

Public Abstract

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The current researches show that spending on education resources does not significantly matter to student achievement. The policy-makers and educators were aware of the inefficient use for the public recourses on American K-12 education. However, the educational accountability system cannot provide the accurate estimate in distinguishing the effective and ineffective schools. These researches did encounter two major difficulties. 1) The school data for students, teachers and other school resources are not available to the researchers. 2) The current studies lack the confidence for the advanced statistical methodologies.

This paper opens the study of school productivity again by applying an updating algorithm for a dynamic system. This method consists of correcting for the test error, updating and smoothing school effects, and simulating the estimate from the well-known distribution at large times. The school effects will be smoother and more convincing than using Ordinary Least Square (OLS) and Hierarchical Linear Model (HLM). With the precise estimates for school productivity, the educational improvement for schools will shrink the gaps between schools, and raise the overall quality of the elementary and secondary education. Therefore, the students benefit from the equity of education, and the improvement of human capital will increase the economic growth for the country.