

The Effect of Shifting toward a Performance-based Admission Policy on Educational Inequality.

A Regression Discontinuity Analysis of the Educational Reform in Taiwan.

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**Abstract**

Alon and Tienda's (2007) study on American college admission suggests that a shift from performance-based measures to test-based measures benefitted those with resources while disadvantaged the minorities. Kariya and Rosenbaum's (2003) study on Japanese educational reform gives the opposite answer. Taiwan adopted a performance-based, multidimensional admission policy for high school admission in 2001, replacing the national entrance exam. Using a regression discontinuity design and logistic regressions on academic outcomes of two academic cohorts, I found that 2001 policy reform expanded educational inequalities by household income and by parental education. Preliminary results suggested that it may be the difference in student involvement in academic and extracurricular activities between the well- and poor-achieving students that explains the increasing inequality.

## Introduction

Educational studies in the U.S have focused on the evaluation of test-based versus performance-based college admissions policies (Alon and Tienda 2007). Alon and Tienda (2007) argued that the measure of merit in college admission is shifting from performance-based measures (grade and class rank) to test-based measures (test score, such as SAT), and this shift has benefitted those with resources while disadvantaged the minorities.

In contrast with the undesirable shift to standardized testing in the U.S., some Asian countries have gone through educational reforms of the opposite direction. Both Japan and Taiwan went through educational reforms that shifted away from using standardized testing as the only criterion to high school and college admissions, and adopted policies favoring multidimensional admission criteria. The goal of these reforms were to incorporate student's accumulated achievements in school, including both accumulated grades and extra-curriculum activities, into the decision of high school and college admissions.

Shifting away from test-based measures was found, however, to have increased educational inequality in Japan. Kariya and Rosenbaum (2003) found that the Japanese reform decreased the amount of homework in the lowest ranking schools and the amount of effort invested by the lowest-achieving students and students from low SES background. Changes in student involvement were not as big for students in high ranking schools and students from high SES background.

With contradictory findings in the U.S and in Japan, this paper used Taiwan as a third case to examine if performance-based measures promote or reduce educational inequality.

### **Educational Reform in Taiwan and Taiwan Youth Project**

A reform in high school admission policy was adopted in 2001 in Taiwan.

Before the 2001 reform, one national entrance examination was held each year in summer to assess student's academic achievement at the 9<sup>th</sup> grade. High school assignment was based solely on the test score students got in the national entrance exam. The 2001 reform replaced the National High School Entrance Exam with a multi-dimensional admission system. An one-time achievement test was replaced by two national achievement assessments at two time points during the 9<sup>th</sup> grade. Students can use the higher test score from the two tests, accompanied with other application materials to apply for high schools through various application channels. Students are no longer evaluated solely by the standardized test score but by their overall performances in the 3 years from 7<sup>th</sup> to 9<sup>th</sup> grade. This policy reform serves as a natural experiment that affects only the cohort of students born after August 31, 1985.

To study the 2001 reform, a panel survey called Taiwan Youth Project was conducted on the academic cohort who took the last National Entrance Exam (the cohort born between September, 1984 and August 1985), and the academic cohort who born two years after. These students were first surveyed when they were 7<sup>th</sup> and 9<sup>th</sup> grade respectively. Follow-up surveys were conducted until their

early young adulthood. This survey serves as a natural experiment to test for potential effects of the 2001 educational reform.

### **Preliminary Results**

Using a regression discontinuity design with 2003-2010 waves of Taiwan Social Change Survey, I examined if there is a significant discontinuity in the probability of having college degree at the cutoff point of people who born before and people who born after August, 1985. Preliminary results show a significant discontinuity for people whose parents have no high school degree. The discontinuity was not as substantial for people whose parents had high school degrees.

Using data from Taiwan Youth Project, I also ran separate logistic regressions on the pre-reform and post-reform cohorts. Two outcome variables are used. The first outcome variable is whether the student has ever attended academic high school versus “vocational high school or no high school at all” at the age 25. The second outcome variable is whether the student has ever attended college.

Preliminary results show a **small** but growing income effect (for both student-reported household income and parent-reported household income) between pre- and post- reform cohorts for academic high school attendance. The effects of parental education on both outcome variables have also increased over time.

I also found that fewer students in the post-reform cohort reported to have represented their class or school to participate in between-class competitions/contests in their 9<sup>th</sup> grade than the

pre-reform cohort. The highest ranking students were also found to have increased their hours spent in cram schools per week at 9<sup>th</sup> grade. But the students who ranked below 20 in their class did not have a significant increase in the average tutoring hours during 9<sup>th</sup> grade.

In sum, preliminary findings using regression discontinuity and logistic regressions suggest that the Taiwanese 2001 reform expanded educational inequalities among students, both by household income and by parental education. Preliminary analyses show that the better-performed students and students with more parental resources are students that were most likely to enter academic high schools rather than vocational high schools or no high schools at all. They were also the students that have acknowledged that a cancellation in the uni-dimensional high school entrance examination did not mean that one could invest less effort in school. These advantaged students, instead, invested continuously from 7<sup>th</sup> to 9<sup>th</sup> grade to have perfect application packages in response to the increasing ambiguity of the admission standards.

## Reference

- T. Kariya and J. Rosenbaum. 2003. Stratified incentives and life course behaviors. In *Handbook of the Life Course*, ed. J. T. Mortimer and M. J. Shanahan, 51-80. New York: Kluwer Academic/Plenum Publishers.
- Alon, Sigal and Marta Tienda. 2007. "Diversity, Opportunity, and the Shifting Meritocracy in Higher Education." *American Sociological Review* 72(4):487-511.