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
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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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- 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
**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?

**Findings from the Cost Literature**
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.
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

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

• Relationally, 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

• 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
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
  • 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

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)
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

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
The modified quadriform method:

- **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

Efficient production of AMOs, 2015

- Standardized residuals for % AMOs
- Standardized residuals for current expenditures per pupil