

## **Costs of an Educational Voucher System**

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**ABSTRACT** *In this study, we suggest a framework for estimating the costs associated with a shift from the traditional method of financing and administering public schools in the US to an educational voucher system. The framework includes the accurate specification of the particular voucher plan, the system to be replaced, the setting where the plan will be applied, assumptions about the behavior of schools and families under the plan, and the method for estimating costs. We then apply those parts of the framework that can be identified generically to compute illustrative 'ballpark' estimates in five cost areas: accommodating additional students, record keeping, student transportation, information to parents and dispute adjudication. Our estimates suggest that the public costs of a voucher plan in a representative US context could raise public educational costs by 25% or more. The costs of an overall governmental system of finance and structures that would support a voucher plan should no longer be ignored, as voucher plans are introduced and debated in the public policy arena.*

### **Introduction**

Almost four decades ago, Milton Friedman proposed a radically different way of financing education (Friedman, 1955, 1962). Parents would receive a voucher that could be used for tuition at any 'approved' school. Schools that met minimal requirements would be eligible to redeem vouchers with the government. Such schools would compete for students by offering programmes that were designed to meet their needs. Schools would meet minimal standards for curriculum and other requirements in order to be eligible to redeem vouchers. Friedman argued that this approach would create a more efficient schooling system by providing a wide range of choices to meet parental and student concerns and by using vouchers as an incentive for schools to compete for students. Friedman also maintained that educational vouchers would speed the advance of technological progress in education by building incentives for schools to find ways of getting a competitive edge in the marketplace.

Considerable literature has arisen concerning vouchers over the last three decades (for example Center for the Study of Public Policy, 1970; Chubb & Moe, 1990; Coons & Sugarman, 1978; Henig, 1994; Jencks, 1966; Levin, 1968; Sizer, 1967, 1969; Weiler, 1974). Although conflicting claims are made about the effects

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of educational markets generally and educational vouchers specifically (Levin, 1991a,b; West, 1991a,b), there is little empirical data to draw upon for either side (Levin, 1992). Only in Milwaukee has a voucher plan been adopted, for students from low-income families. The evaluation showed that, after 3 years, voucher students in private schools were performing no better than similar students in public schools (Witte *et al.*, 1993).

Noticeably absent from most of the literature on educational vouchers is discussion of the cost of shifting from existing systems of financing and administration of schools by states, to a system of finance and administration of a voucher system. Regardless of their educational impact, a shift from the prevalent system of state finance and governance of education to one based upon educational vouchers will require a profound transformation of institutions required to support the schooling system. For example, in California a system of vouchers would require state authorities to keep records and administer vouchers to almost 6 000 000 youngsters in place of dealing with about 1000 local school districts. In order to assure adequate access to alternatives, it is probable that information centers would need to be established to enable parents to make informed choices and an expanded system of publicly funded transportation would need to be incorporated. In addition, some type of system of adjudication would need to be provided for parents who wanted a partial refund of vouchers in order to change schools during the academic year. Finally, a state system of monitoring and assessment would be needed to establish voucher eligibility of both students and schools.

The purpose of this article is to outline a process for estimating the costs of the overriding supportive framework for educational vouchers. To make relatively accurate estimates requires the identification of categories for which a voucher system will entail additional or expanded state services or oversight and to calculate their costs. For reasons that will be given in the next section, this present effort can be only exploratory rather than exhaustive. That section will discuss a number of issues that must be addressed in order to estimate the costs of a voucher system. The section following this will provide illustrative estimates of costs.

### **Issues Affecting Voucher Costs**

The estimation of the costs of a voucher system to replace existing systems of schooling cannot be done without an accurate specification of the particular voucher plan that is being considered, the system that it will replace, the setting where it will be applied, assumptions about the behavior of schools and families under the voucher approach, and the method for estimating costs. In this section, we will review the importance of each of these concerns.

#### *Particular Plan*

Although the educational voucher system is often referred to generically as if it were a single, unified approach to financing education, the term actually covers a wide variety of arrangements with rather different potential consequences for costs. Proposed voucher systems vary from market approaches with little or no government intervention other than the funding of the vouchers to highly regulated educational market-places with elaborate provisions for information, transportation, school admission policies and requirements for school participation. The wide

spectrum of voucher plans and their different provisions suggests that voucher plans should not be viewed as proposals, but as a range of policy designs which have different cost consequences and results for families and schools (Hoenack, 1994).

Educational voucher plans differ according to their regulations, information requirements and systems of finance (Levin, 1991a). The original Friedman (1962) proposal had few requirements that schools had to meet in order to participate. It made no provision for information and stipulated that families would receive a flat voucher for each child, to which parents could add additional spending. The Friedman plan would not have required an elaborate system of information, transportation, monitoring of schools or evaluation of students for vouchers. In contrast, a proposal prepared for the US Office of Economic Opportunity (OEO) would have necessitated rather extensive provisions in all of these areas. The OEO plan called for various restrictions on admissions policies, specific information that schools had to provide, an extensive system of information that would be made available to parents, and vouchers tailored to student need, including larger vouchers for the poor. Parents would not have been permitted to add to the allotted voucher (Center for the Study of Public Policy, 1970). In order to provide even an approximate picture of costs for a supportive state framework for vouchers, it is necessary to know the specific details of the voucher plan.

#### *Existing System*

It is also crucial to know precisely what type of system is being replaced. Some states have very large numbers of local districts, while others have relatively few. Some states have elaborate systems for monitoring and regulating schools, while others do not. In most states, the oversight of private schools is minimal relative to what might be required under vouchers. In some states (e.g. Minnesota) and districts (e.g. 16 districts in Massachusetts), parents have a wide variety of public choices for their children. In those instances, at least some provision is made for disseminating school information to parents, although rarely is it extensive. Virtually all states provide some transportation for students who are distant from their schools or for students with severe handicaps. Since we will want to deduct the costs of these services from those associated with a particular voucher arrangement to obtain net costs for a voucher framework, it is necessary to know the characteristics of the public system it would replace.

#### *The Setting*

Obviously, the setting in which vouchers will be applied will affect the costs of maintaining a voucher system. In some states, there are large numbers of students in existing private schools who will need to be accommodated by vouchers and voucher services. In highly urban areas, transportation costs will be reduced because the market is likely to sustain many choices in a relatively small geographical area. Further, the wider availability of public transportation in urban areas may lower transportation costs because of economies of scale for a given transportation infrastructure. The provision of information on alternatives can also benefit from economies of scale in urban areas. In contrast, costs of transportation may be considerably higher in rural areas because of longer distances that must be traveled to provide school choices. Monitoring schools and providing information and

evaluations of students for a voucher that meets their needs may also be more costly when populations are less concentrated. Even within urban areas, population density and the number of school-age children will vary. For these reasons, it is necessary to know the specific setting in which vouchers will be applied in order to estimate costs.

### *Behavioral Responses*

In addition to knowing the specifics of the voucher plan, the existing school system and the setting in which vouchers will be applied, we need to know the behavioral responses of households to a voucher plan. To the degree that a voucher approach establishes a new set of incentives and increases options for parents, one can expect that it will stimulate changes in both attendance patterns and supply of schools. As an example, Stephen Hoenack (1994) has developed an econometric simulation to predict how vouchers of different amounts will affect the shift from public to parochial schools in Minnesota. In general, the costs of the structure for supporting a voucher system will depend, in part, on the answers to such behavioral responses to new opportunities. What proportion of students will shift schools (Lankford & Wyckoff, 1992)? What proportion will require transportation to their new schools? Will attendance patterns be concentrated among particular neighborhoods and particular schools or will the distribution be more nearly random? How many schools will arise in response to vouchers that will require monitoring and approval? Will the residential mobility of households be affected by school choice and availability? What proportion of families will avail themselves of information services of different types? The answers to these and other questions will be determined by how families respond to the opportunities and incentives inherent in any given voucher system, and these responses will affect the costs of supporting that system.

### *Costing Method*

Finally, the method of estimating costs will be a central determinant of predicted cost levels. The method that should be used is straightforward. Given the information that is stipulated above, it would be possible to construct the activities that are needed to provide an overall voucher structure that meets specifications and the client demands on that framework. Based upon parental choices, we would know how many children would need to be transported as well as transportation patterns from particular neighborhoods to particular schools. We would know the type of organization providing information, what type of information it would collect and how it would obtain and disseminate that information. We would know the types of monitoring activities that would need to be undertaken of schools and the evaluations required of students to allot vouchers, as well as the record-keeping system required for both students and schools.

Each of these functions would be converted into specific activities and services, and the resources or ingredients required to produce these activities and services would be identified. Given the detailed identification of these ingredients, it is possible to ascertain their prices and to estimate the overall costs for specific activities as well as for the overall voucher framework that is needed. This is a method that has been applied to education and which meets the standard economic criteria for measuring costs (Hartman, 1981; Levin, 1983).

It is important to note that many of the costs estimated in this way may not be

borne by the educational sector or even by government. Such costs may be levied on households. For example, if provisions are not made for transportation, parents will have to make their own arrangements to bring students to and from school. Whether they use public transportation with both its private costs and public subsidies or completely private means, additional costs are imposed. The same is true for information. If publicly funded information sources on school options are meager, some parents may choose to seek information independently from schools or rely on private information counselors. Indeed, the overall costs of the service may actually be greater when households address their needs independently than when it is provided by a government agency. Therefore, it should not be assumed that restrictions of specific services which a voucher plan offers will limit the costs, if responsibility for obtaining those services is simply shifted to households. That is, both public and private costs must be taken into account when estimating the costs of supporting a voucher framework.

In the following, we suggest that the costs of the specific infrastructure that we consider necessary to support an educational voucher system will exceed the costs associated with the existing public-school system. We believe that the information, transportation and centralization of records required of a voucher system will entail added costs beyond what these services require in a more traditional schooling approach and we will provide a rationale for this assertion. We will attempt to provide a 'ballpark' approximation of these costs under a given set of assumptions in order to focus systematic attention on cost aspects and to initiate the first stages of concrete discussions about such costs.

Although Lieberman (1993) argues correctly that available published data are inadequate to compare existing public and private educational costs, his claim that the costs of the public schools exceed the costs of a market system are based on assertion rather than careful analysis and measurement. In an effort to 'clarify' what the costs are, he simply lists many categories with little attempt to define carefully what they are and how they would differ between public and market systems. For example, in this catch-all approach he lists the electoral process and operation of school boards and school legislation as costs of public schools that would be eliminated by a market (Lieberman, 1993, pp. 136–137). However, far from eliminating legislation, Encarnation (1983) has demonstrated that, historically, government support to private entities leads to increased government intervention and regulative oversight to protect the public interest. Further, school-board elections and governance are hardly the deadweight loss that is asserted by Lieberman. Tyack and Hansot (1981, p. 23) argue that the public schools represent one of the few foci for democratic discourse not only about education, but about society itself. They assert that: "... public schools are everywhere close at hand and open to all children. They generate valuable debates over matters of immediate concern, and offer a potential for community of purpose that is unparalleled in our society." None of these debates resolves the issues surrounding the relative costs of different systems, but they illustrate why these issues cannot be settled by polemics or tendentious checklists.

However, it is important to note that even if costs are higher for a market system, this is not a *prima facie* criticism of vouchers. The real issue is whether the benefits of vouchers relative to the existing system, in terms of educational results are justified by the additional costs or whether additional costs for a supportive framework are offset by savings at the level of individual schools. This cannot be ascertained from the present analysis, but should be viewed as an open question.

### **Illustrative Costs in Five Areas**

In this section we provide estimates of the costs of shifting to a system of educational vouchers. The estimates must necessarily be illustrative because we lack the specifics on the particular voucher plan, what it will replace, the setting applied and behavioral responses to the plan. Without these, we cannot provide even an approximate cost for a state or smaller entity, nor a definitive comparison of current costs with those incurred through a voucher plan. However, we can estimate costs for hypothetical situations that are consistent with a shift to vouchers in order to provide the beginning of a dialogue on costs and to illustrate methods of obtaining costs. We will address these costs in five areas: accommodating additional students, record-keeping and monitoring systems, transportation, information and adjudication of disputes.

In each area, we begin by discussing why the issue is central to a voucher plan. We proceed to how costs for the particular area can be measured and provide illustrative costs and the degree to which some of these costs will be offset by reductions in the costs of the existing system. Finally, we will suggest the magnitude of potential cost differences for the function.

#### *Accommodating Additional Students*

Under a voucher plan, students attending non-public schools will be eligible for publicly funded vouchers. This means that, even in the absence of shifts from public to private schools or the provision of services to create an efficient system of choice, there will be an additional cost to the public sector—and a likely windfall gain to families with children already in private schools. This public cost will depend on three factors: the numbers of children in private schools eligible to receive vouchers, the voucher amount and the cost of attending those schools. The number of students in schools eligible to receive vouchers will depend upon the regulations in voucher plans and the willingness of private schools to participate in the voucher system. With minimal regulations, probably all or most schools will participate and be eligible to receive vouchers. Restrictions on admission policies, tuition charges, curriculum requirements, testing and so on will reduce the numbers of schools willing to participate. For purposes of estimating costs, we assume that under the least restrictive arrangements, 100% of existing students in non-public schools will be eligible to receive vouchers. Under the more regulated plans, we assume a 75% participation rate.

The voucher amount will be crucial in determining the additional public costs of accommodating present enrollees in non-public schools; the larger the voucher, the greater the costs. For purposes of estimation, we assume the maximum voucher will be equal in size to the US average of per-student expenditures in public schools in 1990–1991. The final criterion is the cost of private-school charges eligible for reimbursement. Although many private schools charge less than the average of per-student expenditures in public schools, they require parents to pay other fees and carry out school fundraising activities. Also, private schools often receive contributions in-kind, through donated or subsidized facilities, and voluntary labor or staff willing to accept below-market wages because of the schools' dire financial straits. However, if eligible for vouchers, we would expect schools to charge the full amount of the voucher. Additional school income would be used to improve staffing and salaries (Chambers, 1987) and provide better facilities and services,



**Table 1.** Potential public cost increases under a voucher plan for 1992–1993 (in 1995 dollars)

Percentage of private-school students participating	Cost with vouchers equal to 100% of public-school costs (US\$ billion)	Cost with vouchers equal to 8% of public-school costs (US\$ billion)
100	33.0	26.4
75	24.8	19.8

Source: National Center for Education Statistics (1995).

i.e. to raise the quality of the school. This tendency would be virtually certain in a market situation in which schools and parents would have a large incentive to use the full voucher.

There are, however, three reasons why voucher costs may be lower for non-public versus existing public schools. First, voucher plans may provide a lower allocation for non-public schools, because these schools need not meet the same public accountability requirements as public schools. Second, few private schools provide either special education for the handicapped or vocational education services, two of the most expensive offerings. The costs of special education are almost two and a half times those for a regular student (Chaikind *et al.*, 1993) and vocational education costs are about two to five times that of the academic curriculum at the high-school level (Hu & Stromsdorfer, 1979). Third, existing non-public schools have a higher proportion of children than public schools at the elementary level where per-student costs are considerably lower than at the secondary level. Even if non-public schools are eligible for identical vouchers for the same services, but do not include the more expensive services, they will receive lower vouchers. For purposes of estimation, we assume that the minimum cost of voucher students in non-public schools will be 80% of the average per-student expenditure in the public sector in 1990–1991. Note that this lower cost per student is due to the private sector enrolling students with lower educational needs, rather than representing lower costs for students with equivalent educational needs. Thus, we are assuming no net savings for equivalent services when a student shifts from one sector to the other.

In 1992–1993, total public-school costs were US\$267.6 billion with an average per-student cost of US\$6141 (National Center for Education Statistics, 1995, Tables 158 and 163, figures adjusted to 1995 dollars<sup>1</sup>). In the same year, about 5.4 million students, or roughly 11% of all students, attended private schools (National Center for Education Statistics, 1995, Table 2). If all private schools attended by these students were eligible for US\$6141 vouchers per student, the additional public cost for education would have risen by about US\$33.0 billion (1995 dollars) for 1992–1993. If only 75% of these students were in schools participating in the voucher plan, the additional cost would be about US\$26.4 billion. Table 1 summarizes these public costs as well as those if the voucher amounts were only 80% of the average public-school per-student cost in 1992–1993. Most of these costs would represent a shift from the private to the public sector (from present private-school families to taxpayers), although some could represent an overall increase in social costs of education to the degree that overall expenditures on education rose through a voucher plan.

*Record-keeping and Monitoring Systems*

Voucher plans will require extensive state record-keeping and monitoring systems for three reasons. First, every child required to be in school under compulsory attendance laws and those continuing their education through high-school graduation will need to be monitored with respect to enrollment and voucher provision. This monitoring must be done actively rather than passively because of student mobility and normal patterns of promotion from one level of school to another. Monitoring and record keeping will consequently increase in cost with the degree of student mobility between schools.

Second, children may be eligible for different educational services with appropriate differences in voucher amounts. For example, secondary schools have a higher cost than elementary schools and services for the handicapped, educationally disadvantaged and language minority students are most costly than for other students. Accordingly, students will have to be evaluated in terms of needed services, and the magnitude of vouchers. As voucher plans increase in complexity and variability, eligibility determinations and record-keeping costs also will increase.

Third, only schools that meet the regulations set out for participating in the voucher plan will be eligible to redeem vouchers, so schools must be evaluated, certified and monitored for eligibility. The greater the births, deaths and substantive changes among voucher schools, the greater will be costs associated with monitoring and evaluating student and school status and updating the record-keeping system.

Existing local school districts carry out many of these functions including compliance with compulsory attendance laws, student record keeping and evaluation for educational services. Because these activities can be integrated in a single agency that is close to the families and neighborhoods served, costs are likely to be lower than when they are performed by a centralized agency independent of the schools. However, it appears that these functions would have to be more centralized (probably to the state level), because the issuing of vouchers, enforcement of compulsory attendance laws and the regulation and monitoring of schools would logically rise to a state agency with regional offices rather than relying on local school districts.

Further, these functions would probably be more extensive under voucher plans. The state would need individual records for each child in the compulsory attendance age group and those completing high school, but beyond compulsory age. It would also need systems to identify students who were covered by compulsory attendance laws and enforce compliance with these laws. An agency would have to communicate with parents on a regular basis with information on their rights and obligations and on how to exercise the use of vouchers, besides ensuring routine issuance of correct voucher amounts for correct time periods. Finally, an agency would need to communicate with existing and prospective schools on regulations and take applications from new schools that sought voucher status. These schools would be evaluated, certified if eligible and monitored for continuing voucher eligibility.

To estimate costs, we looked to an analogous agency, the US Social Security Administration (SSA) and its regional offices, which maintains an ongoing record of eligibility of about 40 million SSA beneficiaries (Social Security Administration, 1987, p. 29). SSA determines initial eligibility for social security benefit amounts and then continues monthly payments to beneficiaries uninterrupted thereafter.<sup>2</sup> At different points, however, benefits may be 'adjusted' to reflect changes in the situation of the individual or their family, analogous to a change in voucher



**Table 2.** SSA 1986 total and average (per person) claim processing costs (in 1995 dollars)

Total retirement cost (US\$ billion)	Total disability cost (US\$ billion)	Total cost (US\$ billion)	Average retirement cost (US\$)	Average disability cost (US\$)	Average of all claims cost (US\$)
1.727	1.750	3.477	51.27	438.34	92.29

Source: Social Security Administration, *Executive Handbook of Selected Data*, May 1987.

amounts. Processing and record-keeping costs of the SSA generally do not cover the range of activities necessitated by taking applications and certifying eligibility for redemption of vouchers by schools, nor those incurred in ensuring children are enrolled in schools. The vast majority of social security claims are for retirement (versus more complicated disability claims), a highly routine activity requiring only verification of existing records showing date of birth and the amount paid into the social security system. In contrast, student mobility from change in residential location alone tend to be more frequent, and evaluation of student needs is also more demanding. Therefore, processing costs of retirement claims alone are likely to understate the costs of the more complex record keeping and administration of a voucher system.

Nonetheless, the SSA analogy is useful because it describes a case where a simple eligibility determination can be made, with limited and less costly updates, i.e. retirement claims, and one in which eligibility determinations and follow-up are highly complex, i.e. disability claims. This analogy parallels two voucher plans—one in which eligibility questions are fairly simple and those in which these questions are more complex as a result of more variables. The social security analogy thus begins to provide a range of costs for record-keeping systems of voucher plans. Table 2 provides administrative costs for SSA in 1986, providing costs for retirement and disability claims separately, as well as total administrative costs. Average costs are calculated per person for the roughly 40 million beneficiaries, yielding a lower estimate than average claims cost because many claims include multiple beneficiaries (e.g. husband and wife often are a single claim).

A more complex voucher system may be more comparable to, but still less than, the higher cost for disability claims, due to the ongoing and costly medical evaluations of these claims. Therefore, a ballpark estimate for a voucher system might be of the order of US\$92, the average of both retirement and disability claim costs, appearing in the final column of Table 2. To the degree that SSA costs also include routine maintenance of accounts prior to retirement or disability, some of that cost is attributable to other functions. Thus, a value slightly below US\$92 per student per year would be comparable. However, assuming vouchers are all of the same amount and all schools and all students participate in a given area, then the per-person retirement claims amount of about US\$51 (column 4, Table 2) might serve as a first approximation of per-student annual costs for these functions.

These are the approximate costs of a record-keeping system but not necessarily the net, additional costs incurred by a voucher system. To estimate these costs we would have to add the costs of the application process for new schools and certification and monitoring for existing schools for their eligibility to participate in a voucher system. We would have to deduct from this total the costs expended on all of these functions (record keeping, evaluation for services and eligibility and

monitoring of schools) under the present system to determine whether these costs are actually greater under a given voucher system.

We have argued that these costs under the present system are likely to be lower than under voucher plans, because of the relative ease of gathering and monitoring information on a local population, and the integration of student information and evaluation of educational needs with the educational services provided by local educational agencies. Further, the monitoring of schools is far more routine than it would need to be in a dynamic market-place of births, deaths and changes in schools. There are also likely to be far more schools to monitor under a voucher system, perhaps twice as many, if the size of private schools is an indicator of what will happen to school size under vouchers (Chambers, 1981). In 1987–1988, over half of the private schools with fourth grades and almost half of the schools with twelfth grades had less than 150 students in contrast with 11% and 14% of public schools at the same grade levels; only about 8% of private schools with a twelfth grade had 750 or more students, but almost 36% of such public schools were that large (Alsalam *et al.*, 1992).

The evidence seems overwhelming, that ‘savings’ which would occur in reduced administration of the present system would be more than offset by the more extensive and centralized system necessitated by voucher plans. In that case, the higher cost of US\$92 per student might serve as a first approximation of the overall cost of record keeping and monitoring and the lower US\$51 cost from the social security illustration might represent a first approximation for the net cost.

#### *Transportation Costs*

Any plan for meaningful school choice must include transportation. Although it is possible that ‘home schools’ and ‘distance learning’ schools using computers and interactive television might be eligible for vouchers, the vast majority of students are likely to be found in school settings removed from their homes. Since schooling must be produced and experienced in such settings, accessibility to a range of school sites can only be provided with adequate transportation.

Transportation costs in any school system are a function of the number and geographic distributions of students being transported and schools served and the costs of different modes of transportation for serving these distributions. Other factors affecting costs include population density (e.g. rural students will probably travel farther to have equivalent choices and have less access to public transport), climate, the size of transport vehicles and labor costs. Transportation costs under a voucher system would be expected to be higher than under the present system for two reasons. First, the advent of choice should lead to more students attending schools outside their immediate neighborhoods. Second, the routes are likely to be of lower density and regularity in terms of pick-ups and deliveries.

We assume that a voucher plan will give rise to new and more schools because existing non-public schools are considerably smaller than their public counterparts. This larger number of schools has both advantages and disadvantages from a transportation perspective. Increasing numbers of choices mean that students may have more school options in closer proximity to their homes, particularly in urban areas. A disadvantage is that the economies of scale of larger buses with regular routes will probably give way to the need for smaller vehicles with costly and irregular pick-up and/or delivery patterns. Labor costs for drivers are similar for larger or smaller vehicles, as are many of the maintenance and insurance costs.

**Table 3.** 1987 costs of transportation in California (in 1995 dollars)

Cost	Annual per-student cost (US\$)	Annual per-mile cost (US\$)
Low cost	257.16	0.85
High cost	4461.88	4.60

Source: Deloitte *et al.* (1987, pp. II-5 to II-9).

Assuming further that there is a shift in student enrollment from nearby (perhaps formerly public) schools to other schools, then both the number of students and the number of schools to which students will need transportation will increase. Also, administrative costs will probably go up, simply because more students and schools will be served.

What do transportation costs look like presently? A 1987 study (Deloitte *et al.*, 1987) of 34 California districts directly providing service or subcontracting with private companies, found the range of per-student transportation costs summarized in Table 3.

Table 3 shows there is enormous variation in district transportation costs, even among those with relatively systematic and regular routes transporting both regular and special education children. In 1992–1993, the national per-student average cost was US\$415 (National Center for Education Statistics, 1995, Table 50, figure adjusted to 1995 dollars). These costs reflect benefits of economies of scale in districts that can establish regular routes and patterns of transportation among a fixed number of schools and with school assignment policies that can minimize the numbers of students being bussed and the distances that they must travel. Under a voucher plan with reasonable transportation boundaries, the choice of schools will be up to parents and students, who will have less incentive to economize on transportation costs if these are paid publicly.

The St Louis integration plan provides an analogy for voucher plans, as students from St Louis and surrounding suburbs may choose schools in the entire metropolitan area. The Department of Elementary and Secondary Education in Missouri reports that the total cost of transporting almost 14 000 children for desegregation purposes among St Louis and these communities was about US\$25 million, with a student cost of US\$1800 in the 1992–1993 school year.<sup>3</sup> The reason for the high cost has to do with the variety of transportation provided: 1100 traditional school buses and 15-passenger vans are used by the bus companies along with about 80–90 taxis for routes ranging from only a few miles to about 80 miles for the round trip.

We also assessed the specific costs of smaller van-type transport. Several companies provide transportation to and from the three San Francisco Bay Area airports by offering ‘door to airport’ service in a highly competitive market for customers. Interviews with staff of these companies suggest a similar arrangement could arise if transportation service under a voucher plan necessitated this more customized service. Table 4 provides per-student cost estimates based on these interviews, indicating costs quite similar to those in the St Louis area.

In many regions, particularly urban and suburban ones, public transport might be a partial substitute for buses or vans. To estimate public-transport costs, we looked to the (San Francisco) Bay Area Rapid Transit (BART) system. In 1988–



**Table 4.** Possible per-pupil transportation cost with 'customized service'

	10-mile cost (US\$)	20-mile cost (US\$)	40-mile cost (US\$)
Daily cost	7	10	12
Yearly cost	1260	1800	2160

*Source:* Interviews with staff of 'Bay Porter Express' and 'Express Shuttle' bus companies. These are round-trip fares, i.e. the '10-mile cost' represents the cost of transport to a school 5 miles away.

1989, the average cost paid directly by riders was about 13.7 cents per mile (Bay Area Rapid Transit District, 1989, adjusted to 1995 dollars). This cost excludes enormous subsidies that BART receives from local state and federal governments. Taking into account this other revenue, the average cost increases from 13.7 cents to 58.4 cents per mile. This higher figure represents a more accurate figure of BART costs. Of course the marginal cost of transporting an additional student is small, but for an entire voucher system increased student demand would be more massive than just a few at the margin, justifying the use of an average cost estimate.

We estimated annual (180 school day) per-student costs of riding BART on a 10-mile round trip (i.e. 5 miles one way). Excluding subsidies, the private cost would be US\$247, but including subsidies the total public cost amounts to US\$1052 (Bay Area Rapid Transit District, 1989, amounts adjusted to 1995 dollars). Nonetheless, public transport appears much less costly than the more customized bus service described above, assuming that public transport can serve school commuting routes within a reasonable commuting time. Use of public transport, however, will probably be limited to older children (i.e. teenagers), because parents would not permit young children to use public transport without a chaperone. In general, depending on the number of new schools arising under a voucher plan, transportation systems may look much more like St Louis than most systems we see today which use large buses almost solely, except for transporting the handicapped.

What will be the magnitude of cost differences? As noted earlier, the 1992-1993 national per-student average was US\$415. Our analyses suggest that efficient customized transport systems under a voucher plan would cost between US\$1000 and US\$2000 annually per student, with US\$1500 being a reasonable illustrative figure. The validity of this estimate is supported by Witte (1994) who reports an average annual transportation cost of about US\$2000 per student for interdistrict bussing to accommodate Milwaukee's choice programme for desegregation purposes. Not only would the average cost of transportation rise considerably, but so would the numbers of students requiring transportation. Almost 60% of public-school students were bussed in 1992-1993 (National Center for Education Statistics, 1995, Table 50). If this number were to rise to 80% of public- and private-school students, an additional 13.3 million children would have been bussed at an additional cost that year of about US\$5.2 billion, assuming annual per-student transportation costs of US\$415. If the cost per student were to double, for reasons already discussed, to about US\$800 a year, the higher costs per student combined with the additional bussed students would amount to about US\$20 billion a year, about half of this attributable to the additional bussed students and half to the higher cost per student. Even this considerable amount remains below estimates based on our analyses.

*Information Costs*

The competitive efficiency of market systems depends crucially upon knowledge of alternatives (Levin, 1991a). Families of different racial, socio-economic and linguistic backgrounds also need equal access to the same information about schools and choices if equity concerns are important. At a minimum, families need to know what choices are available and the appropriateness of particular school choices for their children. Parents need information on matters such as school philosophy, curriculum, personnel, facilities, test scores, student placements after graduation, registered complaints and their nature and turnover rates among students.

Costs would be entailed for schools, parents and government. Schools would need to collect the appropriate information and make it available to parents and involved government agencies, and establish a capacity for school visits and interviews. Parents would need to allocate time and transportation to gather and assess information as they make their choices. Government resources would be necessary to maintain and update an information base on schools and to disseminate information to parents.

Sharing of these costs among schools, families and government may vary. Compiling information could be wholly borne by schools, for example, and these costs may not be new for existing private schools, unless the information is more extensive and must be shared with a larger audience. These costs would be extended to a larger number of schools, because new private and existing public schools would need to provide information. A major share of costs to obtain information, however, could be borne by parents. In the Milwaukee voucher programme, parents most frequently learned about the school programme simply by informal communications, a reasonable approach when only 12 schools were involved (Witte *et al.*, 1993). Government might bear a large share of information costs if equity considerations are important. In this case, the government will need to play a large role in assisting those parents who have fewer resources to obtain and evaluate information. Past systems of choice were inequitable in part, because non-white and low-income parents had less information than white and middle-income parents (Archbald, 1988; Bridge, 1978).

One way to measure these costs is to consider the steps involved in sharing information. The first step is the specification, collection and storage of information that must be shared. Second is the actual sharing and dissemination of information. Costs will go up in the first step, according to the extent and quality of information compiled and the frequency of updating. Consider, for example, cost differences between a one-time public notification that a voucher plan exists, versus a requirement that every school develops and publishes an 'annual report' in several different languages. In the second step, costs will again depend on how much information needs to be shared, as well as how information is shared. Printed materials circulated through libraries are much less costly than 'information centers' with staff trained to answer questions. A balance should be struck between the increasing costs of sharing more information and increased benefits arising from more informed family choices.

Districts in Massachusetts offer an example of an information system when families have increased choice (Glenn *et al.*, 1993). In that state, 16 cities now permit parents to choose among their city's public schools. Parents obtain information about schools through a variety of means, including visits to schools, conversations with friends and neighbors and brochures received by mail. There are clearly



costs to families and schools but we have yet to see estimates of these. Costs have been estimated, though, for district parent information centers (PICs). The PICs supplement information from other sources, most notably for families with limited English language skills. At these centers, parents obtain printed information and discuss choices with counselors. Centers like Massachusetts' PICs may well be needed for voucher plans in which parents are faced with a myriad of options, and need impartial, informed help in choosing schools.

The 16 Massachusetts cities have a combined enrollment of about 200 000 students, and the PICs serve families of about one-third (65 000) of these students each year as they choose a school or move from one school level to another. The total annual cost of the PICs is about US\$2.5 million, so the per-student cost was about US\$38 each year for this fairly modest information approach (Glenn, 1994). This figure may serve as a lower-bound estimate of government costs, but excludes those to families and schools.

### *Costs of Adjudication*

If there is variability in a voucher plan regarding eligibility for vouchers by schools and vouchers of different amounts by students, the potential for dispute arises. Potential disputes might also arise when families change schools during the school year. Schools that have based their yearly spending plans on their sum total of vouchers would probably be reluctant to release funds to new schools. The need or desire to change schools after the school year has begun will require either a pro-rated refund (in order for the child to have enough of a voucher to register at a different school) or a system for adjudicating the conditions under which a child can change schools. It is noteworthy that two of the Milwaukee voucher schools closed their doors during the 1995–1996 school year, leaving their students without resources to enroll at another private school.

Several factors can complicate voucher plans, most notably variable voucher amounts. As a voucher system becomes increasingly complicated, hence requiring multiple judgments, disputes surrounding these judgments and their associated costs will increase. For example, the recent California Proposition 174 provided for a uniform voucher amount for all students. Following its defeat in the November 1993 election, a modified version has been suggested that would provide larger voucher amounts for children of low-income families and special-education children. We expect that some families on the margin of low-income status, but not so deemed, might dispute their status. This example suggests how addition of a single complicating factor might give rise to disputes, necessitating an adjudication system.

Costs of this system will be a function of the type and number of scenarios requiring adjudication, determined partly by the complexity of the voucher system and partly by the frequency of school changes, because families move or are dissatisfied with their schools. Costs will also be a function of the adjudication system set up. A system that limits resolution to the decision of an arbiter will be less costly than one in which a panel of arbiters offers decisions that can be appealed through the legal system.

To provide a sense of adjudication system costs we have turned to Salzer's study detailing the costs of special-education mediation conferences and state due process hearings in California (Salzer, 1987). US federal law (i.e. Public Law 94-142) and state regulations avail both systems to parents of a special-education child

**Table 5.** Mediation and due process hearing costs in California in 1987 (in 1995 dollars)

Route	Average parent cost (US\$)	Average school district cost (US\$)	Average combined cost (US\$)
Mediation (route 1)	585	2318	2903
Mediation & due process (route 2)	2686	5476	8162
Due process (route 3)	3872	7183	11055

if they disagree with a school district’s actions affecting their child. Although special education laws are very complicated, Salzer’s study begins to provide a range of adjudication costs that might be useful for our purpose.

Salzer describes three alternative ‘routes’ for adjudication of disputes. The first, mediation conferences, involves parents and school-district representatives in a one-day session with a mediator who attempts to help the two parties resolve the dispute. If mediation fails, then either party may take ‘route 2’, requesting a state due process hearing, to occur within 45 days of the mediation conference. The last route simply skips mediation as the parties go directly to a state, due process hearing. Salzer assessed both parent and school-district costs of the three routes, which are presented in Table 5. She also discusses the costs of mediators and due process hearing officers. These costs are comparatively small—the daily cost of a route 1 mediator, for example, was US\$190.

One main reason why district costs are so much higher than parent costs is that districts tend to hire more expensive attorneys to represent them in these cases. Another reason was what Salzer calls ‘indirect costs’, i.e. the costs of either parent or district staff time, which she valued much higher for districts.

It is doubtful that adjudication costs stemming from disputes in voucher plans will be as high as those found by Salzer, because of the complexity of special-education law and procedures. Complicated voucher cases would probably arise only occasionally, such as in situations where parents wish to change schools in mid-year because they believe that a school did not accurately represent its ability to meet the needs of their child. There would still be some minimum costs associated with adjudication even if voucher plans are fairly simple, including parent and school personnel time and the cost of a mediator or other officer to aid or decree resolution. To come up with a minimum cost, we assume that parent, school and mediator costs are only half of Salzer’s route 1 costs and further assume no attorneys. To get a high cost figure for a few complicated cases, we halve her route 3 figures, keeping in the cost of attorneys. Our calculations result in a minimum bound or low cost of US\$1925 per case and a high cost or upper bound of US\$5527. Finally, Salzer found that less than 1% of all special education cases entered mediation or due process. But, the large volume of students who would participate in a voucher plan suggest much greater potential for disputes covering far more students.

*Total Public Costs*

Given our estimates for the costs of accommodating additional students, record keeping and monitoring, transportation, information and adjudication, we can now calculate a ‘ballpark’ estimate of the additional public costs of a voucher plan. We



**Table 6.** Additional public costs of a hypothetical voucher plan

Function	Cost per student affected (US\$)	Number of students affected	Additional total cost nationally (US\$ billion)	Total costs as a % of total expenditures
Accommodating additional students	6141	4 031 250 (75% of private-school students)	24.8	9.3
Record-keeping and monitoring	51	48 190 000 (all students)	2.5	0.93
Transportation	1085	38 552 000 (80% of all students)	41.8	15.6
Information	38	48 190 000 (all students)	1.8	0.67
Adjudication	3726	481 900 (1% of all students)	1.8	0.67
Total public costs			72.7	27.2

make the following assumptions to arrive at an estimate of these costs. A voucher plan would accommodate 75% of students in private schools, with a voucher amount equal to 100% of per-student public-school expenditures, US\$6141 dollars per student. Additional record-keeping and monitoring costs for each student would be equal to the average social security per-person retirement claims cost, US\$51 per student. Transportation costs per student would rise from US\$415 to US\$1500 per student, leaving a net increase per student of US\$1085. In addition, the share of students necessitating transportation would rise from 60% of public-school students to 80% of all students. Our estimates suggest at least an additional information cost of US\$38 for every student. Finally, we assume that adjudication costs to resolve disputes would be the average of our lower- and upper-bound estimates from Salzer's study (US\$1925 and US\$5527 respectively), yielding an estimate of US\$3726. We assume that about 1% of all students might require these costs.

Table 6 provides overall cost implications for a hypothetical voucher plan, using these assumptions. Recall that the average per-student expenditure in public schools was US\$6141, and that total expenditures of public education for 1992–1993 were US\$267.6 billion (National Center for Education Statistics, 1995, amounts adjusted to 1995 dollars). Column 3 of Table 6 uses our assumptions of the share of students affected for each function, multiplied by the total number of students nationally. In 1992–1993 there were about 42.8 million US public-school students and 5.4 million private-school students, or about 48.2 million students altogether (National Center for Education Statistics, 1995, Table 2). Column 4 of Table 6 therefore provides a sum total of additional costs if a voucher plan were to be instituted nationally. Column 5 of Table 6 reflects additional public costs of each function as a percentage of total national costs, thereby suggesting additional costs for a voucher plan instituted in a nationally average locale.

### Summary

Public policy discussions of the implications of vouchers are typically characterized by a very limited discussion of costs. Voucher advocates simply assume that the

workings of the market will reduce costs for any given level of educational outcome. Often they note the low tuition costs of Catholic schools in local parishes without stipulating that such schools typically receive subsidies, in the form of facility sharing, low-cost religious personnel and fundraising, that allow them to charge low tuition. Further, they provide a more limited range of services than the public schools, not offering expensive services for handicapped and vocational students as one example. But, even if we could provide an accounting at the school site that would account for all costs and service mixes, there is a larger component of costs that is completely ignored.

To shift from the existing system of state systems of educational finance and operations is to shift from a partially decentralized system to one that will be completely decentralized, where the state will need to deal with individual families and students and individual schools. *Prima facie*, the increase in transaction costs is likely to multiply considerably. Even with modest estimates of the marginal costs associated with creating an infrastructure to meet the needs of a voucher system, the overall public costs mushroom. For example, our hypothetical estimates of these costs suggest an increase in 'central' costs of the highly decentralized voucher system of about one quarter or about US\$1500 per student. Given a fixed educational budget, this would reduce the educational voucher for each student by a significant amount to accommodate the costs of running the system. It is imperative that, as voucher plans in specific settings are proposed and their potential benefits argued, the overall costs of creating an infrastructure that will support those plans are estimated and introduced into the public policy arena.

## Notes

1. In these calculations, we have adjusted dollar amounts to 1995 dollars, using March 1996 Bureau of Labor Statistics (BLS) CPI-U tables (BLS, 1996, Tables 24 and 25). In other adjusted calculations we have used the same BLS tables.
2. SSA beneficiaries have received cost of living adjustments (COLAs) periodically during the last 25 years, which are added to their benefit payments following each COLA approved by Congress and the President.
3. Interview with Mr Tim Jones of Missouri State Department of Education, November 1993 (Jones, 1993). This amount is in 1993 dollars.

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