

# **INTERNATIONAL GUIDE TO STUDENT ACHIEVEMENT**

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## Financing Schools

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### Introduction

Around the world, schools are overwhelmingly controlled and operated by governments, and governmental policies directly affect much of what goes on in schools. The financing of schools has traditionally been addressed from two different perspectives. For the longest period, the central issues have revolved around how money for schools is raised and how it is distributed to local schools. These issues fit naturally into the policy debates around where a society's resources should be invested, along with the related question of how much is spent on schools. Over the past half century, however, a second perspective has entered into the debates, namely, how student performance relates to the financing of schools. This latter perspective has dramatically shifted the policy discussions about school finance. It has also made it clear that finance discussions cannot be separated from broader educational policy discussions because it is important to integrate finance incentives with other policies designed to improve achievement.

### Research Evidence

The new finance focus comes from investigations of the impact of finance on student outcomes. Hundreds of estimates using accepted statistical approaches provide a clear picture of the relationship between resources and achievement. Although they do not always agree, the majority of the studies have found that differences in either the absolute spending level or spending increases bear little or no consistent relationship to student achievement (e.g., Hanushek, 2003, 2006). Perhaps the best known study on this issue was one of the first, *Equality of Educational Opportunity* (Coleman et al., 1966), the "Coleman Report." This report was one of the first attempts to apply statistical analyses to student achievement in what is now commonly referred to as "educational production functions." In 1964, The U.S. Congress funded this massive study to assess the reasons

for the continued failure to close the Black-White achievement gap. The report suggested that variation in school resources had little or nothing to do with differences in student achievement, and that almost all the test score gap was attributable to the widely varying social and economic conditions of Black and White citizens.

The findings of the Coleman Report were extremely controversial, but, since its publication in 1966, a vast literature has confirmed many of the original conclusions. Studies have examined spending and related resources, such as class size, teacher experience, teacher education, teacher credentials, and other possible school inputs— all without finding a consistent or systematic influence on student achievement. For example, with regard to pupil-teacher ratios, almost three-quarters of all studies report no significant relationship with achievement. The studies that do indicate a statistically significant relationship are evenly divided between those showing the expected negative impact of a higher pupil-teacher ratio and those showing a positive impact on achievement (Hanushek, 2003, 2006). Even though the now-famous STAR study from Tennessee found positive impacts in a random assignment experimental study during the 1980s (Word et al., 1990), the Tennessee STAR study is balanced not only by hundreds of other studies reaching the opposite conclusion, but also the disappointing results of California and many other U.S. states that have introduced programs for reducing class sizes in grades K-3 and other grades (see the research in Ehrenberg, Brewer, Gamoran, & Willms, 2001). Similarly, there is no support for any consistent relationship between the level of a teacher's education and student achievement (Hanushek & Rivkin, 2006). Less than 10% of the studies on this topic find a statistically significant positive impact of additional teacher education on student achievement. Teacher experience has historically shown a stronger relationship with performance, but recent studies have consistently found that the impact of experience is concentrated in the first year or two of

teaching with little or no positive impact resulting from additional experience.

It is important to highlight these issues in the discussion of finances because class size reductions and increases in teacher salaries have been very important over the past half-century in the tremendous increases in real expenditure per pupil in schools (Hanushek & Rivkin, 1997). Class size reduction programs have been very popular even though they are perhaps the most expensive of all school reform programs and even though research suggests that they are unlikely to be generally associated with improved student achievement. Because the primary determinants of teacher pay—experience and education level—do not have a consistent link with achievement, what teachers are paid also shows little consistent relationship with achievement. A teacher who has been successful in improving her students' achievement is as likely to have a low salary as a high salary (Hanushek & Rivkin, 2004). Further, since salaries make up the largest component of school district expenditures, variations in instructional expenditures also have little consistent relationship with achievement.

Some studies have found statistically significant positive effects of school spending, and people who wish to advocate for more spending tend to cite just these. Nonetheless, particularly with the spending studies, the relatively few studies finding a positive relationship with achievement tend to be the lowest quality studies. These studies disproportionately rely on aggregate state evidence, where omission of any measures of state policy differences is likely to introduce bias in the estimated effects of spending differences (Hanushek, 2003). Further, these results are not simply a peculiarity of the United States. The same results are found across countries, as reviewed by Woessmann (2007a). Quite consistently, the analysis of performance on international achievement tests suggests that things other than resources are most important for student outcomes (Hanushek & Woessmann, 2011).

Another line of research has examined teacher quality measured on an outcome basis as a potentially important influence on student achievement. As opposed to assessing quality on the basis of measured teacher characteristics such as teacher education or experience, this work has concentrated on whether some teachers consistently produce more gains in student achievement than other teachers. Working with extensive longitudinal data on individual students from different U.S. states, these studies have confirmed large differences among teachers in terms of outcomes in the classroom (see Hanushek & Rivkin, 2010). This research, which also finds that differences in teacher effectiveness are not closely related to commonly observed characteristics of teachers, leads to a different conclusion from the Coleman Report. Teachers and schools differ dramatically, but, as found in the Coleman Report, it is not the simple measured characteristics that are important.

The inability to identify specific teacher qualities makes it difficult to regulate having high-quality teachers in classrooms. It also contributes to a conclusion that changes in

the institutional structure and incentives of schools are fundamental to improving school outcomes. The simplest statement is: *if one is concerned about student performance, one should gear policy to student performance*. Perhaps the largest problem with the current organization of most schools in most countries is that nobody's job or career is closely related to student performance. Relatedly, popular input policies, such as lowering class size, do nothing to change the structure of incentives.

One potential alternative is to alter the structure of school finance to include performance incentives for teachers and other school personnel. Existing international evidence suggests some clear general policies related to institutional structure of schools that are important, and these have direct ramifications for the structure of school finance (Hanushek & Woessmann, 2011). Foremost among these, the performance of a system is affected by the incentives that actors face. That is, if the actors in the education process are rewarded (extrinsically or intrinsically) for producing better student achievement, and if they are penalized for not producing high achievement, then achievement is likely to improve. The incentives to produce high-quality education, in turn, are created by the institutions of the education system—the rules and regulations that explicitly or implicitly set rewards and penalties for the people involved in the education process.

From existing work, three interrelated institutional policies come to the forefront: promoting more competition, so that parental demand will create strong incentives to individual schools; autonomy in local decision making, so that individual schools and their leaders will take actions to promote student achievement; and, an accountability system that identifies good school performance and leads to rewards based on this. The evidence is summarized in Woessmann (2007b). It is also a central part of considerations of why some nations have done better in terms of international test scores (Mourshed, Chijioko, & Barber, 2010). One of the key channels by which these institutions affect performance is clearly through ensuring a strong teacher force in the schools. Each of the institutions provides incentives to improve on student outcomes, and the most direct way to do this comes through improving the effectiveness of teachers.

The exact form of such incentives will vary across different countries. For example, the United States relies considerably on individual states to organize and to finance the schools. Historically, the states have differed considerably, but none of them has relied very much on incentives for performance. It is easy, however, to establish a school finance system that emphasizes performance incentives (Hanushek & Lindseth (2009).

One of the big issues in doing this is thinking about performance incentives for teachers, even though these have not proved popular in many places where they are discussed. One reason for the general resistance by teachers to incentive systems like performance pay is a concern about what will be rewarded. Research shows, for example, that families make a huge difference in the education of

students. An implication of this is that the finance system should not reward or punish teachers for the portion of education they are not responsible for. If some students come to school better prepared than others, their teachers should not receive extra rewards. Similarly, if students come from disadvantaged backgrounds that leave them less well prepared for schools, we should not punish their teachers.

Pursuing this approach requires an aggressive system of performance measurement. It is necessary to track the progress of individual students and to relate this progress to the teachers that are responsible for it. This does not necessarily mean a system of individual rewards as opposed to group rewards for teachers in a school, but it does mean accurately measuring the performance of schools. Nor does it mean that test-based measures should be exclusively used. This area—designing accountability systems—is an obvious area for governmental leadership (although not necessarily ignoring local preferences and capacity).

The international evidence again suggests that countries that rely more on performance rewards for teachers show higher achievement, other things being equal (Woessmann, 2011). Whereas the evaluations of specific forms of performance pay are just now beginning to be developed (Podgursky & Springer, 2007), there are signs that schools are generally moving to experiment with such ideas.

### Summary and Recommendations

The main message of current research is thus that school finance questions must be put into a larger context. It is not possible to expect higher achievement of students from simply providing extra resources to schools. Some specific thought must be given to how any resources affect the incentives of people in the schools. One cannot expect to improve student achievement and outcomes simply by putting more resources into the existing schools. Thus, the traditional focus of school finance policy on the flows of resources is misguided, because it conflicts with an outcome basis for decision making. While there is some uncertainty about the specific details of programs, the most promising school finance policies and institutions are ones that promote higher achievement (instead of simply providing more resources to schools). The modern way to view school finance is how the support of schools relates to incentives.

### References

- Coleman, J. S., Campbell, E. Q., Hobson, C. J., McPartland, J., Mood, A. M., Weinfeld, F. D., & York, R. J. (1966). *Equality of educational opportunity*. Washington, DC: U.S. Government Printing Office.
- Ehrenberg, R. G., Brewer, D. J., Gamoran, A., & Willms, J. D. (2001). Class size and student achievement. *Psychological Science in the Public Interest*, 2(1), 1–30.
- Hanushek, E. A. (2003). The failure of input-based schooling policies. *Economic Journal*, 113(485), F64–F98.
- Hanushek, E. A. (2006). School resources. In E. A. Hanushek & F. Welch (Eds.), *Handbook of the economics of education* (pp. 865–908). Amsterdam, Netherlands: North Holland.
- Hanushek, E. A., & Lindseth, A. A. (2009). *Schoolhouses, courthouses, and statehouses: Solving the funding-achievement puzzle in America's public schools*. Princeton, NJ: Princeton University Press.
- Hanushek, E. A., & Rivkin, S. G. (1997). Understanding the twentieth-century growth in U.S. school spending. *Journal of Human Resources*, 32(1), 35–68.
- Hanushek, E. A., & Rivkin, S. G. (2004). How to improve the supply of high quality teachers. In D. Ravitch (Ed.), *Brookings papers on education policy 2004* (pp. 7–25). Washington, DC: Brookings Institution Press.
- Hanushek, E. A., & Rivkin, S. G. (2006). Teacher quality. In E. A. Hanushek & F. Welch (Eds.), *Handbook of the economics of education* (pp. 1051–1078). Amsterdam, Netherlands: North Holland.
- Hanushek, E. A., & Rivkin, S. G. (2010). Generalizations about using value-added measures of teacher quality. *American Economic Review*, 100(2), 267–271.
- Hanushek, E. A., & Woessmann, L. (2011). The economics of international differences in educational achievement. In E. A. Hanushek, S. Machin, & L. Woessmann (Eds.), *Handbook of the economics of education* (Vol. 3, pp. 89–200). Amsterdam, Netherlands: North Holland.
- Mourshed, M., Chijioko, C., & Barber, M. (2010). *How the world's most improved school systems keep getting better*. New York: McKinsey.
- Podgursky, M. J., & Springer, M. G. (2007). Teacher performance pay: A review. *Journal of Policy Analysis and Management*, 26(4), 909–949.
- Woessmann, L. (2007a). International evidence on expenditure and class size: A review. In *Brookings papers on education policy 2006/2007* (pp. 245–272). Washington, DC: Brookings.
- Woessmann, L. (2007b). International evidence on school competition, autonomy and accountability: A review. *Peabody Journal of Education*, 82(2–3), 473–497.
- Woessmann, L. (2011). Cross-country evidence on teacher performance pay. *Economics of Education Review*, 30(3), 404–418.
- Word, E., Johnston, J. Bain, H. P., DeWayne Fulton, B., Zaharies, J. B., Lintz, M. N., ... Breda, C. (1990). *Student/teacher achievement ratio (STAR), Tennessee's K-3 class size study: Final summary report, 1985–1990*. Nashville, TN: Tennessee State Department of Education.