



Which school systems sort weaker students into smaller classes? International evidence

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Abstract

We examine whether the sorting of high- and low-achieving students into classes of different sizes results in a regressive or compensatory pattern of class sizes for 18 national school systems. Sorting effects are identified by subtracting the causal effect of class size on performance from their total correlation. Our empirical results reveal strongly compensatory patterns of sorting within and especially between schools in many countries. Only the United States, which has a decentralized education finance and considerable residential mobility, exhibits regressive between-school sorting. Between-school sorting is more compensatory in systems with ability tracking. Within-school sorting is more compensatory where administrators rather than teachers assign students to classrooms.

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1. Introduction

The sorting of students into classes of different sizes can reflect a variety of motives. Many policies influencing class size are explicitly compensatory, with low-performing students being

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placed in smaller classes. However, other influences may be regressive.¹ The question of whether allocating additional class-size resources to low-performing students is an effective and cost-efficient strategy for improving students' performance is a matter of ongoing debate (cf. Hanushek, 2003; Krueger, 2003; Wößmann and West, *in press*). Yet the objective indicated by parents, teachers, and administrators of reducing class size suggests that the distributional consequences of the sorting process are of interest from a political-economy perspective.² Specifically, they allow a test of theories about the relative influence of various groups and individuals in education systems with different institutional characteristics.

The mechanisms through which students of differing abilities can be sorted into smaller or larger classes are countless, and stem from sources as diverse as parental choices about where to live and which school their children will attend, the placement of students into classrooms within schools, and school-level placement policies of the school system as a whole. Although endogeneity in the relationship between class size and student achievement is widely recognized as a potential source of bias in estimates of resource effects (cf. Card and Krueger, 1996), most previous research has been concerned with placement policies responsible only insofar as the policies mask the true causal impact of class size on achievement, and thus motivate the development of experimental or quasi-experimental research designs (Krueger, 1999; Angrist and Lavy, 1999; Case and Deaton, 1999; Hoxby, 2000).³ However, as Heckman et al. (1996, p. 287) point out, a better understanding of the political economy of school expenditures at different levels and in different institutional contexts is required to properly interpret estimated relationships between resources and student performance. To our knowledge, the relationship between students' academic ability and class size between and within schools has not been estimated, and the causes of different patterns of resource allocation thus remains unclear.

In this paper, we estimate the extent to which students of different ability levels are sorted into differently sized classes both between and within schools in 18 education systems around the world.⁴ To account for the possibility that the size of the class to which a student is currently assigned may affect his or her academic performance, we use a combination of school fixed-effects and instrumental-variables identification strategies to decompose the simple correlation between class size and student achievement in each country into three parts: (i) the effect of students being sorted into schools with different average class sizes (the between-school sorting effect); (ii) the effect of students being sorted within schools into smaller or larger classes (the

¹ Although public finance scholars typically distinguish regressive and *progressive* policies, we use the term *compensatory* to highlight concern with the allocation of class-size resources based on achievement rather than income. We thereby avoid the connotation of the term 'progressive education' as most commonly used in the field of education.

² Viadero (1998) reports the consistent popularity of class-size reductions with U.S. politicians, and a recent poll shows that reducing class size is second only to early-childhood education as a priority for education spending, far ahead of items such as increasing teacher pay, putting computers in the classroom, and school construction and modernization (Jacobson, 2002).

³ Some studies of class-size effects have attempted to characterize in general terms the allocation of class-size resources in specific contexts. Akerhielm (1995) uses teachers' subjective ratings of the quality of the students in their classrooms to show that, in the United States, teachers of relatively small classes were more likely to describe their students' abilities as below average. Similarly, a survey of a random sample of 500 teachers in New Jersey conducted by Boozer and Rouse (2001, p. 166) revealed an "overwhelming tendency of schools . . . to allocate resources in a compensatory fashion".

⁴ While many kinds of sorting are possible, for example based on social class, race, or other family-background features, this paper examines only sorting with respect to students' academic abilities. Likewise, it restricts itself to the allocation of class size, leaving the allocation of other resources for future research.

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