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The Benefits and Costs of School District Consolidation: What recent research reveals about potential cost savings

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School district consolidation is a striking phenomenon. According to the National Center for Education Statistics, 117,108 school districts provided elementary and secondary education in 1939-40. By 2006-07, the number of districts had dropped to 13,862, a decline of 88 percent. The rate of consolidation has slowed in recent years, but at least a few districts continue to consolidate every year in many states.

Most state governments have policies that influence school district consolidation. The most common form of policy is a state aid program designed to encourage district reorganization, typically in the form of consolidation, by providing additional money for operations or capital projects during the transition to the new form of organization.

The aid bonus from consolidation can be quite large. In New York, consolidating districts may receive an increase in their basic operating aid of up to 40 percent for five years, with declining increases for an additional nine years. On top of this aid, consolidating districts also may receive a 30 percent increase in building aid for projects initiated within 10 years of consolidation.

In many cases, however, state aid policies concerning consolidation are contradictory. In fact, about a third of the states, including some that offer consolidation bonuses, use operating aid formulas that compensate school districts for sparsity (i.e. low population density) or for small scale and thereby discourage consolidation, according to Yao Huang, a contributor to *Helping Children Left Behind: State Aid and the Pursuit of Educational Equity*.

So what's a state to do? Some recent research provides guidance.

Expected Cost Savings

The main justification for school district consolidation has long been that it is a way to cut costs. These cost savings arise, the argument goes, because the provision of education is characterized by economies of size, which exist whenever the cost of education per pupil declines as the number of pupils goes up. In this context, the cost of education is not the same as educational spending but is instead the amount a school district would have to spend to obtain a given level of performance, as measured by test scores, graduation rates and perhaps other output measures.

To put it another way, economies of size exist if spending on education per pupil declines as the number of pupils goes up, controlling for school district performance. Because consolidation creates larger school districts, it results in lower costs per pupil whenever economies of size exist.

Economies of size could arise for many reasons, which we discuss in “Does School District Consolidation Cut Costs?” in the fall 2007 issue of *Education Finance and Policy*.

First, the services provided to each student by certain education professionals may not diminish in quality as the number of students increases, at least over some range. All districts require a superintendent and a school board, for example, and the same central administration may be able to serve a significant range of enrollment with little change in total costs.

Second, education requires certain physical capital, such as a heating system and science laboratories, which require a certain scale to operate efficiently and therefore have a high cost per pupil in small districts.

Third, larger districts may be able to employ more specialized teachers, putting them in a better position to provide the wide range of courses required by state accountability systems and expected today by students and parents.

Finally, teachers in larger districts have more colleagues on which to draw for advice and discussion, interactions that presumably lead to improved effectiveness.

Mixed Signals

Although these arguments make a lot of sense, some other factors cut in the other direction. First, consolidated school districts usually make use of larger schools, which implies that average transportation distance must increase. As a result, consolidation might increase a district’s transportation spending per pupil.

Second, consolidating districts may level up salaries and benefits to those of the most generous participating district, thereby raising personnel costs.

Third, administrators and teachers may have a more positive attitude toward work in smaller schools, which tend to have more flexible rules and procedures.

Finally, students may be more motivated and parents may find it more comfortable to interact with teachers in smaller districts, which tend to have a greater community feel. These reactions and closer student-faculty relationships may result in higher student performance at any given spending level.

Overall, the net impact of consolidation on education costs per pupil is not clear a priori. Some factors indicate consolidation is likely to tap into economies of size and thereby lower these costs, but other factors suggest consolidation might actually cause costs per pupil to rise. As a result, we now turn to

empirical studies of consolidation, which can determine whether the net impact of consolidation on costs per pupil is positive or negative.

Empirical Evidence

A large body of literature has investigated the relationship between cost per pupil and district enrollment, controlling for school performance. Although these studies cover many different locations and use various methodologies, most lead to the same conclusion that emerged from a study, “Revisiting Economies of Size in American Education: Are We Any Closer to a Consensus?” in the June 2002 issue of *Economics of Education Review*: “Sizeable potential cost savings may exist by moving from a very small district ... to a district with 2,000 to 4,000 pupils, both in instructional and administrative costs.”

These studies estimate economies of size across all school districts and therefore do not look directly at the cost impact of consolidation. Another approach is provided by the two of us in our *Education Finance and Policy* article in 2007 -- namely, to see how costs per pupil change when districts consolidate. This study is based on all the rural school districts in New York State between 1985 and 1997.

During this period, 12 pairs of these districts consolidated. These consolidating districts had enrollments ranging from 250 to 1,990. To isolate the impact of consolidation, the costs in consolidating districts can be compared both with their own costs before consolidation and with the cost of similar districts that did not consolidate. The analysis controls for a variety of district characteristics, including two measures of student performance, namely the percentage of students achieving minimum competency on the state’s elementary school math and reading tests and the percentage of students receiving a Regents diploma, which requires passing a set of demanding exams in high school. The second performance variable is important in New York because one argument for consolidation is that it facilitates the offering of special classes to support the Regents exams.

This study explores both operating and capital spending. To account for the extreme “lumpiness” of capital spending, it is averaged over a four-year period.

This study finds strong evidence of economies of size in operating spending but not in capital spending. More specifically, annual operating spending per pupil declines by 61.7 percent when two 300-pupil districts merge and by 49.6 percent when two 1,500-pupil districts merge. The savings are particularly large for the sub-categories of instruction and administration, but the study finds no economies -- or diseconomies -- of size for student transportation.

Transition Costs

These results for economies of size are only half the story, however. This study also finds that consolidation involves transition costs not associated with enrollment. Both overall operating spending and operating spending subcategories exhibit a large upward shift in per pupil costs at the time of consolidation, followed by a gradual decline in per pupil costs in the following years. These extra costs appear to disappear after about 10 years. This study also finds large adjustment costs in capital spending, which appear to phase out even more slowly.

To some degree, these adjustment costs offset the cost savings associated with consolidation-induced enrollment increases. Over a 30-year period, the net annual savings after accounting for adjustment costs fall to 43.7 percent for a consolidation of two 300-pupil districts and to 29.6 percent for the consolidation of two 1,500-pupil districts. The savings are smaller with a 10-year horizon because the adjustment costs have not yet phased out.

These results are summarized in the table (page xx), which replicates data from our study appearing in *Education Finance and Policy* in 2007.

Net Annual Cost Changes from Consolidation **New York Rural School Districts, 1985-1997**

	Type of District Consolidation		
	300 to 600 Students	900 to 1,800 Students	1,500 to 3,000 Students
Total Spending			
Enrollment Effects Only	-56.04%	-48.60%	-45.07%
Enrollment Plus Non-Enrollment Cost Effects of Consolidation:			
10-year horizon	-31.45%	-19.84%	-14.35%
30-year horizon	-43.69%	-34.15%	-29.64%

Source: *Education Finance and Policy*, Fall 2007

The large adjustment costs in capital spending identified by this study are difficult to interpret. They appear to reflect capital spending encouraged by the building aid increases associated with consolidation. It is not clear, however, whether these capital spending increases lead to improvements in student performance in the future (that is, outside the sample period of the study) or whether they represent capital spending that does not have a student-performance payoff.

Non-Cost Impacts

When deciding whether to encourage consolidation, state policy makers may want to consider several factors other than cost savings. To some degree, consolidation may break parents' valued connections with existing schools, result in higher transportation costs for parents and students or raise costs for improving school outcomes other than the test score measures included in existing studies.

Because consolidation requires the consent of voters in all the consolidating districts, consolidation will not take place unless a majority of voters perceive the net benefits outweigh the costs. Nevertheless, the net benefits of consolidation to voters still could be far below the cost savings to the districts themselves.

Some evidence on these issues comes from two recent studies of the impact of consolidation on housing prices. These studies estimate whether people are willing to pay more for housing in a district after it consolidates. Using data from Ohio, David Brasington, writing in the September 2004 issue of *The Journal of Real Estate Finance and Economics*, found that, after controlling for student performance and property tax rates, consolidation lowers property values by about \$3,000 on average.

This result appears puzzling at first. If consolidation lowers property values, why do voters support it? In fact, however, the cost savings from consolidation are translated into either higher student performance or lower property tax rates, so this result simply indicates the cost savings from consolidation must be at least \$3,000 per household to offset the apparent losses from consolidation associated with less local control, lessened accessibility of teachers and school administrators, higher parental and student transportation costs or other unidentified negative effects.

Another study of rural school districts in New York State by Yue Hu and John Yinger, "The Impact of School District Consolidation on Housing Prices" in the December 2008 issue of *National Tax Journal*, yielded results consistent with Brasington's. These results indicate consolidation boosts house values and rents by about 25 percent in very small school districts and that this effect declines with district enrollment.

When two 1,500-student school districts merge, the housing-price impact is only about 6 percent, and consolidation has no impact on housing prices in districts with roughly 1,700 or more students. This declining impact matches the declining economies of size estimated by our own study. Moreover, these results are consistent with Brasington's because they do not control for student performance or property tax rate, but instead estimate the net impact of consolidation, including both its impact on school costs and its impact on other things that households value.

Both studies state that the net impact of consolidation is lower than the cost savings, which means, on balance, households place a negative value on the effects of consolidation other than the cost

savings. The net impact of consolidation is still positive for small districts, but this impact is not nearly as large as the cost savings alone.

Two additional findings from the Hu and Yinger study are worth mentioning. First, they found roughly a third of consolidation's positive impact on housing prices is due to the aid bonus that consolidating districts receive in New York. In the smallest school districts, consolidation would boost housing prices even without this aid increase, but the housing-price impact of consolidation would be negative for two 1,500-student districts if they did not receive additional state aid.

Second, the impact of consolidation on housing prices declines as house value and rent increase and is actually negative in the wealthiest neighborhoods. The negative value placed on the impact of consolidation outside the school budget apparently is greater (in absolute value) for households in neighborhoods with relatively expensive housing, predominantly higher-income households, than for households where house values and rents are relatively low. In short, consolidation is popular with the average household in small rural school districts in New York State, but it is not popular among households with relatively valuable housing.

Policy Implications

These results have several implications for public policy. The first and most important implication is that states are likely to save money in the provision of elementary and secondary education by encouraging their smallest districts, specifically those with fewer than 1,500 pupils, to consolidate with one of their neighboring districts. These cost savings come from economies of size, which are only partially offset by adjustment costs associated with consolidation.

Geographic barriers or other concerns may rule out consolidation under some circumstances, but the potential savings for small districts are substantial. Indeed, school districts with 1,500 students might be able to cut their cost per pupil by 30 percent through consolidation. These cost savings may not translate into lower spending, of course, if the consolidation leads to higher student performance for these small districts, but performance increases of this type are also a clear gain for society.

One final point for perspective is that even though consolidation-induced cost savings may be large for an individual district, they are inevitably small for the state as a whole because only the smallest districts in the state are involved.

Second, consolidation appears to have significant effects beyond cost savings for school districts. On the one hand, households, particularly those with high incomes, appear to value the features of smaller districts, such as better access to teachers and lower transportation costs. From society's point of view, therefore, the cost savings from consolidation are offset to some degree by the losses households experience outside the school budget. These losses do not eliminate the case for consolidation, but they do

indicate the case for consolidation is stronger when a district has 500 or 1,000 pupils than when it has 1,500 pupils.

The existing property-value studies do not indicate exactly which features of consolidation are negatively valued by households, but they do show that negatively valued features exist. Further research is needed to identify what these features are and to determine the enrollment size at which consolidation no longer makes sense. This enrollment size might vary, of course, across states or across circumstances.

The third lesson is that states would be well served by rethinking their aid programs that are linked to consolidation. Our 2007 study found evidence that capital costs shift upward substantially after consolidation, probably because of increased state aid. Some of this capital spending may be justified, but states should be careful to monitor such spending carefully and to direct post-consolidation building aid toward cost-effective projects that are part of a long-run plan.

The 2008 research finding by Hu and Yinger concerning state aid provides another important caution. Increases in housing prices associated with consolidation-based aid bonuses should not be interpreted as evidence that consolidation produces positive net benefits. Extra aid obviously benefits the residents of a newly consolidated district, but this benefit represents a transfer from state taxpayers and does not reflect cost savings. Without this state aid-effect, the net benefits of consolidation are positive only for the smallest districts. To put it another way, strong evidence for positive net benefits from consolidation, and hence for state intervention, only exists for school district with enrollments below about 1,000 pupils. As a fourth lesson, states need to recognize that increased aid for school districts with small scale or high sparsity rewards districts for not consolidating. It makes no sense for states to encourage consolidation through one set of programs while discouraging it through others. It might make sense to compensate a district for the relatively high costs associated with a small scale if it were impossible for that district to consolidate. To account for this possibility, an aid program would have to identify factors that make consolidation impossible and limit sparsity aid bonuses to districts to which these factors apply.

Equity Grounds

Finally, this research indicates policy makers sometimes may confront a situation in which consolidation makes sense on equity grounds but does not result in decreased costs from society's point of view. A small, poor district would undoubtedly experience a decline in cost per pupil if it merged with a richer neighbor. Moreover, the increase in the average property tax base from such a merger would lower the property tax burden on this district's residents. As a result, this type of consolidation would improve the fairness of the education finance system in the state.

However, a consolidation of this type is unlikely to take place. First, the high-income residents of the neighboring district may not perceive any net benefits from consolidation, even if they are small enough for economies of size to kick in. As shown in the research by Hu and Yinger, high-income residents tend to lose from the effects of consolidation other than school cost savings.

In addition, Brasington's study shows that voters in a high-income district are unlikely to approve consolidation with low-income district because this type of consolidation would increase their property tax burden, even holding spending per pupil constant.

If consolidation is deemed to be desirable on equity grounds, therefore, state aid bonuses may be needed to convince high-income voters to go along. Hu and Yinger suggest these aid bonuses add to the perceived benefits of consolidation as reflected in housing prices and might be sufficient to induce voters in the richer district to approve consolidation.

Conclusion

Debates about school district consolidation often involve a great deal of heat and not much light. Recent research can bring some light to bear on this issue by identifying the circumstances under which consolidation can take advantage of economies of size, by identifying the adjustment costs that may accompany consolidation, by measuring the value that voters place on the non-cost impacts of consolidation, and by identifying the circumstances under which consolidation is likely to be accepted by voters. Because it involves small school districts, consolidation cannot generate large cost savings at the state level, but, under some circumstance, it can result in large cost savings for individual districts or enhance the fairness of a state's education finance system.

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[Sometimes we run an Additional Resources box at end of an article, but I question whether any of these would be considered practical resources in the hands of a superintendent?>

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