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School Spending Increases Linked to Better Outcomes for Poor Students

By Holly Yettick

In districts that substantially increased their spending as the result of court-ordered changes in school finance, low-income children were significantly more likely to graduate from high school, earn livable wages, and avoid poverty in adulthood.

So concludes a **working paper** published this month by the National Bureau of Economic Research, or NBER, a private, nonpartisan research organization with headquarters in Cambridge, Mass.

The provocative results provide new fodder for long-running debates over whether more education spending translates into improved outcomes for children. They also delve into thorny methodological questions over how to best estimate the way in which state-level school finance reforms have affected district-level spending.

Between 1971 and 2010, the authors write, supreme courts in 28 states responded to large gaps between richer and poorer school districts by **reforming school finance systems**. Although the changes had limited consequences for children from higher-income families, the paper says, they had large effects on the life chances of low-income children who were exposed to sizable and sustained spending increases.

For low-income students who spent all 12 years of school in districts that increased spending by 20 percent, graduation rates rose by 23 percentage points. Due to the measurement error or "noise" found in almost any study of this type, the effect could, very plausibly, be as low as 8.7 percentage points and as high as 37 percentage points. The estimates are based on the study's analysis of 15,000 children born between 1955 and 1985. All account for a host of other potential explanations, such as school desegregation, War on Poverty programs, and demographic changes.

The paper's analysis also found that low-income children who were exposed to a 20 percent spending increase for their entire school careers attained nearly a full year of additional education after high school. (That estimate ranged from about four months to 1½ years.)

Between the ages of 25 and 45, these same children were 20 percentage points less likely to fall into poverty during any given year. (Estimates vary from 8 percentage points to 31 percentage points.) Their individual wages were 25 percent higher than they would have been without the changes, with estimates ranging from 3 percent to 45 percent, according to the paper. And their family incomes were 52 percent higher, with estimates ranging from 17 percent to 86 percent.

The authors of the research are C. Kirabo Jackson, an associate professor of human development and social policy at Northwestern University in Evanston, Ill.; Rucker C. Johnson, an associate professor of public policy at the University of California, Berkeley; and Claudia Persico, a doctoral student at Northwestern's school of education and social policy.

Narrowing Gaps

"The magnitudes of these effects are sufficiently large to eliminate between two-thirds and all of the gaps in these adult outcomes between those raised in poor families and those raised in nonpoor families," conclude the authors.

David Card, an economics professor at UC-Berkeley who was not involved in the research, praised the paper for analyzing long-term indicators such as earnings rather than trying to tie results of the finance overhauls to K-12 test scores. He noted that economists studying a diverse set of different educational influences, including teacher quality and preschool, have found that, when test scores are the yardstick, effects may "disappear, then reappear in earnings."

But Bruce D. Baker, an education professor at Rutgers University in New Brunswick, N.J., raised questions about the amount of time that passed between the implementation of the finance changes and the emergence of the outcomes.

"[E]xploring such [far-apart] outcomes, while a fun academic exercise, is of limited use for informing policy," he wrote in an email to *Education Week*. "Among other things, these are changes that occurred under very different conditions than today."

Mr. Baker also disagreed with the researchers' caveat that similar changes might have a much smaller effect if introduced today, in part because total school funding nationwide increased by 175 percent over 43 years, from an average of $4,612 per student in 1967 to about $12,772 per student in 2010, as measured in 2012 dollars.

In a statement, the authors responded to that critique and others.

"We acknowledge that the contemporary policy environment and other conditions have changed significantly since the 1980s and 1990s, yet we believe our work contributes significantly to the existing knowledge base of the role of reform-induced changes in school spending on outcomes for poor children," they wrote. "Whether improvements in school resources for poorer districts can lead to similarly large impacts in the future, given current spending levels, is an empirical question, and one which we will address in future research."

Mechanisms for Improvement

Mr. Baker said that some of his concerns were allayed by the fact that the working paper's findings aligned with past research results.

"One would certainly like to think that substantive and sustained school finance reforms have such positive effects, and a significant body of existing literature suggests that they do," he wrote. "To the extent that increased funding leads to things like … smaller classes and … more-competitive teacher wages, this finding would be consistent with the long-term effects of class-size-reduction literature."

As part of their study, the researchers did find that districts that increased spending by 20 percent in the wake of court-ordered school finance revisions reduced the ratios of students to teachers and nonclassroom personnel such as guidance counselors and administrators.

"While there may be other mechanisms through which increased school spending may improve student outcomes, results suggest that the positive effects may be driven, at least in part, by reductions in class size and having more adults per student in schools," the paper states.

Although the new analysis did not examine teachers' salaries, Northwestern's Mr. Jackson has done other research suggesting that "districts that saw spending increases may have been able to attract better teachers through increases in salaries," the paper notes.

Mr. Baker of Rutgers also took issue with the section of the paper that characterizes state-level school finance reforms and examines their effects on district-level spending. That section drew upon a recently compiled data set that tracks school district spending back to 1967, with annual updates available from 1970 through 2010.

The authors found that many legislative finance overhauls that were not ordered by the courts decreased overall spending in the long run.

By contrast, court-ordered "equity based" changes, meant to level the playing field for students, increased spending in poorer districts without affecting overall education spending rates. Court-ordered "adequacy based" reforms, intended to raise funding to levels that met state constitutional obligations to provide all students with an "adequate" education, increased overall spending, with particularly large increases for low-income districts.

The authors also found that overall expenditures declined in the wake of finance changes that imposed spending limits and discouraged spending for wealthier districts. By contrast, when reform measures provided matching funds to poor districts, their spending growth increased, while wealthier districts were left unharmed.

Mr. Baker said it could be misleading to assign the finance revisions to broad categories (such as adequacy-based) or to assume they took effect in specific years. That's because legal cases may drag out and change over time.

In addition, he wrote, some legal decisions address only one small section of a full overhaul. And some finance changes target specific subsets of districts, spending categories, or students.

"You can't make a win-lose … variable out of that," Mr. Baker said. "However, this stuff doesn't really affect [the authors'] major causal conclusions."

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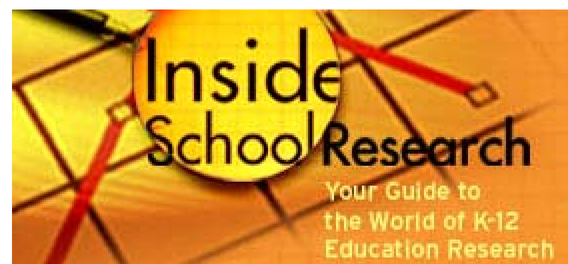

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Joydeep Roy is a visiting professor at Columbia University and a senior economist at the New York City Independent Budget Office, a publicly funded agency. He suggested that the authors had made a thorough effort to conduct a very complicated analysis.

"It is slightly tricky to compare across states when each state's financing formula might involve many unique features," he said.

He suggested that multistate studies like this one should be considered in the context of analyses that examined a single state at a time.

“While I agree with the authors that analyzing individual school reforms does not yield as rich a set of conclusions as a cross-country study, focusing on one state allows you to do a much closer scrutiny of the reform in question,” Mr. Roy said.

“You can tease out individual components of the reform,” he said, “and explore in depth—in other words, what you lose in terms of external validity, results being valid in other contexts, you might make up in terms of a higher level of internal validity, results being really robust.”

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