

## *The Effects of School Choice on Curriculum and Atmosphere*

MANY CURRENTLY PROPOSED school reforms, such as vouchers and charter schools, depend on the idea that if parents are given more ability to choose among schools, schools will be forced to be more responsive to parents, because parents' choices will determine enrollments and budgets. Thus the wisdom of choice-based reforms depends to a large extent on the wisdom of parents' ideas about schools and their ability to perceive what schools do. For instance, if parents place a high priority on academic quality, can correctly perceive academic quality, and choose schools based on academic quality, one would expect that schools with strong academic programs would do well under school choice reforms. If parents want their children to learn disciplined work habits, schools that teach such habits would thrive under school choice. If parents choose schools based on sports programs, schools with good coaches and sports facilities would succeed under school choice. In fact, parents look for schools that offer a balance of academic, disciplinary, and other training. The question "If parents were given greater choice, how and what kind of schools would they choose?" is central to the debate over school choice. It is contentious because little is known about how parents actually choose among schools. In this chapter I attempt to provide an empirical answer.

How parents choose is not the only important question that needs to be answered in order to assess school choice reforms. Other questions concern the effects of school choice on school efficiency, school finance, student peer groups, and the achievement of students at choice and nonchoice schools. I have addressed these issues in other studies.<sup>1</sup> Still other questions concern whether choice schools, such as voucher schools and charter schools, provide high-quality education, as measured by achievement tests, college attendance, and other indicators. These issues have also been addressed elsewhere.<sup>2</sup> All of these studies leave a black box, however. School choice may generate higher student achievement or greater school efficiency, but how? Choice allows parents to exert more pressure on schools, but it remains to be shown how schools change in response to their pressure. Do schools become more or less academically oriented? Do they assign more or less homework to students? Answers to such questions help to reveal the mechanism by which greater school choice translates into different outcomes for students.

One might consider surveying parents about how they would choose a school if they could—that is, what characteristics they would seek. Such survey evidence exists, and proponents and opponents of choice-based school reforms sometimes support their views by citing it.<sup>3</sup> Both proponents and opponents also support their views by citing the characteristics of schools that must be chosen, such as private schools, voucher schools, charter schools, public schools of choice, and magnet schools. Both survey evidence and evidence based on schools of choice is problematic, unfortunately. The first reason is the selection problem: schools of choice and the parents who choose them are not necessarily representative of the population. Thus they may provide misleading evidence for predicting the effects of a general school choice policy. For instance, parents who send their children to a science magnet school probably have different preferences from the average parent. The second problem affects surveys not only of parents

1. See Hoxby (1994, 1996, 1998, forthcoming).

2. See Greene, Peterson, and Du (1996) for a study of the Milwaukee voucher schools. See Greene, Howell, and Peterson (1997) for a study of the Cleveland voucher schools. Studies of the New York City voucher schools and of charter schools in several states are ongoing.

3. For examples of survey evidence, see Parent-Teacher Association of the United States (1991, 1993); Grolier (1983); Williams (1983); U.S. Department of Education (1991). A number of studies of private schools or school choice discuss parents' preferences, though not necessarily in the context of school choice reform; see Fuller, Elmore, and Orfield (1996), Kirkpatrick (1990), Murnane (1984), Allen (1992), Chubb and Moe (1990), Clune and Witte (1990), Coleman and Hoffer (1987), Moe (1995), and Tucker (1995).

whose children attend choice schools but even of randomly chosen parents. Surveys about preferences are notorious for the difficulty of eliciting the truth, because it is hard to set up realistic choices. For instance, if one asks parents who currently have little ability to choose among schools whether they would prefer a more demanding academic environment for their children, they may say yes, as though every other school characteristic could be held equal. However, were their children to be placed in such an environment, they might object to some of its consequences, such as homework crowding out extracurricular activities.

In fact, an empirical answer to the question of how parents would choose schools faces four major obstacles. The first is the selection problem described above. The second is that one requires objective evidence, such as behavior that reveals parents' preferences, in addition to subjective statements about preferences. The third obstacle is that observed choice programs are likely to be simultaneously determined with other policies. For instance, a school district whose students are apathetic might simultaneously introduce intradistrict choice and a wider array of extracurricular activities. In this case, the intradistrict choice program would not have caused the increase in extracurricular activities. The final obstacle is that one must distinguish between the effects of greater student segregation and the effects of giving parents' preferences more influence.

My empirical strategy in response to these obstacles is, briefly, as follows. I use topographic differences among metropolitan areas to identify differences in the number of school districts (and thus choice among school districts) that each metropolitan area offers. Topography serves as an exogenous source of variation in the degree of choice that parents experience, and this remedies the problems of selection and endogeneity.<sup>4</sup> I have used this strategy successfully elsewhere to identify exogenous differences in the degree of school choice among public school districts.<sup>5</sup> I employ rich data on schools and students, primarily from the National Education Longitudinal Study (NELS), so that I have objective measures of behavior to confirm subjective descriptions of each school's characteristics. I also use demographic data from the Public School Universe and the special school

4. This strategy remedies the selection and endogeneity problems because variation in the degree of school choice in a metropolitan area that stems from topography is very unlikely to be endogenous to the actions of any particular school. Since topography predates schools, literal endogeneity is impossible. This strategy also makes the possibility of omitted variables remote. A school's characteristics would have to have been influenced by some omitted variable that is correlated with the variation in school district concentration that is generated purely by topography.

5. Hoxby (forthcoming).

district tabulation of the 1990 census to distinguish the effects of segregation from the effects of school choice.

### Five Issues about Parents' Choice Behavior

Proponents and opponents of school choice disagree about how parents' decisions would affect schools. The disagreement hinges on five issues. The first is how parents would make choices: would they become involved in school decisionmaking, gaining information through discussions with teachers and administrators, bringing their own knowledge about their children and how schools work, militating for improvements? Proponents of choice argue that parents who have more choice over their children's schools are more likely to immerse themselves in school decisionmaking. In other words, "exit" and "voice"—in Albert Hirschman's classic language—are compliments.<sup>6</sup> Opponents argue that exit and voice are substitutes: if parents are able to choose another school, they are less willing to invest time and effort in their children's current school.

The other four issues concern what parents want. Proponents of choice assert that average parents want their children to face challenging academic curriculums, meaning that secondary schools should end with advanced courses close to entry-level courses at college. Opponents assert that average parents prefer easy curriculums. Proponents claim that typical parents like relatively strict academic environments—schools that assign homework and have graduation requirements, for instance. Opponents claim that typical parents prefer a lax academic environment that does not interfere with their children's extracurricular activities. Proponents contend that average parents like schools that enforce firm disciplinary standards. In contrast, opponents argue that although parents say in the abstract that they like firm disciplinary standards (thinking about other people's children being disciplined), they actually undermine school discipline because they so dislike it being applied to their own children. The final point concerns sports and other extracurricular activities. Opponents of choice argue that parents give excessive weight to extracurricular activities when choosing a school, causing schools to sacrifice academic programs to athletic and other extracurricular programs. Proponents of choice argue that parents' first priority is academic preparation.

6. Hirschman (1971).

## The Interaction of Parents' Preferences and School Choice

To understand how parents' preferences translate into school characteristics, it is useful to think of schools being governed by two groups of people: parents and staff.<sup>7</sup> Within each of these groups, there is variation in preferences. For instance, teachers vary in the degree to which they like a conventionally strict disciplinary atmosphere. Parents vary in the weight they put on extracurricular activities.

There are also differences in average preferences between the two groups, because the two groups do not have identical training or incentives. Teachers are usually graduates of programs that specialize in education. They develop preferences for teaching methods that are sometimes unpopular with parents, whose preferences about methods and curriculum are typically conservative.<sup>8</sup> For instance, there is an average difference between teachers' and parents' preferences over the teaching of reading, with the average teacher liking whole language methods more than the average parents. Also, parents naturally tend to prefer teaching and disciplinary methods that are costly in terms of teacher effort, and teachers tend to prefer methods that are costly in terms of parent effort. Consider alternative methods of improving students' academic achievement. Afterschool tutoring requires additional teacher effort, but monitoring children's homework requires additional parent effort. Similarly, students' behavior may improve if the school enforces stricter disciplinary standards, which requires staff effort, or if students learn more self-discipline at home, which requires parental effort.

Thus school choice affects how parents' preferences translate into school characteristics in two ways. It affects how the variation in preferences within each group (parents, staff) and the average differences in preferences between groups will play out. School choice will naturally allow more variation in preferences to be manifested. Some schools may end up with parents and staff who jointly prefer core academic courses, whereas other schools may end up with parents and staff who jointly prefer unorthodox material. However, the predicted increase in the variation of school characteristics is not of interest here, both for data reasons (as discussed below)

7. For the purpose of this paper, "staff" comprises teachers, administrators, and bureaucrats from higher levels of government, such as state superintendents.

8. See Hess (1998) for a discussion of the conservatism of parents' views of teaching methods, relative to the views of school staff and others involved in school policymaking.

and because it is not crucial to the debate over school choice. Most people are willing to see school choice introduce more variety in schools, so long as state guidelines prevent schools from adopting extreme curriculums.<sup>9</sup>

The effect that is of interest in this chapter is the average effect of school choice on curriculums and atmosphere in schools. Choice puts pressure on schools to move away from policies that are, on average, favored more by staff than by parents and toward policies that are favored more by parents than by staff. If average parents desire weaker academic standards than do the staff, greater choice would cause academic standards to fall. If average parents like to use schools that set high academic standards more than staff like to provide such schools, greater choice would raise academic standards.

## Data

For an empirical study of the school characteristics that parents choose when they have choice, a serious challenge is the need for rich information on curricular and extracurricular policies. For instance, to measure strictness of grading, one needs information both on the grades a school gives to a student and on the same student's performance on national standardized tests. One also needs rich information on the characteristics of the student bodies and communities of schools, so that one can separate the effects of choice from alternative explanations of a school's characteristics, such as demography. One cannot separate out the effects of choice on disciplinary atmosphere if one does not know whether a school is likely to need a strong disciplinary policy. Some students come from poor urban neighborhoods that are likely to infiltrate schools (through gangs, weapons, and drugs) unless actively excluded. Schools in high-income suburban neighborhoods require fewer overt disciplinary actions to exclude bad elements. Note that the information required to separate the effects of choice from the effects of demographics are not merely the average characteristics of a school's stu-

9. States can constrain curriculums and atmosphere at choice schools by two methods. They can regulate what courses a school must offer, for instance, by refusing to accredit a school that offers no mathematics. Alternatively, they can insist that a school must be able to attract a certain number or diversity of students. For instance, a state can implicitly ban curriculums that are highly ethnocentric by refusing to accredit schools that cannot attract a student body that is reasonably diverse, given the available population of students.

dent body and community. One also needs measures of the heterogeneity of the students and the community. This is because some school policies, such as unorthodox courses and strict discipline, are determined by the need to cope with a heterogeneous student population.<sup>10</sup>

Thus I need data that richly characterize the decisions of individual schools and precisely describe the student and community environments in which each school operates. Since no one data source satisfies these requirements, I use data from the restricted-use version of the National Education Longitudinal Study matched to the Public School Universe and the special school district tabulation of the 1990 Census of Population and Housing, which, respectively, describe the student body and the community of each school district in the United States.

The Public School Universe contains administrative data on the students in each school and school district, for example, their racial composition. The school district tabulation contains the demographic and housing variables from the long form of the census, aggregated for the population residing within the boundaries of each school district. Relevant variables are educational attainments, household incomes, ages, and house values. I describe and explain my choice of specific variables below.

The NELS is a longitudinal study of 27,805 students who attended eighth grade in 2,451 schools in 1988. Students are tracked on a biennial basis, in eighth grade, tenth grade (1990) and twelfth grade (1992), the last year used in this paper. The NELS contains student, school, and transcript components which provide both objective information and administrators' subjective assessments on each of the five issues about parent choice behavior discussed above. The sole disadvantage of using the NELS is that, like all the longitudinal surveys with similarly rich information, it covers only a fraction of U.S. school districts. My analysis employs data on 769 of the 4,555 school districts located in metropolitan areas. On average, each metropolitan area is represented by three school districts. The consequence of not having rich information on all school districts in each metropolitan

10. In addition, it is important to choose measures of school policy that are equally relevant for schools with different demographics. That is, a decrease in a measured policy should always indicate a decrease in the school's tendency to enforce that policy. Consider grading standards. A school with less grade inflation is always a school with less tolerance for inflated grades. In contrast, consider weapons checks. A school with fewer weapons checks may have a low underlying tolerance for weapons but no weapons problem, because of its demographics; or it may have a high underlying tolerance for weapons and also have a weapons problem.

area is that while one can reasonably estimate the effects of greater choice on the average characteristics of schools, one cannot plausibly estimate the effects of choice on the dispersion of characteristics among school districts within a metropolitan area.

Most of the variables describing curricular and extracurricular characteristics of schools are drawn from the school component of the NELS, which consists of school-level and district-level aggregates provided by school administrators. An example is the percentage of students who take advanced placement (AP) courses. It is necessary to create a few school-level variables by averaging students' answers to the student component of the survey. Because the sample from each school is small but random, these sample-based variables measure characteristics of the student body consistently, but with error. One would expect results based on these sample-based variables to be unbiased but imprecise.<sup>11</sup>

Five variables measure parental involvement. Four objective measures are the percentages of parents who discuss high school curricular choices with their children, who visit the school, who attend meetings of the parent-teacher association (PTA), and who attend regularly scheduled parent-teacher conferences (as opposed to conferences for the purpose of discussing a particular incident). The fifth, subjective, measure is the administrator's assessment of how much parents are involved in decisions about school policy.

To measure whether a school encourages students to take a challenging curriculum, I use the percentages of students in the tenth and twelfth grades taking AP courses. Advanced placement courses culminate in national, standardized tests, which tend to enforce a certain degree of difficulty in curriculums. To indicate whether a school has challenging math courses, I use an indicator variable equal to one if the school's regular (nonremedial, nonadvanced) mathematics offerings for the ninth through twelfth grades culminate in a twelfth grade course that contains some calculus.

To measure the strictness of the academic environment, I use four objective measures and two subjective ones. The objective measures are an index of grade inflation in mathematics, an index of grade inflation in English,

11. These variables, which exhibit classical measurement error, are used as dependent variables in regressions. One would expect estimates based on them to be consistent, but liable to have large standard errors.

number of hours of homework assigned each week, and number of standardized credits required for graduation. The subjective measures are the administrator's assessments of the degree to which students place a priority on learning and are expected to do their homework.

The grade inflation indexes require additional explanation. The index of grade inflation in mathematics is computed as follows. I subtract percentile score on a standardized mathematics test from grade point average in mathematics to obtain a "difference" for each student. Grade point averages are measured on the familiar four-point scale: 1 = D, 2 = C, 3 = B, 4 = A. The percentile scores on the standardized test are divided by 25 before subtracting, so that they are also on a four-point scale: 1 = 25th percentile, 2 = 50th percentile, 3 = 75th percentile, 4 = 100th percentile. I then create an index for each school by averaging students' "differences" within the school. This index is easy to interpret. Suppose that every school had equally tough grading standards and allotted students evenly along the four-point grading scale. Students who scored at the 25th, 50th, 75th, and 100th percentiles would have grade point averages of, respectively, 1.0, 2.0, 3.0, and 4.0. Thus one letter grade's worth of grade inflation is indicated by a increase of 1 in the school's index. For example, if a school typically assigns a grade of 4.0 to a student at the 100th percentile, its grade inflation index equals 0. If a school typically assigns the same grade to a student at the 75th percentile, its grade inflation index equals 1.

The index of grade inflation in English is computed in the same way, except that the standardized test is a reading test. The standardized tests used were administered by the Educational Testing Service to every student in the NELS.

I assess whether a school has a structured, disciplined environment with two objective measures: the number of minutes a student spends in class each day and the action taken by the school against a student who creates a classroom disturbance (first offense). I also use four subjective measures: the administrator's assessment of the degree to which the school has structured classrooms, has a structured school day, does not tolerate deviation from school rules, and provides a flexible environment.

The best indicator of how much weight a school puts on sports programs relative to academic programs is a subjective one: the administrator's assessment of the degree to which the school "emphasizes sports." For an objective measure of emphasis on sports, I use the ratio of physical education faculty to faculty in core subjects, such as English, mathematics, history, and

science.<sup>12</sup> I also examine the percentages of students who participate in varsity sports, intramural sports, and band, choir, or orchestra.

Table 11-1 contains descriptive statistics of all the variables just described. Many of these are interesting, a few of which I note here. There is a great deal of variance in parent involvement. About 8 percent of parents visit the school and attend regular parent-teacher conferences, but the standard deviation of these measures is 20 percent. On average, fewer than 8 percent of students take AP classes in the tenth grade and about 20 percent take them in the twelfth grade. However, the percentage of students who take AP courses varies widely: the standard deviation in the twelfth grade is 17 percent. About 50 percent of schools have a regular mathematics track that is challenging, but this statistic also varies widely: the standard deviation is 47 percent. The average amount of homework is 5.37 hours per week, or a little more than an hour per school day. The standard deviation in homework per week is 1.57 hours.

### Empirical Strategy

The clearest way to explain the empirical strategy of this paper is to proceed from wrong to right. I start by describing a common but naive empirical strategy and explain why it produces biased estimates. An apparently natural way to determine the effect of choice on school policies would be to compare choice and nonchoice schools with students who are similar in terms of their measured aptitude and demographics (race, parental income, gender, age). It is common to carry out such a comparison by means of a linear regression of a school policy measure, such as hours of homework, on variables that indicate students' aptitude and demographics and on a variable that indicates whether the school is a choice school—that is, a school that students must actively choose in order to attend.<sup>13</sup> Examples of

12. Faculty are measured in full-time equivalents.

13. The typical study that tries to estimate the effect of school choice on curricular and extracurricular policies uses an equation of the general form

$$P_{ijk} = C_{ijk}\alpha + X_{ijk}\beta + \epsilon_{ijk},$$

where the subscripts are for school  $i$  in district  $j$  in metropolitan area  $k$ .  $P$  is a policy such as hours of homework or a structured school day.  $C$  is an indicator for whether school  $ijk$  is a choice school.  $X$  is a vector of variables that characterize the student body, parents, and community attached to school  $ijk$ .  $\epsilon$  is a residual comprising all the unmeasured determinants of the policy  $P$ .

Table 11-1. *Summary of Curricular and Extracurricular Policies of Schools in Metropolitan Areas from the National Education Longitudinal Study*

Variable	Mean	Standard deviation
Number of times parents have discussed curriculum with student	1.98	0.35
Number of times parents have visited school in a year	1.39	0.36
Percent of parents who attend PTA meetings	8.32	21.18
Percent of parents who attend regularly scheduled parent-teacher conferences	8.45	20.25
Parents' involvement in school policy decisions <sup>a</sup>	2.44	0.91
Percent of tenth grade students who take AP courses	7.65	10.01
Percent of twelfth grade students who take AP courses	19.06	16.59
Regular mathematics sequence culminates in twelfth grade course with some calculus	0.50	0.47
Minutes in class per school day	342	38
Action taken against student who causes classroom disturbance <sup>b</sup>	1.13	0.40
Structured classroom environment <sup>c</sup>	4.13	0.77
Structured school day <sup>c</sup>	4.51	0.82
Deviation from school rules not tolerated <sup>c</sup>	4.26	0.81
School environment is flexible <sup>c</sup>	3.48	0.99
School emphasizes sports <sup>c</sup>	3.15	1.07
Ratio of physical education teachers to core subject teachers	0.19	0.12
Number of extracurricular activities sponsored by school	17.34	3.39
Percent of students who participate in varsity sports	44.86	17.73
Percent of students who participate in intramural sports	57.40	15.92
Percent of students who participate in band, choir, or orchestra	24.30	14.03
Ratio of English grades to standardized reading test score <sup>d</sup>	0.99	0.16
Ratio of math grades to standardized math test score <sup>d</sup>	0.96	0.16
Hours spent on homework per week	5.37	1.57
Students place priority on learning <sup>c</sup>	3.63	0.81
Students do homework <sup>c</sup>	4.40	0.80

Source: Author's calculations.

a. Measured on a scale from 0 (not at all) to 4 (very much).

b. First offense.

c. Measured on a scale from 1 (not at all accurate) to 5 (very accurate).

d. Multiplied by 20.

choice schools are charter schools, pilot schools, magnet schools, voucher schools, or within-district choice schools.

A serious selection problem, however, plagues such comparisons. Parents and children who select choice schools differ from those who do not, not just on observable traits (for which one might hope to control) but also on unobservable traits, such as motivation. Only a small percentage of students opt to attend choice schools, and they are probably unusual even among students who appear similar based on observable traits like gender, race, parental income, and previous academic performance. The comparison between choice and nonchoice schools does not allow one to disentangle the effects of being a choice school from the effects of unobservable differences in the people served by the choice school. Put another way, parents and children who would select choice schools might act differently from others even if they used regular schools, so that policy in choice schools will reflect both different policy decisions and different types of student.<sup>14</sup>

Some researchers have sought to address the selection problem by measuring choice at the district level rather than at the school level. That is, a district is specified to be a choice district if it contains at least one school that students must actively choose to attend. The other schools in the district may enroll students purely on the basis of residential location or some or all of them may be choice schools (intradistrict choice). The comparison of choice and nonchoice districts can illustrate how policy is affected when schools are subjected to more parental pressure because of choice—even if they are schools that merely lose students to choice schools. It is common to carry out this type of comparison by means of a linear regression of a school policy measure, such as hours of homework, on variables that describe the demography of the school and on a variable that indicates whether the district is a choice district.<sup>15</sup>

14. Formally,

$$\text{Prob}(C_{jk} = 1) = f(X_{jk}, \epsilon_{jk}) \Rightarrow \text{cov}(C_{jk}, \epsilon_{jk}) \neq 0,$$

so that estimates of  $\alpha$  are likely to be biased, reflecting the type of student likely to attend a choice school.

15. That is, one estimates an equation of the form

$$P_{ijk} = C_{jk}\delta + X_{ijk}\gamma + \eta_{jk} + \eta_{ijk},$$

where  $C_{jk}$  is an indicator variable for district  $jk$  being a choice district, and  $\eta_{jk}$  and  $\eta_{ijk}$  are, respectively, district-level and school-level residuals.

This empirical strategy remedies the selection problem discussed above because schools in a choice district must, on average, deal with all the parents and students in the district, not just those who actively choose. But the strategy leaves the problem that choice programs are likely to be responses to underlying circumstances in the district. For instance, large urban districts with heterogeneous populations or floundering schools sometimes respond by instituting intradistrict choice programs. In some cases, intradistrict choice programs are a method of complying with a court order to desegregate. A district that gets an innovative superintendent may also be more likely to implement an intradistrict choice program. Put another way, comparisons of choice and nonchoice districts do not allow one to distinguish the effects of having a choice program from the effects of the circumstances that generated the program.<sup>16</sup>

For unbiased estimates of the effect of choice on school policy, one must have variation in the degree of choice that is independent of (exogenous to) the circumstances of individual schools and districts. If there were a statewide choice program that had been in effect long enough to have affected school policies by the late 1980s, one might argue that the degree of choice in that state had changed in a manner exogenous to the circumstances of individual districts. However, the earliest, reasonably comprehensive program of this type is that of Minnesota, which was only instituted in 1986. When the NELS began, in 1988, sufficient time had not elapsed for Minnesota's interdistrict choice program to have affected the policies of its schools. Statewide programs may be a subject for future research.<sup>17</sup>

Even so, focusing on statewide programs would neglect a far more important source of variation in the degree of school choice available in the United States: variation due to differences in school districting. In some metropolitan areas, parents face a wide array of school districts in which to reside and school their children. Other metropolitan areas contain only

one or a few school districts. The residential choices that households make among school districts ("Tiebout choice") are currently the most powerful form of choice affecting schools.<sup>18</sup> In fact, relative to the amount of household sorting among districts caused by the Tiebout process of residential choice, the amount of student reallocation caused by even the most comprehensive school choice programs has so far been very small. By pointing this out, I do not deny the importance of interdistrict school choice programs. Indeed, contestable markets theory indicates that one need not see any students switch districts to conclude that schools are affected by interdistrict choice. The *potential* to lose or gain students may force schools to behave differently. What I do mean to point out is how unwise it would be to examine only programs with the word "choice" in their titles while ignoring the largest and most widespread source of variation in current school choice.<sup>19</sup>

Formally, Tiebout choice affects school policy because an administrator who institutes policies that deviate from those preferred by parents tends to deter homebuyers, and thus depresses house prices in the district. By means of the property tax, lower house prices result in a smaller budget for schools, which discourages the administrator from pursuing the disfavored policies. Because residential decisions are based more heavily on school conduct when parents have greater opportunity for Tiebout choice, greater opportunity for Tiebout choice intensifies the response of house prices and school budgets to parents' preferences.

The large amount of variation in Tiebout choice among metropolitan areas allows one to derive estimates of the effect of choice on school policy by comparing metropolitan areas. In the next section, I discuss how to construct a measure of school choice based on potential Tiebout choice. Here it is only important to recognize that the results of this chapter are free from biases due to selection and endogenous programs so long as people do not choose to live in a metropolitan area based on its potential for Tiebout choice.

16. That is, there is potential bias from policy endogeneity. Formally,

$$\text{Prob}(C_{jk} = 1) = g(\eta_{jk}) \Rightarrow \text{cov}(C_{jk}, \eta_{jk}) \neq 0,$$

so that estimates of  $\delta$  are likely to be biased, reflecting the types of district likely to introduce choice programs.

17. One might worry that state choice programs are endogenous to state circumstances. It appears, however, that endogeneity is not a problem in the case of Minnesota, since its circumstances were quite similar to those of neighboring states.

18. Tiebout (1956) initiated a large body of research on local public goods. Tiebout choice is the process whereby households explicitly choose their place of residence based on the availability and costs of local public goods and other amenities.

19. Moreover, it would be wrong to look at the partial effect of school choice programs without considering an area's potential for Tiebout choice. The potential choice provided by interdistrict choice programs depends on the underlying Tiebout process.

## Implementing the Empirical Strategy

I use a number of linear regressions to carry out this empirical strategy. In each, a measure of school policy, such as hours of homework, is regressed on variables that describe the demography of a school and on a measure of Tiebout choice in the metropolitan area. A few issues arise in estimating these regressions.<sup>20</sup>

The first issue is how to measure the amount of Tiebout choice in a metropolitan area. One needs a measure that reflects the costs to a household of choosing among school districts within the area. But I am not primarily concerned with the costs of changing residences—such costs do not differ much among metropolitan areas and are incurred infrequently. Rather, I focus on the chronic losses of well-being associated with choosing a residence that would not be preferred other than for its association with a particular school.

Examples will clarify this idea. Suppose that a metropolitan area has one very large school district that covers most of the housing available in the area. Then a family might have to choose a residence with an undesirably long work commute for the parents in order to exercise Tiebout choice. Similarly, suppose that a metropolitan area contains only a few school districts and that they are stratified, so that one has the best houses. Then a middle-income family may only be able to choose from one or two districts that contain residences that match its housing desires. If the middle-income family prefers a school with a very challenging curriculum, and if this is an unusual preference for families of its income, it may not be able to satisfy its schooling desires unless it chooses to reside in a school district where it must overconsume housing (buy a better house than it desires) and sacrifice other types of consumption. By contrast, if the metropolitan area has twenty school districts that include houses for middle-income

20. The regression equations are of the type

$$P_{ijk} = C_k \lambda + X_{ijk} \mu + \omega_k + \omega_{jk}.$$

Here,  $C_k$  is a measure of the potential for Tiebout choice in metropolitan area  $k$ ,  $\omega_k$  is a metropolitan-area wide residual, and  $\omega_{jk}$  is a school-specific residual. The formal identifying assumption is  $\text{cov}(C_k, \omega_k) = 0$ . This equation must be estimated with a metropolitan area-specific random effect, as well as a school-specific random effect. In practice, this requires an adjustment to the standard errors as described by Moulton (1986). It is not necessary to allow both a school-specific random effect and a district-specific random effect, because I observe only one school within each district.

families, middle-income parents who prefer very challenging curriculums can sort themselves into one of the twenty districts and satisfy their preferences without being forced to overconsume housing and underconsume other goods.

In other work I have demonstrated that a good measure of the number and variety of school districts in a metropolitan area is a Herfindahl index of enrollment concentration.<sup>21</sup> Herfindahl indexes are a widely accepted means of measuring market concentration because they take account of both the number of choices and the availability of each choice. I construct a Herfindahl index for each metropolitan area in the following manner. First, I compute each school district's share of total enrollment in the metropolitan area. I square these shares, sum the squared shares within each metropolitan area, and then multiply by  $-1$ .<sup>22</sup> The resulting measure is easy to interpret. The Herfindahl index is equal to  $-1$  if there is no choice at all—that is, if one school district contains all the enrollment. The index moves toward zero as the number of school districts increases and as enrollment is spread more evenly across these districts. For instance, metropolitan areas with two, five, twenty, and fifty equal-sized school districts have indexes equal to, respectively,  $-0.5$ ,  $-0.2$ ,  $-0.05$ , and  $-0.02$ . The key points to remember are, first, that the lower the index, the less choice among districts there is in a metropolitan area; and second, that the difference between a metropolitan area with no choice and one with a lot of choice is approximately a one-unit change in the index.

The average metropolitan area in the United States has an index of Tiebout choice equal to  $-0.17$ . There is, however, a great deal of variation:

21. Hoxby (forthcoming).

22. Formally, the index for metropolitan area  $k$  is equal to

$$-\sum_{j=1}^J s_{jk}^2,$$

where  $s_{jk}$  is school district  $j$ 's share of the total enrollment in metropolitan area  $k$ . The index is multiplied by  $-1$  so that it increases when choice increases. I base the index on enrollment because this provides the most informative summary of the relevant choice and availability of school districts—for instance, whether the housing stock and neighborhood are appropriate for school-aged children. In Hoxby (forthcoming), however, I demonstrate that the results are not sensitive to basing the index on alternative variables, such as the land area of a school district or the number of housing units that it contains. Borland and Howsen (1992) were the first to use a Herfindahl index in this type of context.

the standard deviation in the index is 0.18. Large metropolitan areas do not necessarily have a lot of districts. For example, Miami is a large metropolitan area but has only one school district. At the other extreme, Boston has seventy school districts within a thirty-minute commute of its downtown and 130 districts within the boundaries of its metropolitan area. If one controls for the size of the metropolitan area—by controlling for population, the square of population, land area, and the square of land area—the standard deviation is only slightly smaller at 0.16.

The second issue that arises in estimating the effect of Tiebout choice is due to the fact that successful school districts tend to attract enrollment. That is, parents with school-aged children are likely to concentrate in school districts that are good in unobservable ways—for instance, districts with unusually dedicated teachers. Such parental behavior biases results toward finding that metropolitan areas with highly concentrated enrollment (that is, little choice among districts) have desirable schools. Put another way, reverse causality can generate bias. A central city district that offers good schools keeps residents in the city who would otherwise live in suburban districts, thus concentrating enrollment in one district. In this case, because there are good schools, one observes little choice. One does not observe good schools because there is little choice.

In order to reduce such bias due to reverse causality, one must focus on a metropolitan area's *potential* for Tiebout choice. That is, one wants to know if the metropolitan area is inherently likely to be divided into many districts, and to ignore enrollment concentration resulting from parents choosing more successful districts. To achieve this, I estimate the regressions by instrumental variables (IV), where the instrumental variables are natural boundaries in a metropolitan area. Intuitively, the procedure works as follows. When metropolitan areas were initially divided into districts, boundaries often followed natural boundaries, such as streams, because these affected the time it took students to travel to school. As modes of travel changed and natural boundaries were bridged, the importance of such considerations waned, but the residual influence of natural boundaries can still be seen in school district boundaries today. Because natural boundaries affected district boundaries long before modern school conduct, instrumental variables estimation isolates variation in school districting that is independent of responses to school conduct. As a measure of natural boundaries, I use the number of features classified by the U.S. Geological Survey as streams (rivers, brooks, streams, all

other linear natural water features) in the metropolitan area.<sup>23</sup> I show both ordinary least squares (OLS) and instrumental variables estimates.

The final issue that arises in estimating the regressions is how to differentiate between the effects of choice and the effects of a homogeneous student body.<sup>24</sup> This issue is somewhat subtle. Schools do not base their policies only on the average characteristics of students and the force of parents' preferences, but also take into account the homogeneity of their students. For instance, an administrator with heterogeneous students may choose a highly structured school environment, in order to minimize opportunities for conflict among students. If the administrator had, on average, similar students who were more homogeneous, he might choose a less structured environment. The fact that homogeneity may affect policy is problematic because greater Tiebout choice generally results in more homogeneous student bodies. The effects of choice should be distinguished from the effects of homogeneity not only for intellectual reasons, but also because many proposed choice reforms, in contrast to Tiebout choice, explicitly constrain the degree to which students can sort themselves into homogeneous schools.

To address the issue, I control for measures of population homogeneity within districts in the regressions. The inclusion of homogeneity measures

23. I used 1:24,000 U.S. Geological Survey quadrangle maps and the Geographic Names Information System to gather topographical data. I divide streams into two types: large and small. The idea behind this division is the following. Some metropolitan areas are not generally "watery" but do have a few large streams. These are more formidable natural barriers, more likely to form county boundaries, and are rarely crossed by school districts, even when districts are consolidated. Other metropolitan areas are watery and have a large number of small streams. In many cases, these metropolitan areas were initially divided into smaller school districts, but it is more likely that the districts were consolidated across the small streams over time. Hoxby (forthcoming) contains details of the data and results of over-identification tests for the exogeneity of the number of streams as an instrumental variable.

The relevant identifying assumption is that there is nothing about the number of streams that induces the population of a metropolitan area to display characteristics that have independent effects on school curriculums. It is worth pointing out that the number of streams in a metropolitan area is not correlated with industrial composition. This is because the majority of classified streams at the 1:24,000 level are large enough to provide a natural barrier but not large enough to motivate industrial location.

The results of the first-stage regression are as follows. The estimated coefficient on the number of large streams (divided by 10) is 0.2143, with a standard error of 0.0470. The estimated coefficient on the number of small streams (divided by 100) is 0.1056, with a standard error of 0.0356. The standard errors are adjusted for the grouped structure of the data (grouped by schools and metropolitan areas) as described in Moulton (1986). The number of metropolitan areas in the regression is 290, though the first-stage regression for the instrumental variables estimates uses 769 school-level observations and includes all the covariates, except the choice index, listed in table 11A-1 of appendix 11A. Thus the coefficient estimate on the choice index is identified by the two stream variables only.

24. This issue also applies to the common naive methods of estimating the effects of choice.

is the reason why it is essential to use data from the Public School Universe and school district tabulation of the census. These data allow one to calculate measures of within-district homogeneity in family income, educational attainment, race, ethnicity, age, family composition, and house prices.

## Results

The estimates of the effect of choice on school policy are presented in tables 11-2 to 11-6. Both OLS and IV estimates are shown, but the IV results are to be preferred for their lack of bias. In any case, the OLS and IV results always have the same signs, though not the same magnitudes. Only the estimated coefficients on the variables of interest are shown, but table 11A-1 shows an example of the full regression results. The small effective sample size does not always allow for precise estimates, so it is useful to check whether the estimated effects on similar dependent variables—for instance, the various measures of parental involvement—have the same sign.<sup>25</sup>

### *The Effect of Choice on Parental Involvement*

Proponents of school choice suggest that parents who have more choice will become more involved in school decisionmaking, while opponents suggest the opposite. Table 11-2 shows the effects of greater Tiebout choice on parental involvement. Both the OLS and IV estimates suggest that choice increases parental involvement. For instance, a one-unit increase in the choice index would lead parents to discuss curriculum with their children 0.6 more times and visit the school once more each year. The same increase in choice would lead the administrator to raise his assessment of parental involvement in policymaking by almost 2 points on a scale ranging from 0 to 4. This is an increase of 2 standard deviations in assessed involvement. This subjective evidence is especially useful because it comes from the policymaker, who is in a position to know how much parents are involved in his decisions. The OLS estimates also suggest that greater

25. I show results from linear estimates because there is no established method of generating efficient standard errors for grouped data in instrumental variables probit and ordered probit estimations. The coefficient estimates from linear estimation are similar to those from IV probit and ordered probit estimation. Angrist (1991) shows that under quite general conditions, linear instrumental variables estimates are consistent for categorical dependent variables.

Table 11-2. *Effect of Choice among Public Schools on Parental Involvement<sup>a</sup>*

<i>Dependent variable</i>	<i>Coefficient on choice index</i>	
	<i>OLS</i>	<i>IV</i>
Number of times parents have discussed curriculum with student	0.4285 (0.0803) [5.3396]	0.6186 (0.2762) [2.2401]
Number of times parents visit school in a year	0.0090 (0.0782) [0.1152]	0.9630 (0.2888) [3.3351]
Percent of parents who attend PTA meetings	10.6285 (5.7153) [1.8596]	12.3206 (19.3124) [0.6380]
Percent of parents who attend regularly scheduled parent-teacher conferences	7.7152 (5.2737) [1.4630]	8.0830 (18.1998) [0.4441]
Parent involvement in school policy decisions <sup>b</sup>	0.6741 (0.2291) [2.9430]	1.9813 (0.7743) [2.5588]
<i>Summary statistic</i>		
Number of observations	769	76

Source: Author's calculations as described in text.

a. Measure of choice is a Herfindahl index based on the enrollment of school districts (see text for further details). It is multiplied by  $-1$ , so that an increase in the index indicates an increase in choice, rather than in concentration. Standard errors, adjusted as described in Moulton (1986), are in parentheses.  $t$  statistics for test of  $H_0: \alpha = 0$  are in brackets. The vector  $X$  includes all the covariates listed in table 11A-1 of appendix 11A.

b. Measured on a scale from 0 (not at all) to 4 (very much).

choice causes a greater percentage of parents to attend PTA meetings and regularly scheduled parent-teacher conferences.

These results suggest that parents think that they get more return from involvement when they have more choice—perhaps because administrators are more willing to set policy in accord with parental preferences when the threat of parent exit is more viable. Such an outcome would be consistent with bargaining theory, which suggests that when a party has better outside

options, negotiations result in an agreement closer to the party's preferred position, and thus the party is more likely to engage in negotiation. In other words, the existence of greater exit opportunities does not necessarily mean that the option is exercised more often. Instead, exit opportunities can create greater inside response to voice. It appears that, at least for parents and schools, exit and voice are complementary tools.

### *The Effect of Choice on the Curriculum*

Table 11-3 shows results for three measures of how challenging a school's curriculum is. The three measures all indicate how difficult the courses taken by the school's typical student are, relative to nationally uniform standards. A one-unit increase in the choice index raises the percentage of tenth and twelfth grade students who take AP courses by, respectively, 35 percentage points and 20 percentage points. The same increase in choice would generate a 23 percent increase in the probability that the school's regular mathematics sequence culminates in a twelfth grade class that includes some calculus.

In other words, schools that are under more pressure from parental choice apparently subject their students to more intellectually challenging study. These results are interesting because they confirm survey evidence, in which the majority of parents claim that they want their children to experience more challenging curriculums. The results imply that if left to their own devices, schools would allow students to pursue easier curriculums than parents desire. Perhaps this is not surprising. Even if teachers and administrators wish, in the abstract, that students could pursue difficult material, they bear much of the work of propelling students forward. They must motivate less industrious students, deal with students who are disgruntled about a difficult task, and grade complex and lengthy assignments.

This evidence is also consistent with evidence from one of my previous studies, which shows that students score better on achievement tests and are more likely to attend college if they attend schools that face more competition from other public schools.<sup>26</sup> Jay Giroto and Paul Peterson, in chapter 9 above, demonstrate that student achievement improves when students take more challenging courses. It is reasonable to infer that this is one mechanism in the black box of how school choice translates into student outcomes: schools that face more choice are induced to deliver more

Table 11-3. *Effect of Choice among Public Schools on the Curriculum<sup>a</sup>*

<i>Dependent variable</i>	<i>Coefficient on choice index</i>	
	<i>OLS</i>	<i>IV</i>
Percent of tenth grade students who take AP courses	5.2587 (2.8795) [1.8263]	35.5730 (10.5459) [3.3732]
Percent of twelfth grade students who take AP courses	11.8423 (3.9959) [-2.9636]	20.3250 (14.6169) [1.3905]
Regular math sequence culminates in twelfth grade course with some calculus	26.0900 (12.3550) [2.1117]	23.0345 (26.4867) [0.8697]
<i>Summary statistic</i>		
Number of observations	769	769

Source: Author's calculations as described in text.

a. Measure of choice is a Herfindahl index based on the enrollment of school districts (see text for further details). It is multiplied by -1, so that an increase in the index indicates an increase in choice, rather than in concentration. Standard errors, adjusted as described in Moulton (1986), are in parentheses. *t* statistics for test of  $H_0: \alpha = 0$  are in brackets. The vector *X* includes all the covariates listed in table 11A-1.

strenuous curriculums to their students, who have higher achievement as a result.

### *The Effect of Choice on the Academic Environment*

In surveys and interviews the majority of parents say that they favor stricter academic standards in schools—that is, schools should set standards and stick to them. Such statements relate to the consistency with which academic standards are applied and to the work habits of students, rather than to the intellectual content of the material. Table 11-4 shows the effects of choice on several variables that encompass possible interpretations of such statements. For instance, one might think of strict standards as a ban on grade inflation, which is measured by the first two dependent variables in the table. The results indicate that schools operating in an environment where parents have more choice allow not less grade inflation but more. For instance, a one-unit increase in the choice index causes English grades

26. See Hoxby (forthcoming).

Table 11-4. *Effect of Choice among Public Schools on the Academic Environment<sup>a</sup>*

<i>Dependent variable</i>	<i>Coefficient on choice index</i>	
	<i>OLS</i>	<i>IV</i>
Grade inflation index for English <sup>b</sup>	0.5129 (0.1440) [3.5556]	1.4880 (0.5020) [2.9760]
Grade inflation index for math <sup>b</sup>	0.8400 (0.1442) [4.3333]	1.1321 (0.4879) [2.2787]
Hours spent on homework per week	0.6642 (0.3272) [2.0303]	1.8083 (1.1182) [1.6172]
Number of standardized credits required for high school diploma	0.4136 (0.5450) [0.7589]	5.3072 (0.9474) [2.7253]
Students place priority on learning <sup>c</sup>	0.6984 (0.1853) [3.7690]	0.3160 (0.4252) [0.7432]
Students do homework <sup>c</sup>	0.2316 (0.1765) [1.1326]	0.4293 (0.4071) [1.0544]
<i>Summary statistic</i>		
Number of observations	769	769

Source: Author's calculations as described in text.

a. Measure of choice is a Herfindahl index based on the enrollment of school districts (see text for further details). It is multiplied by  $-1$ , so that an increase in the index indicates an increase in choice, rather than in concentration. Standard errors, adjusted as described in Moulton (1986), are in parentheses.  $t$ -statistics for test of  $H_0: \alpha = 0$  are in brackets. The vector  $X$  includes all the covariates listed in table 11A-1.

b. The grade inflation index rises by one unit for every letter grade of grade inflation (see text for further details).

c. Measured on a scale from 1 (not at all accurate) to 5 (very accurate).

to inflate by about one and a half letter grades, and math grades by about one letter grade.

This inflation suggests that parents respond to the incentives given by college admissions, assuming that admissions officers have difficulty adjusting fully for grade inflation, since they look at transcripts from so many

schools. Alternatively, employers or parents themselves may be misled by inflated grades. For instance, parents may not adjust fully for grade inflation when they examine their children's report cards to determine how well they are matched to their schools. Any or all of these scenarios would explain why more parental pressure would generate grade inflation. Note, however, that the grade inflation goes hand in hand with higher actual achievement. As discussed above, schools that face more choice subject students to more challenging curriculums and induce better performance on standardized tests. Apparently, grade inflation does not mute incentives to perform.<sup>27</sup>

Other dependent variables in table 11-4 measure whether a school induces its students to develop good habits of work and learning. The results indicate that schools are more likely to do so when they are subject to greater choice. A one-unit increase in the choice index causes students to report doing 1.8 more hours of homework each week. It also causes administrators to raise their assessments of students' priority on learning and homework completion rate (the latter estimate is not significantly different from zero at conventional levels of statistical significance.)

Thus real phenomena, such as homework, suggest that parents are reporting honestly when they claim to want strict academic environments. However, strict real standards can apparently be combined with lenient nominal standards, that is, grade inflation. Somewhere there is sufficient "grade illusion"—among parents, college admissions officers, or employers—that the pressures of choice create grade inflation. Fortunately, the inflation does not adversely affect the average student's real achievement.

Overall, this evidence suggests that John Bishop is partly right but too extreme in his analysis of the importance of external examinations in chapter 10 above. Parents are capable of assessing some school policies, such as homework requirements and difficulty of the curriculum, and choosing schools that offer policies closer to their preferences. But the fact that parental choice does not constrain grade inflation suggests that someone is fooled by inflated grades and, in equilibrium, would offer stronger perfor-

27. Costrell (1994) shows that raising standards strengthens performance incentives for some students, while weakening performance incentives for others. Thus the average effect of raising standards depends on how students are distributed relative to the standard. Betts (1997) also investigates this issue. However, these papers assume that standards are absolute and correctly perceived by college admissions officers, employers, and other external authorities. If external authorities are mistaken, grade inflation presents a somewhat different incentive situation: performance incentives will depend on whether the external reward for moving from a B to an A, say, is greater than that for moving from a C to a B.

mance incentives to students if they were able to observe absolute scores accurately.

There is reason to think that the key people fooled by grade inflation are college admissions officers and employers. Admissions officers and employers must compare students from a wide array of secondary schools, they have almost no direct or inside knowledge of what the students experience at different schools, and they have to attempt to control for demographics across students who come from diverse backgrounds. By contrast, parents who are able to choose among school districts face a much simpler inference problem. Generally, they canvass other parents who are similar in terms of demographics and income and ask about their children's actual experiences. They do not want to "control" for demographics, they do not have to correctly assess schools that serve parents with very different incomes, they need not rely exclusively on external indicators of student experience.

#### *The Effect of Choice on a School's Emphasis on Structure and Discipline*

Since schools are mainly academic institutions, it is not surprising that parents think of academics first when they think of schools. But after academics, the factor that parents most often cite when they try to explain their choice of schools is discipline. In fact, insistence that discipline should be a priority is one of the most consistent patterns to emerge from parent surveys. It is striking that discipline should consistently rank higher than sports, extracurricular activities, or career and college guidance. However, teachers and administrators often argue that parents do not truly want schools to emphasize discipline. They claim that parents want other people's children to behave well but do not want their own children to be disciplined. It may be that teachers and administrators are focusing on the subset of parents whose children frequently face disciplinary measures. It is likely that such parents' attitudes toward discipline are not representative of the population of parents.

Table 11-5 shows the effects of choice on several variables that measure a school's disciplinary atmosphere. A one-unit increase in the choice index raises the severity of the action taken against a student who causes a classroom disturbance by 0.8 on a scale that ranges from 0 to 3.<sup>28</sup> This

28. I focus on classroom disturbances because nearly every school deals with classroom disturbances frequently enough to have a standard response. In contrast, some administrators may only be able to conjecture how they would respond to one student threatening another with a gun.

Table 11-5. *Effect of Choice among Public Schools on the Emphasis on Structure and Discipline<sup>a</sup>*

<i>Dependent variable</i>	<i>Coefficient on choice index</i>	
	<i>OLS</i>	<i>IV</i>
Minutes of class time in school day	21.9715 (10.2871) [2.1358]	48.6056 (37.1735) [1.3075]
Action taken against student who causes classroom disturbance <sup>b</sup>	0.2661 (0.0993) [2.6811]	0.8133 (0.3459) [2.3513]
Structured classroom environment <sup>c</sup>	0.4127 (0.1935) [2.1328]	1.2115 (0.6702) [1.8077]
Structured school day <sup>c</sup>	0.3557 (0.2048) [1.7372]	2.3334 (0.7345) [3.1769]
Deviation from school rules not tolerated <sup>c</sup>	0.2450 (0.1985) [1.2343]	0.8801 (0.6924) [1.2711]
School environment is flexible <sup>c</sup>	0.1305 (0.2517) [0.5186]	1.5436 (0.8894) [1.7356]
<i>Summary statistic</i>		
Number of observations	769	769

Source: Author's calculations as described in text.

a. Measure of choice is a Herfindahl index based on the enrollment of school districts (see text for further details). It is multiplied by -1, so that an increase in the index indicates an increase in choice, rather than in concentration. Standard errors, adjusted as described in Moulton (1986), are in parentheses. *t* statistics for test of  $H_0: \alpha = 0$  are in brackets. The vector *X* includes all the covariates listed in table 11A-1.

b. For first offense, measured on a scale from 0 (warning) to 3 (expulsion).

c. Measured on a scale from 1 (not at all accurate) to 5 (very accurate).

point difference is the difference between "a warning" and "a minor action against the student" or between "a minor action against the student" and "suspension." The table also shows that administrators who face more choice state that their schools and classrooms are more structured. Similarly, schools that face more choice are less likely to be described as having a flexible environment.

It appears that Tiebout choice pressures schools to emphasize discipline and provide more structure. Thus there appears to be some truth in parents' claims that they prefer schools that deliver discipline and structure. The results imply that if allowed to set policy on their own, teachers and administrators would choose less structure and discipline than would parents. One need not infer that teachers and administrators actually like disciplined students less than do parents. It may be that school staff bear more of the costs associated with maintaining school discipline. Bishop points out that staff who confront students and mete out consistent discipline end up with hostile working conditions.<sup>29</sup>

#### *The Effect of Choice on the Priority of Sports and Extracurricular Activities*

If parents place more weight on athletics or other extracurricular programs than do school staff, greater parental choice would cause schools to shift emphasis from academics to extracurricular programs. This concern is often voiced by opponents of school choice, even though in representative surveys the average parents rank sports and extracurricular activities low among their reasons for choosing a school. Nevertheless, it is a possibility.

Table 11-6 reports results relating sports and other extracurricular activities to choice. They do not confirm the fear that more choice for parents would expand the priority given to athletics and extracurricular activities. None of the first three measures—a subjective assessment of whether the school emphasizes sports, the ratio of physical education faculty to faculty teaching core subjects, and the number of extracurricular activities sponsored by the school—has a statistically significant relationship with the choice index. The next three measures are the percentages of students who participate in, respectively, varsity sports, intramural sports, and band, choir, or orchestra. The estimated coefficients on these measures indicate that a one-unit increase in the choice index lowers the percentage of students who participate in varsity sports by 6.4 percentage points and the percentage who participate in band, choir, or orchestra by 8.6 percentage points.

Overall, the evidence in table 11-6 is too inconsistent to warrant the conclusion that choice actually suppresses sports and other extracurricular programs. However, it does not support the hypothesis that choice would sacrifice academic programs to extracurricular activities.

Table 11-6. *Effect of Choice among Public Schools on the Priority of Sports and Extracurricular Activities<sup>a</sup>*

<i>Dependent variable</i>	<i>Coefficient on choice index</i>	
	<i>OLS</i>	<i>IV</i>
School emphasizes sports	-0.1300 (0.2562) [-0.5075]	-0.6858 (0.9008) [0.7614]
Ratio of physical education teachers to core subject teachers	-0.0701 (0.0848) [-0.8271]	0.0280 (0.0247) [1.1336]
Number of extracurricular activities sponsored by school	1.2512 (2.5781) [0.4853]	0.7849 (0.8191) [0.9582]
Percent of students who participate in varsity sports	-0.1988 (0.1185) [-1.6783]	-0.0638 (0.0346) [-1.8439]
Percent of students who participate in intramural sports	0.1068 (0.1297) [0.8238]	-0.0265 (0.0379) [-0.6992]
Percent of students who participate in band, choir, or orchestra	-0.1240 (0.1064) [-1.1654]	-0.0864 (0.0313) [-2.7648]
<i>Summary statistic</i>		
Number of observations	769	769

Source: Author's calculations as described in text.

a. Measure of choice is a Herfindahl index based on the enrollment of school districts (see text for further details). It is multiplied by -1, so that an increase in the index indicates an increase in choice, rather than in concentration. Standard errors, adjusted as described in Moulton (1986), are in parentheses. *t* statistics for test of  $H_0: \alpha = 0$  are in brackets. The vector *X* includes all the covariates listed in table 11A-1.

b. Measured on a scale from 1 (not at all accurate) to 5 (very accurate).

### The Importance of Accounting for Selection and Endogenous Programs

In introducing my empirical strategy, I emphasized the importance of accounting for selection and endogenous programs. In this section I briefly discuss results from naive strategies to demonstrate that selection and

29. See chapter 9 above and Bishop (1996).

endogenous programs do generate results that are biased, and thus difficult to interpret in any useful way. These results are reported in table 11-7.

First, I compare choice and nonchoice schools. To form an indicator variable for whether an individual school is a choice school, I use two questions on the NELS: whether the school is a magnet school and whether the school is a choice school. I call these schools choice schools to indicate that they only enroll students who choose to attend them, but a choice school can exist in a district where students are not generally allowed to choose their school. For instance, typically only some students qualify to choose whether to attend a magnet school. Sixteen percent of the schools in the NELS are described by their administrators as either magnet or choice schools.

Estimates based on comparing choice and nonchoice schools will suffer from selection bias if the parents and students who choose their schools differ in unobservable ways from the general population. The results will be difficult to interpret if they suffer from bias. One cannot confidently predict the sign of the bias, because choice schools draw from both ends of the student spectrum. Some magnet schools enroll only high-aptitude students, but others enroll only students who are likely to drop out.

As expected, the results in table 11-7 present an inconsistent picture. For instance, choice schools tend to have parents who discuss curriculums with their children less often, but also tend to have higher assessed levels of parental involvement in decisionmaking. Choice schools have slightly greater percentages of tenth graders taking AP courses, but are less likely to have regular mathematics sequences that culminate in a twelfth grade course than contains some calculus. They have less grade inflation, but no evidence of more homework. They have a higher ratio of physical education teachers to core subject teachers, but administrators' assessments suggest that their emphasis on sports is no greater. The only pattern that stands out clearly is that choice schools provide a less structured environment and more lenient discipline than other schools. This finding is reassuring, because choice schools, regardless of whether they are targeted to high-ability students or likely dropouts, often try to free students from conventional constraints on the pace and content of learning.

Next, I compare choice and nonchoice districts. I form the indicator for choice districts using information on intradistrict choice programs from state departments of education. To be classified as a choice district, a district must routinely and generally allow students to choose their school

Table 11-7. *Effect of Other Measures of School Choice on Curricular and Extracurricular Policies<sup>a</sup>*

<i>Dependent variable</i>	<i>Measure of choice</i>	
	<i>Choice school</i>	<i>Choice district</i>
Number of times parents have discussed curriculum with student	-0.0425 (0.0227) [-1.8764]	0.0002 (0.0166) [0.0120]
Parent involvement in school policy decisions <sup>b</sup>	0.2518 (0.0702) [3.5895]	0.0251 (0.0508) [0.4946]
Percent of tenth grade students who take AP courses	1.2666 (0.8310) [1.5242]	0.5514 (0.5968) [0.9239]
Regular mathematics sequence culminates in twelfth grade course with some calculus	-0.1153 (0.0387) [-2.9793]	-0.0624 (0.0276) [-2.2650]
Action taken against student who causes a classroom disturbance <sup>c</sup>	-0.0550 (0.0280) [-1.9643]	-0.0348 (0.0205) [-1.7017]
Structured classroom environment <sup>c</sup>	-0.1762 (0.0543) [-3.2479]	-0.1048 (0.0398) [-2.6365]
School emphasizes sports <sup>d</sup>	-0.0384 (0.0740) [-0.5189]	0.1625 (0.0541) [3.0065]
Ratio of physical education teachers to core subject teachers	0.0222 (0.0079) [2.8101]	-0.0034 (0.0058) [-0.5862]
Ratio of math grades to standardized math test score <sup>e</sup>	-0.0008 (0.0005) [-1.7778]	0.0002 (0.0004) [0.5714]
Hours spent on homework per week	0.0326 (0.1020) [0.3196]	-0.0592 (0.0744) [-0.7957]
Years of required English in grades 9-12	-0.0061 (0.0232) [-0.2635]	-0.0687 (0.0166) [-4.1511]

Source: Author's calculations as described in text.

a. Measures of choice are indicator variables for a school being a choice school or a district being a choice district (see text for further details). Standard errors, adjusted as described in Moulton (1986), are in parentheses. *t* statistics for test of  $H_0: \alpha = 0$  are in brackets. The vector *X* includes all the covariates listed in table 11A-1.

b. Measured on a scale from 0 (not at all) to 4 (very much).

c. For first offense, measured on a scale from 0 (warning) to 3 (expulsion).

d. Measured on a scale from 1 (not at all accurate) to 5 (very accurate).

e. Multiplied by 20.

instead of assigning students to schools based on their area of residence.<sup>30</sup> Eight percent of the districts in the NELS are choice districts. Estimates based on comparing choice and nonchoice districts will suffer from bias if intradistrict choice programs are endogenous responses to district circumstances. Once again, if they suffer from bias, the results will be difficult to interpret, but one cannot confidently predict the sign of the bias. For instance, the intradistrict choice program in Cambridge, Massachusetts, is the brainchild of well-funded administrators who pride themselves on being at the cutting edge of educational policy. In contrast, the program in Richmond, Virginia, is part of a court-mandated desegregation plan.

Apart from reduced emphasis on structure and discipline, similar to that shown for choice schools, the results based on choice districts in table 11-7 do not show a consistent pattern. Comparison of choice and nonchoice districts does not reveal a relationship with parental involvement. Choice districts are less likely to end their regular mathematics sequences with calculus, but lack of emphasis on challenging courses is not confirmed by the percentage of students who take AP classes. Administrators in choice districts are more likely to say that the school emphasizes sports, but emphasis on sports is not confirmed by the ratio of physical education teachers to core subject teachers.

In summary, the results for choice schools and choice districts appear mainly to reflect the types of student and types of district likely to use such programs. One cannot confidently interpret any of the results in table 11-7 as the effects of giving more sway to parental preferences through choice. Naive comparisons produce results that are difficult to interpret and are unreliable indicators of what the average parent seeks in a school.

## Conclusions

Using data on the policies of 769 school districts matched to detailed data on demographics, I find consistent confirmation that what parents say they want out of schools is what they choose when they have the opportunity to do so. I find that schools operating in metropolitan areas where parents can

choose more easily among school districts exhibit more challenging curriculums, stricter academic requirements, and more structured and discipline-oriented environments. I do not find that such schools place a greater emphasis on sports or extracurricular activities. These results confirm survey evidence that the average parents consider athletic and extracurricular programs a low priority compared with academics, discipline, and school atmosphere. Furthermore, I find that parents are more involved in school policymaking and visit schools more often when they have more choice. Choice appears to make parents more, not less, interested in what their local schools do.

An intriguing result is that greater parental choice appears to cause grade inflation. This suggests that someone is fooled by nominal grades, whether college admissions officers, employers, or parents. Fortunately, the grade inflation does not appear to have real effects: students in schools that are subjected to more choice achieve higher scores on standardized tests. That is, the pressure of choice causes schools to raise real standards but lower nominal standards.

In general, the results suggest that choice, which would give parents' preferences more weight relative to those of teachers and administrators, would not undermine academic and disciplinary standards in U.S. schools. On average, parents appear to choose higher academic standards and stricter environments than do school staff. This is not the same as saying the teachers and administrators, as individuals or parents themselves, do not value good academic work or good behavior. The difference in attitude between parents and staff may be due to the fact that it is the staff who have to enforce higher standards in schools, and so they give more weight to the effort that enforcement activities require.

The messages to take away from this study are that parents actually want what they say they want, and that they have relatively traditional goals for schools: students who have learned academic skills, good work habits, and self-discipline. The results imply that school reforms, such as vouchers and charter schools, that allow parents to put more pressure on school policy are likely to trigger somewhat higher academic standards on average, not a collapse of standards.

30. Districts are not classified as choice districts if they allow intradistrict migration only for peculiar circumstances or particular students, such as those who are gifted, likely to drop out, or disabled. In choice districts, students' selections are often constrained by rules about schools' enrollment, racial composition, and gender composition.

## Appendix 11A

### Example of Full Regression Results

Table 11A-1 presents an example of the full regression results. The estimated equation is for the first dependent variable listed in table 11-2: number of times parents have discussed curriculum with a student.

Table 11A-1. *Full Regression Results*<sup>a</sup>

<i>Variable</i>	<i>Coefficient</i>
Choice index	0.4285 (0.0802)
Coefficient of variation for household income in district <sup>b</sup>	-0.0128 (0.0098)
Coefficient of variation for educational attainment in district	0.0178 (0.3281)
Coefficient of variation for monthly housing costs in district <sup>c</sup>	0.0460 (0.0971)
Coefficient of variation for percentage of income spent on housing costs in district	-0.0826 (0.0993)
Coefficient of variation for age in district	-0.0497 (0.0183)
Herfindahl index of racial homogeneity in district <sup>d</sup>	-0.0213 (0.0969)
Median household income in district <sup>b</sup>	0.0037 (0.0038)
Average education attainment in district	0.0458 (0.0213)
Average monthly housing costs in district <sup>c</sup>	0.1034 (0.0463)
Average percentage of income spent on housing in district	-0.0039 (0.0189)
Average age in district	0.0126 (0.0162)
Percent of households receiving AFDC in district	-0.0163 (0.0047)
Percent of households with school-aged children in district	0.0044 (0.0043)
Percent of households below poverty level in district	-0.0027 (0.0049)
Percent of labor force unemployed in district	-0.0133 (0.0096)

(Continued)

Table 11A-1. *Full Regression Results (Continued)*<sup>a</sup>

<i>Variable</i>	<i>Coefficient</i>
Percent of adult population 4-year college graduates in district	0.0039 (0.0022)
Percent of population 65 or older in district	0.0035 (0.0117)
Percent of black students in school	-0.0025 (0.0012)
Percent of Hispanic students in school	-0.0007 (0.0014)
Percent of Asian students in school	-0.0138 (0.0059)
Percent of students eligible for free lunch in school	-0.0007 (0.0009)
Population density in district <sup>e</sup>	0.0131 (0.0067)
School's enrollment in a single grade <sup>c</sup>	-0.0220 (0.0082)
Population in district <sup>f</sup>	0.0705 (0.0875)
Population squared in district <sup>g</sup>	0.0081 (0.0191)
Land area in district <sup>h</sup>	0.1903 (0.0643)
Land area squared in district <sup>i</sup>	-0.0248 (0.0107)
Constant and 8 indicator variables for census divisions	yes
<i>Summary statistic</i>	
<i>R</i> <sup>2</sup>	0.35
Number of observations	769

Source: Author's calculations as described in text.

a. Dependent variable is number of times parents have discussed curriculum with student. Estimates are by OLS. All covariates are included. Standard errors, adjusted as described in Moulton (1986), are in parentheses.

b. Divided by 1,000.

c. Divided by 100.

d. Based on racial and ethnic group.

e. Population per square mile, divided by 1,000.

f. Divided by 1,000,000.

g. Divided by 1,000,000<sup>2</sup>.

h. In square miles, divided by 1,000.

i. Divided by 1,000<sup>2</sup>.

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