

## PARENTAL VALUATION OF CHARTER SCHOOLS AND STUDENT PERFORMANCE

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Students enrolled in charter schools increased by 81 percent from 2002 to 2007, and the number of charter schools increased by 52 percent.<sup>1</sup> Nevertheless, many studies indicate students in charter schools do not score as highly on standard tests as students in traditional public schools. Do parents choose academically inferior schools for their children because other factors are more important? The significance of that question stems from the requirement of scholastically motivated parental choice for competition-induced improvement in public schools. Milton Friedman (1962) and others have argued that parental choice would stimulate public schools to be more academically effective, because dissatisfied parents would move their children from inferior to superior schools, including public charter schools.

This article provides evidence that the value parents place on charter schools, measured by the number of students on an admissions wait list, depends primarily on their academic effectiveness, measured by test scores. An analysis of New Jersey charter schools indicates that a 10 percent increase in test scores results in a 60 to 100 percent increase in the number of students on the waiting list. Also, schools that stress academic excellence in their mission statements have waiting lists 75 percent larger than identical schools

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<sup>1</sup>According to the Center for Education Research (2003, 2007), 1,242,000 students attended 4,147 charter schools in 2007, and 685,00 students attended 2,700 charter schools in 2002.

that do not stress academic excellence. This study indicates that other characteristics of the schools and their students do not significantly affect parental valuation of charter schools. Thus, this study provides support for academic motivated school choice, a basic requirement for a market-driven enhancement of public school effectiveness.

### Previous Research

Charter schools are the most widely available choice schools because they are public schools and face less political opposition from teachers unions than voucher school programs. Charter schools often embrace different philosophies and offer alternative modes of instruction to promote innovation and improvement in public schools. First established in Minnesota in 1991, these new public schools are issued a charter specifying the philosophy, goals, and methods for achieving the goals, and are exempt from some regulations that govern other public schools. There are periodic reviews of the charter schools, and the charter may be revoked if a school does not attract enough students, does not meet its specified goals, or is mismanaged.<sup>2</sup>

The positive assessment of charter schools by parents has fueled the growth of charter schools during the last decade even though the research results on the effectiveness of such schools has been mixed. Studies of Chicago students and a national school sample indicate that students who attended charter schools scored higher on standard tests than students who attended regular public schools (Hoxby and Rockoff 2004, Hoxby 2004). However, studies of Texas students show no difference in performance on standardized tests by charter school students and regular public school students after a two-to-three-year charter school startup period, during which charter school students underperformed (Hanushek et al. 2007, Booker et al. 2007).

In a national sample of fourth grade tests, controlling for student characteristics, Braun, Jenkins, and Grigg (2006) of the National Assessment of Educational Progress (NAEP) found that charter school students scored 4.2 percent lower in reading and 4.7 percent

<sup>2</sup>The Center for Education Research (2007) reports that about 11 percent of charter schools (496 schools) closed nationwide since 1992, while 18 percent closed in New Jersey (17 schools).

lower in math than students of noncharter public schools. Likewise, Bulifco and Ladd (2006) found that North Carolina charter school students scored lower on standard tests than students who attended regular public schools. Meanwhile, Sass (2006) presents evidence that Florida charter school students scored lower on tests initially, but they reached parity with or surpassed regular school students after five years of charter school operation. Hill, Angel, and Christenson (2006) examined every charter school effectiveness study published since 2000 and found only a small difference (both positive and negative) between the performance of charter and regular public school students.

Mixed conclusions also derive from research on the effect of charter school competition on the students who attend nearby traditional public schools. Using national data, Hoxby (2004) found that charter school competition increased the test scores of students who remained in traditional public schools. Similarly, Hanushek et al. (2007) and Booker et al. (2004) found that competition from Texas charter schools increased test scores of noncharter public school students. Finally, Bifulco and Ladd (2006) found that charter school competition in North Carolina had no effect on the scores of noncharter public school students.

Most research on parental choice analyzes survey responses of parents who choose between traditional public schools and either private schools or alternative public schools. According to Schneider, Teske, and Marschall (2000), New York and New Jersey parents list teacher quality and high test scores as the most important factors in school choice. Hamilton and Guin (2005), using parental survey data, found that educational effectiveness is an important factor influencing school choice. Parents in poor neighborhoods were especially concerned with safety and hours of instruction, while parents in richer areas were concerned with the number of honors classes.

Researchers, however, draw mixed conclusions about parental motivations from analyses of students who change schools and the schools that they leave or enter. Hanushek et al. (2007) analyzed Texas students who changed schools and found that exits from both charter schools to traditional public schools and from traditional public schools to charter schools are inversely related to students' test scores. They also found that the magnitude of the effect for those who moved from charter schools is higher, suggesting that charter

school choice depends on academic effectiveness. Weither and Tedin (2002), in their study of the Texas schools, found that race and income are the prime determinants of charter school choice: students moved to schools with lower average test scores but with higher income peers and with more racial segregation. Lankford et al. (1995) discovered similar race and income peer effects in their analysis of private/public school choice.

### Parental Valuation Model

Charter schools are not allowed to charge tuition or make admission decisions based on entrance exam scores. Consequently, charter schools that have more applications than openings conduct a random admission drawing. Students who are not chosen in the lottery are put on the wait list and are contacted if space becomes available. Because parents incur costs to apply, which may or may not lead to enrollment in the charter school, the number of unsuccessful applications provides a better gauge of parental valuation than responses to survey questions or school changes, some of which are due to employment changes, personal reasons, and other factors unrelated to school quality. Also, by examining wait list data, parents can determine the value of charter schools—a long list means a higher-valued school.

The average wait list for the 42 New Jersey charter schools analyzed in this article is 184 students, and the average number of openings for new students is 40. Thus, on average, the preferences of over 80 percent of parents who desire a particular charter school would not be represented in any survey limited solely to the charter school students. Moreover, one would not expect charter schools with waiting lists of several hundred students to be similar to charter schools with no waiting lists. Studies of charter school students give equal weight to oversubscribed and undersubscribed charter schools with equal enrollments.

The model used in this article relates school value to factors that affect parental choice: academic effectiveness, school resources, and the characteristics of students and schools—both for charter schools and traditional public schools. The model can be stated as follows:

$$(1) \text{WAIT}_{c,t} = f(\text{SCORE}_{c,t}, \text{SCORE}_{d,t}, \text{STUDENTS}_{c,t}, \text{STUDENTS}_{d,t}, \text{SCHOOLS}_{c,t}),$$

where

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$WAIT_{c,t}$ , the dependent variable, is a proxy for parental valuation of the charter schools, as measured by the number of students wait listed for charter school  $c$  at time  $t$ ;

$SCORE_{c,t}$  represents the test scores of students at charter school  $c$  at time  $t$ ;

$SCORE_{d,t}$  indicates the grade equivalent test scores of students at the regular public school in the home district;

$STUDENTS$  indicates student characteristics, including race and economic situation;

$SCHOOL$  reflects school characteristics, including resources (measured by per student expenditures), class size, teacher salaries, student-teacher ratios, instructional time, suspensions, number of grades in the school, and two binary variables—one indicating schools that emphasize academic excellence, the other indicating a school located in a low income urban area.

Because the distribution of  $WAIT$ , a nonnegative integer, does not conform to requirements for efficient estimation with a standard regression model, a negative binomial regression provides efficient estimates of the model parameters. The statistical model assumes that the distribution of  $WAIT$  values depends on the number of openings for new students;  $OPENINGS$  is the exposure variable.

## Data

The primary source of the data is the state-issued New Jersey School Report Card, which details school and district level data for all New Jersey public schools, both charter and regular. These data provide an excellent source for analysis because New Jersey parents have substantial school choice, and the data are available to parents to guide their decisions. New Jersey parents have a long history of school choice that precedes the national school choice movement, as evidenced by the fact that the state ranks second among the 50 states in the 2001 Education Freedom Index (Green 2002).

New Jersey has more than 600 school districts, which allow parents to live in many diverse locales with schools of very different characteristics without changing their employment locations. The diversity of locales is evidenced by the facts that the state had the highest state median household income and also contained three cities—Newark, Jersey City, and Patterson—among the 25 American cities with the

highest unemployment rate. New Jersey public schools are as diverse as the communities. The state has some of the highest-performing and lowest-performing public schools in the nation: the elementary schools are ranked 6th, while Newark has one of the highest dropout rates of major U.S. cities. In addition, New Jersey public schools spend more per student than schools in any other state (Center for Education Research 2007), and spending in the low-income urban districts, designated “Special Needs Districts” by the New Jersey Supreme Court (see Coate and VanderHoff 1999), is higher than spending in suburban schools with the highest-performing students. School choice is enhanced in New Jersey by the high proportion of private schools: in 2005, it had 621 elementary nonpublic schools and 1,356 public elementary and middle schools. Finally, New Jersey is the only state that has historically reported the wait list for each charter school.

The data in the School Report Cards is both easily accessed by parents and comprehensive. The Report Card data are sent to parents, summarized in local newspapers, and reported on the websites of major newspapers and the Department of Education. The Report Cards provide parents with information needed for informed choices: test scores, characteristics of the schools’ students, the schools’ resources and learning environment, school finances, and teacher/staff information. Most of the variables are reported at the school level for three academic years. The Report Cards also include comparable, averaged data for other public schools in the home district, in similar socioeconomic school districts and throughout the state. The Report Card includes three years of wait list and enrollment data, which provides information to evaluate the likelihood of a successful charter school application.

In 1996, New Jersey increased school choice with legislation allowing the Department of Education to issue five-year, renewable charters to the founders of charter schools with the consent of the home school district, which does not oversee the charter schools. Although the charter schools are open to any student in the state, nearly all students reside in the home school district because they receive preference. From 1996 to 2006, 73 schools were granted charters, and in 2005–06, 53 charter schools were operating. All New Jersey charter schools are startups; they do not replace existing public schools. New Jersey, like other states, issues charters to schools with varied philosophies and methods. For example, their

mission statements include “environmental based education,” “culturally immersed educational experience,” and “academically rigorous curriculum.” Also, the charter schools offer different educational services: some provide an 11-month school year, while others operate on an 8 a.m. to 5 p.m. school day.

The data set consists of 203 observations over a seven-year period (1999/2000 to 2005/2006 school years) for the 42 charter schools that offered an elementary or middle school curriculum. The analysis includes two charter schools that have data for a single school year and four charter schools that have data for all seven years. The number of observations per charter school differs because new charter schools were started each year and some charter schools did not get renewed or were closed because of financial reasons, including not enough parental and student interest. Also, standardized test data are not available for every school during each year of operation because most schools chose to expand by adding a grade as the oldest students move on to a higher grade level, and the state does not require schools to report test scores during their initial two years of grade-level operation.<sup>3</sup>

The Special Needs Districts contain 36 of the 42 charter schools analyzed. This geographical concentration allows parents in several cities the choice not only between traditional and charter schools but also between different charter schools.<sup>4</sup> Newark parents can, at some time before high school, potentially choose among nine charter schools, and Jersey City parents can choose among seven charter schools. These numbers do not indicate the number of choices at each grade level because the charter schools offer various grade levels—for example, different schools enroll kindergarten to 12th grade, pre-K to 2nd grade, and 5th grade to 8th grade. The subsample of multiple charter school choice options contains 140 observations, 72 percent of the complete sample.

Scores on state tests required of all public school students measure school effectiveness. During the sample period, the state of New Jersey tested all 4th and 8th grade public school students in math and

<sup>3</sup>Most charter schools started with an initial grade or two and expanded by adding higher grades as the original students progressed. Thus, a school that started with first grade would not give the fourth grade test for three years. Studies have shown that charter school effectiveness improves after two to three years, so the New Jersey scores after two years may be more informative to parents than the initial year scores.

<sup>4</sup>For tables with the number of charter schools in each school district, summary statistics, and detailed regression estimates, see the author’s longer study at <http://ideas.repec.org/s/run/wpaper.html>.

language; more recently science has been added to some tests. The Report Card summarizes the results of the annual March tests in three categories: advanced proficient, proficient, and partially proficient. Separately, the state reports more detailed school-level information, including the mean score, in an annual assessment report. The school mean score is standardized with the state school mean and standard deviation; therefore, the scores measure standard deviations from the state mean.<sup>5</sup> For each charter school, the effectiveness measure is the average of all of the 4th grade and 8th grade tests given at the school. Similarly, test scores for each grade-equivalent regular public school in the home district are averaged to measure the home district school effectiveness. These test scores are lagged one year to correspond to information available when parents apply and to match the time period of other Report Card data.<sup>6</sup>

The summary statistics, some of which are reported in Table 1, indicate the diversity of the charter schools. The average number of students who applied for admission but did not win a seat in the admissions lottery (WAIT) is 186. The value of WAIT varies from 0 to 1,784; WAIT equals 0 for 23 observations and exceeds 500 for 17 observations.<sup>7</sup> The average number of new students that can be enrolled (OPENINGS) is 40, and the range is 5 to 122. The average number of students waiting for each new seat is 5.45 and ranges from 0 to 35, illustrating that the value parents place on charter schools varies substantially.

The average charter school student's test score is 0.96 standard deviations less than the state average; charter school scores range from 3.15 standard deviations less than the state average to 1.95 standard deviations more than the state average. The charter school students did not test as well as the students in the home district regular public

<sup>5</sup>The assessment reports were not issued for the tests given spring 2003; the means for those tests are estimated from the categorical data and the estimated relationship between the mean score and the categorical data for the 2004 tests.

<sup>6</sup>The tests are taken in March, reported to parents in June, and school summaries are released in December. The categorical test summaries are published in the Report Card with enrollment and other data usually collected during the first half of the school year. The 2005–06 Report Card, released in January 2007, reported the number of students on the wait list as of September 2005, and the results of tests taken in March 2006. The 2005–06 academic year wait list data are matched with the March 2005 tests scores, summarized in the 2004–05 Report Card.

<sup>7</sup>For 2007, the Center for Education Research reports that nationwide 61 percent of charter schools had a wait list and the average number of students on the list was 146.

TABLE 1  
SUMMARY STATISTICS

Variable	Charter Schools			
	Mean	S. D.	Max.	Min.
WAIT: The number of students on the waiting list	186.32	261.02	1,784	0
OPENINGS: Enrollment in initial grade plus enrollment changes in subsequent grade	40.04	23.22	122	5
WAIT/OPENINGS	5.45	6.38	35.4	0
TIMEINST: Minutes per day that a typical student is engaged in instructional activities	381.76	41.09	510	300
ACADEMIC: Binary variable =1 if mission statement emphasizes academic performance	0.25	0.43	1	0

*continued*

TABLE 1 (continued)  
SUMMARY STATISTICS

Variable	Charter Schools		District Schools	
	Mean	S.D.	Mean	S.D.
SCORE: averaged standardized school mean score on the state 4th and 8th grade tests	-0.96	1.16	-0.79	0.87
SFRATIO: The ratio of students to faculty	11.93	3.32	10.61	1.55
COST: The total education-related expenditures divided by the average daily enrollment	11.31	2.08	13.79	2.52
CLASS SIZE: Average enrollment per grade divided by total number of classrooms for that grade.	17.45	3.90	18.03	1.74
FACSALARY: median salary faculty	39.15	5.37	57.83	12.14

SOURCES: New Jersey School Report Cards, 2000 to 2006; New Jersey Department of Education Assessment Reports, 1999 to 2005; and N.J. DOE Enrollment Reports, 2000 to 2006.

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schools, who scored 0.79 standard deviations less than the state average. The average difference between the scores at charter schools and regular schools is -0.18, which is statistically significant and is consistent with many studies that indicate charter schools, on average, are not as effective as traditional public schools. However, the average difference obscures the diversity of charter schools; some charter school students score 2.32 standard deviations higher than regular home district school students, and other charter school students score 2.47 standard deviations lower than regular school students.

The summary statistics indicate charter school students are similar to regular home district school students and that charter schools operate with substantially fewer resources. Black and Hispanic students (MINORITY) comprise 80 percent of the student body of charter schools and 78 percent of the student body of other district schools, a difference that is not statistically significant. Students who qualify for subsidized lunches (POOR) comprise 60 percent of charter school students and 62.5 percent of other district school students. The average expenditure per student (COST) for the charters is \$11,310, while the average for the home district is \$13,790.<sup>8</sup> Faculties at charter schools (FACSALARY) are paid nearly 50 percent less than faculty at home district schools.<sup>9</sup> The charters have about one more student per faculty member (SFRATIO), but the charters have nearly one less student in the average class (CLASS-SIZE).<sup>10</sup> These differences in resources are statistically significant.

The average number of grades in the charter school (GRADES) is 5.7, with some charter schools offering one grade and others offering 12 grades. The charter schools average 382 minutes of instructional time; the instructional time for all regular public schools in 2005 was 339 minutes. The binary variable ACADEMIC indicates that 25 percent of the charter schools stress academic excellence in

<sup>8</sup>These are expenditures for educational purposes but do not include expenditures for facilities, which are often not incurred by district-owned traditional public schools. Thus, these averages likely understate the funding differences because charter schools, unlike traditional public schools, may pay rent or capital costs from this funding.

<sup>9</sup>Faculty salaries are highly correlated with experience. Experience is not considered separately because the Report Cards detail experience at the particular school only, so the average level of experience is substantially lower at the newly created charter schools.

<sup>10</sup>Charter schools tend to have fewer classes in special education, art, and consumer economics.

their mission statements.<sup>11</sup> The charter school students are disciplined more often; the average percentage of students suspended (SUSPEND) for the charters is 10.8 percent while the home district average is 7.9 percent. The observations from charter schools in the special needs districts (SPECNEEDS) comprise 72 percent of the sample.

### Estimated Model

Table 2 reports the charter school value model estimated with the complete sample and with the 140 observations from the 7 multiple charter school home districts. This subsample provides additional insight into the factors driving school choice decisions. Because the interpretation of regression coefficients is not intuitive, the magnitude of the estimated response of WAIT is assessed with simulations of the estimated model. Table 2 also reports the percentage change in the predicted value of WAIT with a 10 percent increase in one of the variables that the charter school administrators may be able to influence through resource or policy decisions.<sup>12</sup>

*The analysis indicates that academic effectiveness primarily determines parental value of charter schools.* Tests scores directly and significantly impact the number of wait-listed students. For the complete sample, a 10 percent increase in test scores is estimated to result in a 63 percent increase in the number of students on the waiting list. When parents can choose more than one charter school, parental value is more responsive to test scores: WAIT is predicted to increase by more than 105 percent. Further, charter schools that stress academics in the mission statements have about 75 percent more students on the waiting list, other factors being equal.

The other factors in the model usually do not have a significant effect on charter school value and when the effect is significant, the magnitude of the effect is small. Parental value does not depend on the effectiveness of the schools that the parents want to exit; regular student test scores do not significantly affect WAIT. The estimated effects of student characteristics do not suggest that parents value

<sup>11</sup>Because all mission statements mention academic goals, the designation of a charter school as ACADEMIC is determined by the primary importance placed on academic goals with wording such as “rigorous curriculum,” “education excellence,” and “core curriculum.”

<sup>12</sup>The binary variable ACADEMIC is changed from 0 to 1 for the simulation.

TABLE 2  
PARENTAL VALUE MODEL ESTIMATES

	Complete Sample		Multiple Charter Schools	
	Parameter Estimate	WAIT % $\Delta$	Parameter Estimate	WAIT % $\Delta$
SCORE	0.39** (3.00)	63.2%	0.57** (4.08)	104.5%
ACADEMIC	0.58* (2.17)	79.0%	0.55 (1.37)	74.0%
SFRATIO	-0.09* (-2.15)	-10.4%	-0.05 (-1.11)	-6.3%
FACSALARY	0.02 (1.12)	8.9%	-0.01 (-0.41)	-4.2%
COST	0.02 (0.30)	2.0%	0.03 (0.56)	3.7%
CLSIZE	-0.08 (-1.78)	-13.4%	-0.09 (-1.66)	-15.2%
TIMEINST	0.01 (1.65)	24.0%	0.00 (0.83)	19.6%
MINORITY	0.01 (0.57)		-0.01 (-0.52)	
POOR	-0.01 (-0.52)		0.02 (1.32)	
SCORE D	0.10 (0.33)		0.27 (0.61)	
MINORITY D	-0.01 (-0.51)		0.01 (0.12)	
POOR D	0.03** (2.76)		0.03 (1.16)	
SUSPEND	0.01 (1.04)		0.01 (0.97)	
GRADES	0.07 (1.68)		0.09 (1.59)	
SPECIAL NEED	0.07 (0.18)			
CONSTANT	-0.97 (-1.30)		0.38 (0.19)	
OBSERVATIONS	203		140	

NOTES: The t statistics are in parentheses and the asterisks indicate significance at the 5% level (\*) and 1% level (\*\*). WAIT %  $\Delta$  indicates the percentage change in the predicted value of WAIT when the corresponding variable is increased by 10%. For the binary variable ACADEMIC, the value is changed from 0 to 1 for the simulation.

charter schools for the racial makeup or economic circumstances of the students. Neither POOR nor MINORITY charter school students has an effect on the waiting list. An increase in the number of POOR students in regular public schools has a statistically significant, but small, positive effect in the complete sample estimate, suggesting that the parents of poor children value charter schools more highly. The proportion of district MINORITY students is not estimated to affect charter school value. Parental valuation of the charter schools depends to a small extent on the characteristics of the charter school. For example, a 10 percent increase in the student-teacher ratio is estimated to decrease WAIT by about 10 percent, and a 10 percent increase in instruction time is estimated to increase the number of students on the wait list by 24 percent, but the effect is not statistically significant.

## Conclusion

This article finds that parents choose charter schools based on academic effectiveness and endorsement of academic goals. It thus supports a basic tenet for the belief that school choice will improve public school academic effectiveness. The New Jersey data illustrate that charter schools are not equally effective (as measured by student test scores), equally preferred (as measured by waiting lists), or equally funded. The analysis indicates that a 10 percent increase in a charter school's test scores will increase the number of students on its wait list by at least 63 percent. The characteristics of students and schools, both regular and charters, do not generally affect the size of the wait list.

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