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The impact of school management practices on educational performance: Evidence from public schools in São Paulo

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ABSTRACT

This study examines the causal impacts of a school management program on educational outcomes in São Paulo/Brazil, estimated with the use of a fuzzy regression discontinuity design. I conclude that specific management practices such as performance monitoring, targets setting and incentive schemes have significant positive impacts on 8th-graders' math scores, especially on low performance students. I was unable to obtain similar results for language. I further investigated whether these results were associated with student or staff selection and infrastructure investments or whether they were actually driven by changes to pedagogical and managerial practices. My findings suggest that the latter explanation is more plausible.

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1. Introduction

For many years, economists have been working to understand why educational outcomes are persistently poor, especially in developing countries. Brazil, for example, is among the countries with the worst of the PISA rankings, despite the high investment in education.[1] The empirical literature has been dedicated to investigate whether and how the school inputs are able to affect learning in an attempt to identify effective public policies that can be deployed on a large scale. The knowledge and experience of the teachers are the few inputs that undoubtedly affect student performance (Cantrell, Fullerton, Kane, & Staiger, 2008; Clotfelter, Ladd, & Vigdor, 2007; Rivkin, Hanushek, & Kain, 2005; Rockoff, 2004). However, even among schools that are homogeneous in terms of student's family background and effective school inputs is possible to observe large variability in educational outcomes measured by proficiency on standardized tests.[2]

Adopting the approach of educational production function, if we suppose that the education industry is relatively rigid relative to their production technologies (Hanushek, 1979), the large differences in results between schools with the same inputs could be explained by variations in practices management. In this article, I provide empirical evidence to support this hypothesis, assessing the impact of a program that introduced management tools in public schools in São Paulo, Brazil.

According to industrial organization theory, the distribution of companies managers' talent is directly related to the size of plants within an industry. This relationship is associated with the effect of managerial technology on inputs and productivity (Lucas, 1978; Manne, 1965). This would

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[1] Since 2000, Brazilian students have been among the lowest 5% in terms of performance in PISA. However, in 2008, Brazil invested 5.3% of the GDP in education, a percentage similar to the OECD average.

[2] In São Paulo, in schools with homogeneous students' background (80% of parents with at least high school) and teachers' experience (more than 20 years), the 90/10 ratio of math scores for 8th-graders is approximately 2.

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indicate that, keeping the quantity and the quality of inputs fixed, different ways to manage companies can lead to very different results. The most recent literature, led by Nicholas Bloom and John van Reenen, takes up the theme and presents theoretical models and non-experimental and experimental evidence on the relationship between management practices and results in different industries. Indeed, several empirical studies have identified a strong association between management practices and productivity, profitability, growth and survival of the company and cross-country and within-country TFP (Bloom, Lemos, Sadun, Scur, & Reenen, 2014; Bloom & Van Reenen, 2007; Cappelli & Neumark, 2001; Ichniowski, Shaw, & Prennushi, 1997).

However, the term 'management' is quite broad and addresses everything from standardized procedures for the control of production processes to the leadership and charisma of managers. This complexity makes it difficult to define, measure and analysis of how the administration can affect the company's results. For this reason, the literature asks whether it is possible to identify management practices that can be universalized between organizations or if their effectiveness depends on the environment or the specificity of each firm or industry.

Recent studies have emphasized a set of specific management practices that comprise three elements: monitoring, goal setting and incentives. Bloom, Genakos, Sadun, and Reenen (2012) presented data from a survey of more than 10,000 organizations in 20 countries. Using an assessment tool that considers several key management practices, the authors created a score to classify companies according to their management qualities.

This methodology defines a poorly managed organization as one that "cannot monitor performance, lacks effective objectives, compensation and career bases on years of service and not have systems in place to deal with employees with persistently poor performance." In contrast, a well-managed organization is defined as one that "continuously monitors the performance and try to improve their processes, defines objective and rigorous goals and have a reward system for high-performance employees and the correction of underperforming employees." The authors show that the presence of these "modern management practices" is strongly correlated with the performance of companies in different industries and countries. The adoption of these practices also appears to have a positive impact on the productivity of Indian companies in certain industries.

The main findings of this paper give rise to some stylized facts on what is a well-managed organization. Applying those facts to educational systems' characteristics one can assume that public schools are poorly managed for many reasons. First, public organizations have worse management practices than private. The institutional environment of public education systems is characterized by the difficulty of hiring, firing and changes in wages and working hours, strong unionization of teachers and high stability in their careers. This is associated with poor management of human resources, particularly with regard to monitoring and incentives.

The administrator's academic training is also associated with management quality. In general, top-level managers are trained in excellent business schools. Particularly in Brazil, this is another unfavorable feature of school management, since most of the school principals are trained in pedagogy courses, which do not include administrative skills in their curricula.

A higher degree of market competition is also associated with better management practices. However, public schools face relatively low competition, as there are allocation rules who usually prevent or hinder parents from choosing the school where the children will study. In Brazil, for example, the allocation of students in schools follows geographical criteria. In addition, the gratuity of the educational service reduces the pressure for quality improvements. Finally, the management practices tend to be worse in developing countries. Together, these factors underscore the importance of this issue in designing policies to improve the quality of education in these countries.

Empirical research on Economics of Education provides some *indirect* evidence that elements of school management are associated with educational outcomes. Hoxby (1996) shows that the institutional environment of public education, characterized by the strength of teachers' unions, confers market power to public schools. This power, in turn, increases the amount of school inputs but reduces its productivity. There is also evidence that, for given resources, schools could improve students' performance if they could spend its resources – in terms of school management, teachers, supporting employees and materials – in the most productive way (Haelermans, De Witte, & Blank, 2012).

The school manager's profile and the way in which he was nominated to the position are also related to student learning. The school principal's management experience has a positive impact on students' grades (Béteille, Kalogrides, & Loeb, 2012). Principal's turnover is also related to student performance: low-performing schools experience more principal turnover and performance tend to fall when a principal leaves the school (Miller, 2013). Schools where principals are chosen by parents and teachers or by a selection process have a higher average performance than schools where principals are appointed by their administrative bodies (Barros & Mendonça, 1997).

Studies demonstrate that public school students could benefit when their school faces competition from school-choice policies (Winters, 2012). Competition influences parents' choice of high-performing schools, either through the direct possibility of changing schools (Hastings & Weinstein, 2008) or by granting school vouchers that can be used for enrollment in public or private schools (Angrist, Bettinger, & Kremer, 2006; Chakrabarti, 2008; Lamarche, 2008; Rouse, Hannaway, Goldhaber, & Figlio, 2013).

On the other hand, the effects of charter schools on its relative efficiency and on student performance are mixed (Booker, Gilpatric, Gronberg, & Jansen, 2007, 2008; Davis & Raymond, 2012; Dobbie & Fryer, 2011; Gronberg, Jansen, & Taylor, 2012; Hoxby & Murarka, 2009; Toma & Zimmer, 2012; Zimmer, Gill, Booker, Lavertu, & Witte, 2012). Moreover, monitoring schemes and performance-linked rewards or punishments also have mixed impacts on school officials' behavior and student learning (Ladd, 2001; Sims, 2013).

Bloom, Lemos, Sadun, and Van Reenen (2014) focuses specifically on the relationship between modern management practices and educational outcomes. The authors collected data in over 1800 schools educating 15-year-olds in

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