

— Chapter 8 —

# Adjustments for Student Needs, Education Level, Scale Economies, and Price

Chapter 7 analyzed the basic school finance formulas and the variety of policy and political issues associated with each. But the discussion implicitly assumed uniformity along several dimensions, and in the real world, such an assumption does not hold. For example, some students have special needs and require additional educational services above those provided through state and local general funds. Further, some argue that it is wise to spend more on students at different education levels. Traditionally, states spend more on secondary students, although there is an increasing trend to spend more on students in kindergarten through grade 3. Many states still have small schools that experience diseconomies of scale or schools in rural isolated areas, both of which incur higher costs. Finally, the price of purchasing educational goods varies across districts in a state, especially large, diverse states such as Florida, New York, or Texas. This chapter discusses these issues and the types of vertical equity adjustments to basic school finance formulas that reflect legitimate reasons for providing unequal resources.

## **ADJUSTMENTS FOR DIFFERENT PUPIL NEEDS**

If different pupil needs requiring extra educational resources were evenly distributed across school districts, neither special adjustments to regular school finance formulas nor separate categorical programs would be needed; the extra amounts could be included, at least implicitly, in the spending levels set for the regular program. But the distribution of different pupil needs is not even across all school districts. Students from homes with incomes below the poverty level tend to be concentrated in large, urban districts and in small, rural, isolated school districts; these students are much less prevalent in suburban school districts. Similarly, students for whom English is not the primary language are also not found in equal percentages in all types of school districts; these students too tend to enroll in greater percentages in urban and rural school districts. Likewise, students with physical or mental handicaps are not found in equal concentrations in all school districts; indeed, some suburban school districts that have developed especially effective programs for handicapped children see the percentage of such students rise as parents move to that district for access to the outstanding program.

In short, the demographics of students with different types of special educational needs vary from school district to school district. Indeed, the proportions of students who need extra educational services approach 50 percent in the largest districts in the country, such as Chicago, Dallas, Los Angeles, and New York City.

Furthermore, the prices districts face in providing these extra services also vary, intensifying the fiscal burden caused by special-needs students. Large, central cities face the highest prices and, usually, have the highest concentration of these students. Many rural districts, which generally have lower prices, usually face high costs for the special needs of these students because the low incidence dramatically increases the per-pupil costs of needed services. For example, if there is only one blind student in a rural school, the cost for providing appropriate services is spread over just that one student, whereas in more populated areas, the incidence of blindness among children is higher and the costs of providing needed additional services can be spread over all blind children.

If states required districts to provide the needed extra services solely from local funds, they would be imposing an extra financial burden that would vary substantially by district. Further, since the incidence of special student needs is not necessarily related to local fiscal capacity, such a state requirement could worsen school finance fiscal inequities. In short, because of demographics and price differences, a state role is needed to make the provision of extra services for special-needs students—the poor, handicapped, or limited-English-proficient (LEP)—fair across all schools districts. This section discusses school finance programs to accommodate these vertical equity adjustments.

### Development of Special-Needs Student Programs

There is a rich developmental history associated with the major special-needs student programs: compensatory education programs for low-income students; language acquisition programs for LEP students (Hodge, 1981), and special education programs for physical and mentally handicapped students. Both the federal government and the states have been major actors in this history.

*Compensatory education.* The federal stimulus was inaugurated in 1965 with passage of the Elementary and Secondary Education Act (ESEA); Title I provided grants to local school districts on the basis of the number of students from families with incomes below the poverty level. Within districts, schools were to use the funds to provide extra educational services for low-achieving students. Initially, the per-pupil grant was funded at about \$200, which was about 37 percent of the national average expenditure per pupil. Although this federal compensatory education program has a long history of implementation, by the early 1980s the program was firmly in place across the country (Odden, 1991).

Further, as discussed in Chapter 3, although in the early years a substantial portion of Title I dollars "supplanted" (i.e., replaced) local dollars, by the end of the 1970s each dollar of Title I funded produced a minimum of an extra dollar of expenditures on compensatory education programs (Odden, 1988). A series of rules and regulations developed during the 1970s, focused primarily on funds allocation and use, helped produce these end-of-the-decade fiscal outcomes. "Comparability" required districts to allocate district and state funds equally among schools before allocating Title I dollars. "Supplement and not supplant" required districts to ensure that Title I dollars provided extra educational services and did not merely replace local funds. And "children in greatest need" requirements guaranteed that only the children with the lowest student achievement were eligible to receive extra educational services provided by Title I funds.

In 1981, ESEA was amended by the Education Consolidation and Improvement Act (ECIA), and Title I was replaced by Chapter 1. In 1989, ECIA was replaced by a new Elementary and Secondary Education Act. The compensatory education program became Chapter 1 of Title 1 of the new ESEA. In 1990, approximately \$4.76 billion were provided for Chapter 1 services. Dollars are allocated to states, and to local districts within states on a flat grant basis, depending on the number of students from families with incomes below the poverty level.

Title I and, later, Chapter 1 stimulated many states to enact their own compensatory education programs. Most were designed to complement the federal program. California and New York were among the first states to enact compensatory education programs. A major issue for many state programs, and an issue also raised for the federal program, was whether to distribute funds on the basis of poverty, an indirect measure of student need, or student achievement, a direct measure of student need. The New York program allocates funds

on the basis of student achievement criteria, whereas the California program uses a poverty index.

The politics surrounding the enactment of Title I (Bailey and Mosher, 1968; Ravitch, 1983) favored poverty as the measure of need because it ensured that funds flowed disproportionately to large cities, primarily those in the Midwest and Northeast, and to rural areas, primarily in the South. Representatives of these areas were the strongest supporters of ESEA, and their districts were felt to have the greatest need for federal support. A student achievement measure would drastically alter the distribution of federal compensatory education funds; dollars would flow out of rural and urban areas and into suburban areas, since all districts have low-achieving students. Similarly, in most states, use of a poverty index to distribute compensatory education funds channels relatively more aid into rural and urban areas; a student achievement measure spreads the dollars across more districts and increases the relative proportion allocated to suburban districts, which usually are the wealthier districts. Whatever educational argument is used to rationalize the allocation of compensatory education funds, these political dimensions also affect the final program design.

In the early 1980s, nearly 20 states had compensatory education programs and/or pupil weights in their general aid formula, with about half using pupil weights (McGuire, 1982). Student eligibility was determined by a mixture of poverty and student achievement measures. In 1986-87, the number of states with compensatory education programs and/or compensatory education pupil weights increased to 28. Figure 8.1 lists the different state approaches to funding compensatory education.

Although both federal and state compensatory programs provide opportunities for low-achieving students to receive additional educational services, the programs do not establish a "right" to such extra services. The services are available solely because of the federal and state programs.

*Bilingual education.* Services for students with limited English proficiency emerged in the mid-1970s primarily in response to the 1974 *Lau v. Nicholas*<sup>1</sup> case in California. This case was brought in San Francisco, where students who did not speak English were "immersed" in classes taught in English. The case was filed as an equal protection case, but it was decided on the basis of Title VI of the federal Civil Rights Act of 1964. The court held that it was discriminatory to place non-English-speaking students in classes where the language of instruction was English. As a result, districts created bilingual programs that provided instruction in English as a second language (ESL) and instruction in subject matter classes taught in the student's native language until the student learned enough English to be instructed in English only.

Although debates have surrounded various approaches to bilingual education, the key finding of *Lau* is that the language capability of students must be considered in designing an appropriate instructional environment. Today,

<sup>1</sup> 414 U.S. 653.

FIGURE 8.1 State Approaches to Funding Compensatory Education

State	Compensatory Program Description	1986-87 Funding (millions of dollars)	
California	Funds distributed for marginal costs of compensatory programs not funded through revenue limit, on the basis of a variety of poverty measures	Economic Impact Aid	197.5
		Urban Impact and Meade Aid	86.6
Colorado	Districts with over 15% low-income pupils receive \$125 per low-income pupil in excess of the 15%	Low income/ADC	4.35
Connecticut	Half of grant on basis of number of low-income pupils, half on basis of low achievement; weight of 0.5 in general aid formula	Compensatory education grants	8.63
Florida	Categorical grant distributed on basis of number of children scoring in lowest quartile on statewide assessment tests	State compensation education program	38.35
Georgia	Weight of 1.314 for pupils with low achievement test scores in reading and math	Remedial education Program	13.3
Hawaii	Full state funding for educationally disadvantaged, immigrant children with limited English, alienated youth, and other targeted groups with educational programs	Compensatory education	10.28
Illinois	Chapter 1-eligible children are given a variable weight from 0 to 0.625 depending on the concentration of low-income students relative to the state average concentration of 19.19%; a district with 19.19% concentration has an additional weight of 0.53 per low-income pupil	Unknown	
Louisiana	Flat grant for approved programs	Unknown	
Maryland	25% of foundation amount per Chapter 1-eligible pupil, with requirement that a minimum portion of that amount be devoted to Chapter 1-eligible students	Compensatory education	44.36

(Continued)

FIGURE 8.1 (Continued) State Approaches to Funding Compensatory Education

State	Compensatory Program Description	1986-87 Funding (millions of dollars)	
Massachusetts	Pupil weight of 0.20 for Chapter 1-eligible children	Unknown	
Michigan	Aid for districts with large number of pupils in need of improvement based on state test	Compensatory education	32.14
Minnesota	Pupil weight range of 0.5 to 1.1: pupil weight of 0.5 for AFDC pupils, plus districts with more than 6% AFDC students receive an additional 0.1 weight per pupil up to an additional 0.6 limit	Unknown	
Missouri	AFDC and orphan students weighted 0.25	Unknown	
Nebraska	Culturally deprived students weighted an additional 1.0; only districts that receive equalization aid qualify for funding	Unknown	
New Jersey	Weight of 0.18 for pupils currently enrolled in remedial programs	State compensatory education	110.2
New York	Weight of 0.25 for students scoring below minimum competence on state reading and math tests	Unknown	
North Carolina	60% of remediation funds based on high school competency test failures; 40% of funds distributed on basis of number of students scoring below 35th percentile on 8th-grade CAT test	Unknown	
Ohio	Varying amount per pupil based on the percentage of AFDC children in the district; per-pupil payment increases as percent of AFDC pupils increases	Disadvantaged pupil impact aid	212.7
Oklahoma	Pupils who qualify and participate in reduced-price and free lunch program are weighted 0.25	Unknown	

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FIGURE 8.1 (Continued) State Approaches to Funding Compensatory Education

State	Compensatory Program Description	1986-87 Funding (millions of dollars)
Oregon	Disadvantage funds provided to Portland school district	\$1 million in 1987-88
Pennsylvania	Districts with 10-39.9% of ADM from AFDC families receive payments of \$100 per ADM; districts with 40% or more receive \$300 per ADM The number of pupils in grades 3, 5, and 8 who fail the TELLS examination receive a pro rata share of appropriation for the Agenda for Excellence program	Poverty Payment 85.5 Agenda for Excellence 28.0
Rhode Island	Ratio of Chapter 1 entitlement in district to statewide total times appropriation	\$2 million in 1988
South Carolina	Pupil weights: Grades 1-6 compensatory 0.26 Grades 2-6 remediation 0.114 Grades 7-12 remediation 0.114	Remedial and compensatory 56.8
Texas	0.2 pupil weight based on number of pupils eligible for free or reduced-price lunches	Unknown
Utah	District share based on ratio of AFDC students to statewide total AFDC students	Unknown
Vermont	Weight of 0.15 for students from families receiving food stamps	Unknown
Virginia	Additional payments for students scoring below grade level on state achievement tests	Remedial education payments 17.5
Washington	Flat grant to districts on the basis of the number of students scoring in the lowest quartile on the statewide basic skills test	Remedial assistance program 11.0

Source: Deborah Verstegen, *School Finance at a Glance*, Denver, Colo., Education Commission of the States, 1988; and Richard Salmon, Christina Dawson, Steven Lawton, and Thomas Johns, *Public School Finance Programs of the United States and Canada: 1986-87*, Blacksburg, Virginia, Virginia Polytechnic Institute and State University, and American Education Finance Association, 1988.

for example, when one class might comprise students with many different native languages, bilingual instruction is not possible, and a "sheltered English" instructional approach may be an acceptable option (Krashen and Biber, 1988). In all instructional approaches, lessons have dual objectives: development of English language skills as well as content knowledge. The *Lau* decision made access to a language-appropriate classroom environment a legal right of all LEP students.

In 1967, just before the *Lau* ruling, Title VII was added to the federal ESEA program. Title VII provided funds for districts to design and implement bilingual education programs. Funds were available on a proposal basis only; districts wrote proposals, and a review process determined which proposals received funding. In 1990, the federal government provided about \$189 million for bilingual education.

States also began to provide bilingual education programs, in part as a response to *Lau*. In 1975, 13 states had bilingual education programs. By the early 1980s, the number had risen to 22. By 1986-87, 22 states had bilingual education programs or bilingual education pupil weights. Figure 8.2 lists states' approaches to funding bilingual education programs.

*Special education.* For years, most states have supported special education programs for physically or mentally handicapped students at some level. But during the late 1960s and early 1970s, it became apparent that many handicapped students were being prohibited from attending local public schools. Whether certain handicaps were so severe they required very costly services or because of blatant discrimination against handicapped individuals, these exclusions were challenged under equal protection litigation. One of the first legal actions occurred in the *Pennsylvania Association of Retarded Children v. Pennsylvania* (PARC) case in 1972. This case, settled by a consent decree, held that district actions prohibiting handicapped students from attending local public schools violated the equal protection clause of the U.S. Constitution. The case spawned several other court cases as well as a spate of new federal and state policy initiatives.

In 1975, Congress enacted the federal Education for All Handicapped Children Act, P.L. 94-142. This sweeping new federal program essentially made access to a free public education program a legal right of all children. To receive any federal education dollars, states had to provide appropriate special education services to all handicapped children. The services had to meet a series of new, detailed federal requirements, many of which were written into P.L. 94-142 itself. Although several states initially responded negatively to the detailed federal requirements, and some states refused all federal education aid for a few years, today all states comply with the mandates of this federal law.

P.L. 94-142 authorizes the federal government to fund up to 40 percent of nationwide costs for special education services. In the year it was enacted, Congress appropriated \$300 million, or about \$74 per handicapped student—much less than the 40 percent authorized. In 1985-86, federal support totaled

**FIGURE 8.2 State Approaches to Funding Education for Limited-English-Speaking Children**

<i>State</i>	<i>LEP Program Description</i>	<i>Program Operating Characteristics</i>	
Alaska	Bilingual program costs included in state support program as additional instructional units	<u>ADM</u>	<u>Inst. Units</u>
		1-12	1
		13-18	2
		19-42	3
		43 and over	3 plus 1 for each 24 weighted ADM or fraction of 24
Arizona	Weights included in block grant calculations	<u>Weights</u>	
		K-8	1.158
		9-12	1.268
California	Funds distributed through Economic Impact Aid program, based on measures of poverty, limited English proficiency, and pupil transiency		
Colorado	English Language Proficiency Act provides funding to build English proficiency for under-achieving K-12 pupils of limited English proficiency	\$2,000,000 in 1986-87	
Florida	Pupil weighting program	Bilingual students weighted at 1.657	
Georgia	Grants based on need		
Hawaii	Full state funding		
Illinois	Excess cost for approved programs	\$18,632,300 in 1986-87	
Kansas	Payments for approved programs	\$150 per pupil in approved programs	
Louisiana	Additional instructional units provided for full-time second-language instructors at elementary level		
Massachusetts	Pupil weighting program	Weight of 1.4 for transitional bilingual program	

(Continued)

FIGURE 8.2 (Continued) State Approaches to Funding Education for Limited-English-Speaking Children

State	LEP Program Description	Program Operating Characteristics
Michigan	Reimbursement to districts on basis of number of LEP students	\$4,212,000 in 1986-87
Minnesota	State categorical program	Lesser of 61% of salary of FTE teacher or \$17,000 per 45 LEP students with 1/2 teacher in districts with less than 23 LEP students
New Jersey	Pupil weights	Additional 0.23 times state average net current expense per pupil for LEP students
New Mexico	Pupil weights	FTE LEP students weighted an additional 0.3
New York	Pupil weights	LEP students weighted an additional 0.12
Oklahoma	Pupil weights	Weight of an additional 0.25 in foundation program
Rhode Island	Incentive program for bilingual pupils	\$1.8 million in 1986-87
Texas	10% of adjusted allotment per pupil enrolled in a bilingual or special language program	
Utah	Categorical appropriation distributed proportionately based on number of LEP students	
Washington	Transitional bilingual program	\$4,291,000 in grants to school districts in 1986-87
Wisconsin	State reimburses 63% of approved costs	\$4,608,000 in 1986-87

Source: Deborah Verstegen, *School Finance at a Glance*, Denver, Colo., Education Commission of the States, 1988; and Richard Salmon, Christina Dawson, Steven Lawton, and Thomas Johns, *Public School Finance Programs of the United States and Canada: 1986-87*, Blacksburg, Virginia, Virginia Polytechnic Institute and State University, and American Education Finance Association, 1988.

\$869 million, about 7.8 of total nationwide costs.<sup>2</sup> In 1990, federal support for special education services totaled about \$2.7 billion, a large increase from 1985-86.

Federal funds are allocated on a per-pupil flat grant basis. The federal law requires that states identify students in the following 12 special education categories:

1. Deaf
2. Deaf and blind
3. Hard of hearing
4. Mentally retarded
5. Multiply handicapped
6. Orthopedically handicapped
7. Other health impaired
8. Seriously emotionally disturbed
9. Specific learning disabilities
10. Speech impaired
11. Visually handicapped
12. Autistic

Further, the category of learning disabled is limited to 2 percent of all students in a state. In 1987-88, the incidence of handicapped students averaged 6.74 percent across the nation, with individual state figures ranging from 4.03 percent in Hawaii to 10.3 percent in Massachusetts. Many states use the federal student categories to structure their state programs for the handicapped. Even though the per-pupil costs of providing services varies substantially by category, the federal program allocates the same flat grant amount for each identified student, regardless of category.

In the late 1980s, a "regular education initiative" was begun by a group of individuals who believed that a focus on fitting handicapped students into a diverse set of special categories and pulling students out of regular classrooms for instruction was doing more harm than good for many handicapped students. This initiative reinforced earlier views that labeling students was not the best approach to providing extra services; indeed, many argued that all students had particular needs and that schools, given their student populations, should identify the different types of services to provide, and that funding should be determined by the service levels needed. States such as Iowa and Massachusetts, in fact, structured their state programs for the handicapped on this basis. Nevertheless, the federal student labeling requirements have not changed

<sup>2</sup> In 1985, special education costs (excluding related services) totaled \$11.466 billion, with \$0.87 billion from the federal government, \$6.92 billion from states, and \$3.68 billion from local districts.

and are used, in some form, by most states (see also Chambers and Hartman, 1983).

### Issues in Determining Costs of Special-Needs Programs

Four major categories of issues must be addressed in assessing and calculating costs for any special-needs program; (1) defining student eligibility, (2) identifying appropriate services, (3) determining the appropriate placement, and (4) calculating state and local cost shares.

*Student eligibility.* Since most states allocate special-needs funds on the basis of the number of eligible students, regulations on student eligibility are quite important. As mentioned previously, compensatory education program guidelines define eligibility in two ways: (1) based on poverty measures, such as household income, eligibility for free or reduced-price lunch, or eligibility for Aid to Families with Dependent Children (AFDC); or (2) based on achievement measures, including the type of tests used, the content areas to be tested, and the degree of divergence from the average or grade norm. Special education programs need guidelines on the number of discrete handicapping categories, assessment procedures, and whether there are "caps" on eligibility in any one category, such as the federal 2 percent cap on the learning disabled (see Moore, Walker, and Holland, 1982, for example). Bilingual education programs need to identify the types of language examinations that can be used and criteria for determining partial or full English proficiency, i.e., criteria for determining the transition into "sheltered English" instruction or into the regular, English-taught classroom. In each area, these issues can be quite complex. Finally, there is pressure to move away from narrow definitions of student eligibility to broader categories, such as requirement for a low, medium, or high level of extra services.

Eligible age ranges also need to be identified. In many states, handicapped children from birth to age 21 are eligible for public education services; other states limit eligibility to conventional school age. Only school-age children are eligible for compensatory and bilingual education services, although for these programs most money is spent at the elementary level. A service and policy issue is whether secondary students also should have these extra services.

Finally, the incidence of special-needs students varies widely overall and by program. Although the incidence of handicapped students is about 6.7 percent nationwide, some estimate that the total number of at-risk students might be as high as 25 percent (Pallas, Natriello, and McDill, 1988).

*Appropriate services.* Program guidelines also need to identify the range of services on which funds can be spent. Some programs restrict spending to current operating activities, and others allow capital expenditures—for buildings and equipment—as well. Within operating expenditures, some programs allow only instructional expenditures, whereas others provide spending for additional

functional categories, such as transportation, which generally is costly. Within instructional expenditures, some programs limit spending to certain subject areas, such as reading and mathematics; others allow spending on all academic content areas, including art, music, and physical education.

Another issue is the degree to which program funds can be spent on administration. Because many categorical programs need special management and have reporting requirements—to ensure that only eligible students are served and that funds are spent as intended—many districts have created a special categorical program administration staff to manage the program and meet reporting and compliance requirements. Many programs specify the maximum portion of program funds that can be spent for administration.

Other service issues include student assessment and the level of assessment that can be employed (i.e., the diagnostic activities to determine placement), class size policies, and length of school day and year for special programs. For special education, a major issue is “related services,” such as counseling, medical services, occupational therapy, and parent counseling. The guideline has been that such services are required if they are related to educational need. Related services can be costly for students with multiple physical handicaps, so the interpretation of these guidelines can have a substantial impact on the “bottom line” of special education costs.

Another issue is the comprehensiveness and quality of special services. The *Rowley*<sup>3</sup> court decision held that handicapped students were required access to an adequate educational program, but not the educational program of the quality needed to optimize their intellectual growth. In this case, a deaf individual sued a district to force employment of a teacher to read materials in a one-to-one tutoring situation, arguing that such a service was needed to maximize her learning. The district refused, and the court upheld the district's action, stating that P.L. 94-142 required provision of only adequate educational services, not services to maximize student performance.

*Educational placement.* The way educational services are provided can produce substantial cost variations for students at the same grade level and with the same special education need. There are five basic placement categories: (1) preschool, (2) resource program, (3) self-contained classroom, (4) home or hospital program, and (5) residential care. Most compensatory education and bilingual education programs are provided through resource programs, as are special education services for handicapped students who are “mainstreamed” in the regular program. Moore et al. (1988) and Chambers and Parrish (1983) show how costs vary widely—by a ratio of 2 to 1—across different educational placements.

*Costs.* Once decisions are made about student eligibility, types of services required or eligible for reimbursement, and educational placement, program

<sup>3</sup> 485 U.S. 176 (1982).

costs are relatively easy to calculate. One of the most sophisticated mechanisms for determining special-needs program costs is the resource cost model (Chambers and Parrish, 1983), which also can determine the most cost-effective educational placement depending on special-need condition and size and location of the school district. Such a program conceivably could be used by a state to determine the levels of cost that should be associated with numerous, local special-needs programs, but no state has yet adopted such a model.

Of course, after total costs have been determined, the next task is to identify the state and local shares of those costs. These issues are discussed next.

### **General Approaches to Special-Needs Formula Adjustments**

States have adopted several different mechanisms to finance programs for special-needs students. These strategies divide into two general approaches. The first is for the state to cover the entire extra costs of providing the services. This approach certainly has strong appeal to local districts and eliminates fiscal inequities caused by requiring local districts to finance these services by raising local revenues. Under this approach, local districts document the extra costs and submit a reimbursement claim to the state each year. Alternatively, if the program costs are "forward-funded," districts submit an application for reimbursement of estimated costs. The state then needs a reconciliation mechanism to ensure that payments equal actual costs. Modifying the next year's payment by the difference between predicted and actual costs is a straight-forward example of such an adjustment.

Full state funding of special-needs program costs requires rigorous state oversight or an audit mechanism to verify that only legitimate local costs are reimbursed. With the state paying the full tab for extra services, local districts have a fiscal incentive to develop and implement comprehensive, expansive, and high-quality programs. If the state has neither cost controls nor regulatory guidelines to monitor local programs and their financial needs, state costs could soar. Any state reimbursement program for special students needs some regulatory and program guidelines, but such mechanisms are an absolute requirement for a state program that reimburses 100 percent of local costs.

Over the long term, it is difficult for states to fully fund all special services. When service provision is mandated, as for special education, a drop in state funding forces districts to "encroach" on the general fund to cover the full costs of the special programs.

Thus, over the years, most states have devised some means of sharing the costs with local school districts, the second approach to funding special services. States have created several types of specific financial structures to implement state-local sharing. The simplest approach has been to provide a flat grant per eligible pupil. Sometimes the flat grant is based on the number of teachers or classroom units instead of pupils. Very few states currently use this approach, but it is the mechanism the federal government uses to distribute

both Chapter 1 funds and funds under P.L. 94-142 for handicapped students. The obvious drawback to this approach is that it provides the same per-pupil level of financial assistance to rich and poor districts, and if the amount does not cover all costs, districts low in property value per pupil need to levy a higher incremental tax rate to make up the difference. Additionally, if all program-eligible students generate identical grades, these grants don't take different needs into account.

A second state-local cost sharing program is "excess cost reimbursement," in which the state reimburses a percentage (less than 100 percent) of excess local costs. This ensures that local districts finance at least some portion of the costs of the programs they create and implement. The local match is in part a fiscal incentive for local districts to control costs; if program costs soar, the local match requirement puts a direct strain on local budgets, as well as the state. Since, under this program, the local share is raised by increasing the local tax rate (or encroaching on the general fund budget), this approach also somewhat disadvantages property-poor districts, which have to exert a higher incremental local tax rate to make up the difference between full program costs and the costs shared by the state.

A third state-local sharing strategy includes some fiscal capacity-equalizing component in the state reimbursement program. For example, the state could turn a flat grant into a foundation-type grant. Or the state could use a separate guaranteed tax base program for the tax rate needed to raise the extra revenues to finance the total costs of the special-needs program.

The most prevalent form of special-needs student program that includes a fiscal capacity-equalizing element emerged in the 1970s and is called pupil weighting. Under this strategy, each special-needs pupil is given an extra weight that indicates, relative to some norm expenditure (usually the statewide average), how much funding for additional services is required. For example, if the extra weight for a compensatory education student is 0.5, such a student would be counted as 1.5 students in determining state aid. The advantage of a pupil weighting approach is its simplicity in incorporating into the school aid formula the level of extra need for each student and in structuring the state share to make it higher in low-wealth districts and lower in high-wealth districts. Another advantage is that only one finance formula is used to provide all state aid to local districts; the weighted pupil count may be used in place of the unweighted pupil count for all state aid calculations.

A weighted pupil approach also indicates very directly the degree of vertical equity in the school finance system; the weights are the vertical adjustments. The adequacy of the vertical equity adjustments may be determined by evaluation of the specific pupil weights. In calculating the fiscal equity of the resultant distribution of educational resources, moreover, equity statistics are calculated using the number of weighted pupils.

A pupil-weighted system can be used with any type of school finance formula. Technical issues, however, arise in the following ways. If the weight for a particular type of student is determined by comparing the excess costs required with the statewide average expenditure per pupil, this expenditure

must then be included in the state aid program for the weight to be accurate. Often, states with foundation programs set the foundation expenditure below the statewide average expenditure per pupil but use a pupil weight that has been calculated using the statewide average. In this situation, the level of extra resources provided is less than that required. On the other hand, if a state has a guaranteed tax base program together with a pupil weighting system, districts that tax at an above-average level will have expenditures above the statewide average, and thus the pupil weight might generate more additional revenues than are needed to cover excess costs.

In addition, there are shortcomings in labeling students as needing extra resources, and some have argued for systems that identify service levels necessary for schools to educate students. Despite these technical concerns, pupil weighting programs are rising in popularity.

In short, there are two generic approaches states can use to provide assistance to local districts for educating students with special needs. Under the first, the state picks up the entire amount of excess costs. Under the second, the state shares in the excess costs through one or more mechanisms. Pupil weighting programs have become popular as a way for a state to identify directly, through an extra weight, the degree of extra service to provide, and then to share in financing that extra support by allocating state aid through the general aid formula using a weighted count of pupils. This strategy also conditions the level of extra aid received on local fiscal capacity; for a given number of special-needs students, districts low in property value per pupil will receive larger amounts of special funds than districts high in property value per pupil.

The reason some states do not adopt a weighted pupil strategy, despite its many attractions, is precisely because that approach makes it difficult to funnel state aid to property-wealthy districts. If the state uses a categorical program approach (i.e., devises a separate program formula for distributing financial support for special-needs students, usually some form of excess cost reimbursement) all districts—rich and poor—become eligible for some state aid. At first blush this might seem inequitable, but the politics of state aid distribution often requires this approach. If the state has a strong fiscal capacity—equalizing general aid program, districts high in property wealth per pupil receive little or no general state aid, which squares with fiscal equity principles. But politics can intervene in two ways. First, many legislators feel that all districts should be eligible for at least some state aid. And providing state support for special-needs students—even in the wealthiest districts—has surface appeal as a rationale for distributing aid to all districts, including wealthy ones. Second, it is difficult to maintain political support for strongly redistributive programs, such as robust fiscal capacity school finance formulas. Thus, providing at least some state aid for all districts, even if it is just for special-needs students, helps legislators maintain political support for a general aid program that provides aid in amounts inversely related to property value per pupil.

Unfortunately, just as with the basic school finance formulas, states have used a variety of names for programs implemented using these generic ap-

proaches, and the different terms may make the school finance programs sound like fundamentally different approaches. But just as many basic school finance formulas are algebraically equivalent, so also are many formulas for addressing special pupil needs. Berstein, Hartman, and Marshall (1976) show how the various approaches states use to help local districts provide extra services for special-needs students are simply variations of the general types of programs discussed in this chapter.

Finally, the interaction of the specific funding formulas and the regulations accompanying them provide incentives and disincentives for student identification, program placement, and dollar use. At the local level, districts sometimes classify students in higher reimbursement categories and place them in lower-cost instructional programs to increase revenues and reduce costs. Although some "play" in these interactions is desirable, the limits of such flexibility need to be understood and addressed. Hartman (1980) discusses such issues for special education.

### Costs and Formulas for Financing Compensatory Education Programs

The federal government has provided funds to local school districts for compensatory programs since 1965. Under Chapter 1 of the 1988 Elementary and Secondary Education Act, funds are allocated to students in five distinct steps. First, the federal government allocates funds to states based on the number of low-income children and the state's per-pupil expenditures for elementary and secondary education.<sup>4</sup> Second, the state allocates funds to counties within the state. Third, if county and school district boundaries are not coterminous (which is the case in most states), the state uses a subcounty allocation formula to distribute funds to local school districts, based on the number of low-income students in each district. Fourth, local school districts decide which schools will receive Chapter 1 funds based on the number of *low-achieving* students. Finally, each district decides how the resources will be divided among the schools and the students in those schools.

Federal regulations on the use of Chapter 1 funds focus on ensuring that districts use the money they receive to "supplement and not supplant" local funds, but they provide little guidance about how the resources should be divided among eligible students. Consequently, there is considerable variation in how local districts choose to allocate compensatory funds. Goertz's (1988) study of Chapter 1 funds allocation in 17 school districts confirmed variations among districts in the type and level of services provided to eligible schools and students.

<sup>4</sup> Currently, Chapter 1 is *authorized* at 40 percent of the state's average expenditures per pupil. Each state's amount per pupil, however, cannot be less than 80 percent or greater than 120 percent of the national average expenditure per pupil. Dollar amounts are proportionately reduced each year since appropriations usually provide a total that is less than that needed to fund the authorized levels.

Generally, school districts have greater latitude in determining the kind of compensatory programs they offer; thus, determining compensatory education costs is not straightforward. Programs for other special-needs students are better defined. Districts are required by law, for example, to provide appropriate services to all handicapped children. Once a child's handicap has been identified and an appropriate level of service agreed upon, it is relatively straightforward to determine the costs of that service. Although there may be variations in costs and instructional techniques across districts, it is possible to estimate an "average" cost for each special service provided within a region or state.

The problem of determining compensatory education program costs is more complex. A district receives a funding level according to the federal program requirements, and those are the funds used to provide extra services. Chapter 1 and most state compensatory programs require that program funds be expended on low-income or low-achieving children but specify neither how they should be served nor whether all eligible children must receive services. As a result, local districts have considerable flexibility in determining the breadth and intensity of services provided.

For example, one district may choose to offer intensive services to a subgroup of eligible low-income students, and another district may elect to serve all of the eligible student population with a less intensive program. In fact, a number of different allocation procedures or rules are possible. Goertz (1988) found that among 17 large districts across the United States, allocation rules included:

- Uniform allocation to each eligible building
- Allocations based on the number of low-achieving students in a building
- Allocations based on the relative size and/or poverty of the building's student body

Even among districts with similar allocation rules, Goertz found a wide range in the breadth and intensity of compensatory services. In the 17 districts analyzed, the percentages of children in poverty served through Chapter 1 programs ranged from a low of 19 percent to a high of 81 percent, and the average caseload per teacher ranged from 35:1 to 100:1.

The study also found considerable differences in instructional expenditures per pupil within districts and among Chapter 1 programs. Goertz reported these figures on the basis of the range of expenditures across schools within each district. One district had a Chapter 1 expenditure range of \$300 to \$2,500 per pupil; in another district, expenditures ranged from \$450 to \$625. The lowest per-pupil Chapter 1 expenditure identified in the 17 districts was \$175 (in a district with an expenditure range of \$175 to \$1,070); the highest was the \$2,500 per pupil identified above.

Other studies have had similar difficulties identifying the costs of compensatory programs. The New York State Special Task Force on Equity and Excellence in Education (Gaughan and Glasheen, 1979) found that the state's

accounting system for schools made it very difficult to track the costs of programs for special-needs students. The task force found that compensatory programs increased per-pupil costs between 25 and 100 percent. At that time, compensatory aid was distributed to districts on a weighted-pupil basis, with each identified pupil receiving a weight of 0.25.

In 1985-86, the Texas State Board of Education (1986) reviewed the costs of compensatory education and recommended an extra weight of 0.2 for all eligible compensatory education students. Although subsequent studies suggested that many districts did not spend that much extra for compensatory education, in part because compensatory education services within the regular school day were provided in lieu of other services, the legislature has retained the 0.2 extra weighting.

Another problem in identifying the costs of compensatory education programs is the fact that over 90 percent of the school districts in the United States receive Chapter 1 funds (Orland, 1988). Clearly, the percentage of low-income children varies greatly among these districts. Districts with larger concentrations of low-income students have more funds available for compensatory programs, and one might thus expect more intense compensatory services. In fact, Orland (1988) found that not only did Chapter 1 generally allocate more resources to a state's high-need school districts, but that more students were more intensively served in those districts. Although Orland did not provide expenditure data for compensatory programs directly, his work implies that expenditures per pupil served might be higher in districts with concentrations of low-income students.

In summary, compensatory education funds are distributed to school districts on the basis of the number of eligible pupils. For the federal Chapter 1 program, eligibility is determined by the number of low-income students in a district. Many state programs use income measures for eligibility, and others offer compensatory aid for low-achieving students. Compensatory education programs generally include requirements that districts do not use the money to replace local funds, but they do not delineate how services should be provided, or how many of the eligible students must be served. Consequently, some districts attempt to provide compensatory services to all eligible schools and students, whereas others focus their resources at specific populations. This results in a tremendous range in the breadth and intensity of the compensatory education services provided across the United States.

### **Costs and Formulas for Financing Bilingual Education Programs**

Studies of the costs of providing bilingual education have produced widely varying results, from less than an extra 5 percent (Carpenter-Huffman and Samulon, 1981) to an extra 100 percent (Chambers and Parrish, 1983). There are several reasons for these variations, and they go to the heart of what a bilingual education program is and how it should be structured.

Five specific issues define the costs of bilingual education programs (Nelson, 1984): (1) student eligibility, (2) minimum number of LEP students required to trigger provision of a bilingual education program, (3) instructional approach used, (4) transition into the regular program, and (5) class size.

Student eligibility usually is determined by a score on some type of English language proficiency test. As Nelson (1984) noted, states use different tests and have selected different cutoff points for eligibility, as low as the 23d percentile, in Texas. Clearly, the higher the cutoff point, the more students eligible and the smaller the number of low-incidence programs.

Most states also require a minimum number of students in a grade level for a school or district to provide a bilingual education program. Minimums range widely, from 10 students for a school in California, to 20 students for a district in Texas (Nelson, 1984). The lower the minimum number of children and the larger the unit, the more students will qualify.

Class size in many states also is limited, sometimes to as few as 10 students. Other states do not set lower limits on class size for bilingual or ESL classes. Clearly, small class size requirements will boost per-pupil costs.

Transition policies also affect the level of services provided. Most state bilingual education policy assumes that students diagnosed as LEP will be able to make the transition into regular classes, i.e., classes taught in English, within three years. A longer transition period, i.e., the provision of extra services to students who need more than three years to make the transition and perform well in English-only classrooms, would clearly boost per-pupil costs.

Finally, the instructional approach used also is a major determinant of program costs. A few comments on bilingual education program goals and characteristics of instructional strategies that work will help provide some background for assessing the nature of the instructional approach and, thus, the results of cost studies based on different approaches.

The student who is eligible for bilingual education programs generally lives in a family in which a language other than English is spoken or is from a background in which English is not the student's native language. The key issue is the degree to which the student is proficient in English as a language for learning. Literacy—the ability to read, write, do mathematics, and think—can be developed in any language; literacy is neutral with respect to language (Office of Bilingual Education, 1984). Once literacy is developed in one language, it is easily transferred to another, once the second language is learned. Students diagnosed as LEP are those who do not have sufficient English language proficiency to learn in English. Research shows that the most effective approach for such students is to teach them regular subjects in their native language and give them an ESL class, i.e., to provide an extra class to teach them English (Krashen and Biber, 1988). The goal of such a program is to have them learn English while learning regular academic subject matter.

The same research shows that students (adults too, for that matter) learn conversational English first; this English proficiency is sufficient for socializing on the playground, playing with friends, and talking about the weather,

but it is not sufficient for academic learning (see also Cummins, 1980). When this conversational level of English proficiency is learned, the student is ready for "sheltered English" instruction in subjects with a great deal of language and terminology of their own, such as mathematics and science (Krashen and Biber, 1988), but they still need both instruction in their native language for history and language arts and continuation of ESL classes. This intermediate approach helps the student learn "academic" English, i.e., English proficiency sufficient to learn academic subjects. History/social science is the next subject for sheltered English instruction; the last such class is language arts. In other words, the most effective program is to begin instruction in the native language; transit sequentially to sheltered English instruction in mathematics, science, history/social science, and language arts; and only then move to English-only, or regular classroom, instruction. ESL instruction also should continue until the full transition is made to the regular classroom.

The Krashen and Biber report does not make recommendations for major class size reductions. Nor does this report recommend the common school practice of having an English-only instructor assisted by a bilingual education aid. This configuration is quite common across the country because there are insufficient numbers of bilingual teachers to teach students in their native languages. In this circumstance, Krashen and Biber recommend ESL with a sheltered English instruction approach.

Thus, the major extra costs of bilingual education for the most effective instructional approach are threefold:

- *A teacher for the ESL class.* If the class has a normal number of students and is used for six periods a day, costs increase by about 1/6, i.e., the cost of the extra period of instruction. Other, related costs, such as materials and space, might bring the total extra cost to about 20 percent.
- *Intensive staff development in sheltered English instruction.* Clearly, this is professional expertise that can be learned by all teachers; knowledge of a second language is not required. Sheltered English instruction is good instruction mediated by a variety of mechanisms and with a conscious English language development component.
- *Additional materials both in the native language of the student and for mediating the sheltered English instructional approach.* These extras would probably add a maximum of 25 to 35 percent. Note that regular classes are taught either by bilingual teachers, by teachers using a sheltered English approach, or in a regular classroom; other than staff development, these classes entail no extra costs.<sup>5</sup>

Most studies of bilingual education program costs reflect these levels of extra costs. Garcia (1977) found the add-on costs for bilingual education in New

<sup>5</sup> Some states and districts pay bilingual teachers a bonus of up to \$5,000. This clearly is an extra cost. The bonus is rationalized on the basis that bilingual teachers are in short supply and have an expertise—proficiency in a second language—that other teachers do not have.

Mexico to be about 27 percent. Three studies by the Intercultural Development Research Association found bilingual education to cost an extra 30 to 35 percent in Texas (Cardenas, Bernal, and Kean, 1976), an extra 17 to 25 percent in Utah (Guss-Zamora et al., 1979), and an extra 15 to 22 percent in Colorado (Robledo et al., 1978). These studies analyzed program configurations quite different from that described here, but the findings provide a range of cost estimates that are nevertheless comparable.

Finally, although districts have typically reported higher extra costs for bilingual education programs than most studies have found (Carpenter-Huffman and Samulon, 1981), the Chambers and Parrish (1983) study in Illinois produced fairly large figures for bilingual education program costs. Studies have found that bilingual program costs vary depending on the program structure. Cost estimates have ranged from an additional \$848 to \$5,113 per pupil. More to the point, the studies showed that additional costs amounted to between 33 and 100 percent of a district's expenditures for regular programs. The highest cost figure, moreover, was based on both a low incidence and a very low class size, the latter a characteristic absent from the Krashen and Biber studies of effective California programs.

Bilingual education continues to be controversial, but the key ingredients for an effective program structure are an ESL program to teach English and regular teachers who teach either in the native language or in a sheltered English format—either alternative entails extra costs, supplementary materials, and staff development. As the diversity of students' native language increases, as is the case in many border states and especially California, sheltered English instruction becomes the dominant instructional mode in addition to ESL. Extra costs for this program structure, as found in several research reports, range between 25 and 35 percent.

### **Costs and Formulas for Financing Special Education Programs**

Identifying the costs of special education programs for physically and mentally handicapped students has been a major subject of study for the past two decades. Initially, studies sought to identify different costs by handicapping condition and to determine how that varied by size of district. More recently, special education cost research has focused more on excess costs as a function of educational placement (Rossmiller and Frohreich, 1979; and Moore et al., 1988).

Some of the earliest work was conducted by Rossmiller under the auspices of the early 1970s National Education Finance Project (NEFP) (Rossmiller et al., 1970; Johns, Alexander, and Jordan, 1971). This work was probably the first analysis of special education costs that produced results that could be used to create pupil weighting programs. Indeed, in 1973, Florida enacted one of the first pupil weighting programs as a new approach for financing special education.

Florida adopted the following weights for 1976-77, based in large part on the Rossmiller and NEFP analyses:

Educable mentally retarded	2.3
Trainable mentally retarded	3.0
Physically handicapped	3.5
Physical and occupational therapy, part-time	6.0
Speech and hearing therapy, part-time	10.0
Deaf	4.0
Visually handicapped, part-time	10.0
Visually handicapped	3.5
Emotionally disturbed, part-time	7.5
Emotionally disturbed	3.7
Socially maladjusted	2.3
Specific learning disability, part-time	7.5
Specific learning disability	2.3
Hospital and homebound, part-time	15.0

In addition to the general points made earlier on factors that determine program costs, three key issues are related to determining special education program costs. The first is the level of program quality. Most of the early studies sought to identify "good" special education programs and based special education cost estimates on the expenditure patterns of those programs. Few studies set a priori standards for program quality. Thus, studies have been plagued over the years by various definitions of program quality. The second issue is identification of services included in the study. The most controversial aspect of this issue is whether to include administrative services, such as general district administration, as well as noneducational related services. A third issue, especially for determining per-pupil costs, is how the number of students is determined—by headcount or by full-time-equivalent. The importance of this issue is shown by the high weights for students receiving part-time services in the early Florida program. Kakalik (1979) provides another overview of issues in determining special education costs.

Two large studies of nationwide special education costs have been conducted, one by Kakalik et al. (1981), using data from the mid-1970s, and one by Moore et al. (1988), using data from the mid-1980s. Both used a representative national sample, thus providing a picture of actual special education expenditures across all programs in the country. The results in terms of excess costs for special education programs are quite similar. Kakalik et al. presented results as ratios of special education expenditures to regular education expenditures in 1977-78 for 13 categories of handicapping conditions; the weights ranged from 1.37 for speech-impaired children to 5.86 for the blind. The overall weight across all handicapping categories was 2.17. The authors also presented data comparing special education expenditures to regular education

expenditures by 10 categories of educational placement. For in-school programs, the ratios or weights ranged from 1.37 for "regular class plus related services" to 3.24 for "special day school." The "regular class plus part-time special class" arrangement had a weight of 2.85.

Moore et al. (1988) presented no pupil weights or ratios in their report, tending rather to emphasize the linkage between type of educational program or educational placement and handicapping condition. The following are their summary findings of 1985-86 special education program costs:

<i>Handicapping Condition</i>	<i>Preschool</i>	<i>Self-contained</i>	<i>Resource Room</i>
Speech impaired	\$3,062	\$ 7,140	\$ 647
Mentally retarded	3,983	4,754	2,290
Orthopedically impaired	4,702	5,248	3,999
Multihandicapped	5,400	6,674	NA
Learning disabled	3,708	3,083	1,643
Seriously emotionally disturbed	4,297	4,857	2,620
Deaf	5,771	7,988	NA
Deaf-blind	NA	20,416	NA
Hard of hearing	4,583	6,058	3,372
Other health impaired	3,243	4,782	NA
Autistic	6,265	7,582	NA
Visually impaired	4,068	6,181	3,395

These results can be transformed into pupil weights by comparing these costs to the 1985-86 expenditure per pupil for regular students, which was \$2,780. Since the preceding figures are costs just for the special education services, the \$2,780 figure would have to be added to them in calculating the weight. Moore et al. found that the overall average expenditure for special education across all programs and placements was \$3,649. Thus, their study produced an overall weight of 2.3  $[(\$3,649 + \$2,780)/\$2,780]$ , close to the Kakalik et al. finding of 2.17.

In short, it seems that the average expenditure for a handicapped student is about twice that for a regular student. But caution must be applied in using this figure. Significant variation in special education costs occur by handicapping condition, educational placement, type of educational program, and size of school district. McClure (1976) and Leppert and Routh (1979) further discuss issues related to developing and implementing a state weighted-pupil approach to financing special education services for handicapped students.

### Simulation of Adjustments for Special-Needs Students

Adding adjustments for special-needs students to a state school finance structure clearly improves the vertical equity of the system, but it also improves both horizontal equity and fiscal neutrality, although the improvements require

additional revenues. The simulation that accompanies this book can be used to analyze the impact of a pupil weighting system. Select the **pupil weights** option in the model menu. The combination foundation and GTB program analyzed in Chapter 7 (see Figure 7.8) was used to simulate a weighted-pupil program with the following characteristics:

- Compensatory education students weighted 1.3
- Limited-English-proficient students weighted 1.3
- Handicapped students weighted 2.0.

Figure 8.3 shows the results of this simulation. The impacts are substantial. First, the total state cost of the program increases from \$30.3 million to \$47.1 million, an increase of \$16.8 million, or 55 percent. Since the parameters of the simulated program—the foundation level, the required tax effort, and the guaranteed tax base—remained the same, local costs have dropped because the extra students have reduced each district's property value per pupil and thus made it eligible for more state aid.<sup>6</sup> The combination of more state aid and reduced local costs produce a total cost rise of one-third, which is a large increase. Note that the total number of weighted students is 62,021—an extra 10,505 children, or about 20 percent, over the unweighted total of 51,516. All of these children require extra services that, according to the simulation, increase costs 30 to 100 percent. Thus, increased costs should be expected.<sup>7</sup>

Second, the bulk of the extra costs is for handicapped students. Readers should run a series of simulations, each time giving a weight to just one of the three categories of special-needs students. The results will show that the incidence of bilingual students is quite low, which is the case in most states (but not California, Arizona, New Mexico, Texas, Florida, and New York). Since the extra cost for each student is just 30 percent, the total extra costs are marginal. Extra costs for compensatory education alone are higher because the incidence of poverty-level students is about 20 percent, but the extra cost for each student is just 30 percent. The incidence of handicapped students is about 12 percent; with an extra cost of 100 percent for each student, this produces the largest extra cost for a special-needs student category.

Third, the pupil weighting in Figure 8.3 improves all the fiscal equity statistics compared with the unweighted situation in Figure 7.8. The range ratio drops by nearly one-third, from .15 to .09, the coefficient of variation drops from .054 to .042, the correlation coefficient falls from .92 to .69, the elasticity

<sup>6</sup> A policy issue in simulating weighted-pupil programs is whether the original program parameters should be lowered by using weighted pupils to determine major policy variables such as the zero-aid district and level of tax base guaranteed. For simplicity, the parameters were retained, and the simulation indicates how much extra funding all special student needs would cost.

<sup>7</sup> The base data include no state aid for categorical programs such as those simulated. Since most states already have some level of categorical programs, the extra costs would not be as large as indicated by the simulated results.

**FIGURE 8.3 Ten-District Sample: Combination (foundation level: \$1,500; required tax rate (mills): 10; guaranteed tax base: \$100,000; GTB rate cap above foundation level (mills): 99)**

District	Weighted Pupils	Property Value per Weighted Pupil (\$)	Old Property Tax Rate (mills)	New Property Tax Rate (mills)	Old Revenue per Weighted Pupil (\$)	New Revenue per Weighted Pupil (\$)	State Found. Revenue per Weighted Pupil (\$)	State GTB Revenue per Weighted Pupil (\$)	Change in State Revenue per Pupil (\$)	Total Revenue per Weighted Pupil (\$)	Total Gain (Loss) per Weighted Pupil (\$)	Pupil weights	
												Regular	Comp. LEP
A	12,277	29,988	30.43	22.17	913	665	1,200	852	1,074	2,717	826	1.00	1.30
B	8,583	38,357	28.33	21.54	1,087	826	1,116	711	940	2,654	679	2.00	1.30
C	9,555	46,132	26.86	21.10	1,239	973	1,039	598	842	2,610	576		
D	5,059	53,245	25.61	20.22	1,364	1,077	968	478	826	2,522	539		
E	6,171	59,868	24.39	19.86	1,460	1,189	901	396	725	2,486	453		
F	7,295	69,798	23.54	19.87	1,643	1,387	802	298	623	2,487	367		
G	4,451	76,549	23.28	20.24	1,782	1,549	735	240	538	2,524	304		
H	3,580	87,841	21.72	19.95	1,908	1,753	622	121	332	2,495	177		
I	4,054	116,041	19.52	19.94	2,265	2,314	340	0	(48)	2,653	0		
J	996	261,261	10.52	11.92	2,748	3,114	0	0	(366)	3,114	0		
Weighted Average		59,204	25.74	20.68	1,402	1,179	926	497	734	2,601	511		
Standard Deviation		34,744	3.72	1.43	419	505	261	268	323	109	241		
Median		53,245	25.61		1,364					2,524			
<b>Totals</b>													
Weighted Pupils	62,021											<b>Equity Measures</b>	
Local Revenue	\$73,101,323											Horizontal equity	\$629
State Revenue	\$88,230,066											Range	.092
Total Revenue	\$161,331,389											Coef. of variation	.042
State Aid												McLoone index	.991
Number of winners	8											Gini coefficient	.021
Number of losers	2											Fiscal neutrality	.692
												Correlation	.034
												Elasticity	

decreases from .07 to .03, and the McLoone index rises from .979 to .991, all changes in the direction of greater fiscal equity. In short, vertical adjustments for special student needs improves equity on all fronts. Of course, costs also rise, so equity gains come at a price.

### ADJUSTMENTS FOR DIFFERENT GRADE LEVELS

For years, the primary grade level adjustment in school finance formulas was for secondary students, who typically were provided an additional 25 percent of resources or weighted 1.25. The rationale for this practice was that, given current patterns of elementary and secondary school organization, costs were higher for secondary students. More specialized classes were provided, more expensive educational programs (such as vocational education) were provided, and class sizes were often smaller.

Figure 8.4 shows the grade level adjustments states made during the 1986-87 school year. As expected, most states provided more for secondary students, with the extra costs ranging from 5 to 37 percent. Interestingly, several states also weighted K-3 students, up to an additional 25 percent. This practice began in the 1970s; the rationale was that if students learned successfully in the early years, compensatory or remedial programs in the later years would not be needed, at least not at current levels.

There are strong arguments for concentrating extra educational investments in the early years. Indeed, preschool programs provide long-term achievement and other benefits (Berrueta-Clement et al., 1984). Further, extended-day kindergarten programs for low-income children help boost performance in later grades (Puelo, 1988). One-to-one tutoring in the early grades produces achievement gains on the order of one-half to a full standard deviation (Slavin, 1989a; Odden, 1990d). Finally, a small class size of about 15 also improves achievement for kindergarten and first-grade students (Folger, 1990).

Such research results firmly support investing more at the early grades, perhaps even weighting K-3 students an extra 25-30 percent. Nevertheless, current practice generally is to provide more resources at the secondary level. As productivity, i.e., the link between resources and student achievement, assumes greater importance in the 1990s, the practice of allotting extra investments for the early years might also expand.

### ADJUSTMENTS FOR SIZE

There is substantial controversy over size adjustments in state school finance formulas. Conditions that could produce higher costs possibly qualifying for a size adjustment in the state aid program are: (1) small school size, (2) small district size, (3) large school size, and (4) large district size. The generic policy