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CENTER FOR RESEARCH ON EDUCATION OUTCOMES

The Competitive Effects of Charter Schools: Evidence from the District of Columbia

11/15/2012

Overview

- Motivation for the Study
- Prior Research Approaches
- Current Approach
- Analytic Findings
- Summary and Further Directions

Importance of Study - I

- Charter schools the largest school choice AND school reform initiative in the US today
  - Charter schools are publicly funded schools operated by independent organizations
  - "Flexibility for accountability"
    - Oversight by designated "Authorizers"
    - Operate with fewer regulations than traditional public schools (TPS)
    - Limited term then must face renewal review
  - Parents must voluntarily enroll their children
  - Funding follows the child…..mostly

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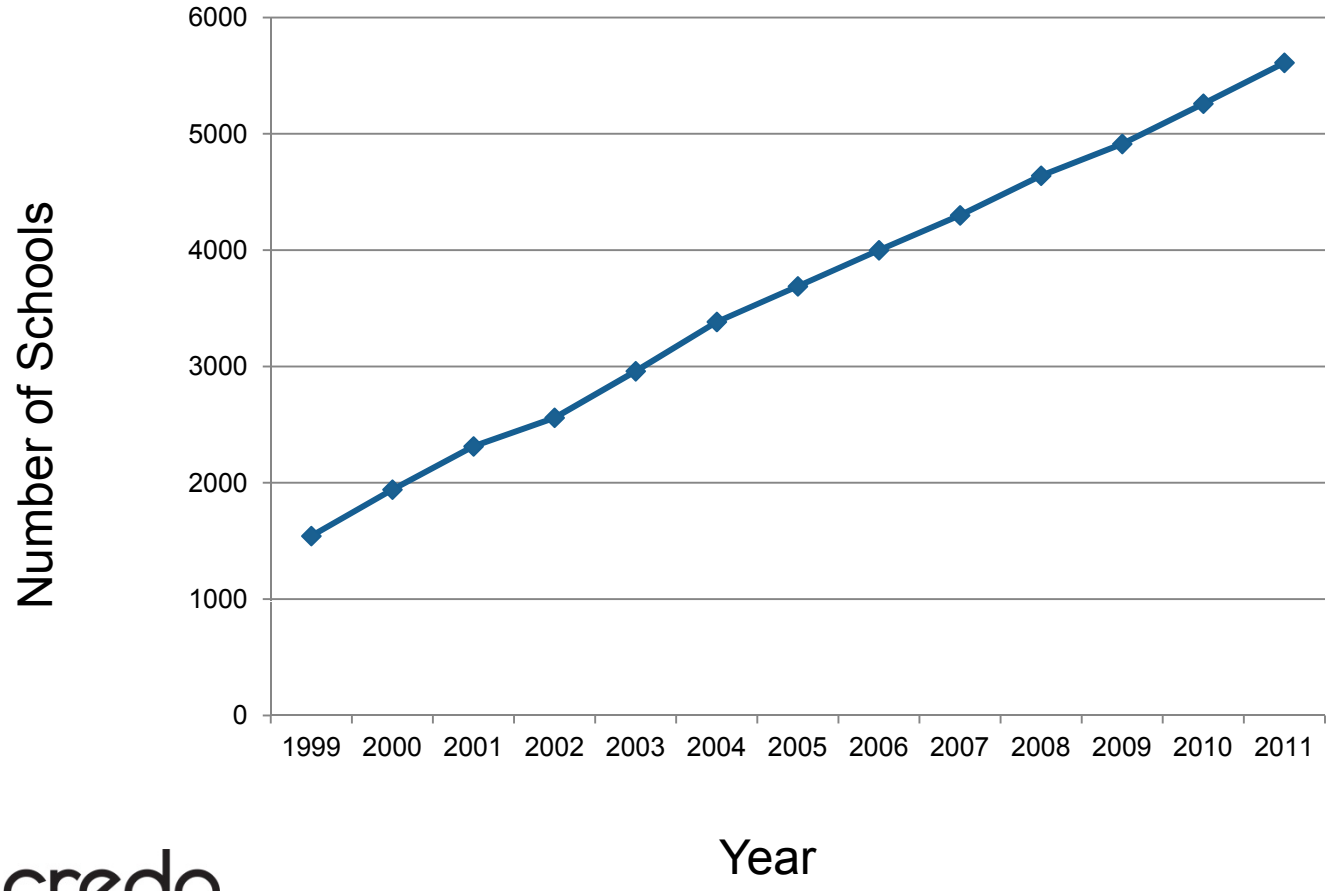
The Landscape Today



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Importance of the Study - II

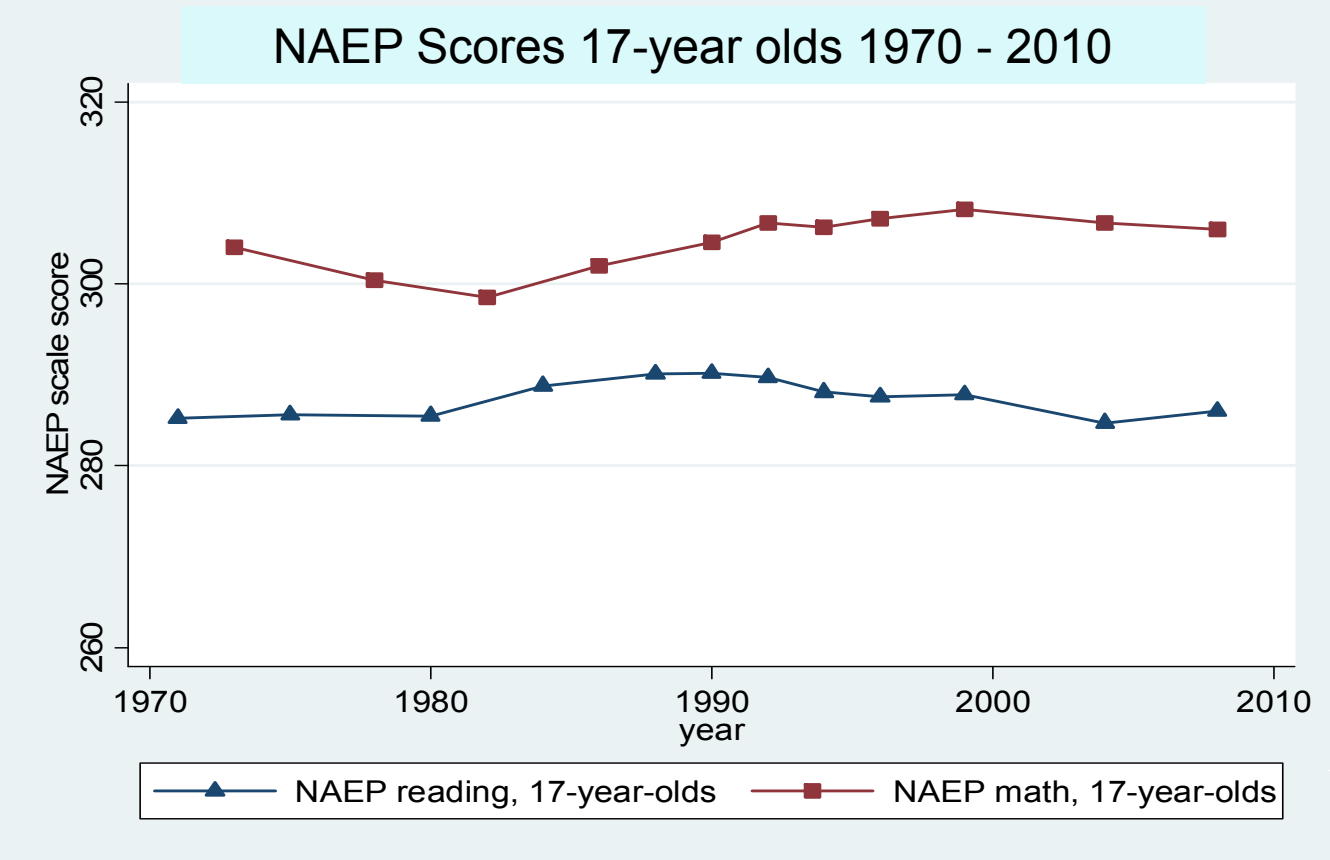
- Performance has been shown to be mixed
  - Across states, outcomes differ -- after controls for student and school attributes
  - Findings suggest policy matters
  - Focus on enabling legislation and authorizing to set quality standards at two key points
    - Application to open charter school
    - End of charter term review for possible renewal

Importance of the Study - III

- For 20 years, charter schools have faced multiple and conflicting priorities

The Promise of Charter Schools

School reform policy



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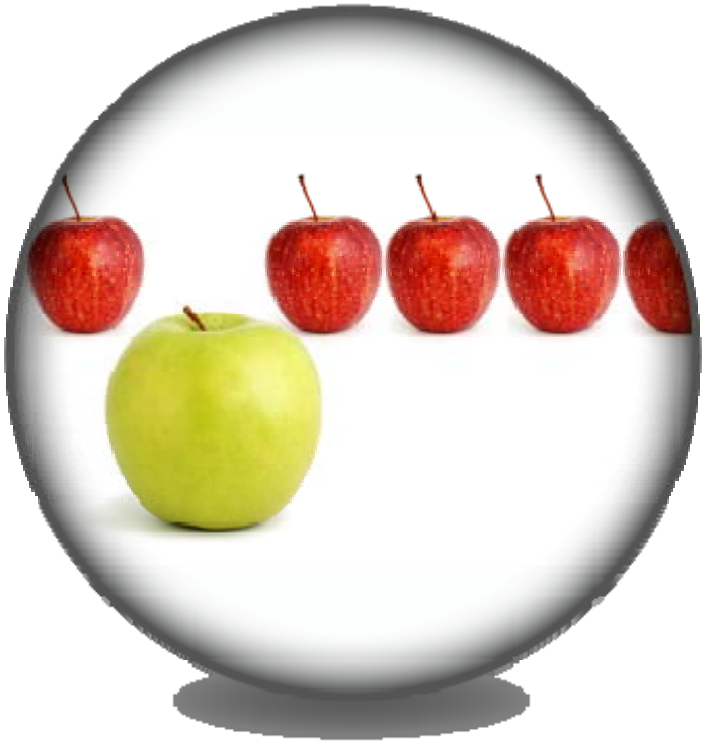
The Promise of Charter Schools

Models of innovation



The Promise of Charter Schools

Focus on Underserved Students

Characteristic	Change in average reading scale score		Change in average mathematics scale score
	Since 1992	Since 2005	Since 2005
Overall	▼	▲	▲
Race-ethnicity			
White	♦	▲	▲
Black	♦	♦	▲
Hispanic	♦	♦	▲
Asian/Pacific Islander	♦	▲	▲
American Indian/Alaska Native	‡	♦	▲
Gaps			
White – Black	♦	♦	♦
White – Hispanic	♦	♦	♦
Male – Female	♦	♦	♦

	▲	Higher in 2009
Source: 2009 NAEP Trends	▼	Lower in 2009
	♦	Same in 2009

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The Promise of Charter Schools

Vehicles for growing "healthy" competition in public education at primary and secondary levels

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Importance of the Study - III

- For 20 years, charter schools have faced multiple and conflicting priorities

BUT….

- After 20 years, and billions of dollars of new investments, 2 million students in charters
- If we rely on charter schools alone to save US students, it will take 200 years
- But if they stimulate improvement in TPS….

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Three Possible Mechanisms of Charter Impact on TPS

- Merhaba!! Simple Market Presence
  - *Do TPS in charter markets show generally higher performance than in monopoly markets?*
- Market-wide analysis –
  - *# of charters, density or proximity*
- Early studies showed little or no impact
  - *Holmes, DeSimone & Rupp, 2003, Ni, 2005, Bifulco and Ladd, 2006*

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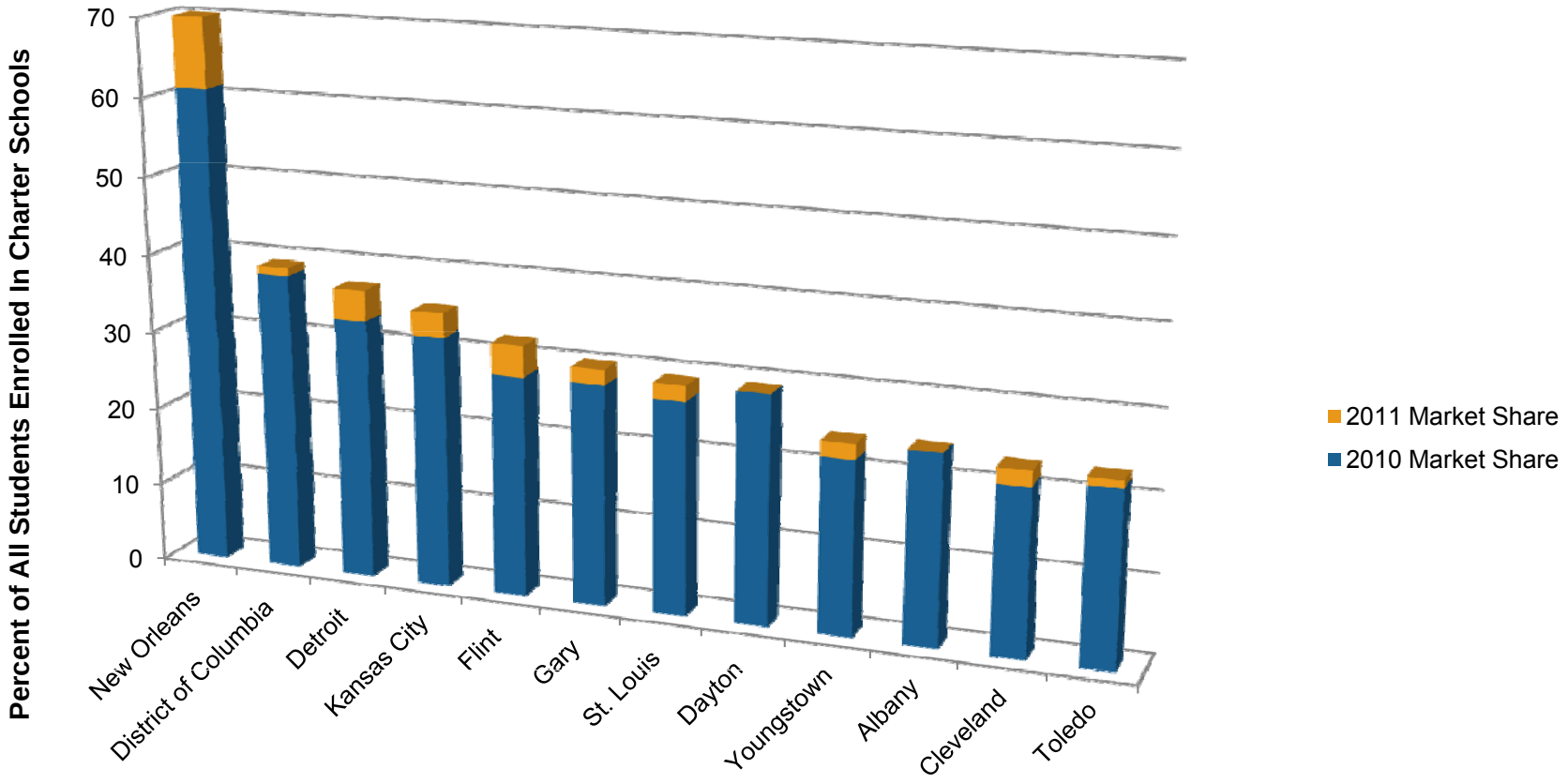
Largest Charter School Markets



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Largest Charter School Communities

Three Possible Mechanisms of Charter Impact on TPS

- Butts in Chairs Charter Market Share
  - *Do TPS in markets with high penetration outperform TPS in low- or no-penetration markets?*
- Market-wide or multi-site analysis
  - *Can mask variation in quality of charter schools*
  - *Budget relief may dampen effects*
- Levitt et al, 2005; Ny et al, 2009

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Three Mechanisms of Charter Impact on TPS

- What the Heck?!?

  Elastic Response to CS Quality

  - *Do TPS "recognize" the signal of quality from their competitor charter schools and respond to it?*
  - *Charter schools as "evidence proofs" of possibility to improve on historical outcomes*
- Sass, 2010; Imberman, 2011;
- *Studies use market-wide measures*
- *Results show no or minimal impact*

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Current Study

- Use panel data to follow students (not new)
  - Which TPS schools lose students to charters
  - Which charter schools are high performers
- Two contributions to the field:
  - Build micro-level markets of TPS and their competitors to examine “butts in chairs” and “WTH” mechanisms
  - Use Difference-in-differences (DID) estimation

Current Study

- District of Columbia
  - Discrete market area
  - Consistently low performing traditional public schools
  - High concentrations of poverty and ethnic minorities
  - Charter schools since 1999, now have 120 schools
  - Real estate pressure influences location > mission
- Student-level testing data since 2006
- Permits 3 periods of growth to be estimated

Attrition to Charters by TPS Quality

Attrition Rate	2006-2007	2007-2008	2008-2009
• 1% or less	.38	.68	.53
• 2% or less	.50	.29	.55
• 3% or less	.19	.28	.44
• 7% or less	.01	.03	.08
• 8% or less	.01	.03	.07
• 9% or less	-.01	.02	.02
• 13% or less	-.03	-.02	.01
• 14% or less	-.03	-.03	.01
• 15% or less	-.04	-.03	.00

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Current Study Approach

- DID model of student performance
- $Y_{ijt} = \alpha + \beta_{1jt}(C_{jt}) + \beta_{2jt}(T_{jt}) + \beta_{3jt}(DND) + B_{3ijt}(D_{ijt}) + B_{4jt}(M_{jt}) + \varepsilon_{ijt}$

  Y_{ijt} is the measured growth in test scores for each student *i* attending TPS *j* in year *t*,

  C_{jt} is a variable that signifies the presence of competition at TPS *j* in year *t*,

  T_{jt} is a measure of the competitive signal that is available to TPS *j* in year *t*,

  DND_{jt} is the interaction of the control and treatment for TPS *j* in year *t*,

  D_{ijt} is a vector of student demographic and program participation controls that apply to student *i* in TPS j in year *t*,

  M_{jt} is a vector of market controls for TPS *j* in year *t*, and

  ε_{ijt} is an error term for each student *i* in TPS *j* in year *t*.

Current Study Approach

- Endogeneity due to charter school's location preferences create problems for OLS models
  - Not addressed in early studies
  - Two-stage model with IV
    - Bettinger's Michigan study used proximity to university or racial diversity
    - Not as useful in small market like DC
  - Fixed effects for schools or students
    - Zimmer created "spell effects" for year-student periods
    - Apply only to schools experiencing competition
    - Exclusion of "no competition" could bias estimates

Current Study Approach

- Real question about endogeneity in DC
  - Open enrollment across district
  - Heavy real estate pressure makes strategic targeting by location improbable
  - Many schools move often in early years
- DnD abates endogeneity by making it explicit
  - Create threshholds of attrition to charter schools
  - 5%, 8%, 10%, 12% rates signal presence of competition
  - Arbitrary and increasingly implausible

Analytic Findings

Math results

Variable	5% attrition	8% attrition	10% attrition	12% attrition
Competition Threshold	-.07**	-.03**	-.04**	-.05**
Average Charter School Quality	.01	.05**	.04**	.04**
Average Charter School Quality DND	.08**	-.02	.04**	.03
Enrollment Trend Index	-.06**	-.05**	-.05**	-.05**
Number of Competing Charters	-.004**	-.005**	-.005**	-.005**

* significant at 5% ** significant at 1%

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Analytic Findings

Reading results

Variable	5% attrition	8% attrition	10% attrition	12% attrition
Competition Threshold	-.11**	-.08**	-.08**	-.04**
Average Charter School Quality	-.009	.03*	.02	.04**
Average Charter School Quality DND	.12**	.07**	.15**	.06*
Enrollment Trend Index	-.03**	-.03**	-.03**	-.03**
Number of Competing Charters	-.007**	-.007**	-.008**	-.007**

* significant at 5% ** significant at 1%

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Sensitivity Tests – Alternate Quality Measures

Charter school quality trajectory

Variable	5%	8%	10%	12%
Math				
Positive Trajectory DND	.07**	.02	.06**	.03
Reading				
Positive Trajectory DND	.09**	.10**	.14**	.06*

* significant at 5% ** significant at 1%

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Sensitivity Tests – Alternate Quality Measures

Difference between TPS and Charter Quality

Variable	5%	8%	10%	12%
Math				
Average Quality Difference DND	.07**	-.08**	-.11**	-.10**
Reading				
Average Quality Difference DND	.17**	.17**	.03	-.07

* significant at 5% ** significant at 1%

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Fixed Effects Models

"Butts in Chairs" Models with Fixed Effects

Competition Measure		OLS	Student FE	Student FE School FE
% Students in Charter Schools	R	.067**	.038**	.021*
	M	.055**	.011	.006
Lagged Attrition to Charters	R	-.442**	.776**	.538**
(with prior test score)	M	-.364**	.773**	.722**
(without prior test score)	R		.40	.816
	M		.530	.503

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Fixed Effects Models

WTH Models with Fixed Effects

Competition Measure		OLS	Student FE	Student FE School FE
Ave. Score of Charter Schools	R	.356**	.05	.052
(with prior test score)	M	.243**	-.004	-.009
(without prior test score)	R		.163**	.182**
	M		.055	.043
High Scoring Charter School	R	.126**	.034**	.012
(with prior test score)	M	.112**	.002	.00
(without prior test score)	R		.067**	.054**
	M		.057**	.072**

Summary and Further Questions

- Competitive impact fairly stable and significant when signal is simple and definition of "competition" is reasonable.
- Other controls reject market-wide factors as drivers of competitive effects
- Quality signals appear to have stronger impact than loss of students
- Modest policy support for competitive markets – stresses importance of overall charter quality