

Tailoring Instruction to Students' Knowledge: Teacher Rewards, Peer Spillovers, and The Impact of Ability Tracking on Student Achievement

Abstract

Ability tracking, i.e., the separation of students into classrooms based on their ability level, is a common although controversial practice. While tracking may benefit pupils over the entire ability spectrum by allowing teachers to better tailor instruction to the students' needs, it might also hurt weaker pupils, as they cannot benefit from the positive spillovers stemming from higher-quality peers. In this paper, I assess the distributional impact of ability tracking on student achievement by developing and estimating an equilibrium model of endogenous classroom instruction and student effort which nests these mechanisms. The model allows teachers to vary in instructional ability, to value differently the achievement of students with different levels of prior knowledge, and to optimally choose teaching effort and the allocation of instructional time across different topics. The model allows for two different channels through which peer effects can operate: direct peer-to-peer spillovers, and indirect peer effects stemming from teachers' instructional choices. I estimate the model using a unique dataset that combines US school administrative data with rich information on teachers' instructional choices and teaching ability collected through surveys and video-recorded lessons. The model's estimates suggest that teachers attach a higher value to the achievement of students at lower quantiles of the distribution, a result consistent with the incentives provided by the US public school system. I then assess the distributional impact of ability tracking by simulating different scenarios where students are separated into classrooms based on prior test score performance, and where teachers are allocated to tracks either randomly or through assortative matching. Results show that ability tracking has heterogeneous impacts on students with different levels of prior knowledge, and that the distribution of these effects critically depends on the mechanism used to assign teachers to classrooms. In particular, the combination of tracking with the assignment of high-ability teachers to lower tracks would benefit pupils at both the top and the bottom terciles of the ability distribution.

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