Effect of Time Spent in Charter Schools on Student Test Scores: A Michigan Case Study

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I. Introduction

At least since Milton Friedman’s 1955 article on the role of government in education questions have arisen as to the efficacy of the system of public schools in the United States (Friedman 1955). The idea that public schools were being outperformed by private schools at less cost, even though most private schools were devoid of a key advantage of the private sector—profit, was given an empirical boost by the release of the Coleman Report in 1982 (Coleman et al 1982). The 1983 release of *A Nation at Risk* by the National Commission on Excellence in Education gave the problem national prominence. Eric Hanushek’s review of the literature relating school expenditure to student performance cast further doubt on the economic efficiency of the public school system (Hanushek 1986). In the past two decades the political reaction to the increasing concern about public K-12 education has been attempts to enact vouchers, tuition tax credits, and charter schools. These attempts have met with different degrees of success.

Charter schools have been the most widely adopted school reform, no doubt because they are an appealing option for the school choice movement. Because they are public schools, they have been politically more palatable than voucher or tuition tax credit programs. This has allowed them to establish a noticeable presence in the public school system. The first charter school began in Minnesota under its 1991 statute. Today there are almost 3,500 charter schools in 40 states plus the District of Columbia, with a total enrollment of nearly 950,000 students.¹

This paper briefly presents an argument explaining why the public school system will not efficiently produce educational services and the role of charter schools in improving public school efficiency. It then provides a case study offering empirical evidence of the positive effect of charter schooling on educational performance by examining performance. There are a number of problems attempting to compare the performance of charter schools with regular public schools. This paper uses the technique of examining the benefits of time spent at a particular charter school in order to avoid some of these problems in an attempt to establish a clear indicator of improved educational

performance. The evidence is that students who attend those Michigan charter schools managed by National Heritage Academies (NHA) perform better on Michigan’s statewide standardized test the longer they are in attendance at an NHA school and the longer the NHA school has been in existence. Application of this technique provides a straightforward and inexpensive way of comparing value added across schools and types of school systems and may be useful to public and private schools in assessing their performance and to consumers in taking advantage of the limited expansion in school choice offered by charter schools.

II. Inefficiencies in the K-12 educational System: Systemic Problem

Dissatisfaction with America’s system of public schools has been growing. This is the result of increasing expenditures on K-12 education with little corresponding improvement in measured performance by students. Nationally, total K-12 expenditures in public schools rose from $96 billion in 1979-80 to $455 billion in 2002-03, an increase of 374 percent. Pupil enrollment in this period went from 41.6 million to 48.1 million, an increase of 15.6 percent. This large increase in per pupil funding has resulted in little if any increase in test scores. Scores on the National Assessment of Educational Progress have been stagnant. For example, from 1992 to 2002, 12th grade reading scores have declined from 292 to 287, and 4th grade reading went from 217 to 219. The number of students performing at or above basic in science in the fourth grade went from 63 percent to 68 percent from 1996 to 2005, but in 8th grade the percentage declined from 60 percent to 59 percent and in 12th grade the decline was from 57 percent to 54 percent.

The inefficiencies in the K-12 public school system are due to systemic problems. As Adam Smith pointed out: “It is not from the benevolence of the butcher, the brewer or the baker that we expect our dinner, but from their regard to their own interest.” The point is not that one will never find a benevolent butcher, but rather that a system that aligns the incentives of the producer with that of the consumer is more likely to produce a better dinner than one that relies on the charity of the producer. The same holds for the public school system. The incentives of the system for those producing K-12 education are not well-aligned with those of the consumers. Teachers, principals, and superintendents are not rewarded for providing quality education, nor do they suffer losses if they provide poor education. This does not mean we shall never find the equivalent of the benevolent butcher, that is the teacher, principal, or superintendent that works efficiently to produce quality education. Very good public schools exist and will continue to exist. The problem is that very poor public schools exist, and the system’s mechanisms for correcting that have proven to be woefully ineffective. In the private sector producers that fail to provide services that are of greater value then the opportunity cost of the

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2 U.S. Department of Education, National Center for Education Statistics (2005) tables 156 and 32. The expenditures are in current dollars. The consumer price index rose during this period from 74.6 in September 1979 to 181.0 in September 2002, or an increase of 143 percent.


5 For further discussion along these lines, see Wolfram (1998).
resources used in producing them go out of business. This is not the case with public K-12 education in the United States.

III. Charter School Competition

Charter schools are public schools, but introduce competitive elements into the system, particularly that of entry and exit. Students are not assigned to charter schools, so charters must attract students in order to receive funding, and charters may go out of business. Charter schools are often run by for-profit management firms. This further encourages efficiency in production, since these efficiencies can be captured as profit by the management firm, and increased quality of education, since revenue for the firm is based upon student enrollment and increasing quality will likely lead to increased enrollment.

There are several aspects of the charter schools system that keep it from being able to serve as more than a first step in the movement towards changing K-12 education from a centrally-planned system of government provision to a market-based consumer driven one. Charter schools suffer from price controls in that they are unable to charge tuition and they are prevented by statute from aligning admissions with a particular educational theme (Merrifield, 2006). Because charter schools may not charge tuition, they are excluded from meeting the demands of those who desire educational services that cost more than the foundation grant. The effective price control of zero means that charter schools only need to offer services that are slightly better than the existing public schools If a charter school is clearly a great deal better than the existing public school, it cannot allocate spot by increasing prices and thus the incentives to provide high quality services are artificially limited.

Many state charter laws regulate charter operators to an extent that discourages market entry. A primary example in Michigan is the limit on the number of schools that may be chartered by public universities to 150. Such a regulation not only discourages entry, but also results in charter schools that are inefficiently sized. Numerous other regulations preclude much of the specialization that makes a school of choice attractive to families with children struggling in a traditional public school. It is possible that these limitations may sufficiently impede the effectiveness of charter schools that the transition to a fully competitive market in education may be stymied.

Nonetheless, should the limited advantage of charter schools make the public comfortable with competition in public education, then the charter school movement will be a positive force in improving K-12 education. This will require that there be some evidence that charter schools can improve student performance.

IV. Michigan Charter Schools

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7 For further discussion see Merrifield (2006).
Michigan’s charter school law was enacted in 1993\(^8\). Schools may be chartered by the local school district, community colleges, intermediate school districts, and public universities. The large majority of the charter schools have been chartered by public universities, although, as noted above, the cap on such charters is set at 150. In 2005-06 there were 225 charter schools in Michigan with more than 92,000 students.

Under Michigan law, charter schools must follow all the requirements that any other public school must follow. Essentially, the charter schools are single school districts with no geographic boundary. This means that students are not assigned to charter schools and are free to exit whenever the parents choose. Charter schools are funded by a state-funded per-pupil foundation grant that was $6875 in 2005-06. Charter schools may not charge tuition, nor may they raise taxes.

While charter schools may be innovative, they may not do anything that cannot be done by a regular public school. They must also comply with the terms of the charter as put together by the chartering agency in compliance with the state statute. Charter schools may set their maximum enrollment, but must admit students that apply. If the number of applications is in excess of the number of available spots, then a lottery is held to determine who is accepted. Thus, while charter schools may not deny any student entrance they need not accept all students, as would be the case with the regular public schools.\(^9\)

Charter schools have introduced some competition into the Michigan public school system. An individual or group of individuals that can obtain a charter may open a charter school and receive the per-pupil grant, offering parents some alternative to the current public school system. This competition is limited for a number of reasons, however, the major one is the limitation on the number of schools that may be chartered.\(^10\) Even without the limitation, the political system determines who may or may not obtain a charter, since charters may only be granted by school districts or public institutions of higher education. As a consequence, it may be that school districts either ignore the threat of entry from charter schools since the number of entrants is limited, or they may attempt to use the political process to erect barriers to charter school entry in their particular district.

Charter schools are inherently different from the regular public school system in that they will only attract student if those students feel they are getting a better education than they are in their existing school district. In addition, the competition from the charter schools may force the regular public school system to improve its quality of education or face

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\(^8\) Public Act 362 of 1993.


\(^10\) School districts may charter schools within their district without limit, however, there is little or no incentive for this to happen since the school district will lose the foundation grant of every student who switches from the district to the charter school. Community colleges may charter schools within their own district, however, few community college boards are willing to do so. The fifteen public universities may charter up to 150 schools total within the state. This limit has been met. One community college may charter schools anywhere in the state as it is the only community college with a state-wide district. This college, Bay Mills Community College, had chartered and opened 28 schools through 2005.
losses of students to the charter schools and as a result a reduction in the school district's budget.\textsuperscript{11}

Michigan provides some indication that charter schools are providing increased quality of education using the revealed preference indicators from a limited market. Despite the legislated limits on the number of charter schools, total enrollment in Michigan’s charter schools increased 13 percent in 2005-06 school year, rising by 10,718 to hit 91,326. Wayne County, home to Detroit Public Schools, had nearly double the gain, increasing from 33,371 to 40,559, a 22 percent increase. In addition, there were an additional 6,466 students on the waiting list of Wayne County charter schools alone.\textsuperscript{12}

There is also some evidence that competition from charter schools is an important financial consideration for regular public schools in Michigan, since state aid to public schools, including charters, is based on a per pupil foundation grant. For the 2005-06 school year, every student that left a public school district in Michigan cost the district $6875. Thus, the loss of 150 students meant a million dollar reduction in a school district’s budget. This can be sufficient to change the behavior of those in charge of school districts where charter schools have been able to obtain a charter. Whether there is an effect and its size will largely be determined by the political pressures. Unlike a business that fails to improve and goes bankrupt, it is not clear what will happen when a school district fails to generate enough revenue to pay its expenses. In Michigan, there is statute that will allow a state takeover of a financially troubled district, however, in the case of the large urban school districts (where many of the charter schools are located) there is extreme political reluctance for a state takeover. Nonetheless, that loss of students to charter schools and the attendant loss in revenue was a major consideration in the recent teacher strike in Detroit Public Schools was evident from the media coverage of the event. It is at least true that statute requires school districts to maintain a balanced budget, so loss of revenue due to students exiting to charter schools will force layoffs of teachers and possible closure of schools within the district.

It is possible that regular school districts will simply downsize in the face of declining revenue from loss of students to charter schools. However, at least some superintendents will respond by searching for ways to improve the regular public schools in order to maintain enrollment. Hoxby (2001) was able to find that competition from charter schools in Michigan does improve one measure of quality in regular public schools, MEAP scores.\textsuperscript{13}

\textit{V. Cost Efficiency of Charter Schools in Michigan}

One way to measure the effectiveness of charter schools is to compare taxpayer expenditures per pupil with that of regular public schools. If charter schools provide a

\textsuperscript{11} Due to Michigan's movement in 1993 to what is essentially a state per pupil grant system, loss of students results in loss of funding for a school district.
\textsuperscript{12} Data from Michigan Association of Public School Academies, www.charterschools.org.
\textsuperscript{13} See also Arsen (2001).
similar quality of education at lower cost than regular public schools then this would indicate charter schools are more efficient. Since charter schools are government entities they are not able to earn profit by keeping their costs below their revenues. There is some incentive to operate efficiently since they are not able to continue to exist if they don’t operate at least where costs are equal to revenues. But those charter schools that are operated by management firms have a particular reason to operate efficiently. Should the management company operate the school at costs below revenues, a portion of this can be captured by the management company. This ability to generate profits provides the incentive of management-operated charter schools to produce at lowest cost.

The Michigan Department of Education (2005) has estimated the difference in taxpayer revenue for charter schools and regular public schools in Michigan. Michigan charter schools in 2003-04 received foundation grants that were on average $300 per pupil less than that of regular public schools. They receive $445 per pupil less in other state, federal, and local funds. Regular school districts levy debt millage that averages $726 per pupil, something that charter schools are unable to do. In total, charter schools operate with $1471 per pupil less in taxpayer funding than do regular public schools.

Michigan charter schools provide educational services at a taxpayer cost substantially less than that of regular public schools. One explanation for this might be that charter schools provide services to less at-risk students, and thus will find it less expensive to provide services. However, just the opposite is the case. Forty-three percent of charter school students in Michigan were eligible for the federal free lunch program, compared to twenty-seven percent of the non-charter public school students. Michigan charter school students are 62% minority compared to 26% of non-charter public school schools.

Given that charter schools produce educational services at lower cost than regular public schools in Michigan, the natural question is to what extent are these services effective. The most common way of measuring the effectiveness of schooling has been test scores. It is to this that the rest of the paper is devoted.

VI. Methodological Difficulties with Test Score Comparisons

The adoption of charter schools nationwide has resulted in a growing literature on their effectiveness in affecting test scores. The conclusions from these studies have been mixed. Some claim the results show charter schools do not improve student test scores, while others find charter school students score higher on standardized tests than students in regular public schools. The difficulties in using test scores to compare charter schools performance with standard public schools have been detailed in two major studies, one by National Charter School Research Center (2006), entitled Key Issues in

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14 The calculation of the foundation grant is somewhat complicated. While all districts are guaranteed a certain foundation allowance, some districts are guaranteed substantially more. Charter schools receive the same foundation allowance as the school district within which they are located. Thus, if charter schools are located in districts with lower foundation allowances, they will on average receive a smaller foundation grant that is lower than the average for regular public schools.

15 For example, see Solmon (2001); C. Hoxby (2204); Jansen (2001); Bifulco (2005); and Nelson (2004)
Studying Charter Schools and Achievement: A Review and Suggestions for National Guidelines, and one by the National Alliance for Public Charter Schools (Hassel, 2005), entitled Studying Charter Schools: What Do We Know? The former analyzes 41 studies by methodology, and the latter has a review of 38 studies characterized by type of analysis and summarizes the findings.

The most obvious problem in comparing achievement is that the composition of students who attend charter schools may differ significantly from students who attend regular public schools. The student who is doing well in a regular public school is not as likely to move to a new charter school, which has no track record, than is a student who is doing poorly in the regular public school. Thus charter schools are likely to have a student body that is made up of those students who were performing poorly at regular public schools. Another obvious problem is that since charter schools are new, the oldest charter school in the U.S. having been in existence for only 15 years, the charter student’s test scores will oftentimes be more of an indication of the effectiveness of the student's prior schooling. It is not surprising, then, that some studies will find test scores for charter school students will be lower than scores for regular public school students.

Generally, studies of charter schools attempt to answer comparison questions, such as whether students in charter schools are performing better than students in regular public schools, or whether students who are in charter schools would have performed better or worse had they been in a regular public school. This paper has a different approach. It attempts to determine if there is value-added in a particular subset of charter schools, those managed by National Heritage Academies (NHA) in the state of Michigan. The question addressed here is whether time spent at NHA schools affects a student’s score on the Michigan Educational Assessment Program (MEAP) test more than attendance at their assigned traditional public school. If so, we would expect students, controlling for other characteristics, who have been at NHA for two years, for example, to outperform students who spent the last two years in another school.

This study examines 4th, 5th, 7th, and 8th grade MEAP scores in the tests that are given at that grade level at the 28 NHA schools in existence for a year at the time of the 2004 MEAP tests. The tests are Math, Writing, Reading and English Language Arts (ELAS) in the 4th grade, Social Studies and Science in the 5th grade, Writing, Reading and ELAS in the 7th grade, and Math, Science, and Social Studies in the 8th grade. The regression analysis found that time spent at NHA had a statistically significant positive effect on MEAP test scores at the 5% level in every test at every grade with the exception of 7th grade Writing, which was significantly positive at the 10% level and 8th grade Math which, although showing a positive effect, was only significant at the 20% level. In every regression, the number of years that an NHA school has been in existence was statistically positive, indicating that as the school has time to gain experience with its students and establish the NHA curriculum, student test scores show additional improvement.16

16 These results are consistent with earlier research by the author examining the effect of time spent at NHA using 2001 MEAP data. The data in the earlier study were more limited, only having categorical test score data rather than raw scores and not having actual time spent at NHA, but time since application for
VII. The Approach

This study is more narrowly focused than most analyses of charter schools. It only looks at one particular subset of charter schools, Michigan charter schools managed by National Heritage Academies. As such, its results cannot be extended to a general statement about all charter schools, nor to compare charter school performance with regular public school performance. On the other hand, the approach of examining the effect of time spent at a particular type of school on test scores can be extended to other types of schools. Regular public school districts and other charter schools might use the same technique to see if time spent within their district increases test performance. Should a number of studies find that time spent at charter schools does not affect performance or affects it in a negative fashion, while time spent at regular public schools positively affects student performance, this would provide some evidence that charter schools do not enhance performance. If time spent in regular public schools negatively affects performance while time spent at charter schools positively affects performance, then the opposite conclusion might hold.

This approach might also lend some insights into the effectiveness of types of curriculum, whether turnover rates in inner city schools are affecting performance, if the use of management companies affects performance, and other public policy questions that are more narrowly focused than achievement rates of charter schools compared to regular public schools.

Analyzing the effect of time spent at the school on test scores partially addresses the problem of the level of test score reflecting prior educational experience. This is important in the case of charter schools, where many of the students will have come from other regular schools due to the fact that charter schools are new and students who are doing poorly in the regular school system will have the most incentive to enter a charter school.

Current MEAP data does not lend itself to looking at individual student improvement in test scores, as students have not take the same type of test every year. In addition MEAP raw scores are not comparable from year-to-year, nor are the categorical scores. Despite these limitations, MEAP data was analyzed, rather than other standardized test data for which improvement in score might be made because MEAP test scores are the most commonly used achievement indicator in Michigan.

Hoxby and Rockoff (2005) expressed an interest in their study of Chicago charter schools in being able to “allow the effect of charter schools on achievement to vary with the length of time that a student has been enrolled at the charter school.” The NHA data allows this study to make such an examination.

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enrollment. It thus looked at the probability that a student who was enrolled at NHA would meet the highest and lowest category score. Using logit analysis, time spent at NHA positively affected the probability that a student would score in the highest category and negatively affected the probability the student would score in the lowest category. See Wolfram (2002).

VIII. National Heritage Academies

National Heritage Academies is a charter school management firm that began in 1995 with the management of Excel Academy in Grand Rapids, Michigan. It currently manages 51 schools in five states, 33 of these in Michigan. Total enrollment in NHA schools exceeds 30,000 students. Each NHA school uses the same curriculum, teaching method and educational philosophy. This reduces the problems of heterogeneity in schools that afflicts some of the analysis of charter school performance. Since charter schools in general vary along a variety of lines, including such key elements as curriculum and values, a general study of charter school achievement is likely to have results that are affected by the wide variety of forms and approaches of charter schools. Again, this study is not meant to assess charter schools in general, but one particular set of charter schools with a particular method of producing educational services.18

IX. Regression Results

The model that we used for estimating the effect of time spent at NHA on student achievement is of the following form:

\[ Y = \alpha + \beta_1*YE + \beta_2*SES + \beta_3*GEN + \beta_4*RACE + \beta_5*NHA + \varepsilon; \]19

Where \( Y \) is the raw scale score on the relevant MEAP test, \( YE \) is years that the NHA school has been in existence prior to the year of the test, \( SES \) is socioeconomic status as determined by whether the student is eligible for free or reduced lunch, \( GEN \) is gender of the student, \( RACE \) is the racial category identified by the student, and \( NHA \) is the number of days the student was enrolled at NHA prior to taking the MEAP exam, and \( \varepsilon \) is the independently distributed error term with mean 0 and constant variance.

Each of these dependent variables was available for the students in the study, and each is commonly discussed in the literature as having an effect on student achievement. The SES variable was actually two dummy variables, one taking on the value of one if the student was eligible for free lunch and one taking on the value of one if the student was eligible for reduced lunch. \( GEN \) is also a dummy variable taking on the value one if the student is male. \( RACE \) is actually a series of dummy variables taking on the value of one if the student meets the category Black, Native American, Hispanic, or Asian.

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18 NHA bases its program on four pillars: academic excellence, parental participation, student responsibility, and moral focus. The educational program is based on E.D. Hirsch’s *Core Knowledge Sequence*. For reading instruction it uses *Open Court Reading*. NHA has developed its own curriculum in other subjects, including character instruction.18 Parents may access student grades on-line, sign a contract designed to increase parental participation, and fill out a survey of parental satisfaction twice a year. NHA encourages student participation in extra curricular activities including community involvement.

19 An alternative regression form was also run, with the NHA variable entered in natural log form. The hypothesis was that the effect of time spent at NHA might gradually decline. These regressions gave nearly the same results for all explanatory variables as the strictly linear form and did not improve the explanatory power of the regression.
A separate regression was run for each of the exams. The 4th grade exams were Math, Writing, Reading, and English Language Arts (ELAS), the 5th grade exams were Social Studies and Science, the 7th grade exams were ELAS, Reading, and Writing, and the 8th grade exams were Math, Social Studies and Science.

Of the 12 exams, NHA was positive and statistically significant at the 5% level in 10, and was positive and statistically significant at the 10% level in one. In the remaining regression, the effect of time spent at NHA was positive, but was not statistically significant. NHA has its strongest effect, as measure by size of the coefficient, in 7th grade Reading, where each day added .012 points to a student's test score, or 4.38 points per year. The exams where the NHA variable added 2.19 to 2.56 points annually were 4th grade Math, 7th grade ELAS, 8th grade Social Studies, and 8th grade Science. The weakest effect was in 7th grade Writing, in terms of size of coefficient, with a value of .0018 on a daily basis, or slightly less than two-thirds of a point annually. The coefficient on NHA in 8th grade Math was higher than 7th grade Writing, 1.27 points on an annual basis, however, its variance was sufficiently large to make it not statistically significant at the 10% level.

The number of years that an NHA school has been in existence is positive and statistically significant in all the 12 regressions. Its strongest effect is in 8th grade, with it adding 2.67 to Science, 3.2 to Social Studies, and 6.3 to Math scores annually. The coefficient on YE for 5th grade Social Studies was also relatively large at 4.14. The improvement in test scores as NHA academies gain experience is consistent with the literature on charter schools in general, and indicates that NHA schools get better as they age.

The minority variables, particularly Black and Hispanic, are strongly negative. Two regressions stand out, however, 4th and 7th grade Writing. While the Black variable is negative and statistically significant in both cases, the coefficient is smaller than in the other exams, -3.9 and -4.9 respectively. This indicates the NHA writing program may be effective in reducing the score gap between black and white. The highest negative coefficients on Black, in excess of -20, are in the 5th grade Social Studies, 7th grade Reading, and 8th grade Science, Social Studies and Math. The Hispanic variable shows a similar pattern. It is not statistically significant in either 4th or 7th grade Writing, and has high negative values, between -15 and -17, in each of the 8th grade test scores. While it is not obvious why these minority variables should have such a relatively strong effect in 8th grade, it is a point worth noting.

The socioeconomic variables were consistently negative, with free lunch eligibility having a statistically significant negative effect at the 5% level in every regression but one, while reduced lunch eligibility was always negative and often statistically significant. As was the case with the minority variables, the coefficients on the Free lunch variable are relatively large in the 8th grade tests, ranging between -14 and -17. 5th grade Social Studies and 7th grade Reading have the largest negative coefficient on Free Lunch, -18.20 and -18.25 respectively. It is also the case that the effect of
socioeconomic status is small in both the 4th and 7th grade writing, with the coefficient on Free not being statistically significant at the 5% level in the 4th grade Writing regression.

It is interesting to note the large negative effects of the socioeconomic variables and of Black and Hispanic. It is well known that charter schools have higher percentages of free and reduced lunch eligible students and of minority students. Simple comparisons of charter schools with regular public schools will be biased against charter schools, given this evidence. It also is interesting to note that the effect of these variables is noticeably smaller in the Writing tests. It may be useful to see if the NHA curriculum seems to reduce the gap in Writing scores between minority and non-minority students. It may also be useful to think about what there is about 8th grade that has relatively high negative effects of socioeconomic status on test scores.

IX. Consumer Response to NHA

If consumers are rational, and NHA schools are providing services that enhance the education of students, then we should observe an increase in enrollment at NHA schools. This has indeed been the case. Total enrollment for NHA schools increased from 174 in one school to 19719 in 33 schools in 2005-06. Enrollment increased for all of the 33 schools between the initial enrollment and the 2005-06 school year.

The increase in total enrollment was limited by the inability of NHA to obtain charters due to the limits imposed under the charter school legislation. This has created waiting lists at nearly all of the charter schools, since NHA is unable in most instances to add another school once one has reached its capacity. In 2006-07 there are 4593 students on the waiting list for NHA schools. The waiting lists will underestimate the excess demand, since in many cases it is known that the probability of being accepted is so low that parents do not bother to apply.²⁰

Waiting lists are a clear indication that Michigan's system of charter schools, while introducing an element of competition, is not creating a fully competitive environment. In normal circumstances, market prices would rise to clear excess demand and an increase in prices that increased economic profit would induce new entrants, thus expanding supply. Neither of these self-regulating mechanisms are allowed under the current Michigan statute. Obvious reforms that would improve the K-12 system would be to allow tuition charges at charter schools and the removal of caps on the number of schools that may be chartered by public universities.

X. Conclusion

The results of this paper provide evidence that a student’s score on the MEAP test is positively affected by length of time spent at a NHA charter school. The increase in enrollment in NHA schools and waiting lists indicate that consumers have rationally

²⁰ Significant excess demand is the norm for Michigan’s chartered schools. There are more than ten thousand students statewide on waiting lists for the 225 charter schools.
responded to the improvement in test scores brought about by time spent at NHA schools by enrolling their children. The existence of extensive waiting lists is evidence that consumers would prefer to have more charter schools. However, Michigan's charter school statute creates significant impediments to the creation of true competition that would improve public education, primarily in limiting the number of charter schools and not allowing prices above zero.

This is a case study and the results of the statistical analysis of test scores may not be extended to all charter schools, even all charter schools in Michigan. However, the methodology of examining the effects of time spent at a particular school on student achievement can be extended to charter, private, and regular public schools. If this is done, it may be possible to make comparisons among types of schools as one way of determining relative effectiveness of school organization and program. The methodology might also assist in explaining other findings, such as low levels of test scores in large urban school districts that have high turnover of students. Further research might include use of standardized test such as the Metropolitan Achievement Test that allow for a measure of gains in student achievement as the dependent variable. While the results of this study are not general, they may be used to examine what aspects of the NHA curriculum are most effective in generating higher student achievement and how they might be extended to the public school system in general.

The primary benefit of charter schools will be to demonstrate that even the limited competition that charter schools provide can improve the educational system. Once parents and voters see the positive effects, the political environment may be changed sufficiently to allow the full benefits of a market based K-12 educational structure. The danger is that the limitations imposed on the charter school structure may dampen the effects of competition sufficiently that there will be a lack of empirical evidence demonstrating the gains to be had from truly reforming our public school system.

REFERENCES


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