

Value-Added Modeling of Teacher Credentials: Policy Implications

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Outline of presentation

- Brief summary of what we have learned from value-added modeling in North Carolina about the relationship between teacher credentials and student achievement.

(See CALDER papers by Clotfelter, Ladd, and Vigdor)

- Six implications for policy



Test scores for students in NC

Elementary school, grades 4-5. We use end-of-grade tests (EOG) in math and reading

High school. End-of course (EOC) tests in 5 subjects designed for grades 9 and 10 (Algebra I, English I, Biology, Geometry, and Econ/Legal/Poli,)

- ✓ Linked to NC standard course of study
- ✓ Basis of state school-based accountability system
- ✓ At high school level, tests count for 25 percent of student's grade in the course.

=> Incentive for teachers to teach the material and for students to learn it.

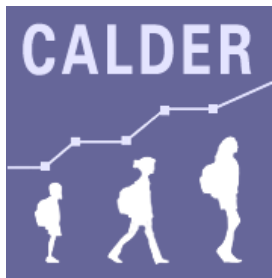


Interpretation of magnitudes

All test scores are normalized so that the coefficient estimates are fractions of a standard deviation -- typically in the range of 0.01 to 0.09 s.d.

May seem small, but when interpreted relative to an expected annual growth in test score and with attention to measurement error, they look much larger, possibly four times as large (See research by the NY CALDER group)

All estimates are statistically significant unless otherwise noted.



Achievement effects by: Teacher experience

Years of exp.	Elementary		High School
	Math	Reading	
(base = 0)			
1-2	0.057	0.032	0.050
3-5	0.072	0.046	0.061
6-12	0.079	0.053	0.061
13-20	0.082	0.062	0.059
21-27	0.092	0.067	0.062
>27	0.084	0.062	0.043



Achievement effects by:

Licensure status

	Elem. math (lower bound)	High school
Regular (base)	---	---
Lateral entry	-0.033	-0.061
Other	-0.033	-0.046



Achievement effects by:

National Board Certification

	Elem. Math (lower bound)	High school
NBCT -2	0.024	Pre. 0.022
NBCT -1	0.018	---
NBCT current	0.018	0.048
NBCT has	0.022	0.051

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Achievement effects by: Master's degree

	Elem. Math (lower bound)	High school
MA before teaching	-0.001 (not sig.)	-0.006 (not sig.)
MA 1-5 years into teaching	0.004 (not sig.)	0.009 (sig.)
MA degree 5+ years into teaching	-0.010 (sig)	0.009 (sig.)



Achievement effects by: Teacher licensure test scores

	Elem. Math (Lower bound)	High school
Teacher test score (normalized)	0.011	0.011
Math score for Alg. and geo.		0.031
Biology		0.013
Other science for biology		0.009
Social studies and English		Small negative effects unexpected



Magnitude of the effects

- Bundles of characteristics – add up the effects

- Elementary teachers.

 - Strong vs. weak set of credentials

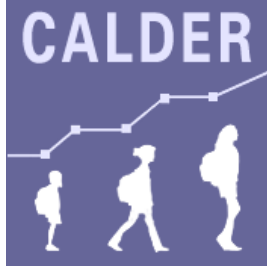
 - Math 0.150 to 0.206

 - Reading 0.081 to 0.120

- High school teachers

 - 90th to 10th percentile of the predicted achievement distribution 0.183

Relatively large effects, but still a lot of unexplained variation in teacher effectiveness.



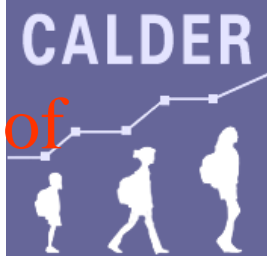
Policy implications – 1

The current **maldistribution** of teachers (as defined by their credentials) across schools and across classrooms contributes to achievement gaps.

In NC, the schools serving the highest proportions of poor students have the:

- Highest percentage of teachers
 - with less than 3 years experience
 - with a non-regular license
- Lowest average teacher test scores
- Lowest percentage of teachers who are National Board Certified.

⇒ **Need to find ways to even out the distribution of teachers across schools.** (not developed here)



Policy implications - 2

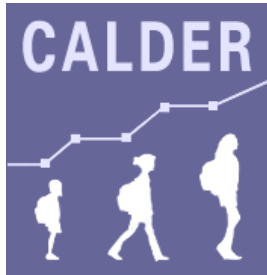
Accountability systems need to pay attention to the maldistribution of teachers across schools.

Counterproductive to put strong pressure on schools with large proportions of teachers with weak credentials.

Problem of lack of capacity.

Accountability pressure may increase turnover in low performing schools – clear evidence of that in NC

Once again – policy makers need to find ways to even out the distribution of teachers across schools.



Policy implications - 3

Type of **licensure** matters

Lateral entrants and other teachers without regular licenses are less effective than those with regular licenses.

(But other CALDER research indicates TFA teachers at high school level may be an exception)

Caution needed in promoting lateral entry.

Quality of programs matter.
Support needed.



Policy implications - 4

- National Board Certification

- Positive effects in NC

- (but other CALDER research shows not true in Florida)

=> May be useful to promote Board Certification and to induce NBCTs to teach in high poverty schools.



Policy implications- 5

Does not make sense to reward teachers for a **master's degree** – especially at the elementary school level.

But the higher pay may keep teachers in the profession.

Policy implication: need to explore other ways to keep effective teachers in the profession.

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Policy implications - 6

Time to rethink the salary schedule for teachers.

See proposal by Jacob Vigdor to flatten the salary schedule in *Education Next*, fall, 2008)

- Raise salaries at the bottom
To attract teachers with more ability (teacher test scores matter)
- Increase the returns to experience at the bottom of the experience distribution much faster than now so that teachers do not have to wait until their 50's to reach the peak of the salary schedule.

Consistent with the rising returns to experience at the low end of the experience distribution.

Also would make salaries patterns more consistent with those in other professions.

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Policy Implications – 6 (cont.)

Other adjustments to salary schedule

Eliminate automatic increases for master's degrees.

Eliminate automatic increases for experience.

But then need to find some alternative way to identify and reward effective experienced teachers.

Possible options: NBCT or comparable process, rewards based on careful evaluation, more pay for additional work such as mentoring.



Teacher credentials research by

Charles Clotfelter, Helen Ladd and Jacob Vigdor

based on North Carolina data

- Teacher-student matching the assessment of teacher effectiveness. *Journal of Human Resources*, 2006.
- How and why teacher credentials matter for student achievement. CALDER and NBER working paper.
- Teacher credentials and student achievement: Longitudinal analysis with student fixed effects. *Economics of Education Review*, 2007.
- Teacher credentials and student achievement in high school: A cross subject analysis with student fixed effects. CALDER and NBER working paper.

