

Supply Chain and Operations Management Seminar

Dr. Sergei Savin

Professor at Wharton School , University of Pennsylvania

Investing in Performance: Information and Merit-Based Incentives in K-12 Education

Friday, October 18, 2019 | 9:30 – 11:00 am
Rawls 3058



Abstract

The United States educational policy requires that K-12 students participate in annual standardized tests. As a result, school districts that have traditionally utilized ongoing “formative” assessments of student progress, are increasingly relying on additional, costly “interim” assessments. In addition, some districts are experimenting with merit-based incentives that tie teachers' bonuses to student performance on state tests. We examine the relationship between information on student performance and monetary incentives for teachers using a two-period principal-agent model. In our model, the school district (principal) chooses whether to invest in interim assessments, and, also, how much merit-based compensation to offer to teachers, while the teachers (agents) decide on the level of effort to exert in each period.

We use two-state (“proficient” vs. “not proficient”) Markovian dynamics to describe the evolution of student readiness for the tests, and assume the presence of information asymmetry between the teachers and the school district regarding the student readiness level. Our analysis shows that, for schools that are not proficient at the beginning of the year, the return from merit-based incentives is always greater than the return from information derived from interim assessments. For schools that begin the year on track to achieve proficiency, there exist settings where investing in the interim assessment is optimal, such as when the district has a low budget and the formative assessment is reasonably accurate. However, we also establish that there are settings where the provision of additional information about the student mid-year performance has a demotivating effect on teachers.

Bio

Professor Savin’s research expertise is centered on operational aspects of health care delivery, improving patient access to care, and optimal management of diagnostic and treatment capacity. His articles have appeared in Management Science, Operations Research, and Manufacturing and Service Operations Management, among others, and he also actively participates in editorial activities for several premier journals including Management Science, Operations Research, Manufacturing and Service Operations Management, and Production and Operations Management.

Professor Savin teaches a PhD course on optimization, the core MBA course on Business Analytics, and the core undergraduate course on Operations and Information Management.

Before joining the Wharton School in July 2009, Professor Savin was on the faculty at the Columbia Business School and the London Business School. He received a Ph.D. in Physics from the University of Pennsylvania in 1997 and a Ph.D. in Operations and Information Management from the Wharton School in 2001.