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The effect of administrative pay and local property taxes on student achievement scores: Evidence from New Jersey public schools

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ABSTRACT

We theorized that student test score performance will be positively related to the percentage of school district revenues raised from local taxes and with salary levels of school district administrators. Using both fixed and random effects panel analyses, we examine data for 217 Kindergarten-to-Grade 12 school districts in New Jersey for the years 2002–2009. Our results support the inference that increases in the percent of school funds raised locally have a positive influence on student test scores. However, the results for our hypothesis involving administrative costs were mixed. Administrative salaries and administrative spending were found to be positively related to test score performance in the one-way time fixed effects model, but not in the two-way models. Finally, classroom spending and the student–faculty ratio were found to be positive and significant in some of the tests, although not robust to alternative specifications.

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1. Introduction

The international financial crisis of 2008 and the resulting downturn in the economy have put public education funding under immense pressure in the United States. As a result, an active debate rages over cost benefit analysis of each dollar spent on public education and its impact on the quality of education. So while on the one hand, it is interesting to look for the best source of funds for our schools, it is equally interesting to ask what these funds should be best spent on.

This empirical study investigates the relative influence of funding sources for public education as well as the role of the administrative function on student achievement scores. Over the last decade student achievement scores have often been used as a benchmark for the quality of

education provided. This reliance on test scores as a measuring stick for school quality coincides with the enactment of the *No Child Left Behind Act of 2001*, which triggered increased testing at all levels of elementary and secondary education. The *American Recovery and Reinvestment Act of 2009* included \$4.35 billion in competitive grants for educational reform under President Obama's 'Race to the Top' initiative. This initiative provided for further increases in the use of standardized tests, and at the same time links teacher and principal salaries to student performance. In light of the increased frequency and utilization of standardized tests, additional research on both the optimal mix of funding sources and cost benefit analysis of expenditures on administration is warranted to guide policy-makers in their efforts to reform public education in the U.S.A.

This study examines two aspects of the spending–test score relation using a sample of 217 Kindergarten-to-Grade 12 (K–12) school districts in the State of New Jersey. Our first research question focuses on the value of the administrative function on student achievement scores. This question is motivated by the widespread belief that

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administrators, either through malfeasance, ignorance, or indifference to the objectives of the institutions they serve, divert resources from value-added, education-enhancing activities, to non-value-added administrative activities. The prevalence of this view is clearly exhibited in actions by several state legislatures in the United States to cap spending on administration in public schools. For example, the Chicago School Reform Act passed by the Illinois Legislature in 1988 imposed constraints on non-instructional costs in the Chicago public school system (Hess, 1995). Similarly, Texas adopted legislation in 1993 to limit administrative expenditures to 11 percent of what is spent on instruction for large school districts, and to 35 percent for small school districts (Dee, 2005; Lewis, 1994). During 2004, the State of New Jersey adopted legislation that anchors school districts per-pupil administrative costs to the lower of: (1) the prior year's administrative costs adjusted by the cost of living or 2.5 percent, whichever is less, or (2) per-pupil administrative costs for the district's region (State of New Jersey, 2004). At the Federal level, the General Accounting Office issued a report that examined the proportion of Title I funds spent on administrative activities relative to instructional and other activities (GAO, 2003).²

More recently, on February 7, 2011, Governor Christopher Christie revised the Administrative Code of the Department of Education (NJDOE, 2011, chap. 23A), placing a limit on the salaries of New Jersey's School District Superintendents. The "maximum salary" cap was imposed on a sliding scale, ranging from \$125,000 for the smallest school districts (less than 750 students) to \$175,000 for the largest (more than 6500 students).³ According to the New Jersey Association of School Administrators, the salary cap triggered an exodus of Superintendents to neighboring states (Calefati & Terruso, 2011). Angry school districts claim the salary cap places them at a competitive disadvantage in attracting top administrative talent, and have challenged the law in court or otherwise defied it (Davis, 2011).

Thus, there is a perception that administrators will arbitrarily increase discretionary and unproductive spending at the expense of more productive spending that contribute to the quality of education. This perception is supported by Brewer (1996) who theorized that the "administrative blob" had a significant negative relationship to student achievement. We argue that, in the current environment, where so much attention is being paid to student achievements and the administrative cost burden posed on the school system, an exhibition of strong expense preference behavior by administrators implies persistent short-term administrative myopia. We theorize that the employment of first-rate superintendents and

principals (and other professionals) at what may be regarded as above-market labor rates can lead to organizational and strategic changes that can significantly improve the school district's performance.

Our second research question is focused on the influence of funding from local property taxes on test scores. Nationally, the bulk of education funding comes from three sources: federal (8.3 percent), state (45.6 percent) and local (37.1 percent) (U.S. Department of Education, 2005, p. 2). Although the total education funding has increased over time, it is not clear if the increase in funds can be linked to better quality of education.⁴ This paper investigates the question of whether all dollars contribute the same or can different sources of funding lead to better outcomes in public schools. Hoxby (1997, 1999) has theorized that the higher the proportion of the total spending that was raised locally (as opposed to being provided by the state government, the federal government, or from private funding sources), the greater the pressure upon local school districts to provide high-quality efficient schools and to increase student performance. This theory is supported by Fiva and Rønning (2008), who argue that in the education sector where output is not well defined and monitoring is difficult, property taxation can establish a direct relationship between the tax level and benefits received. Jimenez and Paqueo (1996) and James, King, and Suryadi (1996) report findings (from the Philippines and Indonesia, respectively) which suggest that schools that are more financially accountable to the communities they serve are more responsive to their clients—students and their parents. Empirical support is also provided by Hoxby (1997), who compares educational outcomes for the State of New Hampshire, which relies heavily on local funding and experienced no increase in state aid, to outcomes in six states that increased the proportion of state aid over the 1980–1990 period.

According to U.S. Census data for fiscal year 2006–2007, 55 percent of school district revenue in New Jersey was raised locally, placing New Jersey in the top twelve percent of the fifty states in local contributions (*Public Elementary-Secondary Education Finance Data—Table 5*). Due to the high percentage of school district expenditures funded locally, as well as the variation in local taxes between districts, New Jersey provides an excellent backdrop to test our theory.⁵

To examine the influence of school district funding sources and the administrative function on student achievement scores, we estimate one-way fixed effects (time-wise), two-way fixed effects (time and school district), and two-way random effects models. Our production function includes a set of variables known or

² This report of the General Accounting Office was triggered by a Congressional mandate to ensure that most Title I funds provided under the No Child Left Behind Act of 2001 were being spent on instructional activities that improved student learning (GAO, 2003, p. 1).

³ For school districts with greater than 10,000 students, the Board of Education may apply to the Commissioner of the New Jersey Department of Education for a waiver of the maximum salary limit (NJDOE, 2011, chap. 23A).

⁴ According to the U.S. Department of Education (2005, p. 2), national K-12 education spending has increased an estimated 105 percent between 1991 and 2005. Also, the Federal share of total K-12 spending in the United States has increased from 5.7 percent to 8.3 percent.

⁵ In our summary statistics in Table 2, we find that 61.3 percent of the average K-12 New Jersey school district operating expenditures was funded by local property taxes, with a minimum of 2 percent and a maximum of 96 percent.

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