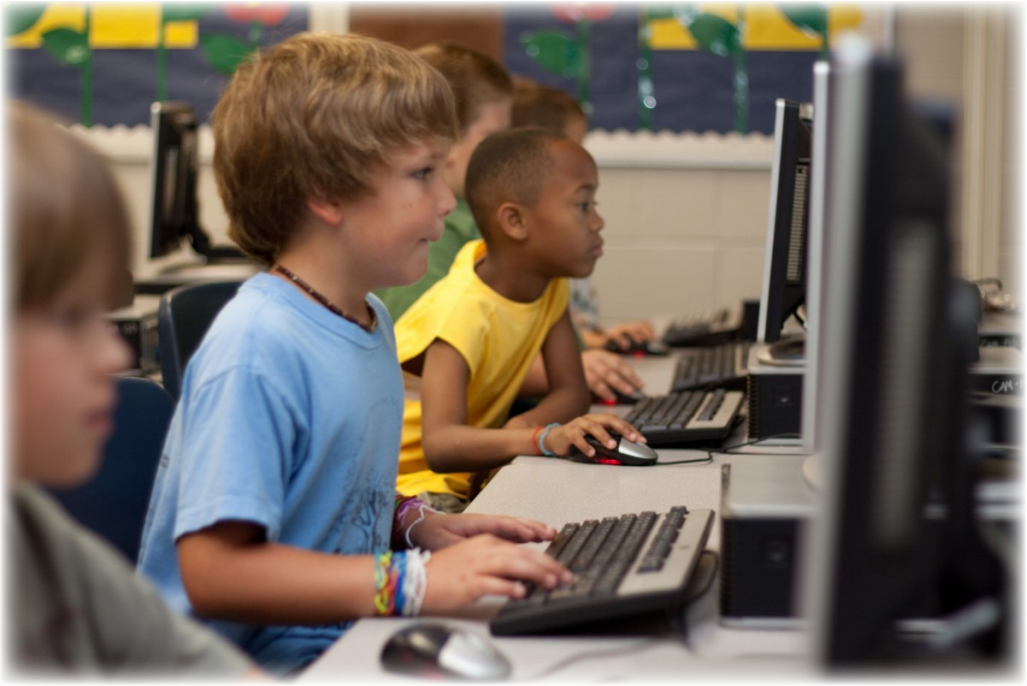
NEPC Review: Fiscal and Education Spillovers from Charter School Expansion (Massachusetts Institute of Technology, July 2018)



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Executive Summary

A recent paper by two researchers at the Massachusetts Institute of Technology examines the consequences that follow from an expansion in the number of charter school places available for enrollment. The study uses data from Massachusetts, where charter school growth has been carefully managed and where there was significant excess demand for charter school places. In 2011, the state increased the cap on charter school enrollments in districts with low test scores, resulting in a large increase in charter school enrollment in some of these districts. The paper analyzes three outcomes: (a) changes across charter and non-charter public schools in funding (how much resource was available per student), (b) resource allocation (how schools spent their funds), and (c) achievement (how well students performed on academic tests). The paper reaches three key findings. First, per-pupil expenditures in the impacted public schools increased as charter schools expanded. Second, these districts appeared to respond to competitive pressures from charter schools by moving funding toward inputs directly related to instruction. Third, test scores in math and English language arts in the existing public schools increased very slightly. As a final note, all three of these impacts appear to disappear after six years of initial charter school expansion. The paper affirms a two-part consensus from past studies on the economic and academic impacts of charter schooling. First, the flows of public funds to charter and public schools are complex, idiosyncratic, and variable. These features make economic evaluation of charter schooling very difficult. Second, the academic influence of competition between charter schools and public schools is positive but small. This second finding suggests that expanding charter schools, at least under the relatively restrictive conditions that existed in Massachusetts, will have a benign effect on the overall education system. However, because of the first finding, it is extremely difficult to determine how cost-effective or equitable such expansions might be. Overall, the research paper is a rigorous and intensive examination of the fiscal and educational consequences of increased enrollments in charter schools in Massachusetts. It serves as a benchmark against which other charter school studies might be compared, to explore whether results from Massachusetts are similar to those in different states and contexts.

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I. Introduction

This review is of an academic paper written by Matthew Ridley and Camille Terrier from the School Effectiveness and Inequality Initiative at the Massachusetts Institute of Technology.[1] The research paper investigates changes in funding, spending patterns, and achievement across charter schools and public schools.

There are now 2.8 million charter school students across almost 7,000 charter schools, 6 percent of all public school students.[2] Evaluations of charter reforms have focused on the effectiveness and efficiency of these schools and the consequences for non-charter public school students.

Charter schools are intended to provide students with alternative educational choices. But another fundamental aim is for charter schools to exert competitive pressures on public schools, motivating them to improve. The study under review focuses on this competitive pressure.

The researchers focus on the change in charter school enrollments in Massachusetts since 2011. In response to excess demand, the state permitted low-performing districts to expand their charter school enrollments. The researchers examine the impacts of this expansion.

The researchers undertook an intensive empirical investigation. They analyze large-scale, high-quality data on Massachusetts students over a 15-year period. Overall, the study provides definitive evidence on how this particular expansion of enrollment affected public school funding, resource allocation, and student achievement.

II. Findings and Conclusions of the Research Study

The research paper presents evidence from detailed empirical analysis of increased enrollment in charter schools in low-performing districts in Massachusetts. There are three key findings.

The main finding relates to changes in education spending. Increased enrollment in charter schools increased per-pupil expenditures across public schools in the districts where enrollment expanded (with no loss in funding to other schools). The effect was not trivial: funding increased by five percent more in expanding districts relative to districts where there was no change in charter school enrollment. The researchers conclude that local public schools are definitely not losing funds as a result of increased charter school enrollment.

A related finding pertains to how school districts spent their money. After the expansion of charter school enrollment, districts spent more of their funding on inputs directly related to instruction (including teacher salaries) instead of on support services. Districts switched approximately four to eight percent of their funding within the public schools away from support and toward instruction. The researchers conclude that school districts are responding to competitive pressures from charter schools by spending more money on inputs that will directly boost student achievement in public (non-charter) schools.

A third finding relates to student achievement. As charter schools expand within a district, test scores in math and English language arts in the existing public schools may increase very slightly. The size of any increase depends on the method applied. Using one estimation method, the authors find no change in test scores. Using an alternative estimation method, the increase in test scores is positive but very small at 0.02-0.03 standard deviations. The researchers conclude that, as has been found in many other studies, competitive pressures across charter and public schools are weak.

The researchers also report on the near-term and longer-term effects on spending and achievement. They find that the two spending effects are not long-lasting. Within five to six years, spending amounts and spending patterns are equivalent across districts with changes in charter school enrollments and districts with no changes. Similarly, gaps in achievement have disappeared. The researchers conclude that the influences charter schools have on public schools vary significantly over time, particularly if there are many policy changes in the intervening period.

III. The Study's Rationale for Its Findings and Conclusions

The rationale for the study is that all public schools operate in a marketplace and are all in some sense competing with each other for students and the public resources associated with these students. In particular, charter schools, because they offer a distinctive mode of education, might be expected to have substantial and specific impacts on local public schools. One expected impact is that as charter school enrollments expand, public schools will lose

resources because they now have lower enrollments. This loss should then incentivize public schools to offer an improved education. In this study, it is assumed that this improvement will be reflected in: (1) higher spending on instruction-related inputs (e.g., teachers); and (2) higher achievement in math and English language arts. Evidence supporting these assumptions would indicate that charter schools exert a benign competitive pressure.

The paper identifies the effects on spending and achievement using an empirical evaluation with multiple contrasts. These contrasts are all derived from the fact that in 2011 some Massachusetts districts were allowed to expand enrollments in charter schools and others were not. Hence, some students were offered a new opportunity to enroll in charter school and others were not. This disjuncture in opportunity allows the authors to make causal claims.

The researchers compare "expanding districts," i.e., districts where charter school enrollments increased after 2011, with "other districts." These other districts are identified using two approaches. The first approach is to create a Synthetic Control group (SC): other districts are matched with expanding districts based on their pre-2011 characteristics. The matching characteristics are the share of students in charter schools and student outcomes. The intent is to create an apples-to-apples comparison between expanding and other districts. The second approach is an instrumental variables difference-in-difference method (IV-DiD). Expanding districts are compared against other districts before 2011 and, separately, after 2011, in order to see if the charter school reform changed the gaps between districts.

The research study applies highly advanced econometric techniques. Both SC and IV-DiD approaches have only recently been applied by scholars examining patterns over time.[3] Both approaches allow the researchers to identify outcomes for students who remain in the public school system when that system has more charter school options. Each approach may establish causality. Together, the two approaches represent a robust and rigorous empirical evaluation. The researchers also perform an array of sensitivity tests and subgroup analysis.[4]

The researchers use detailed and comprehensive longitudinal school-level and student-level data to estimate the effects of charter school expansion. The data covers the period 2002-15, i.e., both before and after the charter school reform. The fiscal data is from the Annual Survey of School System Finances compiled by the Census Bureau. The educational data is the Massachusetts Comprehensive Assessment System (MCAS) database. MCAS tests in math and ELA are administered in grades 3-8 and 10. Information on individual student characteristics and school status are merged from the Massachusetts Student Information System. Thus, this study is based on the full data necessary to evaluate the charter school reform.

IV. The Study's Use of Research Literature

The study refers to the prior research literature in valid and appropriate ways.[5] The study cites recent rigorous evidence on achievement and research on funding inequities. This research literature helps place this study in the context of what is already known about charter schooling.

However, the study relies only lightly on evidence about the effectiveness of instructional inputs. A key motivating assumption of this study is that spending on instructional inputs is strongly related to school effectiveness. However, the researchers provide only limited justification for this assumption.

Nevertheless, the research literature is not especially fruitful for this study. As the authors acknowledge, research has generally established that charter school students do not clearly outperform students in public schools. There are some high-performing exceptions and some low-performing exceptions (cyber charter schools, for instance), but on average there is not much difference.[6] Moreover, competitive pressures from charter schools and other forms of school choice have been found to be modest at best.[7] Hence, this study is simply reinforcing the consensus. We would not expect there to be strong findings, and the researchers find that there are not.

V. Review of the Study's Methods

The paper uses advanced econometric methods to test for fiscal and educational impacts from increased charter schooling, but there are two general issues and one unexplored puzzle.

The study would benefit from a more general perspective on the economics of charter schooling. A fundamental economic issue in the analysis of costs and expenditures at charter schools is the determination of an adequate level of funding. The adequate level for charter schools depends on what public funding is available, what other resources are available (e.g., subsidized facilities), and, importantly, which students are enrolling at the charter schools and consequently not enrolling in public school. This study focuses only on the first of these factors.[8] But all three are critical to a full understanding of the issues.[9] Together they determine the optimal amount of funding for charters and therefore how much competitive pressure they will exert on public schools. If charter schools enroll low-ability students who then receive inadequate resources, competitive pressure on the public schools will actually go down.

In general, the study relies on high-quality data that is appropriate for performing these tests. However, it does not investigate in detail the quality of the expenditure data. In some cases, expenditure data may not be presented in a way that is helpful for this study. Often, expenditure data is coded according to accounting principles and not according to educational functions.[10] So payments to teachers may be classed as instructional spending even if some of those teachers are not regularly in the classroom. Expenditures on facilities are especially difficult to calculate and to compare across charter and public schools.[11] Furthermore, charter schools may apply different accounting codes than public schools.[12]

There is also an unexplored puzzle in the IV-DiD approach. Instrumental variable estimation relies on the existence of an independent variable that is correlated with the treatment (charter schooling) but is uncorrelated with the outcome (funding or achievement). In this case, the most straightforward instrumental variable would be an indicator for which

districts are eligible for increased charter school enrollments. Yet, the authors reject this instrument because "eligibility criteria are poor predictors of district charter expansion" (p.12). In other words, the actual increase in enrollments is not strongly correlated with the policy encouraging an increase in enrollments.

Despite claims of excess demand, charter school enrollments only expanded in some districts. In some districts where charter school options have been opened up, enrollment has not increased. It is a puzzle why some districts respond and others do not. Hence, it is not clear what readers should conclude about the use of a more complex instrument over a more straightforward, direct instrument.

VI. Review of the Validity of the Findings and Conclusions

The results of the study are plausible. Indeed, the results for achievement strongly accord with prior literature, lending confidence in their validity.

The analysis clearly illustrates how challenging it is to model and evaluate funding for public and charter schools. First, funding formulae are complex. For example, as charter school numbers expand in Massachusetts, public schools receive a sliding-scale subsidy over a six-year period. Second, funding formulae are idiosyncratic. The amounts of funding depend on where students transfer from (e.g., which district or from a private school). Third, funding formulae vary over time as regulations change and charter schools become eligible or ineligible for different streams of public funding.

However, these challenges raise an important question as to the validity of the study. The researchers are investigating the consequences for the funding of local schools when the number of charter schools expands. These consequences arise from Massachusetts's funding formula, a formula the authors describe in some detail. The formula compensates public schools when more students enroll in charter schools. As is the case in most states, public school funding formulae are extremely complicated, with many nuances, caveats, and exemptions. Nevertheless, if the funding formula is correctly implemented, we can predict that expenditures in public schools will go up, and the researchers find that they do. In this respect, the first finding of this study is entirely predictable.

But that finding may undermine the rationale of the paper. If public schools receive more resources when students leave for charter schools, why would these public schools seek to improve the education they offer? In order for a competitive pressure to work to raise school quality, schools must be penalized when students reject them. Based on the Massachusetts regulations, for at least six years public schools are fiscally rewarded when students reject them. Hence, other than pride, it is hard to understand why public schools reallocate funds toward instructional inputs, and it is hard to interpret the finding that, as charter schooling increases, achievement in public schools goes up.

VII. Usefulness of the Study for Guidance of Policy and Practice

This study is informative and useful for several groups. Primarily, it's an academic research paper intended for publication in an academic journal and is strongly focused on empirical methodological validity. For researchers in this field, the study is very useful in its explication and use of synthetic control and IV-DiD approaches to identifying causality.

A secondary purpose of the paper is to inform policymakers of the impact of charter school regulations. In this respect, the study is directly informative for the education community in Massachusetts. It clearly establishes the benign – but modest and temporary – effects of increasing charter school options for children in low-performing districts across the state.

Policymakers in other states may learn from this study. The research has a more general relevance insofar as (a) the context in Massachusetts is similar to that in other states, and (b) states are considering the type of change implemented in 2011 in Massachusetts.

Of the 43 states that allow charter schooling, Massachusetts enrolls students at a rate close to the average. Four percent of the state's public school students enroll in charter schools; the nationwide average per state is six percent. However, Massachusetts imposes relatively strict regulations and accountability mandates on its charter schools.[13] The quality of charter schools might therefore be higher than in other states. Other states might therefore expect weaker competitive pressures than those found in Massachusetts.

The policy change in Massachusetts was not extreme. Although there was an important increase in charter schooling, the absolute change in the public school system was modest. In 2010, only three percent of public school students in Massachusetts were enrolled in charter schools. By 2015, the rate had increased to over four percent. Thus, although there was a significant relative expansion – one-third more charter school enrollees – the absolute expansion was quite small – only one percent of the state's students. This can be compared to a charter school enrollment rate of over eight percent in ten other states. Further, the expansion was primarily at the middle school level and in low-performing districts. It is unclear what spillovers – especially fiscal ones – might occur with a larger absolute expansion or one applied more generally across grade levels and districts.

Across the U.S., states are searching for the optimal charter school policy. The study under review here provides important, high-quality evidence on the impacts of increased enrollment options.

Notes and References

1 Ridley, M. & Terrier, C. (2018) *Fiscal and education spillovers from charter school expansion*. Massachusetts Institute of Technology, School Effectiveness and Inequality Initiative. Retrieved August 9, 2018, from https://seii.mit.edu/wp-content/uploads/2018/07/SEII-Discussion-Paper-2018.02-Ridley-Terrier.pdf

2 U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), *Public elementary/secondary school universe survey*, 2000-1 through 2015-16. Table 216.90.

3 DiD approaches have been in common use for several decades. The more novel approach applied by Ridley & Terrier is that of an instrumental variable DiD.

4 The sensitivity tests include placebo tests (where the reform is assumed to apply to alternative districts across Massachusetts). The subgroup analyses include restricting the sample to middle-school students and separating out the effects in Boston from those in the rest of the state.

5 The study also refers to the relevant and most recent literature in econometrics to justify its methodology.

6 The study itself refers to evidence on the average effect being close to zero. On adverse effects from cyber charter schools, see for example: Ahn, J. & McEachin, A. (2017). Student enrollment patterns and achievement in Ohio's online charter schools. *Educational Researcher, 46*(1), 44-57.

7 See Belfield, C.R. & Levin, H.M. (2002). The effects of competition between schools on educational outcomes: A review for the United States. *Review of Education Research*, *72*(2), 279-341.

8 The study does report significant differences in the characteristics of students in charter and public schools.

9 For example, after multiple investigations, Maloney & Wolf (2017) discovered an extra financial transfer to charter school in New York City. This "pass-through" was worth approximately $2,700 per charter school student. It was not identified in standard audit documents. See Maloney, L.D. & Wolf, P.J. (2017). *Charter school funding: Inequity in New York City*. University of Arkansas, Department of Education Reform. Retrieved August 18, 2018, from http://www.uaedreform.org/wp-content/uploads/charter-school-funding-inequity-in-new-york-city.pdf

10 See Chapter 7 of Levin, H.M., McEwan, P.J., Belfield, C.R., Bowden, A.B., & Shand, R. (2017). *Economic evaluation in education: Cost-effectiveness and benefit-cost analysis*. New York, NY: Sage Publications.

11 As well as the citations included in the study, see Taylor, M. (2012). *Comparing funding for charter schools and their school district peers*. Legislative Analyst's Office, California. Retrieved August 16, 2018, from http://lao.ca.gov/reports/2012/edu/charter-schools/charter-schools-012612.pdf

12 See Baker, B. & Miron, G. (2015). *The business of charter schooling: Understanding the policies that charter operators use for financial benefit*. Boulder, CO: National Education Policy Center. Retrieved September 28, 2017, from http://nepc.colorado.edu/publication/charter-revenue

13 See Ziebarth, T. (2016). *Measuring up to the model: A ranking of state charter laws*. 7th Edition. National Alliance for Public Charter Schools. Retrieved August 17, 2018, from https://www.publiccharters.org/publications/measuring-model-ranking-state-charter-public-school-laws