School District Size, Fiscal Efficiency, and Student Outcomes: Lessons from Research

A presentation to the *Joint Legislative Study Committee on the Division of Local School Administrative Units*

March 28, 2018

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Presentation overview

- Introductions
- Historical context
- Review of relevant literature
  - Finding from the cost literature
  - Findings from the production literature
- Questions and discussion

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- Co-author of *Modern Education Finance and Policy* (2007)
- Author of "Examining School District Efficiency in Georgia" in the *Journal of School Finance* (Spring 2010).
- Author "Measuring Charter School Efficiency in North Carolina: A Modified Quadriform Analysis"

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- Director of Educator Quality Research Initiative, partnership between UNC Chapel Hill and UNC System focused on educator effectiveness
- Published work on educator preparation and effectiveness, equitable distribution of teachers, beginning teacher supports, and school quality

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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
- Rationales for consolidation
- Concerns with consolidation
- Consolidation/closure still a relevant topic at the LEA and school level
- What the history of consolidation means for research and commentary on deconsolidation?

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Findings from the Cost Literature

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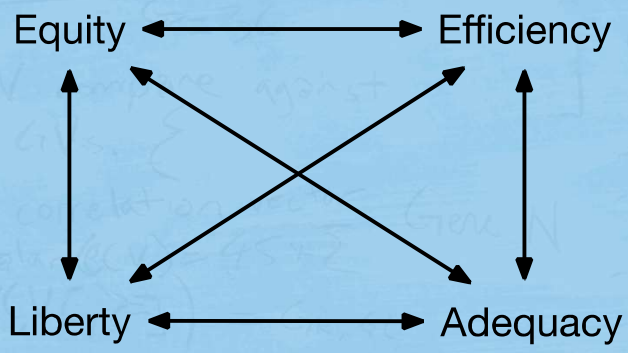
Framework for evaluation of school finance policies from *Modern Education Finance and Policy:*



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Findings from cost studies

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

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Findings from cost studies

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

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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

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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.

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Concerns about previous work

- 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

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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

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Findings from the Production Literature

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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

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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)

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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
  - Friedkin & Necochea, 1988: District average test scores in CA
  - Howley, 1996: School and district-level achievement in WV
  - Bickel & Howley, 2000: Percentile rank on tests (8th and 11th in GA)
  - Abbot et al. 2002: School-level achievement in 4th and 7th grades in WA

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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)

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Findings from the Production Literature

- Interpreting this literature from the deconsolidation perspective…
  - Much of the data come from the 1980s and 1990s
  - Not controlling for much; concerns as to whether it isolates "size" effects
  - Lack of student-level data; almost always aggregated (to school or LEA levels)
  - Little attention paid to interaction effects of LEA and school size
  - "Static" focus on achievement levels rather than growth
  - Lack of "natural experiments" to study

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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

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Questions/Discussion

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Slide annex

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The modified quadriform method:

Output resid

Quadrant 1: Efficient Low Input - High Output	**Quadrant 2:** Effective High Input - High Output
Quadrant 3: Ineffective Low Input - Low Output	**Quadrant 4:** Inefficient High Input - Low Output

Input resid

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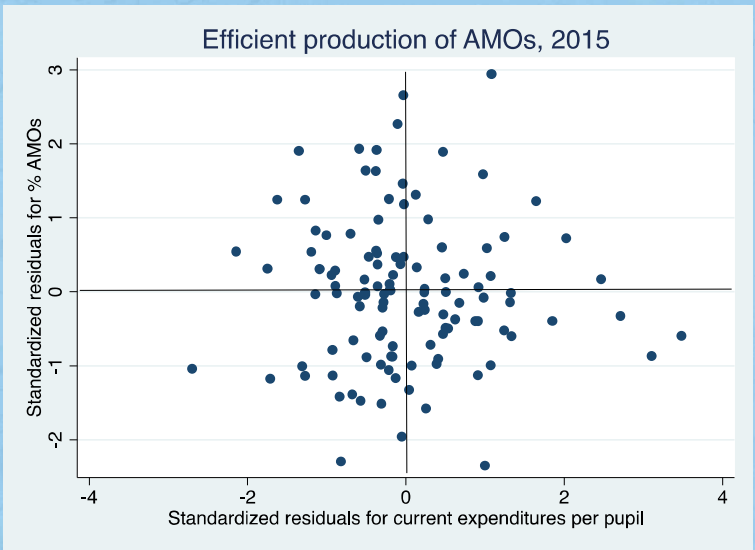

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