9.8	46.8	43.4
1989–90	6.1	47.2	46.6

Source: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics 1992*, Table 148.

the conceptual issues involved in school finance, both goals and trade-offs, and explain the major types of school aid formulas states have adopted to attain these goals.

II. Standards of Equity in School Finance

The trade-off between local control and equal opportunity frames the school finance debate. One view is that any disparities in education are bad—no child should receive a poorer-quality education than any other child, even if that outcome reflects the relative priorities that taxpayers in each district place on schools versus other public and private purchases they could make. But in adhering to another American value, local decisionmaking regarding the education of local children, states implicitly accept and even endorse educational disparities attributable to different preferences. Thus, most states appear to have a somewhat looser definition of equity, not that schools should be equal, but that educational disparities should not primarily reflect disparities in residents' wealth (as indicated by the property tax base) or income levels. When an association between wealth and per pupil spending persists even when state school aid is equalizing, states directly confront the need for other, controversial strategies that generally involve some reduction in local sovereignty, such as requiring all districts to spend above some minimum or even capping allowable levels of spending.

The second major difficulty in "solving" the school finance problem is that most discussion and measurement focus on spending, but the basic issue

Table 2

Sources of Revenue for Public Elementary and Secondary Schools, 1989–90
Percent of Total

	Federal	State	Local
United States	6.1	47.2	46.6
Alabama	11.2	60.0	28.8
Alaska	12.8	62.4	24.8
Arizona	7.9	43.5	48.6
Arkansas	9.6	56.8	33.6
California	6.6	66.9	26.5
Colorado	4.8	38.1	57.1
Connecticut	4.6	43.1	52.3
Delaware	7.3	66.8	25.9
District of Columbia	9.8	—	90.2
Florida	6.2	51.2	42.5
Georgia	6.3	53.1	40.5
Hawaii	10.1	87.3	2.6
Idaho	8.0	60.2	31.8
Illinois	5.9	32.8	61.3
Indiana	4.9	57.7	37.4
Iowa	4.9	49.1	46.0
Kansas	5.0	44.2	50.9
Kentucky	9.8	68.5	21.6
Louisiana	10.1	55.5	34.4
Maine	5.4	53.1	41.4
Maryland	4.6	37.7	57.7
Massachusetts	4.7	34.5	60.8
Michigan	5.7	26.8	67.4
Minnesota	4.1	52.4	43.5
Mississippi	15.5	56.2	28.3
Missouri	5.5	40.0	54.4
Montana	9.0	45.9	45.1
Nebraska	5.9	23.1	71.0
Nevada	4.2	38.0	57.8
New Hampshire	2.8	8.4	88.8
New Jersey	3.8	39.8	56.4
New Mexico	12.3	72.9	14.8
New York	5.1	40.7	54.1
North Carolina	6.4	66.8	26.8
North Dakota	9.8	44.8	45.5
Ohio	5.4	43.6	51.1
Oklahoma	5.6	57.0	37.4
Oregon	6.1	25.1	68.8
Pennsylvania	5.2	43.6	51.2
Rhode Island	4.9	43.1	52.0
South Carolina	8.0	50.0	41.9
South Dakota	11.5	25.9	62.6
Tennessee	9.0	45.8	45.2
Texas	7.3	41.9	50.8
Utah	6.6	56.6	36.8
Vermont	4.3	32.2	63.4
Virginia	5.3	33.1	61.7
Washington	5.8	71.6	22.6
West Virginia	7.5	65.7	26.8
Wisconsin	4.1	40.2	55.7
Wyoming	5.0	51.2	43.8

Source: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics 1992*, Table 149.

is equality of educational inputs or outcomes across rich and poor districts, not simply equality of expenditures. Giving all students "the same quality" education may require spending more money in one district than another, if the children have different educational needs or if the cost of educational inputs varies significantly from one district to the next. Thus many states attempt to make more equal not spending per se but spending adjusted to reflect differences in needs or costs.[1] Or they may equalize specific physical inputs (such as teachers per student).

Per pupil spending or inputs (or even outcomes) that are equal *across* districts do not ensure that each school or each student *within* a district fares equally well. Nevertheless, on practical grounds—the status of current state school aid programs and the availability of data—this article focuses on dollars per student at the district level.

Furthermore, even equal need- or cost-adjusted dollars will not result in the same education everywhere because the way school funds are spent varies considerably across districts and states. For example, some districts spend more on curriculum development, some on experienced teachers' salaries, some on science labs. In recent years, the equity issue has become entangled in broader educational reform issues relating to the overall quality of elementary and secondary education in the United States, as doubts are raised about American workers' ability to compete in international markets. The competitiveness debates bring to the fore disagreements among parents, teachers, school administrators, other education professionals, and business observers regarding what to teach and how best to teach it to elementary and secondary school students, even when resources are ample. Real public school spending per pupil has risen at a faster pace than most government spending over the past few decades, yet many observers believe that the overall quality of education has not risen concomitantly.

Money alone cannot equalize educational opportunity or attain the nation's education goals. Recent education reform efforts focus on performance assessment and accountability for students, teachers, schools, and school districts. To address these issues, states attach strings to their school aid, from setting

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[1] This poses considerable measurement problems because local cost indexes are not readily available and student needs·(for special, vocational, or bilingual education, for example) are difficult to measure and even more difficult to translate into spending requirements.

standards to explicitly tying aid amounts to performance. Ultimately, states pursuing the goal of equal educational opportunity might attempt to ensure that the educational *outcomes* for children in different school districts were not associated with the income or wealth of the district. But measurement of student outcomes is impossible without consensus on what students should know and tests that measure what students do know at the beginning and end of school.[2] Alternatively, advocates of school choice argue that the "market test" implicit in school choice schemes (within a public school district, among districts, or among public and private schools) holds schools and school systems fully accountable, rewarding excellence and eliminating poor performers. While systems of interdistrict school choice can, in theory, give all students equal access to all schools statewide, making moot the issue of unequal resources among districts, in practice, access to the "best" schools is necessarily limited at any point in time.

To date, few states have incorporated such school performance standards or accountability into the design and implementation of their equalizing school aid formulas; most continue to puzzle over how to integrate educational (or "structural" or "systemic") reform initiatives with school finance reform. Kentucky is an example of a state that revamped the governance, structure, and program of its schools, as well as financing, after the state Supreme Court found "the whole gamut of the [state's public] school system" unconstitutional; the new system focuses on student performance. The most difficult challenge in accountability schemes, including school choice, is to develop approaches that reward the progress made by schools or districts (and not simply attainment levels) so as to avoid leaving some districts' students behind in a self-reinforcing downward spiral, as poor performance leads to reduced aid and fewer resources lead to performance declines.

In addition to equality of educational opportunity for public school students, states often have a second criterion for equity in school finance, that taxpayers in different districts should not face un-

equal tax burdens to provide equal education to their children. While the local-control philosophy honors the educational *choices* districts may make, this fiscal neutrality standard seeks to remove the wealth-related constraints that would bias such choices in poor versus rich districts. Thus, taxpayer equity is viewed as an intermediate step toward equalizing spending—given local decisionmaking, districts facing similar tax rates are thought likely to choose similar spending levels. However, many states have found themselves back in court after implementing a new school aid plan because they did not get beyond that intermediate step: legislators have found to their chagrin that most equalizing aid programs are more successful in bringing school tax rates closer together than in reducing spending disparities.

III. School Aid Formulas

The two key decisions states must make regarding aid to school districts are the total aid budget and the formula that determines how much aid each district will receive. States' equalizing aid formulas generally fall into one of three categories: foundation plans, guaranteed tax base or percentage-equalizing programs, and combination plans.[3] These formulas are equalizing in the sense that school districts with fewer local resources receive more aid than richer districts, but they differ regarding whether the funding for each district is invariant to actual district spending or *matches* local school spending.

A foundation program provides aid to each district in proportion to the number of students and in inverse proportion to the local property tax base per pupil (or other measure of local resources). A district's actual school spending does not affect its aid amount. Over three-quarters of the states use a foundation-type program for their basic school support. (See Gold et al. 1992, Table 4, p. 18.)

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[2] See, for example, Downes (1992) who finds that school finance reform in California in response to Proposition 13 and the *Serrano* court decision reduced spending disparities across districts but not disparities in student performance (sixth-grade test scores). He argues that the performance disparities are partly attributable to faster-rising costs of educating the students in poorer districts as well as to actions taken by richer districts to raise more school revenue outside of state-imposed revenue limits.

[3] A few states provide basic aid through flat grants that simply provide the same dollar amount per pupil to every school district. But these grants are not considered equalizing because they fail to provide more aid per pupil to poorer districts. Many states also have a variety of K–12 education objectives *that are not equity-related* which they attempt to address through school aid programs of a "categorical" nature. Categorical aid reflects the specific programmatic priorities that state government wants to support at the local level. States vary considerably in the emphasis they place on categorical versus "basic equalizing" aid. (See Gold et al. 1990, Table 7, p. 38.) Some states use mandates instead of categorical aid to impose their priorities on local school districts. Indeed, all states impose some educational standards on local school districts. Categorical aids and mandates are beyond the purview of this article.

"Pure" foundation formulas revolve around a statewide "foundation" spending level per pupil and a target tax rate. The per-pupil aid to any one district is calculated to make up the difference between the foundation spending level and the amount of revenue per pupil that the district could raise by applying the target tax rate to its local tax base. (See Appendix A for a mathematical formulation of the key features of each type of grant formula.) As a condition for receipt of aid, pure foundation plans require that each district actually spend at least its foundation amount (not just the aid amount) on schools, but some states do not impose this minimum spending requirement.

Guaranteed tax base (or percentage-equalizing) plans match the dollars that districts spend, with the matching rate varying inversely with local resources. In a pure guaranteed tax base program, the per-pupil aid to any district makes up the difference between what the district actually raises and what a district that had the guaranteed tax base per pupil would raise using the given district's actual tax rate. That is, regardless of the actual size of the local tax base, all districts have access to the same school tax base per pupil; levying a given tax rate yields the same per pupil revenue (taxes and aid combined) in a rich or poor district.[4]

Both types of grant can be adjusted for cost differences among districts if a state decides to provide more money per pupil to higher-cost or "needier" students. The most common adjustment is made by substituting "weighted" students for simple student counts in the formula, where the weights reflect the proportional increase in cost thought to be associated with educating students in designated categories relative to a "regular day elementary" student. Some states also adjust for interdistrict cost differences, if the costs of standard inputs (wage rates or materials prices) vary across districts and can be measured at the district level.

States must also decide whether to interfere with the operation of the formula in order to limit year-to-year changes in aid for individual districts. Some states limit the "maximum loss" that any district can incur in a year; others guarantee districts the previous year's aid amount and run the formula only to

allocate each year's aid increment. (This latter strategy obviously is feasible only when the total aid pool is growing.) Over time, such restrictions can significantly reduce the equalizing impact of any aid program.

Either type of formula can be made more or less equalizing by changing the size of the state's total aid budget or altering the formula's parameters. An increase in total state dollars, distributed through any equalizing formula, is likely to lead to more equal spending across districts. So are actions such as raising the foundation amount and lowering the target tax rate, or raising the guaranteed tax base. These actions alter the number of districts that qualify for aid and the degree to which aid funds are focused on poorer districts.

Having set the program parameters, each state must also decide how to treat districts that, according to the formula, should receive negative aid amounts because they have "ample" resources. Theoretically, the state could "recapture" the negative aid amounts but, more commonly, those richer districts simply receive zero equalizing aid or a minimum dollar amount per pupil. Indeed, the equalization goal is often compromised slightly in order to "buy" all districts into the plan with minimum aid.[5] The compromise is that the richest districts are able to spend more at any tax rate or tax themselves more lightly to support any spending level than poorer districts, which would not be possible if the state recaptured funds from them. Figure 1 shows graphically the tax rates required to attain certain spending levels under foundation or guaranteed tax base plans with *no* recapture. For the richest districts seen toward the right side of the figure,[6] tax rates begin to decline with increments to the tax base.

While guaranteed tax base programs reward lo-

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[4] The percentage-equalizing label is also applied to other formulas that share the key characteristics of the guaranteed tax base program: the state reimburses a fraction of actual school expenditures, and the fraction varies inversely with the local district's ability to raise revenue. That is, poor districts receive aid equal to a larger fraction of their actual spending than rich districts.
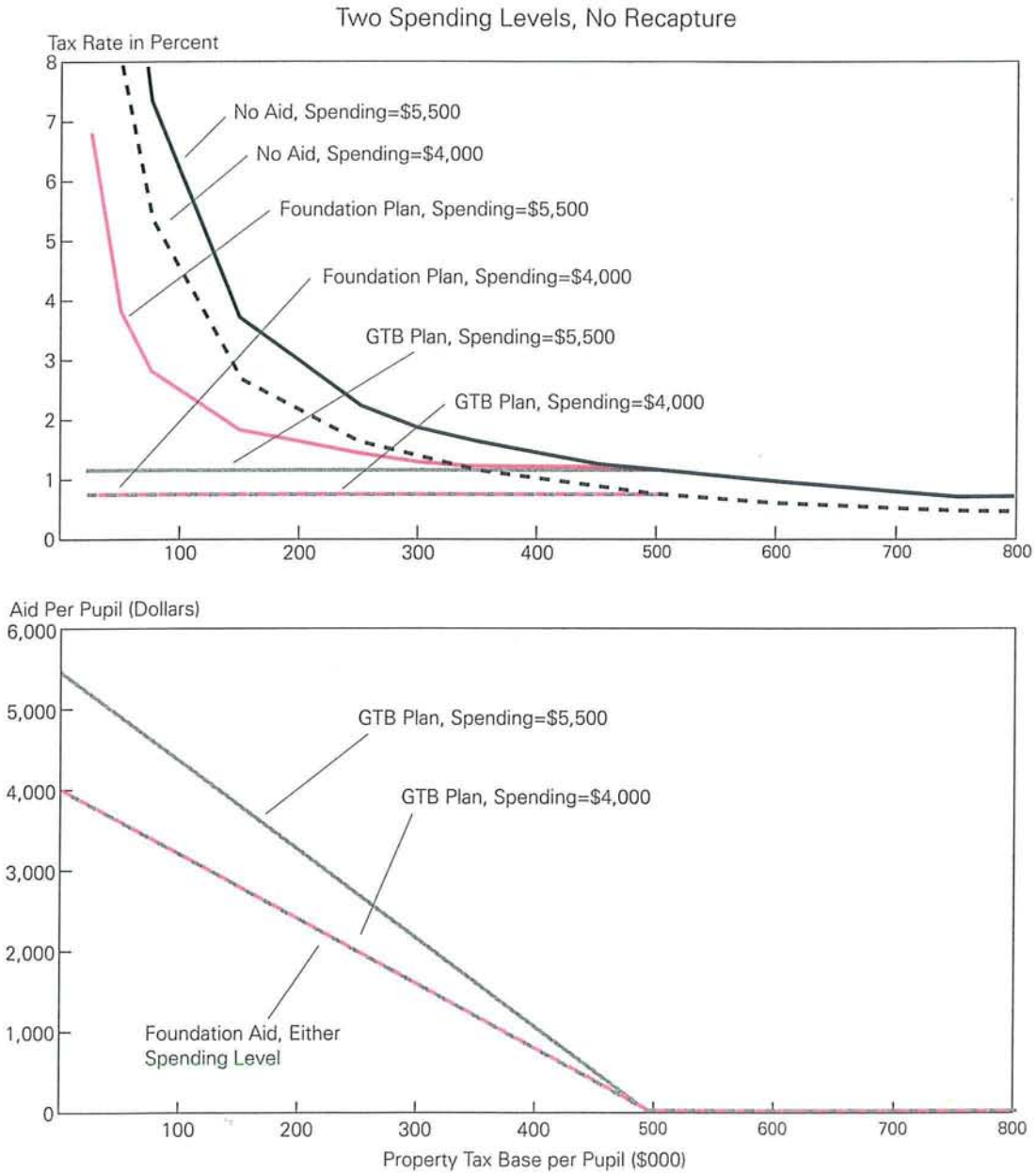
[5] Political feasibility aside, recapture may violate some state constitutions. A Wisconsin court overturned its recapture provision and Maine voters repealed a recapture provision after a lawsuit charged that it was unconstitutional. In Montana, recapture was viewed as functioning as a state tax and was upheld. (See LaMorte 1989, p. 12.)

[6] Districts with tax bases in excess of the guaranteed tax base have access to their richer base. Similarly, in a foundation plan, districts with tax bases in excess of the foundation breakeven (the base at which the target tax rate yields the foundation amount per pupil) are able to collect property taxes in excess of foundation spending levels with a tax rate below the target rate. The sample formulas depicted in Figure 1 were chosen to make the two plans as similar as possible: the foundation is $4,000 per pupil, the target tax rate is 0.8 percent, and the guaranteed tax base is $500,000 per pupil—the tax base that would yield foundation spending at the target tax rate.

Figure 1

Foundation Plan, Guaranteed Tax Base Plan, or No Aid

Two Spending Levels, No Recapture

Tax Rate in Percent

- No Aid, Spending=$5,500
- No Aid, Spending=$4,000
- Foundation Plan, Spending=$5,500
- Foundation Plan, Spending=$4,000
- GTB Plan, Spending=$5,500
- GTB Plan, Spending=$4,000

Aid Per Pupil (Dollars)

- GTB Plan, Spending=$5,500
- GTB Plan, Spending=$4,000
- Foundation Aid, Either Spending Level

Property Tax Base per Pupil ($000)

Note: Foundation= $4,000, target tax rate=0.8%, guaranteed tax base (GTB)=$500,000.

cal "effort" so that any local tax rate yields the same aid-plus-tax revenue in a rich or poor district, under a foundation program poor districts adding spending above the foundation amount face a steeper increase in their tax rates than do rich districts adding the same per pupil spending. (Compare the two pro-

grams' tax rates required for the higher spending level in Figure 1.) To remedy this drawback of foundation programs but still retain a required minimum spending level, states have enacted combination plans, adding a guaranteed tax base program to "level the playing field" beyond the foundation level

of spending. If the foundation spending level is low, the guaranteed tax base add-on is especially important, since many districts will want to spend more than the foundation amount and poorer districts would face a significant tax rate disadvantage with the foundation plan alone.

IV. Equalizing School Aid and Local Spending Decisions

The essence of local decisionmaking is that local school districts make the final decision about how much money to spend per pupil, presumably taking into consideration the amount of aid provided by the state as well as their own ability to raise revenue. The dollars provided by state aid raise the total resources available to a school district, and specific provisions of the aid formula may further alter the spending incentives faced by the district. But, depending on local preferences and other factors,[7] those incremental resources might be used by the community for additional school spending, other local public spending, or to reduce taxes.

Earmarking—the requirement that school aid add, dollar for dollar, to school spending—is controversial because it treads the line between state authority and local decisionmaking. Furthermore, it is almost impossible to enforce. Most states would like local districts to decide how much local money to spend on schools in the absence of aid and then add total school aid to the local money. But it is virtually impossible for state officials providing aid to know what the district would otherwise have spent from local sources. In most cases, the only enforceable requirement is that school spending (from all sources) must equal or exceed the amount of school aid; if a district would spend more than that regardless of aid, the requirement does not alter school spending.[8]

As noted earlier, poor districts typically spend less per pupil than rich districts and pay higher

school tax rates in the absence of aid. If poor districts get more aid dollars per pupil than rich districts, then presumably both the spending disparities and the tax rate disparities will fall when aid is provided or augmented. The degree to which the funds add to spending or reduce taxes, of course, depends on the parameters of the aid program chosen by the state as well as patterns of spending, tax rates, tax bases, and voter preferences in the absence of aid.

Because they match locally raised funds, percentage-equalizing or guaranteed tax base programs reduce the effective tax rate needed to obtain each additional dollar of school funds; economists call this a change in the "price" a district pays for school spending. Indeed, the basic rationale for guaranteed tax base programs is to equalize the tax price of school funds across districts, ensuring that poorer districts do not face higher tax rates than rich districts to raise the same dollars per pupil. Economists have analyzed the effect of additional resources ("income effect") and tax-price changes ("price effect") on local governments' spending decisions. The consensus from studies of the income effect seems to be that an additional non-matching dollar of school aid raises school spending by about 50 cents (Odden and Picus 1992, pp. 85–86); adding the price effect, the spending response would presumably be greater to aid dollars distributed through matching programs (percentage-equalizing or guaranteed tax base plans). (See Figure 2 for a simple graphic representation of how the two types of aid affect the choices open to local districts.) Thus for any given pool of aid funds, guaranteed tax base or percentage-equalizing plans are likely to be more successful at equalizing spending—if the matching rate is considerably higher for poor than for rich districts—than are foundation plans.[9] Conversely, since one element of foundation plans is the target tax rate, they are generally more successful at reducing tax rate disparities, at least among districts spending at or below the foundation amount.

A guaranteed tax base plan removes the relative tax rate *dis*incentive to spend additional dollars on schools faced by poorer districts. But even so, poor districts may still choose to spend less on schools than rich districts, for several reasons. First, ability to pay may not be fully captured in a tax-base measure: given the same per-pupil tax base, taxpayers in a high-income district may be willing to spend more on schools than low-income taxpayers for whom any
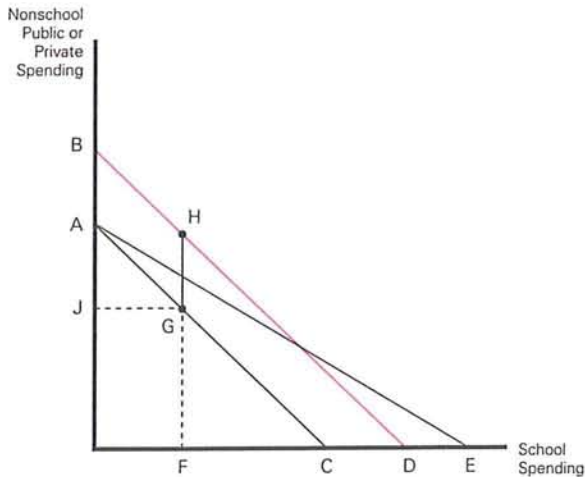
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[7] Local responses also depend on the institutional structure through which local spending decisions are made (type of government, presence of binding tax limitations, referendum requirements, and the like) and on differences in the perceived price of school spending that are independent of the aid formula, such as voter perceptions of the community's ability to export taxes (which might depend on the fraction of property that is nonresidential).

[8] If a district's school budget would otherwise be shrinking by more than the incremental aid amount, then strict enforcement of maintenance of effort provisions (requiring locally raised funds to equal or exceed the previous year's amount) could force each additional dollar of aid to add to spending in the short run.

[9] This will not be the case if richer districts are much more sensitive to matching aid than are poor districts.

Figure 2

Schematic Diagram of Price Shift vs. Income Shift

AC represents a district's budget and spending options in the absence of aid (A=C). Along AC, the district's voters decide how to divide its total resources between school and nonschool (including private consumption) spending. For example, a district at point G on AC is spending F on schools and J on nonschool items.

A guaranteed tax base or percentage-equalizing aid program shifts possibilities to AE, providing no aid if school spending is zero (at point A) and increasing amounts of aid the higher is school spending. By contrast, a foundation plan shifts the possibilities to points along BD (or AGHD if spending greater than the foundation F is a requirement for receipt of aid). BD is parallel to AC because the amount of foundation aid is invariant to actual spending.

For poorer districts, local resources (measured by point A, which is equal to C) are smaller. Both types of formula offer more aid to poorer districts, given any spending choice. That is, for a poorer district, the distance between C and D and between C and E would be greater than that shown above for a district with average resources.

given property tax bill represents a greater burden relative to income. Second, some poor districts, especially big-city districts, may choose to spend less per pupil than rich districts on account of greater competing demands for other (nonschool) government spending (sometimes referred to as "municipal overburden").

Instead of trying to use additional aid to induce poor districts to add to spending, states sometimes simply overrule local choices by adopting a foundation plan with required minimum spending. For maximum equalizing impact, a state would adopt a combination plan with a fairly high required foundation, and add on a high guaranteed tax base for above-foundation spending.

The choice of a school aid formula and funding level by state policymakers thus reflects the nature of a state's concern for interdistrict disparities and its commitment to reducing them. After a discussion of school finance court cases in states around the country, the subsequent two sections describe the size and form of school aid programs in each of the New England states and current patterns of spending and tax rate disparities among local school districts in each state.

V. School Finance Court Cases

School finance suits have been brought in over half the states, based on evidence that the existing system of school finance, with local schools supported by a combination of local tax revenues (raised from unequal property tax bases) and aid from the state government, provides considerably fewer resources to educate students living in the state's poorest districts. Depending on the wording of the education clause of each state's constitution, these suits allege that such a situation is not "equitable" or "efficient" or fails to provide equal protection or an "adequate" education for residents of poorer districts.

Court decisions in about half the cases to date have overturned the state's system of school finance and about half have upheld it (Odden and Picus 1992, p. 36). The courts have generally avoided prescribing a remedy, preferring to leave that to elected state legislators. Indeed, some courts that have failed to find their state's school finance system unconstitutional have nevertheless explicitly criticized the status quo, but deferred to legislators to initiate reforms. In several states, the courts have been asked to take a second or third look after state legislatures have enacted equalizing reforms, and have found the reformed system still unconstitutional. (For example, see the box for a summary of ongoing Texas attempts at reform, which have recently taken an unusual turn.)

One of the key differences between courts that have overturned and upheld state school finance

A New Approach in Texas

The Texas Legislature voted this February to amend the state constitution to "force wealthy school districts to transfer money to poor ones" (Verhover 1993). The amendment would allow the Legislature to shift 2.75 percent of all state and local school revenue from districts with high property wealth to poor ones. Legislators approved the amendment as superior to the two alternatives, consolidation of the state's 1,000-plus districts into regional units or a court-ordered cutoff of financing that would shut down the schools several weeks before the scheduled end of the school year. If the amendment passes, Texas will be the first state to put a "recapture" provision into its constitution.

This amendment (which goes before the voters on May 1) is the most recent action in a 25-year struggle to insure fairer spending on the public schools in Texas. In an early case, filed in 1968 and decided in 1973 (*Rodriguez v. San Antonio Independent School District* 337 F. Supp. 280 (W.D. Tex. 1971); rev'd, 411 U.S. 1 (1973)), the U.S. Supreme Court upheld the constitutionality of Texas's system of school finance. But judging the appeal of a 1984 suit (*Edgewood Independent School District, et al. v. Kirby, et al.* 77 S.W. 2d 391 (1989)), the Texas

Supreme Court in 1989 found the system to be in violation of the state constitution. A substantially reformed school finance system was found to be still unconstitutional by the state district court in 1990, a decision upheld by the state Supreme Court in 1991.

The Texas constitution requires the legislature to "make suitable provision for the support and maintenance of an efficient system of public free schools." The state courts have interpreted "efficiency" as a loose fiscal neutrality standard, requiring that each school district would have "substantially equal access to similar revenues per pupil at similar levels of tax effort" (Walker 1990, p. 11). The post-reform system found to be still unconstitutional in 1990 included a foundation plan plus a percentage-equalizing add-on for spending above the foundation. One ongoing complaint has been insufficient state funding of this system. Another sticking point in each court decision was the "inefficiency" of concentrated resources in "property-rich districts that tax low" (Walker 1990, p. 10), which helps explain why the constitutional amendment for redistribution and a regional consolidation plan are considered to be alternative remedies.

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systems is the emphasis they place on local control. Local control is often the key rationale for upholding the status quo. By contrast, courts overturning school finance systems have concluded that the existing system provided meaningful local control only to wealthy districts or that the state constitution put a higher priority on equity than on local control (LaMorte 1989).

Although evidence is typically offered regarding wide disparities among districts in *spending*, most of the state court decisions have been based on a fiscal neutrality standard, that the current system of financing does not provide all districts *equal access* to school revenues. For example, in the case of *Serrano v. Priest*, the California Supreme Court decided that inequities in educational opportunities existed under California's foundation plan since "two school districts levying the same tax rate but with different taxable wealth per pupil would have different per-pupil spending" (quotation from Downes 1992). As dis-

cussed earlier, a guaranteed tax base or percentage-equalizing state aid program can offset the unequal distribution of property tax bases to give poor and rich districts *access* to the same revenues for the same tax effort, while allowing poor districts to channel some of their aid into tax relief as well as higher spending. Some decisions have combined fiscal neutrality with concern for the "adequacy" of support for basic education; in these cases, a foundation (or combination) plan would be more useful in bringing all districts above an explicit minimum spending level.

Despite the focus on equal *ability* to raise revenue (fiscal neutrality), some courts have also indicated that spending disparities beyond a certain range are unacceptable. For example, the 1971 *Serrano* decision stated that wealth-related spending differences among school districts in California could not exceed $100 per pupil (a limit that was later adjusted for inflation). A New Jersey court decree required the

Table 3

State Aid to Local Public Schools in the New England States, 1990–91

	Connecticut	Maine	Massachusetts	New Hampshire[a]	Rhode Island	Vermont
State Aid per Pupil ($)	2,633	2,436	1,775	280	2,442	1,521
State Aid Relative to Total School Budget (percent)	40.0	49.6	31.5	6.1	40.5	31.2

Note: These figures are pupil-weighted averages of school district data for each state.
[a]New Hampshire data are for 1989–90.
Source: Calculations based on data supplied by Departments of Education in the New England states. See Appendix B for definition of aid included for each state.

state to raise the spending level of the poorest 28 districts to that of the wealthiest suburban districts. But according to Odden and Picus (1992), "only Wyoming has created a standard of equal expenditure per pupil that the school finance system must meet" (p. 36). Since additional school aid dollars can go only so far in raising spending in poorer districts, such limits on spending disparities have forced states such as California and New Jersey to consider capping spending in richer districts.

VI. State Aid to Education in New England

The New England states, like states elsewhere in the nation, approach local school aid in a variety of ways. Only Rhode Island has a percentage-equalizing aid program; the other five states have foundation-type plans (some with a percentage-equalizing second tier). The states also vary widely in the size of their commitment to local public schools: the state government in New Hampshire provides less than $300 of public school aid per pupil, on average, while all the other New England states provide more than $1,500 per pupil (Table 3).

Table 4 summarizes the key characteristics of the basic equalizing aid programs in the New England states (and Appendix A describes each state's formula). The paragraphs that follow highlight the key characteristics for each state.

Connecticut uses a foundation-type formula for the bulk of its aid, providing more dollars per pupil than any other New England state. The foundation spending level changes annually in line with statewide school spending. The (implicit) target tax rate is the foundation divided by "state-guaranteed wealth," defined as some multiple of median town wealth. The legislature can and does alter the equalizing impact of the program by changing the multi-

ple. "Wealth" is a composite measure of ability to pay, reflecting both per capita income and the size of the local property tax base.

Spending at or above the foundation per "need student" is virtually required; districts face a steep aid penalty if they spend less. The "need student" count gives heavier weight to low-income students and students scoring below the remedial level in a mastery test. (Appendix A describes pupil "weights.")

Maine's basic school aid is officially a foundation plan for operating costs with a small percentage-equalizing "quality incentive adjustment" add-on that partly matches higher spending for poorer districts. However, because districts spending less than the foundation amount have their aid reduced proportionally, the formula actually operates like a guaranteed tax base plan in which the guaranteed tax base is equal to the foundation divided by the target tax rate. Thus the formula has a matching aspect both below and above the foundation spending level, with the matching rate lower for above-foundation spending.[10]

The foundation spending levels (different for K–8 and high school) are set on the basis of average statewide spending in the previous year, adjusted for cost increases. The (implicit) target tax rate is approximately the statewide average tax rate that would be required to raise 45 percent of the statewide foundation, because the state covers an average of 55 percent of school costs[11]—a considerably higher level of state participation than in the other New England states.

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[10] The state also provides a smaller amount of aid through a percentage-equalizing program for school debt service costs and "special program" costs (including special needs and vocational education).

[11] This 55 percent figure does not exactly match Maine's data in Table 3 because of different concepts and measures. The formula refers to 55 percent of state-local spending, disregarding federal funds. And Table 3 reports pupil-weighted averages of school district data, not statewide averages.

Table 4
Key Characteristics of Basic Equalizing Aid Formulas in the New England States

	CT	ME	MA	NH	RI	VT
Type of Formula						
Foundation	X		X	X[a]		X
Guaranteed tax base		X[b]			X	X[c]
Minimum Spending Required	X[d]					
Student Weights[e] Reflect						
Grade level		X[f]	X[g]	X	X[g]	X
Poverty or income	X		X			X
Special ed./vocational ed./bilingual			X	X		
Separate Aid Program Available for						
Special ed./vocational ed./bilingual	X	X		X	X	X
Some Districts Receive						
Zero basic aid				X		X
Flat minimum aid[h]	X	X	X		X	X
Limited year-to-year changes[i]	X[j]	X	X[k]		m	X
Ability to Pay Includes						
Property tax base	X	X	X[n]	X	X	X
Resident income	X			X	X	X
Basic Equalizing Aid as Percent of Total Aid	62	64	55	60	88	67

[a]School tax rate and locally raised revenues also enter the formula.

[b]Basic aid is officially foundation-type with an add-on for spending above the foundation level. But because aid is reduced proportionally if a district spends below the foundation amount, Maine's plan operates like a GTB formula with the matching rate halved for spending above foundation.

[c]Percentage-equalizing add-on for half of spending above foundation level.

[d]If a town fails to spend required amount, aid is reduced by twice the shortfall.

[e]See Appendix A for complete description of weights.

[f]No official weights, but different elementary and secondary foundation amounts are equivalent to weighting by grade level.

[g]Among grade levels, only kindergarten students are weighted (because they attend only part of the day).

[h]Flat minimum aid (or zero aid) is usually provided to the richest districts.

[i]Changes may be limited by "hold harmless" or "maximum loss" provisions, or by other restrictions on reductions in aid from one year to the next.

[j]After the 1990–93 transition, minimum and enhancement aid require aid growth.

[k]Formula is applied only to incremental aid each year.

[m]Only temporarily in transition years.

[n]Property tax base is expressed per capita, not per pupil.

Source: Program descriptions supplied by Departments of Education in the New England states and Gold et al. (1992).

Massachusetts has an official equalizing school aid formula, but during the 1980s another general-purpose aid formula determined the (school plus municipal) aid total,[12] and the school aid formula was used simply to label a fraction of those additional assistance funds as school aid. The aid data shown in Table 3 (and elsewhere) reflect only the official school formula amounts. Both formulas operated on an incremental basis; that is, each community received the aid it had received the prior year, and the formula determined only the increment to aid each year. Furthermore, in fiscal years 1990 through 1992, neither aid formula was operative; municipal and school aid *cuts* were apportioned partly in proportion to total aid dollars and partly on a per capita basis. School aid was increased for fiscal year 1993, mostly on a per-pupil basis.

The official formula for schools is "Chapter 70," a foundation-type program using weighted pupils and the per capita property tax base as the measure of local ability to pay.[13] The implicit target tax rate is

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[12] The general-purpose aid for municipal governments reflects school-related costs (a multiple of weighted pupils) as well as other municipal costs, and provides aid in proportion to the measured gap between local needs (costs) and local revenue-raising capacity. This "additional assistance" formula can be decomposed into school and nonschool components; the school component operates much like a foundation plan.

[13] The use of a per capita rather than a per pupil measure of the property tax base was designed to recognize "municipal overburden" concerns and increase slightly the amount of aid going to the (mostly urban) communities with relatively few school-age children per capita.

equal to a statewide constant[14] multiplied by the tax rate that would be required for a community with the statewide average tax base per capita to raise the foundation amount per pupil.

New Hampshire has a "foundation" plan in the broad sense: the state provides money in proportion to weighted pupils and in inverse proportion to ability to pay. The formula's measure of ability to pay reflects not only property tax base per weighted pupil, but also per capita income and local tax effort relative to state averages. The most notable characteristic of New Hampshire's aid program is its small size: for a district with average wealth, income, and tax effort, aid would be equal to 8 percent of the per-pupil foundation amount (set equal to statewide average spending) times the number of weighted pupils, where the weights reflect special needs students and their placement and high school, vocational, and regular elementary student counts. If funds are insufficient (as they have been in the last few years), the percentage of each district's foundation amount covered by aid is reduced by a constant percentage point amount. Districts are not required to spend the foundation amount to qualify for aid.

Rhode Island's basic aid matches actual expenditures, with the matching rate varying inversely with ability to pay. According to the formula, the state should reimburse about 50 percent of the average district's spending,[15] although when funding falls short (as it did in FY93), aid to each district is reduced proportionally. Legislation guarantees that no district's aid will cover less than 15 percent of spending in fiscal year 1993 and 9 percent thereafter (down from a 28.5 percent minimum in earlier years). The guaranteed tax base implicit in the formula varies across communities; for a community with family income at the statewide median, it is roughly equal to twice the statewide per-pupil property tax base.

Vermont has a classic foundation plan with a percentage-equalizing add-on for above-foundation spending, and tiered treatment of richer communities for which the formula would yield negative aid.[16] Pupil weights reflect high school and elementary

student counts, poverty, and transported students by density (Appendix A). The foundation tax rate varies to make the aid more equalizing than a standard foundation plan; it is adjusted for each district in proportion to local income.[17]

Year-to-year declines in aid are limited to $100 per pupil by a "maximum loss" provision.[18] Districts are not required to spend at or above the foundation level, but the state also provides "supplemental aid for above-average expenditures," which uses each district's ratio of basic aid to foundation cost as a matching rate for one-half of spending above the foundation level.

VII. Patterns of School Spending in New England

Table 5 reports measures of disparity in school spending and tax bases across school districts within the six New England states. It indicates that disparities in operating spending among school districts are greatest in Massachusetts and least noticeable in Rhode Island.[19] As noted earlier, however, spending disparities can reflect different local priorities; it is those associated with resource differences that arouse concern.

Depending on which dispersion measure is used, disparities in property wealth may be greatest in Maine (according to the restricted range ratio), Vermont (coefficient of variation), Rhode Island (McLoone index)[20], or Connecticut (gini coefficient).

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[14] The constant is an adjustment factor used to make the formula distribution consistent with the aid budget.

[15] As is the case for Maine, this figure does not match Rhode Island's data in Table 3 for definitional and measurement reasons. See footnote 11.

[16] If a district has resources in excess of need, then basic aid is zero, but if resources are 1 to 1.5 times need, then the district qualifies for "minimum aid" of $150 per pupil. Districts with resources that exceed 1.5 times need are "gold" towns and receive no aid.

[17] Income is measured as adjusted gross income per exemption indexed to the statewide average. For each unit of the index, the tax rate (in mills) is adjusted either up or down by 27 cents (so if income is twice the state average, the district's foundation tax rate will be 27 cents above the base rate). The statewide foundation tax rate was 1.085 percent in FY91 and 1.1175 percent in FY92.

[18] The number of communities "on" the formula (not "gold" zero aid, not minimum aid, not maximum loss) declined from 186 in 1988 to 91 in 1992, while the number of "maximum loss" towns grew from 34 to 99.

[19] Rhode Island has many fewer school districts than the other New England states, which may tend to reduce the measured interdistrict disparities.

[20] The coefficient of variation and the gini coefficient for the property tax base per pupil are lowest in Rhode Island, indicating low disparity, while the McLoone index suggests Rhode Island has the highest wealth disparity. The McLoone index reflects data on only half the districts—those with values below the median—indicating how far below the median they are on a pupil-weighted basis. The disagreement among the three measures presumably indicates that wealth inequalities in Rhode Island are concentrated below the median; that is, the districts above the median are fairly closely clustered, but some districts have considerably lower per-pupil wealth.

Table 5

Measures of Interdistrict Disparity within Each New England State, 1990–91

Measure	Connecticut	Maine	Massachusetts	New Hampshire[a]	Rhode Island	Vermont
Number of Districts	169	258	347	153	35	251
Number of Students	464,056	212,262	834,216	166,752	133,666	97,465
Operating Spending per Pupil ($)						
Average[b]	6,816	4,165	5,082	4,378	6,112	4,240
Minimum	5,051	2,264	3,251	2,583	5,104	2,321
Maximum	9,823	9,669	8,861	8,067	10,738	6,935
Restricted Range Ratio[c]	1.50	1.49	1.77	1.74	1.41	1.67
Coefficient of Variation	12.6	13.3	19.8	15.7	8.0	16.7
McLoone Index[d]	.930	.940	.901	.971	.953	.919
Gini Coefficient[e]	.070	.070	.107	.093	.040	.087
Property Tax Base per Pupil[f] ($000)						
Average[b]	552.7	262.9	512.3	439.6	176.9	361.4
Minimum	160.4	27.0	171.0	101.7	50.8	117.9
Maximum	2,620.5	5,856.5	7,039.0	5,235.8	1,513.1	17,171.3
Restricted Range Ratio[c]	5.39	6.67	4.85	3.33	3.82	5.25
Coefficient of Variation	67.2	72.0	60.9	88.1	46.5	106.0
McLoone Index[d]	.776	.687	.700	.808	.678	.747
Gini Coefficient[e]	.306	.217	.229	.211	.157	.219

[a]New Hampshire data are for 1989–90.
[b]Pupil-weighted.
[c]Ratio of value at 95th percentile to value at 5th percentile, pupil-weighted.
[d]An index of equity measuring ratio of sum of variable for pupils in districts below pupil-weighted median to what sum would be if they were at median; lower values indicate more inequality.
[e]The gini coefficient measures how unequally the object (spending or tax base) is distributed among pupils—higher values indicate more inequality.
[f]Property tax base is equalized; the data are states' estimates of the market value of taxable property in each district.
Source: See Table 3. See Appendix B for definition of operating spending used for each state.

Two of the measures indicate that wealth disparities are least pronounced in New Hampshire and the other two point to Rhode Island. In all the states and according to all the reported measures, disparities in per-pupil property wealth are considerably greater than spending disparities. Hence some equalizing is occurring in all six states.

In simplified terms, per-pupil spending in any district depends on its tax base per pupil, the school tax rate applied to that tax base, and the amount of school aid it receives.[21] Tax base disparities would translate directly into spending disparities if all districts levied the same school tax rate and aid were not equalizing. But the typical pattern is that poor districts tax themselves more heavily in order to raise their spending somewhat closer to that of rich districts. This means that school aid must operate on

two fronts to achieve fiscal neutrality; it must provide enough funds to bring spending per pupil in the poorest districts up to that in the richest districts and, furthermore, bring school tax rates in the poorest districts down to those in the richest districts, on average.[22]

Table 6 narrows the focus from disparities per se to fiscal neutrality, quantifying the degree to which tax bases, spending, tax rates, and aid in the richest districts differ from their counterparts in the poorest districts. The table ranks the school districts in each state by property tax base per pupil, groups them into five equal groups (quintiles) from poorest to richest, and reports the average values of key variables for each group.

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[21] This ignores local revenues other than the property tax and school aid from the federal government, but these are very small revenue sources compared with property taxes and state school aid.

[22] That is, more equalizing aid (or smaller underlying tax base disparities) will likely result in more equal tax rates as well as more equal spending. However, for a given aid distribution and pattern of wealth disparities, a trade-off between the two dimensions of fiscal neutrality exists: the more heavily poor districts tax themselves, the more equal spending will be.

Table 6

District Characteristics by Property Tax Wealth per Pupil, 1990–91
Average Values in Wealth Quintiles for School Districts in the New England States

State and Characteristic	Overall Average	Poorest Quintile	Second Quintile	Middle Quintile	Fourth Quintile	Richest Quintile	Ratio: Richest/Poorest
Connecticut							
Property Tax Base per Pupil[a]	560.1	251.9	345.7	448.7	640.8	1,110.0	4.4
Operating Spending per Pupil ($)	6,710	6,179	6,361	6,375	6,958	7,669	1.2
School Tax Rate (mills)	9.19	10.85	10.01	9.67	8.60	6.83	.6
State Aid per Pupil ($)	2,478	3,906	3,195	2,391	1,897	997	.3
State Aid/School Budget (%)	38.5	63.5	50.3	37.9	27.5	27.5	.4
Maine							
Property Tax Base per Pupil[a]	402.6	94.5	144.8	219.3	352.5	1,211.6	12.8
Operating Spending per Pupil ($)	4,152	3,853	4,039	3,864	4,114	4,900	1.3
School Tax Rate (mills)	9.02	10.93	10.03	9.29	9.02	5.79	.5
State Aid per Pupil ($)	2,373	3,561	3,380	2,603	1,741	570	.2
State Aid/School Budget (%)	46.2	72.0	64.9	52.8	32.4	8.7	.1
Massachusetts							
Property Tax Base per Pupil[a]	624.8	249.2	344.6	442.8	596.3	1,484.2	6.0
Operating Spending per Pupil ($)	5,009	4,258	4,528	4,765	5,365	6,124	1.4
School Tax Rate (mills)	7.39	7.77	8.21	8.12	7.71	5.16	.7
State Aid per Pupil ($)	1,680	2,628	2,164	1,590	1,070	949	.4
State Aid/School Budget (%)	29.8	50.9	40.1	28.0	17.4	12.4	.2
New Hampshire[b]							
Property Tax Base per Pupil[a]	573.4	241.3	327.9	392.7	513.5	1,407.7	5.8
Operating Spending per Pupil ($)	4,387	3,817	3,815	4,535	4,392	5,389	1.4
School Tax Rate (mills)	12.01	14.49	14.26	13.74	11.10	6.39	.4
State Aid per Pupil ($)	314	937	358	177	104	4	···
State Aid/School Budget (%)	6.7	21.7	7.2	3.2	1.4	.1	···
Rhode Island							
Property Tax Base per Pupil[a]	245.7	98.8	157.4	190.5	224.6	557.2	5.6
Operating Spending per Pupil ($)	6,262	5,699	6,060	6,034	6,194	7,321	1.3
School Tax Rate (mills)	6.88	7.75	6.94	7.13	7.39	5.20	.7
State Aid per Pupil ($)	2,289	2,992	2,671	2,250	1,909	1,622	.5
State Aid/School Budget (%)	37.5	52.8	44.0	37.3	30.8	22.5	.4
Vermont							
Property Tax Base per Pupil[a]	535.2	177.5	236.1	306.0	429.4	1,531.6	8.6
Operating Spending per Pupil ($)	4,187	3,842	4,001	4,179	4,216	4,700	1.2
School Tax Rate (mills)	10.74	10.96	12.01	12.45	11.91	6.33	.6
State Aid per Pupil ($)	1,403	2,877	2,120	1,408	576	33	···
State Aid/School Budget (%)	28.6	60.2	43.7	27.8	10.8	.5	···

Note: Figures in overall average column above do not match averages in Tables 3 and 5 because these data are district-weighted, and data in Tables 3 and 5 are pupil-weighted.
···Less than 0.05.
[a]Property tax base is in thousands of dollars of equalized value; quintiles are defined in terms of this variable.
[b]New Hampshire data are for 1989–90.
Source: See Table 3. See Appendix B for definitions of operating spending and state aid for each state.

On a quintile-to-quintile basis, Table 6 indicates that tax base disparities are highest in Maine and second highest in Vermont (the richest quintile has 13 times the average tax base per pupil of the poorest quintile in Maine, and nine times in Vermont). Spending per pupil, however is only about 30 percent higher in the richest quintile than in the poorest quintile in Maine, and 20 percent higher in Vermont. Spending disparities among wealth quintiles are smaller than wealth disparities partly because school aid is quite equalizing (the richest quintile averages only one-fifth the aid per pupil of the poorest quintile

in Maine and less than one-fiftieth in Vermont) and partly because the poorer communities tax themselves more heavily (the school tax rate is half as high in the richest quintile as in the poorest in Maine and about 60 percent as high in Vermont).[23] That is, spending disparities in Maine and Vermont are substantial, but not as wide as the underlying tax base disparities because of the offsetting effects of more aid and higher tax rates in poorer districts.

Spending differences between rich and poor districts in Rhode Island are similar to those in Maine and Vermont[24] (the richest quintile spends 1.3 times as much as the poorest), but the underlying property tax base disparities are considerably smaller than in Maine and Vermont. Rhode Island's smaller wealth disparities do not translate into noticeably smaller spending disparities because state aid is less equalizing (the richest quintile averages one-half the aid per pupil of the poorest quintile), and differences in tax effort are also less pronounced (the richest districts average about 70 percent of the school tax rates of the poorest).

Connecticut also enjoys less pronounced property tax base disparities among wealth quintiles than the other states, and its school aid is not as concentrated on poorer communities. The smaller wealth disparities translate into lower spending disparities (as in Vermont, spending per pupil is only 20 percent higher in the richest quintile than in the poorest). Connecticut's school aid is less equalizing than Maine's and Vermont's, and its tax rate disparities are smaller (the richest quintile's tax effort is about 60 percent as high as the poorest's).

Massachusetts shows mid-range tax base disparities between quintiles, but the highest spending disparities (spending per pupil is over 40 percent higher in the richest quintile of districts than in the poorest). The data suggest that spending disparities between rich and poor districts persist in Massachusetts more than in Maine and Vermont because the distribution of aid is less equalizing in Massachu-

setts—the richest quintile of districts receives about 40 percent as much per-pupil aid as the poorest quintile—and because tax rates are more similar across quintiles, which means that tax base disparities translate more directly into school revenue disparities. Local property taxes in Massachusetts (for school and municipal purposes combined) are constrained by Proposition 2½, a property tax limitation measure enacted in 1980.

In New Hampshire, like Massachusetts, spending was 40 percent higher in the richest quintile than in the poorest, on average, although its tax base disparities are relatively small. As in Vermont, school aid is highly focused on poor districts, but school aid in New Hampshire comprises such a small portion of the school budget that it cannot offset a very large fraction of the wealth disparity, even in the poorest districts. What keeps spending disparities from being even larger in New Hampshire is tax rate disparities; school tax rates in the poorest districts are more than twice as high as in the richest districts, on average.

In sum, spending disparities between rich and poor districts are largest in Massachusetts and New Hampshire and smallest in Connecticut and Vermont. Of the latter two, Vermont deserves special attention since the underlying tax base differences are greater there than in Connecticut, but school aid helped bring spending disparities down. Table 6 also indicates that tax rates in rich and poor districts are most disparate in New Hampshire and most similar in Massachusetts and Rhode Island.

VIII. Current Challenges and Issues

One interpretation of the data in Table 6 might focus on the remarkable similarity among the New England states of spending disparities across districts, given the wide variation in underlying tax base disparities, school aid, and school tax rates. This similarity suggests a "comfort" level, common among the New England states, beyond which state policymakers (who determine aid) and local decision-makers (who determine school taxes) find spending disparities unacceptable. For example, the Rhode Island pattern in Table 6, compared with the other New England states, might occur because Rhode Island state legislators perceive less need for its aid program to be equalizing since its wealth disparities are less pronounced, and because Rhode Island's local school district officials need not levy widely varying tax rates to raise similar amounts of revenue.

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[23] Note that three states, most notably Vermont, show higher average school tax rates in some of the mid-wealth quintiles than in the poorest.

[24] The disparity measures in Table 5 indicated that Rhode Island's spending disparities were lower than those in the other New England states, while Massachusetts' were highest. By contrast, Table 6 suggests spending differences between rich and poor districts are smallest in Vermont and Connecticut, with Rhode Island and Maine falling in the middle tier. This discrepancy between the two tables indicates that some of the spending disparities in Vermont and Connecticut are associated with preference or cost differences or other nonwealth factors.

However, that "comfort level," if it exists, is not at the point of equal spending in rich and poor districts. In all the New England states, students and parents living in poorer districts typically experience lower spending and higher school tax rates than their counterparts in richer districts. Even in the region's most fiscally neutral states, the richest one-fifth of the districts spend 20 percent more per pupil than the poorest one-fifth, on average, and these spending disparities are larger when the very richest districts—the top 10 percent, for example—are compared with the very poorest.

The patterns of spending, wealth, aid, and tax rates examined in this article suggest that some strategies are likely to be more successful than others in achieving greater fiscal neutrality—greater equality of spending and tax rates across school districts—in the New England states. As just noted, Vermont has relatively low spending disparities despite fairly pronounced tax base disparities—aid goes a long way toward equalization. This provides some endorsement for the "combination" type of aid formula Vermont uses, with a percentage-equalizing add-on to a foundation plan. The foundation plan has no minimum spending requirement and no recapture, but does provide zero aid to the richest towns.[25] With this type of formula, Vermont could achieve greater equality in spending, should it wish to do so, by adding more dollars to the school aid pool; its aid commitment is currently in the low to middle range among the New England states.

Maine, like Vermont, has a small percentage-equalizing add-on to its aid formula for the poorest districts, and makes a more sizable contribution to school aid than most of the New England states. While spending at or above the foundation is not required, aid is reduced proportionally if spending falls below the foundation level. This aid program is quite equalizing; it brings spending disparities to the middle range, despite the largest tax base disparities in the region. Tax rate disparities, however, remain sizable in Maine, probably because the aid formula is matching, which focuses its influence on spending.

Connecticut's spending disparities are also low, largely because the underlying tax base disparities are relatively small. Consequently, Connecticut can achieve as much equalization as the other states with less targeting of aid to the poorest districts. Perhaps

equally important, its requirement that districts spend at least the foundation amount brings all districts' spending above that minimum (while foundation aid minimizes the tax rate impacts of such a requirement).

New Hampshire's spending disparities between rich and poor districts are relatively high, and poor communities tax themselves relatively heavily. The state's aid program is quite equalizing as far as it goes, but it does not provide much money, even to the poorest districts. A substantially greater commitment of state funds to school aid would be required to achieve fiscal neutrality comparable to other states,[26] but New Hampshire's current budget difficulties have prompted a move in the other direction—reductions in aid and even some "trial balloon" proposals that the state remove itself from school standard-setting.

Rhode Island, alone among the New England states, provides school aid that explicitly matches local school spending, with a higher matching rate for poorer districts. Starting with small tax base disparities, Rhode Island displays a low level of tax rate disparities but mid-level spending disparities. Rhode Island's aid dollars are not more equalizing, largely because a fairly high minimum matching rate (aid covered no less than 28.5 percent of spending in fiscal year 1991) gives rich districts almost as much incentive as poor ones to increase spending. The state has passed legislation to reduce the statutory minimum matching rate to 9 percent after fiscal year 1993, which should enhance the aid's equalizing impact. A combination plan with a binding foundation minimum (and a percentage-equalizing program as an add-on for above-foundation spending) might be more successful than the current formula in raising school spending in the state's poorest districts.

The impact of Massachusetts' school aid is difficult to assess, since the dollars labeled as school aid (and hence measured in this and other studies) bear little relationship to the actual aid dollars provided to each community for combined school and municipal purposes each year. In terms of outcomes, the aid

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[25] The growing number of communities receiving "maximum loss" aid, however, blunts the equalizing impact of the aid program. See footnote 18.

[26] In theory, the state government's lack of any broad-based taxes and the local governments' access to the property tax might provide an argument for adoption of an expanded foundation plan (or a guaranteed tax base plan) *with recapture*; that is, aid to poorer districts would be augmented by redistributing property tax funds from richer districts. In practice, however, the property tax is already heavily used in New Hampshire (because it is the only broad-based tax), and recapture plans have been politically palatable in few other states.

does not appear to be as equalizing as other states', since spending disparities are relatively high. The incremental nature of aid in Massachusetts may limit the degree of equalization: the formula (for school or general purpose aid) applies only to the new dollars added to the aid pool each year; furthermore, fiscal year 1991 represented the second year of aid cuts to Massachusetts cities and towns. By contrast with spending disparities, tax rate disparities are relatively low, perhaps because of Proposition 2½, the state's property tax limitation measure. Indeed, Prop 2½ may contribute to school spending disparities by limiting the degree to which poor communities can tax themselves more heavily in order to raise revenues comparable to their wealthier neighbors. (See the box for a discussion of the most recent Massachusetts court case on school finance.)

Massachusetts added money to its school aid pool last year, and plans to do the same this spring for fiscal year 1994 aid. The FY93 increment was distributed mostly on a per-pupil basis, but consideration was given to a proposal for a combination formula, with spending required at or above a reasonably adequate foundation level and percentage-equalizing aid for spending above the foundation.[27]

This year's proposals include some of the same features. More money explicitly for schools combined with a phase-out of the incremental approach and a shift toward a combination formula would undoubtedly enhance the program's equalizing effects.

All told, the New England states could further reduce spending disparities among school districts by moving toward combination plans, with a percentage-equalizing add-on to a foundation formula such as Vermont uses. Making the foundation a binding minimum at an adequate spending level brings up spending in the lowest-spending districts. Putting more money into the aid pool makes possible greater equalization or allows pursuit of general education support without sacrificing equalization; such budget decisions, of course, must also consider other priority uses for state funds. Straightening out these school finance issues is a critical challenge as the states face key ongoing decisions regarding broader educational reform and accountability.

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[27] The Massachusetts Business Alliance for Education proposal included a foundation spending level of $5,000 per pupil with a percentage-equalizing add-on to allow poorer districts to spend above the foundation without facing markedly higher school tax rates.

Appendix A: Equalizing School Aid Formulas

I. Generic Formulas

Foundation Plan

$APP_i = F - (t \times PBPP_i)$; aid makes up the difference between the foundation spending level and what the local tax base yields at the target tax rate.

(And $APP_i = 0$ if $(t \times PBPP_i) > F$ when "negative aid" is not recaptured.)

(Furthermore, $APP_i = 0$ if $EPP_i < F_i$ when aid is contingent on districts spending at least the foundation amount per pupil.)

Then, assuming spending per pupil equals aid plus local school revenue from the property tax (a simplifying assumption that ignores federal aid, other state aid, and non-property tax local revenue),

$r_i = t + [(EPP_i - F)/PBPP_i]$ = target tax rate plus spending above (or below if allowed) the foundation divided by per-pupil tax base;

$DSA_i = APP_i \times n_i = (F \times n_i) - (t \times PBPP_i \times n_i)$ = the foundation amount times the number of pupils minus what the target tax rate raises with the local tax base;

where

APP_i is aid per pupil to school district i,

r_i is district i's school tax rate,

EPP_i is district i's spending per pupil,

$PBPP_i$ is district i's property tax base per pupil,

DSA_i is district i's total school aid,

n_i is the number of pupils in district i,

F is the statewide foundation amount per pupil, and

t is the statewide target tax rate.

Note that subscript i refers to district i and unsubscripted variables are statewide constants.

The "foundation" label is also applied to other formulas in which aid is proportional to the number of pupils (n_i) and negatively related to the per pupil property tax base ($PBPP_i$) or other measure of district resources.

Guaranteed Tax Base or Percentage-Equalizing Plan

$APP_i = r_i \times (GTB - PBPP_i)$; aid makes up the difference between what the local tax base yields and what the guaranteed tax base would yield at district i's tax rate.

(And $APP_i = 0$ if $PBPP_i > GTB$ when "negative aid" is not recaptured.)

Then, assuming spending per pupil equals aid plus local school revenue from the property tax,

$r_i = EPP_i/GTB$ = spending divided by the guaranteed tax base;

$DSA_i = APP_i \times n_i = r_i \times [(GTB \times n_i) - (PBPP_i \times n_i)]$ = the local tax rate times the difference between the guaranteed tax base and the actual tax base;

where the above definitions apply, and

GTB is the guaranteed tax base, a statewide constant.

The "percentage equalizing" label is also applied to other formulas in which aid is matching (aid is proportional to

actual spending) and the matching rate varies inversely with the local per pupil property tax base.

For example,

$APP_i = (1 - LS_i) \times EPP_i$, where LS_i is the fraction of spending that district i must raise locally,

$LS_i = c \times PBPP_i/PBPP$, the local share is a constant c times the size of district i's property tax base per pupil relative to the statewide average property wealth per pupil. Then

$APP_i = (1 - c \times PBPP_i/PBPP) \times EPP_i$; aid covers a certain fraction of total spending, where the fraction varies inversely with the relative size of local property wealth per pupil.

Then, assuming spending per pupil equals aid plus local school revenue from the property tax,

$r_i = c \times EPP_i/PBPP$

$DSA_i = APP_i \times n_i = (1 - c \times PBPP_i/PBPP) \times EPP_i \times n_i$, a fraction of total spending

$= r_i \times \{(PBPP/c \times n_i) - (PBPP_i \times n_i)\}$, the local tax rate multiplied by the difference between [some multiple of the statewide average tax base per pupil times district i's pupils] and district i's tax base.

Thus, under the usual simplifying assumptions, this percentage-equalizing formula is equivalent to the GTB formula, where the implicit $GTB = PBPP/c$.

Combination Plan

$APP_i =$

$$
\begin{cases}
F - (t \times PBPP_i) & \text{if } EPP_i \leq F; \\
& \text{like foundation plan for spending} \\
& \text{at or below foundation level.} \\
& \text{(And } APP_i = 0 \text{ if } (t \times PBPP_i) > F, \\
& \text{when "negative aid" is not recaptured.)} \\
F - (t \times RBPP_i) + (r_i - t) \times (GTB - PBPP_i) = \\
F - (t \times GTB) + r_i \times (GTB - PBPP_i) & \text{if } EPP_i > F; \\
& \text{foundation aid plus guaranteed tax base} \\
& \text{plan for spending above foundation level.}
\end{cases}
$$

Then, assuming spending per pupil equals aid plus local school revenue from the property tax,

$r_i =$

$$
\begin{cases}
t + [(EPP_i - F)/PBPP_i] & \text{if } EPP_i \leq F, \text{ the target tax rate,} \\
& \text{or less if below-foundation} \\
& \text{spending is allowed.} \\
t + (EPP_i - F)/GTB & \text{if } EPP_i > F, \text{ the target tax rate} \\
& \text{plus spending in excess of the} \\
& \text{foundation divided by the} \\
& \text{guaranteed tax base.}
\end{cases}
$$

$$
DSA_i = \begin{cases}
(F \times n_i) - (t \times PBPP_i \times n_i) & \text{if } EPP_i \leq F \\
(F \times n_i) - (t \times GTB \times n_i) + r_i \\
\quad \times [(GTB \times n_i) - (PBPP_i \times n_i)] & \text{if } EPP_i > F
\end{cases}
$$

Incorporating differential costs or needs into the formulas

Weighted pupils (w_i) can be substituted for the simple pupil count (n_i) if the state decides to provide more money per pupil to higher-cost or "needier" students. The weights reflect the proportional increase in cost thought to be associated with each type of student, and hence the proportional increase in aid provided by the state.

II. Equalizing Aid Formulas in the New England States

The equalizing aid formulas used by the New England states can be expressed in a form comparable to the "generic" aid formulas above. The abbreviations used above have the same meanings below. Subscript i refers to school district i; unsubscripted variables are statewide constants.

Connecticut

$$DSA_i = (F \times w_i) - (F/SGW) \times (PCY_i/PCY^{highest}) \times PBPW_i \times w_i$$

where w is weighted students, SGW is the state guaranteed wealth, PCY is per capita income, and PBPW is property tax base per weighted pupil. In this context, the "target tax rate" is F/SGW, that is, the rate required for a community with state-guaranteed wealth to raise the foundation amount per pupil. Local ability to pay is measured as property tax base per weighted pupil adjusted for per capita income relative to the highest town's per capita income.

Maine

For a community spending the foundation amount or more,

$$DBA_i = [1 - \{(OCMR \times PBPP_i)/F\}] \times [(F^e \times n_i^i) + (F^s \times n_i^s)]$$
$$= (F \times w_i) - (OCMR \times PBPP_i \times w_i) \quad \text{if } EPW_i \geq F$$

where DBA_i is basic equalizing aid to district i, OCMR is the statewide "operating cost mill rate" (a target tax rate), the superscripts e and s refer to elementary and secondary students, the weights are derived from relative elementary and secondary per pupil "foundation" amounts (that is, the weights are F^e/F and F^s/F), and EPW_i is school spending per weighted pupil.

When a district does not raise its share of foundation spending, then aid is reduced proportionally:

$$DSA_i = (r_i/OCMR) \times \{(F \times n_i) - (OCMR \times PBPP_i \times n_i)\} \quad \text{if } EPW_i < F$$

where r_i is the local property tax rate. Thus the adjustment is in proportion to the ratio of the district's actual tax rate to the target tax rate. Rearranging terms,

$$DSA_i = r_i \times \{(F/OCMR \times n_i) - (PBPP_i \times n_i)\} \quad \text{if } EPW_i < F,$$

which is the same as a guaranteed tax base formula in which the guaranteed tax base is equal to the foundation breakeven (implicit GTB=F/OCMR). Maine also provides "quality incentive adjustment" aid for districts receiving nonzero basic aid that spent above the foundation two years prior. The state matches one-half of that "excess"

spending, and the matching rate is the ratio of basic aid to foundation spending:

$$DAA_i = .5 \times \{1 - (OCMR \times PBPP_i/F)\} \times (EPW_i \times w_i - F \times w_i) \quad \text{if } EPW_i > F.$$

For districts that qualify for both basic aid and the quality incentive adjustment, total aid is

$$DSA_i = DBA_i + DAA_i.$$

Massachusetts

$$DSA_i = \{F \times w_i\} - \{P \times (F/PBPC) \times PBPC_i \times w_i\}$$

$$= \{F \times w_i\} - \{P \times (F/PBPW) \times [(w_i/pop_i)/(W/POP)] \times (PBPW_i \times w_i)\}$$

where P is a statewide constant, PBPC is property tax base per capita, PBPW is the property tax base per weighted pupil, POP is population, and unsubscripted capital letters refer to statewide averages. In this context, the target tax rate is $P \times \{(F/PBPC)\}$, a multiple of the tax rate that would be required for a community with the statewide average tax base per capita to raise the foundation amount per pupil. Ability to pay is expressed in per capita terms; that is, it is adjusted for the ratio of weighted school pupils to population.

New Hampshire

$$DSA_i = .08 \times (PBPW/PBPW_i) \times (PCY/pcy_i) \times .5\{[(STR_i/STR) \times (PCY/PCY_i)] + (SR/SR_i)\} \times w_i \times F$$

where STR is the effective school tax rate, SR is locally-raised school revenues per weighted pupil, and unsubscripted capital letters refer to statewide averages. This formula cannot be expressed in the same form as the typical foundation plan because the local property tax base is in the denominator rather than the numerator, but as in any foundation plan, aid is inversely related to the local property tax base per weighted pupil and proportional to the number of weighted pupils.

Rhode Island

$$DSA_i = (1 - \{.5 \times ([EWAV_i/n_i]/[EWAV_s/n_s])\}) \times EPP_i$$

where EWAV is the property tax base adjusted to reflect median family income (MFI below) and the subscript s refers to statewide totals. If reimbursable expenditures were equal to aid plus local revenues ($r_i \times PBPP_i \times n_i$) and if $EWAV_i = (PBPP_i \times n_i) \times (MFI_i/MFI)$, then

$$DSA_i = r_i \times \{[2 \times (EWAV_s/n_s) \times (MFI_i/MFI) \times n_i] - (PBPP_i \times n_i)\}.$$

The implicit guaranteed tax base thus varies across communities in proportion to relative income; for a community with family income at the statewide median, the guaranteed tax base is roughly equal to twice the statewide property tax base per pupil.

Vermont

$$DBA_i = F \times w_i - (t + x_i) \times (PBPW_i \times w_i)$$

where DBA is a district's basic school aid and x is an

additive change in the foundation ("target") tax rate proportional to local income.

Vermont also provides supplemental aid for districts that qualify for nonzero basic aid and spend above the foundation; half of expenditures in excess of the foundation are matched, and the matching rate is the ratio of basic aid to foundation cost:

$$DAA_i = .5 \times \{1 - (t + x_i) \times (PBPW_i/F)\}$$
$$\times (EPWi - F) \quad \text{if } EPW_i > F$$

where DAA_i is supplemental aid and EPW_i is spending per weighted pupil; supplemental aid is zero if

$$\{PBPW_i \times (t + x_i)\} > F.$$

For a district with spending above the foundation and property tax base low enough to qualify for basic aid, total equalizing aid is

$$DSA_i = DBA_i + DAA_i.$$

III. Pupil Weights Used in New England School Aid Formulas

Connecticut uses "need students" in its formula. The count of need students gives heavier weight to low-income students (1.25 for AFDC) and students scoring below the remedial level in a mastery test (1.25). "The mastery count is a proxy measure of the number of students testing below the remedial standard on the mastery tests plus a bonus for improvements in mastery test scores."

Maine has no pupil weights, but does have a higher foundation per-pupil operating rate for high school than for K–8 students, based on actual statewide spending patterns. In FY91, the high school foundation was 41 percent higher (= 4213/2982) than the elementary school foundation. Other weights are not used in the general purpose "operating cost" aid formula because Maine has separate "program cost" aid for early childhood education, special education, vocational education, transportation operations, and bus purchases.

Massachusetts uses pupil weights in its aid formulas (both Chapter 70 and additional assistance). Weight is 1.0 for regular day students and higher for special education (4.0), bilingual (1.4), occupational day (2.0), and residential (4.0) students; low-income (AFDC) students receive an additional weight of 0.2. Pre-kindergarten and kindergarten students are weighted 0.5 (or 0.7 if bilingual) because they attend only half-day.

New Hampshire also incorporates weights into its formula, based on state average expenditures per pupil for eight educational programs. Weights are 1.0 for regular elementary student, and higher for regular high school (1.21), high school vocational education (2.01), special education in-district special education classroom (2.57), special education mainstreamed (2.12), out-of-district special education day (7.08), out-of-district special education residential (8.72), special education preschool day placement (3.37).

Rhode Island—no weights.

Vermont's weights reflect elementary (1.0) and secondary school (1.25 for grades 7–12) student counts, poverty (1.25 for children in families receiving food stamps), and transported students by density. The transported student weights are higher for transported students in more sparsely settled catchment areas: sparsely settled (3 or fewer students transported per square mile) = 1.0714, moderately settled (over 3 but no more than 9) = 1.05, and densely settled (more than 9) = 1.0385.

Appendix B: Definitions of Key School Measures for the New England States

Connecticut

Operating spending defined as "Net Current Expenditures"—"Those expenditures on behalf of public elementary and secondary education from all sources: state, local, federal, and other." Excluded from NCE are debt service and capital outlay, reimbursable regular education transportation, adult education, and expenditures on behalf of nonpublic schools.

State school aid defined as "Equalized grants"—total state equalized formula aid, the sum of state grants that encompass an equalized distribution formula. In 1990–91, these included education cost sharing (the foundation formula), special education-regular, public and nonpublic transportation, school construction, adult education, health services, and vocational education equipment/OIC.

Pupil count is average daily membership. Observations are cities and towns; data for regional school districts have been attributed back to member cities and towns.

Maine

Operating spending defined as "Operating Costs Residential"—all general fund costs reported in each School Administrative Unit's annual Financial Report of Public Schools except major capital outlay, debt service, and transportation expenditures. Tuition receipts have been deducted from operating costs because the data are based only on resident pupils.

State school aid defined as "Adjusted state allocation"—this includes the "operating cost allocation" (the basic foundation formula) and "program cost allocation" (a matching program for special education, transportation, vocational, and other programs), plus debt service allocation, and a variety of adjustments.

Pupil count is average resident pupils. Observations are generally districts; but data for 20 community (elementary) districts were incorporated into the regional (high school) districts of which the communities are members.

Massachusetts

Operating spending defined as "Integrated Operating Cost"—direct school spending plus spending outside the school budget that benefits schools such as insurance and pupil support services; also includes EEO grant spending

but not other non-general fund expenditures. Takes into account a town's share of regional school district spending as well as its own schools.

State school aid defined as "State revenue"—the sum of Chapter 70, school construction, pupil transportation, state wards, food services, Chapter 188 (EEO grants and other phased-out grants), special education Chapter 71b, racial imbalance, regional school aid (matching inversely to wealth per pupil), and other state aid.

Pupil count is net average membership. Observations are cities and towns. Aid and spending for regional districts, vocational districts, and county agricultural schools were allocated back to member cities and towns on the basis of enrollments.

New Hampshire

Operating spending defined as "K–12 Cost"—current expenditures reported on each district's annual financial report. These represent operating costs and do not include tuition, transportation, capital expenditures, or debt service expenditures. Food service is deducted from current expenditures.

State school aid defined as "Foundation aid"—this excludes building aid, state contributions to teacher pensions, special education catastrophic aid, and vocational education tuition and transportation aid.

Pupil count is average daily membership in residence. Observations are school districts, many of which coincide with cities and towns.

Rhode Island

Operating spending defined as "Expenditures, All Programs"—includes general instruction and special programs such as vocational, special education, limited English-proficient, compensatory, and gifted/talented.

State school aid defined as "State revenue"—includes operations aid (basic equalizing program), disadvantaged program, vocational education, gifted, and other aid.

Pupil count is resident average daily membership. Observations are school districts, which generally coincide with cities and towns. Two regional districts were deleted because of incomplete data.

Vermont

Operating spending defined as "Current Expenditures" —all school expenditures (1) excluding capital debt service expenditures, transportation expenditures, and special education expenditures, and (2) subtracting incoming tuition and all federal and state funds earned except for federal impact aid and state general aid.

State school aid defined as "Calculated general state aid"—the sum of basic aid (foundation formula) plus minimum aid adjustment plus two kinds of supplemental aid (capital debt service and above-average expenditures) plus maximum loss adjustment.

Pupil count is average daily membership. Observations are districts, many of which coincide with cities and towns.

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