ARTICLE

Can the Elite Stream Improve the Academic Achievement of Senior Secondary School Students? A Study of High School Students from X City in western China based on Regression Discontinuity Analysis

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Abstract: *The fairness and efficacy of the elite stream in general senior secondary education have long been a contentious issue. Based on the longitudinal data of the students who were enrolled in five senior secondary schools in X City in western China in 2017 and 2018, this study examined the effects of elite class streaming in improving student academic performance, using regression discontinuity analysis. The research findings showed that: despite the significant differences in the grade-10 streaming examination results and the grade-12 academic achievement between the elite class and regular class students, the gap was not markedly widened after three years of senior secondary education; the elite stream did not exhibit distinct promotive effects on the advancement of students' overall performance when the cutoff point of elite class admission was utilized as the exogenous variable to evaluate the effects of the elite stream on student performance; both the parameter estimation and non-parametric estimation results demonstrated that the elite stream had no marked effects in improving student performance and there was no gender difference or urban vs. rural difference in the impact of the elite stream on student academic achievement.*

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***Keywords**: Elite Class, Academic Performance, Regression Discontinuity Design*

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***Conflict of Interests**: None.*

Introduction

Elite Classes deployed by general high schools have always been an attraction to parents of students of senior secondary level. With elite classes, schools put high achieving students into the fast stream, equipping them with experienced anchor teachers, and implementing more demanding instruction. Under the principle of equitable and efficient education, a scientific evaluation of the impact of the elite stream on student academic advancement is crucial for students and their parents making evidence-based educational decisions and for schools reasonably allotting educational resources. Based on the academic achievement status of both elite class and regular class students from five county-level general high schools in a western city of China, this study focuses on examining the effects of the elite stream, an intra-school education resource allocation strategy, on student performance, employing the quasi-experiment design and regression discontinuity analysis.

Research Methodology

Data Sources

Data in this article are derived from the longitudinal database of science students in X City in western China who were enrolled in senior secondary school in 2017 and 2018. The sample of the study consists of 3,397 students from county-level schools with 1,669 enrolled in 2017 and 1,728 enrolled in 2018. For the convenience of comparison, normalization was administered to the scores of science students in X City. Data shows that despite the significant differences in the sources of science students as well as the variations in the number and size of elite classes and the student test results among various schools, the cutoff points for elite classes in all schools are similar, with standard deviations ranging from 0.64 to 0.96.

Research Design

The determination of the cutoff point of elite class admission in each school relies on the number and size of this type of classes prescribed before the admission examination and the performance of all students at the school in the uniform grade-10 final examination in X City. Neither the school nor students can manipulate who will enter the elite classes. Elite class admission can be viewed as an exogenous change administered to sampled students. In principle, students will be accepted by elite classes as long as their examination results reach the cutoff point; otherwise, they will enter regular classes. Yet, in the actual streaming, some students may fail to enroll into elite classes despite having scores surpassing the cutoff point while those with scores below it have the chance to enter them. That may result in the discontinuity jump on the two sides of the cutoff point being neither 1 (denoting elite class admission) nor 0 (denoting non elite class admission). Therefore, the present study employed the fuzzy discontinuity design in the estimation and used the cutoff point as an instrumental variable to estimate the academic performance differences between students who complied with admission rules.

Both parametric estimation and non-parametric estimation were adopted to identify the influences of the elite stream on student academic achievement. Considering the differences in the cutoff point of elite classes between schools and academic years, this study incorporated the fixed effect of school-academic year in the estimation model to control for factors that did not show time difference between schools and academic years but have an impact on student academic performance.

Research Hypotheses

Based on the relevant conclusions made by previous studies, the following hypotheses were proposed:
H0: The elite stream cannot promote student academic progress.
H1: The elite stream can significantly enhance student performance.

Research Findings

Descriptive statistics showed that there was a considerable difference in the grade-10 streaming examination results and the grade-12 academic achievement between elite class and regular class students, yet the gap did not undergo significant alteration after three school years. That indicated that despite the unbalanced distribution of educational resources between elite and regular classes during this period, there was a limited effect of the elite stream in promoting student academic performance. To identify the causal relation between the elite stream and student academic progress, this study utilized the cutoff point of elite class admission as the exogenous variable to construct quasi-experiment design and employed fussy regression discontinuity design to evaluate the effects of the elite stream on students' disciplinary results and their overall performance. The findings showed that the elite stream had no significant promotive effects on the advancement of students' overall performance and disciplinary results. The robustness check demonstrated that the driving variable and control variables verified the continuum hypothesis at the cut-point, and the estimation results are not affected by distinct bandwidth values or the make-up of the sample. No significant positive impact of the elite stream on students' overall performance and disciplinary results were detected. Therefore, the research findings showed strong robustness. The results of the heterogeneity test indicated that the elite stream had no significant positive effect on the academic achievement of students of different genders and with different types of registered residence. As a result, it was concluded that the elite stream in general high schools could not serve as an effective strategy for optimizing education resource allocation and encouraging student academic progress.

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