

School District Size, Cost, and Performance: Implications for deconsolidation

A presentation to the *Huntersville Educational Options Study Commission*

25 February 2019



Presentation overview

- Introductions
- Historical context
- Review of LEA size literature
 - Finding from the cost literature
 - Findings from the production literature
- Deconsolidation in the public sector
- Deconsolidation in the charter sector
- Questions and discussion

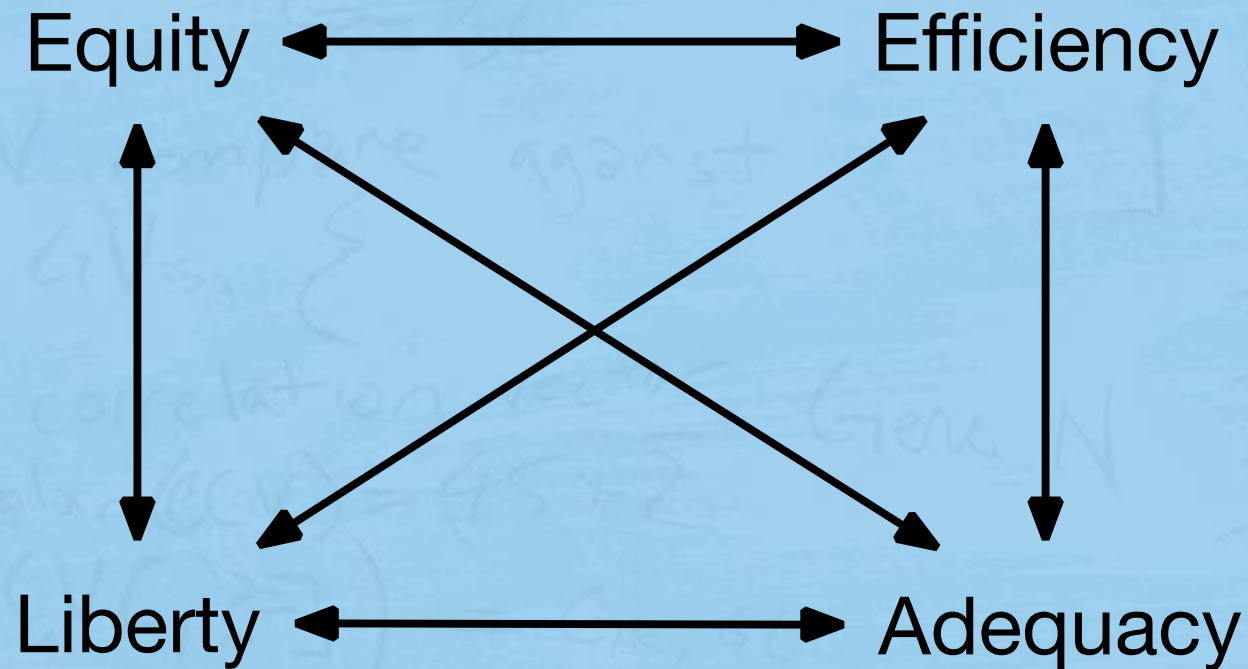


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- Associate Professor of Leadership and Policy, School of Education, University of North Carolina at Chapel Hill
 - Co-author of *Modern Education Finance and Policy* (2007).
 - Lead author of “Examining School District Efficiency in Georgia” in the *Journal of School Finance* (Spring 2010).
 - Co-author “Measuring Charter School Efficiency in North Carolina: A Modified Quadriform Analysis” presented at the 2018 meeting of the *National Education Finance Conference* with Dan Sturdevant, EdD.
 - Lead author of “Left Behind: District secession and the re-segregation of American schools” in the *Peabody Journal of Education* (forthcoming) with Brittany Murray.



Framework for evaluation of school finance policies from *Modern Education Finance and Policy*:



Historical Context

- Increased chartering and vouchering in NC
 - Race to the Top 2010
- Capacchione and its aftermath
 - Williams & Houck 2010
 - Ayscue et al 2018



Historical Context

- A history of LEA and school consolidation in the US
 - From 117,000 LEAs in 1940 to 14,000 in 2009; from 200,000 schools in 1940 to 87,000 in 2009
- Consolidation/closure still a relevant topic at the LEA and school level
- What the history of consolidation means for research and commentary on deconsolidation?



Findings from the Cost Literature



Findings from cost studies

- Cost studies seek to find minimum operational costs, holding performance constant
- Many cost studies find a “u shaped curve”
 - Districts are inefficient up to a point, become efficient and then become inefficient again.



Findings from cost studies

- A 2002 review of the literature indicates this “U” may begin around 4K and end around 15K of student population
 - Andrews, Duncombe, & Yinger 2002
- A 2018 study in Kansas noted a threshold of 10K of student population
 - Taylor et al 2018



Local context

- The enrollment of a “Northern cluster” of CMS schools would total ~22,000 students.



Findings from cost studies

- Administrative cost savings in larger districts seem to be offset by transportation costs.
 - Andrews, Duncombe, & Yinger 2002
- Researchers in this area are sensitive to – but unable to pinpoint – district size and school size interactions.
 - Andrews, Duncombe, & Yinger 2002
 - Baker & Duncombe 2004



Findings from cost studies

- Relatedly, school (re)composition can impact operational efficiencies
 - Race and class
 - Baker & Duncombe 2004
 - Special education
 - Houck, Rolle, & He 2010
- Often, school finance mechanisms can be leveraged to address these concerns.



Concerns about previous work

- Rooted in technical, not allocative approaches
- Have only looked at performance levels and not growth in performance
- Have utilized production-function and cost-function approaches based in the idea of technical efficiency
 - Schools are not firms
 - Schools are sometimes thought to practice allocative efficiency on a bureaucratic model
 - Multiple goals pursued simultaneously
 - Uncertainty regarding the nature and frequency of mandates
 - Relative immobility



Findings from cost studies (allocative)

- A study in Texas found no relationship between efficiency and school district size
 - Taylor, Grosskopf, & Hayes 2016
- A study in Georgia found that district size was unrelated to performance on grade level tests and graduation rates, but that district size was positively associated with improved passing on state-administered graduation tests
 - Houck, Rolle, & He 2010



Findings from the Production Literature

- Not a sizable literature on LEA size
- Outcomes: test performance (aggregated level), pursuing additional education, average daily attendance, reform “take-up”
- Operationalizing LEA size
- State contexts



Findings from the Production Literature

- Several studies show that smaller LEAs are associated with desired outcomes
 - Higher ADA rates for HS in Texas LEAs with fewer schools
 - Jones, Toma, & Zimmer 2008
 - Higher school-level achievement in California ES and MS
 - Driscoll et al. 2003
 - Higher school-level achievement in grades 3, 6, and 9 in NJ
 - Walberg & Fowler 1987
 - Higher school-level achievement and higher test passing rates in NJ high schools with fewer schools in the LEA
 - Fowler and Walberg 1991



Findings from the Production Literature

- Other studies suggest that the impact of LEA size depends on the poverty/SES of the district/community
- As SES increases, the effect of LEA size on student achievement goes from negative to positive
 - District average test scores in CA
 - Friedkin & Necochea 1988
 - School and district-level achievement in WV
 - Howley 1996
 - Percentile rank on tests (8th and 11th in GA)
 - Bickel & Howley 2000
 - School-level achievement in 4th and 7th grades in WA
 - Abbot et al. 2002



Local context

- Northern cluster: 33% ED; 8 Whole School Title I (WSTI) schools (36% average ED population).
- CMS: 54% ED; 109 WSTI schools (69% average ED population).



Findings from the Production Literature

- Several studies return positive results for LEA size
 - Larger LEAs have higher 8th grade science scores in TX
 - Mann et al 2013
 - Students coming from larger municipalities more likely to complete higher education in Denmark; key cut-point at 15,000
 - Heinesen 2005
 - LEA size positively associated with improved passing rates on state-administered graduation tests
 - Houck, Rolle, & He 2010
 - Larger LEAs and schools in larger LEAs report greater progress in implementing standards-based reform; some evidence of SES effect
 - Hannaway & Kimball 1998



Combined Conclusions

- No optimal size...may differ based on outcome, group, and value
- The NC context
 - Wake and CMS would likely need to be divided into many LEAs to capture potential benefits; still may have larger schools
 - Distribution questions— which portions of these LEAs would form new LEAs?
- Some evidence related to LEA size; concern as to whether it warrants such consequential decisions
 - Opportunity for more recent and rigorous work in NC



Anticipating deconsolidation in the public sector



each GV compare against other GVs, $\{$

Store correlation vector $G_{row, N}$

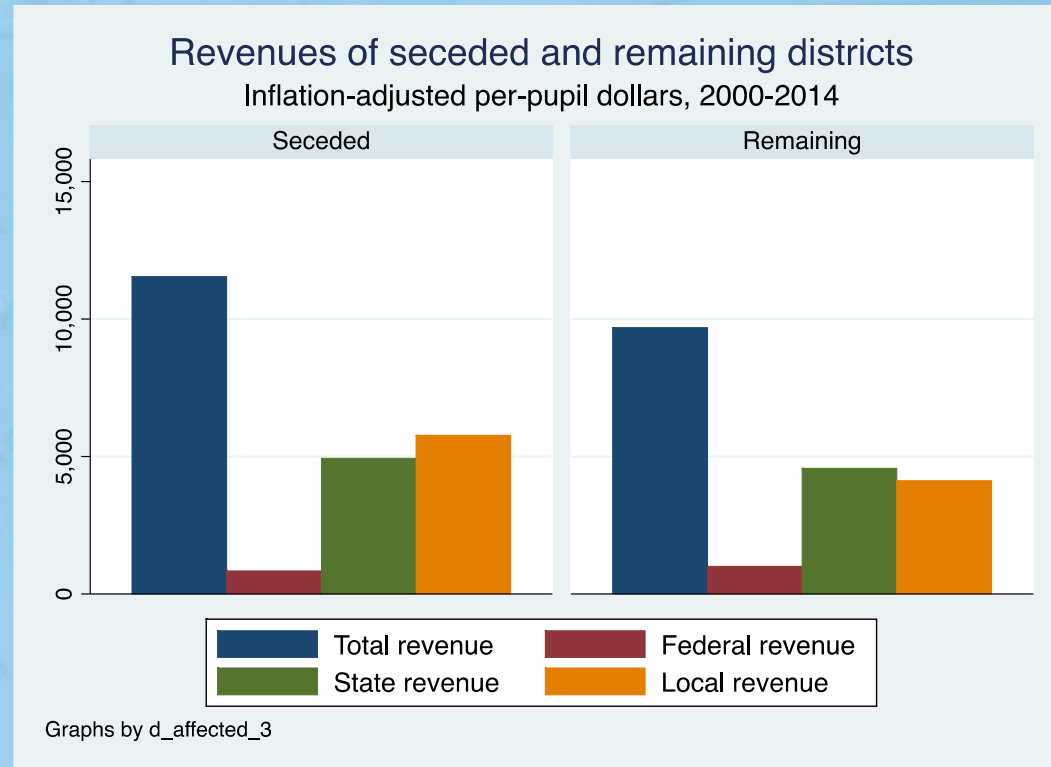
$$\text{scalar}(GV) = 45 + 2$$

$\max(\{GV, \lambda\}) = G_k, G_l$

average G_k, G_l and G_V

remove G_k, G_l from Q

Revenues, described



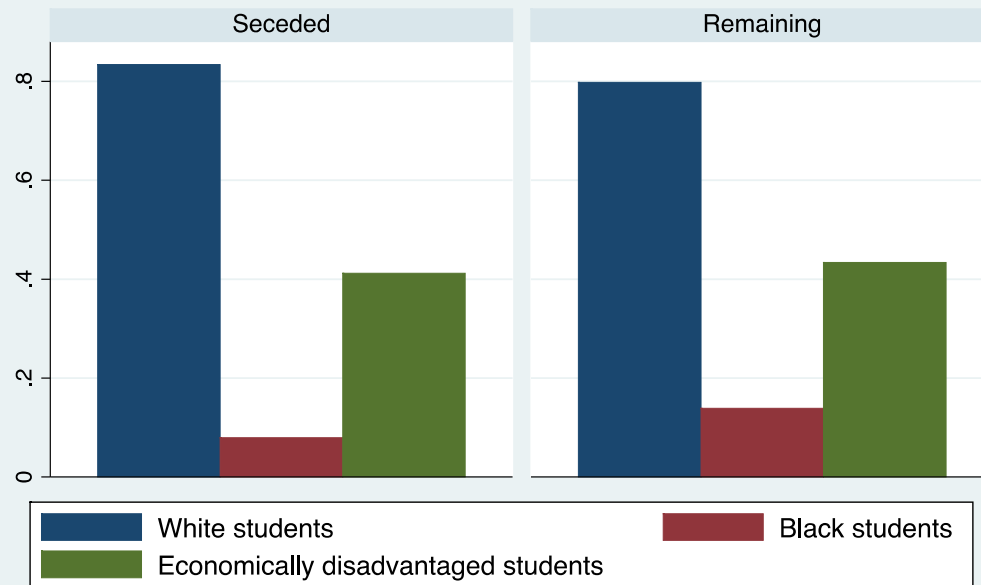
Measure	Seceded	Remaining		p
Total	11,514	9,678	***	p<.00
Federal	826	995	***	p<.00
State	4,931	4,536	-	p=.07
Local	5,772	4,117	***	p<.00
n=575				

Source: Houck & Murray, in press



Demographics, described

Select demographics of seceding and remaining districts
2000-2014



Graphs by d_affected_3

Measure	Seceded	Remaining		p
White	.84	.80	*	p=.02
Black	.08	.14	***	p<.00
Hispanic	.06	.03	***	p<.00
FRL	.41	.43	-	p=.12
n=575				

Source: Houck & Murray, in press



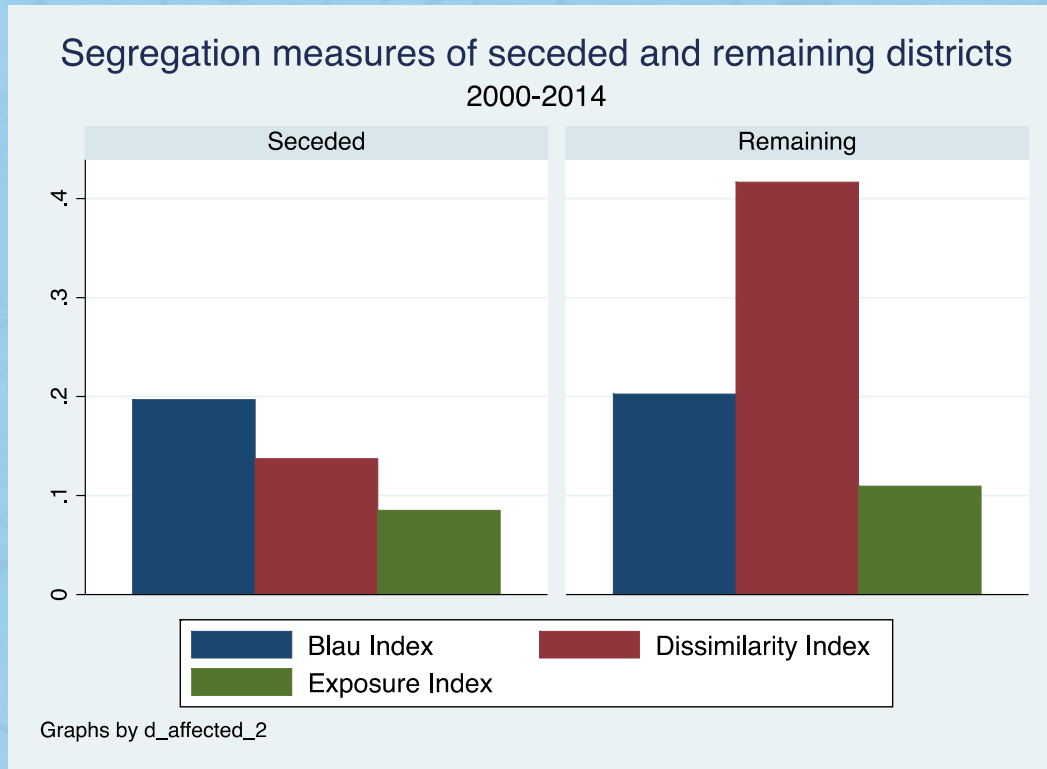
Demographics, described

School secession 2000-2014	Original districts pre-secession	Original districts post-secession	Seceded districts
Demographics			
Percent white	0.82	0.74	0.84
Percent black	0.12	0.19	0.08
Percent Hispanic	0.03	0.04	0.06
Percent Asian	0.01	0.01	0.01
Percent FRL	0.42	0.47	0.41
Size	15,264	20,111	1,668
Percent SPED	0.14	0.13	0.10
Percent ELL	0.03	0.02	0.03
Student-teacher ratio	13.38	15.79	17.65

Source: Houck & Murray, in press



Segregation, described



Measure	Seceded	Remaining		p
Dissimilarity	.14	.42	***	p<.00
Exposure	.08	.11	-	P<.06
Blau	.19	.20	-	P<.12

n=575

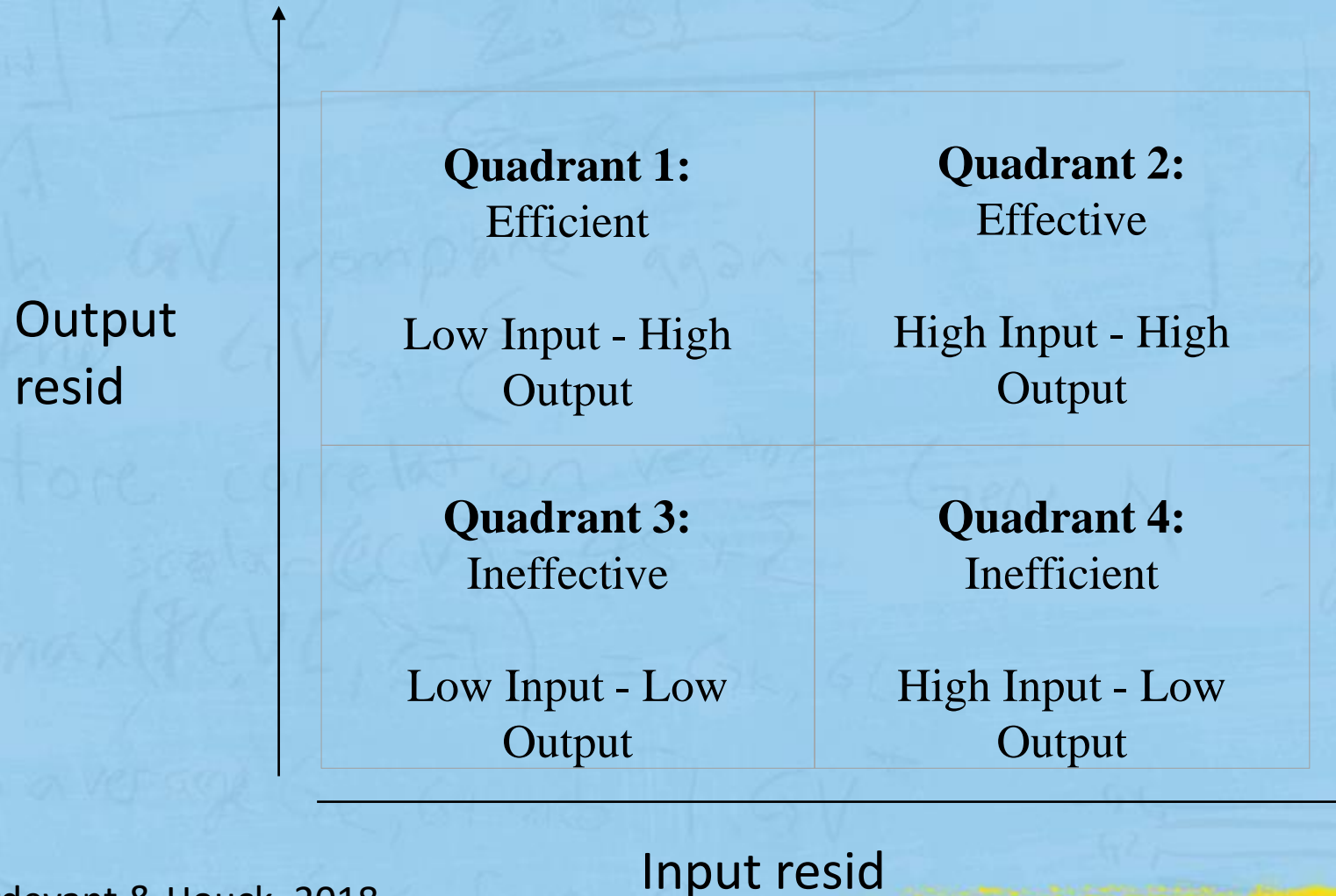
Source: Houck & Murray, in press



Anticipating deconsolidation in the charter sector



The modified quadriform method:

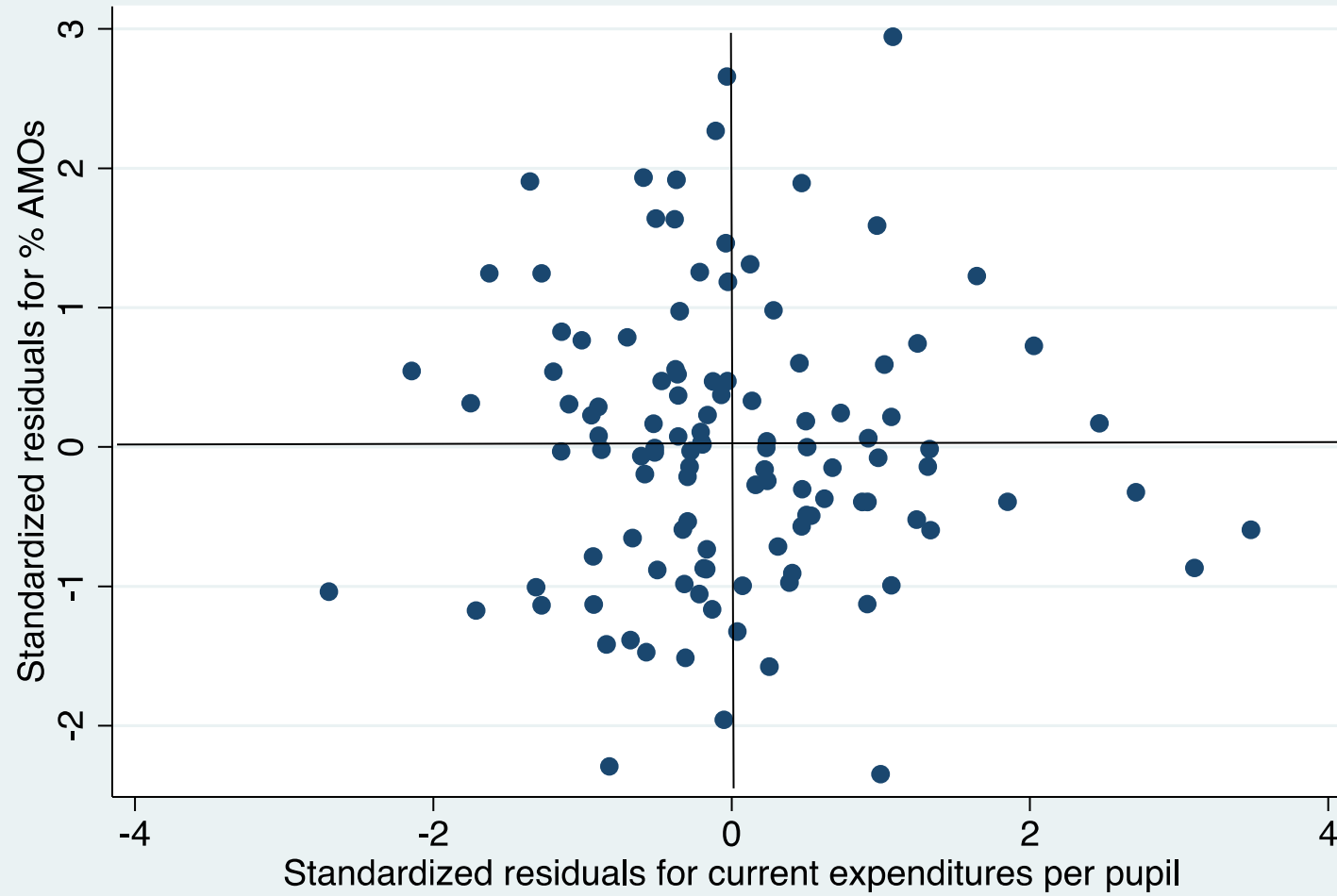


Source: Sturdevant & Houck, 2018



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Efficient production of AMOs, 2015



Source: Sturdevant & Houck, 2018



Questions and contact

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