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POLICY BRIEF

Where Do I Stand?
The Importance of Prior Class Ranking on Life Outcomes

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What We Studied

This paper considers an unavoidable feature of the school environment, class rank. What are the long run effects of a student's ordinal rank in elementary school? This research shows that students with a higher third grade academic rank, conditional on achievement and classroom effects, have higher subsequent test scores, are more likely to take AP classes, to graduate from high school, enroll in college, graduate from college, and ultimately have higher earnings 19 years later.

Students may have very different schooling experiences based on their classroom experience. Many studies have considered the effects of students' peers on their performance and the long run impact of these peers, where having high achieving peers is beneficial (i.e. Carrell et al., 2009; Black et al., 2013; Booij et al., 2017). Recently, studies have considered the effect of a student's rank, where having low achieving peers is beneficial (Elsner and Ipshording, 2017; Murphy and Weinhardt, 2020). A student's rank in their classroom may affect their own perceptions and investments in education as well as the investment and perceptions of teachers or parents. Hence, rank may have long lasting effects on future outcomes such as future test scores, high school success, college enrollment, and even earnings.

Rank and achievement are highly correlated, students who have higher test scores will generally have higher rank. A key challenge in our research is to isolate the effect of rank, rather than simply capture the effect of achievement. We are interested in the effect of rank holding fixed a students' own achievement and many characteristics of the classroom.

These findings contribute to a growing literature that documents how childhood conditions affect adult outcomes. These conditions range from a child's health (Oreopoulos et al., 2008), where a child lives (Chetty et al., 2016), the quality of a student's teacher (Chetty et al., 2014), size of a student's classroom (Chetty et al., 2011), the age of a student when they start school (Black et al., 2011), and the presence of disruptive peers (Carrell et al. 2018) among others.

How We Analyzed the Data

This research studied the classroom rank of 3rd grade public school students in Texas for students between 1995 and 2008. Classroom rank is constructed using standardized test scores for students who took the exams in English. Academic achievement and rank are highly correlated. So, to isolate the effect of a student's rank, this research advances the method used in Murphy and Weinhardt (2014/2020) and leverage the idiosyncratic variation in the distribution of test scores across schools, subjects, and cohorts.

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Consider the following hypothetical: two students who have the same math achievement (as measured by their place in the state-wide distribution), in successive cohorts of the same size and mean attainment, at the same school. Because school cohorts are small relative to the state cohort, there will be variation in the test score distribution such that one student may be the fifth best student in the class while the other may be the eighth. This is the idiosyncratic variation we leverage to identify the effect of rank, which we argue originates from sampling variation in the distribution of human capital within subjects and cohorts of each school. This variation exists because these groups sample relatively small numbers of students which means that distributional differences emerge by chance.

This research uses statistical techniques to mimic this hypothetical which accounts for a students' level of achievement as well as many features of classrooms such as teachers, average peer achievement, etc. One of the contributions of this study is that it more fully develops the techniques used to study classroom rank.

What We Discovered

A student's rank has meaningful impacts on a host of outcomes. Higher ranked students are less likely to be retained in 3rd grade. Higher rank leads to higher test scores in 8th grade, more AP course taking. Higher rank in 3rd grade increases the probability of high school graduation, college enrollment, and college graduation. Finally, higher rank increases earnings at age 23-27.

A student enrolling in a class where they are at the 75th percentile rather than 25th in third grade increases their real wages between ages 23 and 27 by $1500 per annum, or approximately 7 percent. For comparison, Carrell et al. (2018) look at the long run impact of peers at the same ages, and find that being in a class of 25 with a student who was exposed to domestic violence reduces an individual's earnings by 3 percent.

This research also explores which groups are most effect by rank and find that underrepresented minorities and students who are receiving free and reduced price lunch are more strongly affected by rank than white students and students who do not receive free and reduced price lunch. This research does not find heterogenous effects by gender, in contrast to some of the earlier work on this topic (Murphy and Weinhardt 2020).

This research also considers how rank interacts with average school "quality" and/or achievement. A student with a given ability who is in a classroom with higher mean will have a lower rank. We find that the rank effects erode about 40 percent of the benefits of a higher achieving classroom.

Discussion/Policy Recommendations

These results are directly applicable to parents who are considering where to send their students to school. Rank effects are meaningful but are smaller than the effects of schools more broadly.

This also has implications for classroom composition. Because rank has heterogenous for different groups of students, students who are more sensitive to rank could be put in classrooms where they are less likely to be lower ranked. However, this sort of exercise merits caution because the changes in classroom distribution will have general equilibrium effects not accounted for in this paper (Carrell et al., 2013)

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