

The Causal Effect of Graduating from a Top  
University on Promotion: Evidence from the  
University of Tokyo's Admission Freeze in 1969

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## **Abstract**

The high correlation between having graduated from a selective college and success in the labor market has been robustly observed in many countries. There are two major explanations for this finding. One claims that graduating from selective colleges assures success in the labor market in a causal sense due to better education, a better alumni network, or something attached to selective college graduation. The other explanation claims that the correlation is created by a “third” factor, such as selective college graduates’ high innate ability or better family background. We attempt to test the latter hypothesis by using a natural experiment. The most selective university in Japan, the University of Tokyo, did not admit new students in 1969 because the university could not administer its entrance examination due to a campus lockout by armed, leftist students, who demanded university reform. Consequently, many of the 3,000 high school graduates who would have been admitted to the university went to other, second-best universities that year. We examine whether the 1973 graduation cohort of these second-best universities performed better than other graduation cohorts of the same universities by using the 2002/2003 Who’s Who for publicly traded companies and the central government. We found little evidence that the 1973 graduating cohort from the second-best universities performed better than

other cohorts. This finding rejects the hypothesis that the Tokyo graduates' success is explained solely by their innate high ability.

# 1 Introduction

The high correlation between selective college graduation and successful labor market outcomes has been robustly observed in many countries. For example, Dale and Krueger [2002] showed this correlation for the US, and Daniel et al. [1995] did the same for Canada. Social science researchers have long been interested in pinning down the causal effect of having graduated from a selective college on labor market outcomes. However, it has been difficult to estimate a causal effect from the observed correlation, since those people who would be successful in the labor market, regardless of the college from which they graduated, are more prone to attend prestigious colleges due to their endogenous selection into selective colleges. This self-selection prohibits researchers from making a causal inference regarding prestigious college graduation on labor market outcomes from the observed correlation.

Identifying the causal effect of selective college graduation on labor market outcomes is important for several reasons. First, the causal effect implies that receiving an education from a selective college serves as a vehicle for social mobility because even those who come from disadvantaged family backgrounds can succeed in the labor market by attending selective colleges. Second, the causal effect may be created through a peer effect among students on learning, and thus different rules that allocate students with heterogeneous ability across schools can result in different educational outcomes.

To identify the causal effect, previous studies have made significant ef-

forts to control for self-selection using exogenous variation. Brewer et al. [1999] corrected for the selection bias using Lee [1983]’s method of sample selection correction. They used high school GPA, net cost of attending a specific college, and other variables as excluded variables to identify the selection effects. They found a significant return to attending selective colleges, even after correcting for the selection bias. Their results crucially depended on the validity of their assumptions that high school GPA and other excluded variables do not affect labor market outcomes after conditioning on the colleges from which individual workers had graduated. Several studies have attempted to control for the unobserved high ability of selective college graduates. Behrman et al. [1996] used a female twins sample to difference out the unobserved family characteristics that can be correlated with the quality of the schools that individuals attend. They found a significant return to attending private colleges, even after controlling for the family-level unobserved heterogeneity. Dale and Krueger [2002] compared the labor market outcomes of workers who were accepted and rejected by a similar level of colleges to control for unobserved heterogeneity. They concluded that the positive correlation between selective college graduation and high income is mainly due to the selection into colleges based on unobservable characteristics, contrary to the previous studies.

This paper attempts to complement these previous studies, using a natural experimental event. The ideal social experiment to infer the causal effect of selective college graduation on labor market outcomes would be the ran-

dom assignment of students to various colleges, independent of individual characteristics that determine labor market outcomes. The observed correlation between elite college graduation and labor market performance observed from this social experiment would indicate the causal effect of elite college graduation on labor market outcomes. While the cost of implementing such a social experiment would be prohibitively high, a Japanese historical event offers a natural experimental situation that mimics this ideal social experiment. As described in a later section, the University of Tokyo, which is the most selective, elite university in Japan, did not have an entering cohort of about 3000 students in 1969 because it could not administer its entrance examination due to a college lockout by armed leftist students. This exogenous shock led some students who would have attended the University of Tokyo to attend the second-best universities in that year. By comparing the labor market performance of this graduation cohort of the second-best schools with the other cohorts of the same schools, we can test the hypothesis that the labor market success of the University of Tokyo graduates was solely due to their high innate ability.

## **2 University Education and Labor Market Outcomes in Japan**

In this section, we review the existing literature on the relationship between university education and labor market outcomes in Japan. A careful study by Koike and Watanabe [1979] is probably the first work by economists

that examined whether Japan is an academic credentialist society as had been claimed by Dore [1976]. Using a Who's Who of Japanese companies, they examined whether those workers who had graduated from selective colleges were more likely to be promoted to section chief positions (*Kachō* in Japanese) in companies whose stocks were publicly traded. They found that graduates from the most selective colleges, such as Tokyo and Kyoto, did not necessarily perform better, and they denied the widely shared view that Japan is a society that places greater value on an individual's academic career than on his or her real ability. In contrast, a more recent study by Higuchi [1992] obtained the opposite results. Based on the data that record how many graduates were placed in each industry, he imputed the average life-time earnings of graduates from each university based on the average life-time earnings of workers in each industry. He found a strong, positive correlation between the university selectivity measured by a standardized test score and imputed life-time earnings. Higuchi [1994] also found that those workers who had graduated from selective universities were more likely to be promoted to department manager (*Buchō* in Japanese) or higher positions in publicly traded private companies and government ministries 23 to 27 years after university graduation. Ohashi [1995] further investigated the reason why those elite school graduates succeed in the labor market, using survey results obtained from private company executives. He claimed that those elite school graduates succeeded because they were well connected with other elites through an alumni network and had high innate ability. Rebeck

[2000] and Abe [2002] examined the transition from university to work, using detailed data on the transition between specific universities and specific firms. Rebick [2000] found a persistent pattern of transition and interpreted it as evidence for the existence of old-boys networks among elite school graduates. Abe [2002] attempted to explain elite university graduates' good job placement by the universities' selectivity at the time of admission. She regressed the probability for each university graduate to be placed in one of the top 200 companies on the university selectivity measure, which was represented by standardized test scores using university-level panel data. Although she found a large effect of selectivity on good job placement in the cross-sectional estimates, the estimated effect became negligible after controlling for the university fixed effects. From this finding, she concluded that time-invariant university inputs, such as the quality of instruction, old boys networks, and placement efforts may be important to explaining the correlation between elite university graduation and good placement.

Many of the studies introduced above have found a strong correlation between elite university graduation and success in Japan's labor market. The University of Tokyo has occupied the top position of the single-peaked university hierarchy since its establishment. The university was established in 1877 and reformed into the imperial university in 1886. With the Meiji Reconstitution in 1868, the government's goal was to catch up with Western countries by adopting Western governmental institutions and technologies, and the imperial university was expected to train elites who could work as



government bureaucrats and engineers. The University of Tokyo was the only university in Japan until the government opened its second imperial university in Kyoto in 1897.

The University of Tokyo graduates have formed an elite class since the university's establishment. Working as a high-class public official of the central government is prestigious in Japanese society, and the first-class bureaucrat examination is designed to select workers who will be on a fast track in the central government. This examination is typically taken in the senior year of undergraduate study. Among 1615 people who successfully passed this examination in 2002, 436 graduated from Tokyo, and this far outnumbered the number from Kyoto, which was 176. In the legal field, about one-quarter of the examinees who passed the bar examination had graduated from the University of Tokyo. The Japanese Bar examination is known to be extremely difficult: Only 2 to 3 percent of applicants pass the examination. In the political arena, 144 Diet members, out of its capacity of 722, graduated from the University of Tokyo. This number is followed by the Waseda's 92. Not surprisingly, the University of Tokyo is one of Japan's most competitive universities in terms of research. For example, the faculty members affiliated with the University of Tokyo published 176 articles in *Nature* between 1993 and 2002. This number is followed by Kyoto's 90. Corresponding to its research performance, the government allocated 18 trillion yen as grant-in-aid, which is similar to the National Science Foundation Grant in the US, to the university. This number is followed by 9.4 trillion yen granted to Kyoto

University.

Corresponding to the figures above, admission to the University of Tokyo has been very competitive; in 2002, 3,243 students were admitted from 14,272 applicants. This university attracts applicants from a pool of high school students and those who already have graduated from high schools and are attending “cram schools” (*Yobikō* in Japanese) to prepare for the entrance examination. As has been the usual case for Japanese national universities, the university decides whom to admit based on the applicants’ performance on written examinations that cover a range of academic subjects.<sup>1</sup>

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<sup>1</sup>The details of the admission process as of 2004 are as follows. Admission decisions for the entering cohort for the following April start in January, and the decisions are almost solely made based on the students’ performance on the written examination. The written examination is divided into two stages. The first stage is the national uniform examination that takes place in January, and the second stage is the unique university examination that takes place in late February or early March. Students take national uniform examination, called the university admission center examination, and decide where to apply after taking the examination. Students are allowed to take home the problem booklet on which they are allowed to transcribe the answers that they had written on the answer sheet, and the correct answers are published in the media. Thus students can estimate their scores on the examination, and large-scale “cram schools” publicize the “cut off point” for each school based on the score information gathered from students. Based on this information, students decide where to apply, including the University of Tokyo. Because of this two-step admission system, self-selection occurs at the time of application, and readers should be cautioned that the numbers of applicants reported above reflect this self-selection. In the second-step examination, students take an examination written by each university to which they wish to apply. In the case of the University of Tokyo, the university administers two types of examinations on different days. The first type of examination is based on academic subjects. This examination consists of foreign language (students choose one from English, French, or German), mathematics, and Japanese. For those who apply for the college of humanities and social sciences, 2 additional subjects in the social studies are required. For those applying for the college of natural sciences, engineering, and pre-medical course, 2 additional subjects in the natural sciences are required. The second type of examination consists of long-form essay questions. The examination date for the former examination precedes the latter, and those who are not admitted by the first examination can be admitted by the second one. Around 1969, there was no national uniform examination, but the University of Tokyo administered its original first-stage examination, as well as

### 3 The University of Tokyo's Admission Freeze in 1969

Reflecting the rapid rise of the students' left-wing movement during the 1960s, several buildings of the University of Tokyo had been occupied by armed leftist students for 6 months until January 18, 1969.<sup>2</sup> While universities in Japan used to administer their entrance examinations in March in order to select entering students for the coming April,<sup>3</sup> the University of Tokyo decided, on December 30, 1968, not to administer the entrance examination in March 1969 due to the confusion on campus. As a consequence of having canceled the entrance examination, there were no entering students at the University of Tokyo in April 1969; usually, about 3000 students entered the university around that time. Listening to the sudden news of the canceled examination, students who expected to take it were forced either to take the entrance examinations of the second-best schools or to wait for another examination in the following year. For students who made the former choice, Kyoto University<sup>4</sup>, Hitotsubashi University,<sup>5</sup> or Tokyo Institute of Technology<sup>6</sup> became popular alternatives.

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the second-stage examination.

<sup>2</sup>Sasa [1996], who directed the police force to release the buildings at the time, documented the battle between armed leftist students and the police force.

<sup>3</sup>The Japanese school year starts in April and ends in March.

<sup>4</sup>Kyoto University is often considered as the second-best college in Japan. It is located 500 kilometers away from Tokyo and was established as the second imperial university in 1897.

<sup>5</sup>Hitotsubashi University is a former commercial college specializing in the social sciences located in Tokyo. It was established as a university in 1920.

<sup>6</sup>Tokyo Institute of Technology specializes in natural sciences and Engineering, and it is located in Tokyo. It was established as a university in 1929.

## 4 Data

Using the general survey data available in Japan, it is difficult to know the specific schools from which individual people graduated. Thus, in this analysis, we proxied each worker's success in the labor market by looking at whether the worker holds an administrative position in a prestigious firm or the central government. This is the measure of success used in Koike and Watanabe [1979] and Higuchi [1994]. We calculated the probability for a worker who graduated from a certain school in a specific year to hold an administrative position in a private firm or the central government. To calculate this probability, we needed 1. the number of administrative workers in selective firms and in the central government for each school and graduation year cell, and 2. the number of graduating students who presumably started to work for private and public sectors for each school and graduation year cell.

We obtained the number of administrative workers in private firms by school and graduation year cell from a Who' Who for administrative workers. In particular, we used "the List of Company Employees: All Publicly Traded Companies, 2002," (*Kaisha Shokuin Roku: Zen Joujou Kaisha Ban, 2002*) which is a Who's Who for administrative workers in publicly traded companies published by the Diamond Publishing Company. This list records each worker's name, the name of the company, the position held by the worker, the year of birth, the prefecture in which the worker was born, the

year of graduation from the school that the worker last attended, the name of the university from which the worker graduated, when the worker started to work for the current company, and the worker's hobby. In addition to the workers' individual information, the list includes each company's information such as: the name of the company, the company's address, in which security market the company's stock is traded<sup>7</sup>, the company's capital amount, the number of employees, the type of industry, a description of its business, total sales amount, and profit amount. We restricted our interest to the companies that are traded in the first section of the Tokyo Stock Exchange that hold 500 million yen or more in their capital because this is the criteria often used to define "large companies" in Japan. From these companies, we counted the number of workers holding manager (*Buchō* in Japanese) or above positions by school - graduation year cell.

Although the data set recorded each worker's year of graduation, the year in which each individual entered the university was not recorded. Thus we cannot exactly identify the workers of the 1969 entering cohort. To identify this cohort in the most conservative way, we used birth-year information. Under the Japanese school system after World War II, which is exactly the same as the US 6-3-3-4 system, students typically graduate from universities at age 22 or 23. Thus, to identify the workers who entered college in year  $t - 4$ , we counted the number of workers who graduated from college

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<sup>7</sup>There are two markets in Tokyo, two markets in Osaka, two markets in Nagoya, and one market in Fukuoka.

in year  $t$  and were born in year  $t - 22$  and  $t - 23$ . We call this conservative count the “with birth-year restriction” estimate. We also counted the number of workers without imposing the year-of-birth restriction. We call this less conservative count the “without birth-year restriction” estimate. By loosening the birth-year restriction, this count includes those who took more than 4 years to graduate from a university or who spent one or more years in a “cram school” before entering a university after graduating from high school<sup>8</sup>. Anecdotal evidence indicates that not a small portion of the smartest students who graduated from high school in 1969 took the entrance examination of the University of Tokyo in 1970 or initially entered the second-best schools in 1969 and reentered the University of Tokyo without credit transfer. Thus, examining the behavior of the 1974 graduating cohort without an age restriction is also very important.

The number of public officials in administrative positions were counted based on *Toyo Keizai Shinpo* [2004]. This is a who’s who of politicians and public officials. In the public officials section, the book lists each public official’s name, position, the year of birth, the school of graduation, and the year of graduation. We regarded all officials listed in this book as officials in administrative positions and counted the number of them by the school-graduation year cell. We counted the number with and without the birth-year restriction, as we did for administrative workers in private firms.

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<sup>8</sup>Spending a year or more in a “cram school” to prepare for the university entrance examination after high school graduation is quite common in Japan.

The number of workers who hold administrative positions also depends on the size of the graduating cohort of specific schools for each year. Thus, the number of graduates from each specific school in each year was needed. However, there are no statistics that count the number of graduates who graduate from specific schools for each year. As a proxy, we used the size of the authorized capacity of the entering cohorts available from *Lists of Universities* (*Zenkoku Daigaku Ichiran* in Japanese) published by the Ministry of Education. This publication lists all of the university and department names and their authorized student capacities. We assumed that the sizes of the entering student cohorts were exactly the authorized capacities and that all the entering students graduated 4 years later. Koike and Watanabe [1979] pointed out that private universities may have admitted more students than their respective authorized capacities, but this is less likely for national universities. To reflect the fact that graduates from medical, dental, pharmaceutical, nursing, and education departments rarely work for private and the government sectors after graduation, we did not count graduates from those departments. For other departments, we calculated the national average of the proportion of graduates who took jobs in the private sectors depending on academic department using *Basic School Survey* (*Gakkou Kihon Chousa* in Japanese). Using this weight, we estimated the number of graduates who work in private and government sectors by using the following formula.

$$N_{jt} = \sum_d [(N_{djt}) \times (\frac{pr_{ipub}_d}{N_d})_t], \quad (1)$$

where  $N$  stands for the number of graduates; subscripts  $j$ ,  $t$ , and  $d$  correspond to school, year, and department respectively; and  $pripub$  stands for the number of graduates who take jobs in the private and government sectors. In other words, we added the number of graduates from each department multiplied by the proportion of graduates who work for private and government sectors from each department at the national average. The proportions of graduates who work for private and government sectors by each department are reported in the Appendix Tables. Using the calculation described above, we obtained the number of students who graduated from a specific school in a specific year who started to work for private firms and the central government. This measurement can be “noisy” because the proportion of graduates who start to work for the private and government sectors can differ across schools, even though the departments are the same. Also, those who start to work for the government sector may hold positions in local governments.

Table 1 tabulates the number of workers who hold manager and higher positions in selected companies and administrative positions in the central government, classified by the school from which they graduated. In our analysis, we focused on five national universities: Tokyo, Kyoto, Hitotsubashi, Tokyo Institute of Technology, and Osaka, and two private universities: Waseda and Keio. We selected these universities because they are considered to be elite universities and, in addition, the schools other than Tokyo can well be considered as substitutes for the University of Tokyo when its entrance examination was canceled. All workers who graduated between 1965



and 1983 were pooled.

The University of Tokyo was top-listed in terms of the percentage of graduates who held administrative positions in the private and government sectors. In particular, the number of workers who worked as public officials in the central government is striking when compared with the corresponding numbers for the other schools. Keio and Hitotsubashi followed the University of Tokyo, but their composition of administrative workers was very different from the latter. In that it was heavily skewed toward workers in the private sector. This looks natural because Hitotsubashi, a national university in Tokyo, started its history as a commercial college and has a reputation for business education. Keio, a private university in Tokyo, also has a long tradition of business education. Kyoto, which is listed fourth, is generally perceived as the second-best comprehensive university in Japan and the best in Western Japan. Osaka, which is listed fifth, is a national comprehensive university that is generally perceived as the second-best university in Western Japan. Waseda, which is a private university in Tokyo, is listed sixth. It is worth noting that the number of graduates from this school is much larger than the number from the other schools. Tokyo Institute of Technology is listed in the seventh. This university specializes in science and technology and has trained a large number of engineers.

## 5 Identification Strategy and Results

The estimated proportion of workers who hold manager or higher positions in selective firms or administrative positions in the central government is plotted in Figure 1 by universities. Figure 1 is based on the sample with the birth-year restriction. Thus, only those who graduated from a university at age 22 or 23 are included in the analysis sample. The vertical axis shows the estimated proportion of workers holding administrative positions among the graduates who presumably work in private and government sectors. The horizontal axis shows the year of graduation. Those who graduated from universities in earlier year are more likely to hold administrative positions, as indicated by the downward sloping curve for every university. The estimated proportion for Hitotsubashi fluctuated widely from year to year, probably due to its smaller number of graduates. The same can be said for TIT. For the graduates from other schools, the estimates move rather smoothly, and this feature is particularly notable for graduates from Waseda, perhaps due to the law of large numbers.

If the inflow of “smarter” students into the second-best schools in 1969 positively affected the students’ labor market outcomes after their graduation, we should expect those actual 1973 graduates from the second-best universities to perform better than the counterfactual, that “smarter” students would not have entered in year 1969. The calculation of this counterfactual is difficult because of the highly non-linear effect of the graduation year on

the probability to hold administrative positions and the year-to-year variation of the probability due to sampling error. To overcome this problem, we assumed that the effect of graduation year on the probability of holding administrative positions is continuous with respect to graduation year in the population. We also assumed that the cancellation of Tokyo's entrance examination in 1969 gave a discontinuous shock. The resulting model is

$$p_{jt} = \gamma D_{1973} + f(t) + u_{jt}, \quad (2)$$

where  $p_{jt}$  is the probability of holding administrative positions among workers who graduated from school  $j$  in year  $t$  and  $D_{1973}$  is the dummy variable that takes one for 1973 graduates and zero otherwise. To implement this estimation, we regressed  $p_{jt}$  on  $t$ , using local linear regression for each school  $j$  excluding the year 1973. The estimate of the probability  $p_{j\tau}$ , denoted by  $\hat{\alpha}_{j\tau}$ , is given by

$$(\hat{\alpha}_{j\tau}, \hat{\beta}_{j\tau}) = \arg \min_{\alpha_{j\tau}, \beta_{j\tau}} \left[ \sum_{t=1965}^{1983} (p_{jt} - \alpha_{j\tau} - \beta_{j\tau}(t - \tau))^2 K\left(\frac{t_{jt} - \tau}{h}\right) 1(t \neq 1973) \right], \quad (3)$$

where  $1(\cdot)$  is the indicator function that takes one if the statement in parentheses is true and zero otherwise. We chose  $h = 1$  as the bandwidth and Epanechnikov kernel for  $K(\cdot)$ . Then  $p_{jt} - \hat{\alpha}_{j\tau}$  was regressed on a constant and  $D_{1973}$  to estimate  $\gamma$ . The standard errors for the estimators were not affected by the first-stage estimation of  $\hat{\alpha}_{j\tau}$  as far as  $\hat{\alpha}_{j\tau}$  converges to  $\alpha_{j\tau}$  at least at the rate of  $n^{1/4}$  (Theorem 5.1 in Pagan and Ullah [1999]), and this is the case for the local non-linear regression.

The result of local linear regression appears in Figure 1 as smooth lines. We do not observe a large deviation from the estimated trend for 1973 except for Hitotsubashi, which indicates an upward deviation from the trend, but this seems to be within sampling error. To make this point more precisely, the estimates of  $\gamma$  appear in Table 2. Although we find slight evidence that Hitotsubashi's graduates performed better in 1973 than other years, the deviation was within the range of sampling error or marginally significant at best ( $t = 1.50$ ). Overall, we have not found clear evidence that the 1973 graduation cohort from the second-best universities performed better than other cohorts, once the sample was restricted to those who graduated from universities at age 22 or 23. This sample restriction presumably captures those who entered the second-best universities in 1969. Thus, the above evidence is inconsistent with the hypothesis that the graduates from the University of Tokyo perform well solely because they have high intrinsic ability.

We repeated the same exercise using the sample without the birth-year restriction. This sample captures all the graduates from specific schools regardless of their ages at the time of graduation. Due to the change in the sample restriction, the 1973 graduates from the second-best universities now include those who entered universities prior to 1969, those who waited one or more years before entering universities, and those who spent more than four years attending universities.<sup>9</sup> Figure 2 draws the local linear regression line

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<sup>9</sup>In Japan, if high school students fail the university's entrance examination, spending

applied for each school using this sample. A comparison with Figure 1 reveals that the rate of holding administrative positions is almost double the rate based on the sample with the birth-year restriction. Table 3 reports the result of the semi-parametric regression that examines whether the rate of holding administrative positions is significantly different for 1973 graduates. The results show that the 1973 Hitotsubashi graduates performed 4.2 percentage points better than their trend and this effect is statistically significant ( $t = 3.23$ ). However, a word of caution applies here. As Figure 2 indicates, the probability of holding administrative positions fluctuates among Hitotsubashi graduates, and the statistical significance of the 1973 dummy may not be definitive evidence for the substitution of Tokyo graduates by Hitotsubashi graduates.

Although the above results suggest that the 1973 Hitotsubashi graduates outperformed other cohorts in term of promotion, this result is obtained only when the sample is not restricted by the age at the time of graduation. If we assume that students with high innate ability enter straight into universities after high school graduation, we should have observed the better performance of 1973 Hitotsubashi graduates when we used the sample with the birth-year restriction. Thus, the difference in results based on different samples suggests

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one or more years to prepare for the following year's entrance examination is common because admission decisions are almost completely made based on individuals' performance on the written entrance examination. For the period between 1996 and 2002, among the students admitted to the University of Tokyo, about 67 percent had just graduated from high school, about 28 percent waited one year before admission, and about 5 percent waited more than one year.

that the better performance of 1973 Hitotsubashi graduates, if there is any, is not because of their high innate ability, but due to some other reasons. A natural interpretation for this result is that the 1973 Hitotsubashi graduates were more likely to be hired by the sample firms and the central government and promoted more quickly to managerial positions due to the absence of the Tokyo graduates in the same cohort.

## **6 Discussion**

Our tests reject the hypothesis that Tokyo graduates performed better in the labor market than the second-best schools' graduates solely due to their high innate ability. We could interpret the results of the tests as suggestive evidence for a view that the school from which one graduates does count in the Japanese labor market. However, we cannot identify the specific reason why graduating from the University of Tokyo leads to success in the labor market. This could be because 1) the good education given by the University of Tokyo helps graduates, 2) the old-boys' network effect helps graduates, or 3) selective companies and the central government have a quota for graduates from each college.

Alternatively, the evidence found in the previous section could be interpreted as supporting evidence that human ability is multi-dimensional. Among high ability people, some may be good at bureaucratic-type jobs and others might be good at doing business. People may choose schools that can further sharpen their comparative advantage. Those who have a compara-

tive advantage in doing business choose Hitotsubashi, and those who are cut out to become government officials choose the University of Tokyo, because Hitotsubashi is presumably good at training business people and offers a good alumni network in the field of business and the University of Tokyo is presumably good at training government officials and offers a good alumni network in the government sector. If this is the case in reality, even if those smarter people who are cut out for elite bureaucrats attended Hitotsubashi in 1969, they did not necessarily perform well in business. At the same time, Hitotsubashi may not be good at educating government officials due to its historical functions.

This view claims that once absolute advantage is controlled for, which school to attend is optimally chosen based on individuals' comparative advantage, and making someone attend a "better" school exogenously does not make him/her better off. The results in Dale and Krueger [2002] also could be interpreted in this way. This view of multi-dimensional ability is consistent with the evidence obtained in this study, but more direct examination is, of course, necessary to test this hypothesis.

## **7 Conclusion**

This paper examined whether graduating from the top university positively affected workers' promotion in prestigious private firms and the central government in a causal sense. To account for the selection effect of high-ability students into the top educational institution, we used a quasi-natural event

that occurred in Japan in 1969. Those students who would have attended the University of Tokyo attended the second-best universities in that year because the University of Tokyo's campus was occupied by armed leftist students and the university could not give its entrance examination. Although "smarter" students flowed into the second-best universities in that year, the 1973 graduating cohort from the second-best universities did not perform better than the other graduating cohorts in the same level universities.

The evidence rejects the view that the high innate ability of the top college graduates solely makes them succeed in the labor market; rather, it implies that graduating from the top university positively affects individuals' success in labor markets in a causal sense. The mechanism through which this causal effect operates should be further investigated, and this would be an interesting future research topic.

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Table 1: The Number of Workers Who Held Manager and Higher Positions in Private Firms and Administrative Positions in the Central Government in 2002 or 2003

Sample Private Firms: Firms that traded in the Tokyo Stock Exchange Section 1 with capital holding more than 500 million yen

Sample Years: Year of graduation between 1965 and 1983

School	Graduates	Graduates in Private and Public Sector (Estimates)	Manager and above in Private Sector	Public Officials in Administrative Positions in the Central Government	The Rate of Managers and Bureaucrats
Tokyo	51974	34637	906	483	4.01%
Keio	74060	53317	2075	14	3.92%
Hitotsubashi	13460	10471	359	28	3.70%
Kyoto	41685	28544	750	80	2.91%
Osaka	31265	23052	546	5	2.39%
Waseda	138300	89425	1722	8	1.93%
TIT	14301	11015	201	4	1.86%

Note: Graduates in the private and public sectors were estimated with the following formula:

$$Est_i = \sum_{t=65}^{83} \sum_{j=1}^6 w_{jt} grad_{ijt} , \text{ where } j \text{ is the subscript for the field of study at the university, } i$$

is the subscript for university,  $t$  is the subscript for year,  $w_{jt}$  is the proportion of graduates who work in private and public sector from the field  $j$  in year  $t$ . The variable  $grad_{ijt}$  is the number of graduates from school  $i$ , field  $j$  in year  $t$ . The weight  $w_{jt}$  is available in Appendix Table 1 for the private sector only and Appendix Table 2 for the public sector inclusive. This adjustment has been made because universities, such as Tokyo or Kyoto, have medical schools and schools of education, whose graduates are less likely to hold jobs in the private or public sector after graduation.

Table 2: Semi-Parametric Regression Predicting the Probability of Working in a Manager or Above Position in Selective Companies or the Central Government in 2002 or 2003.

Sample: Workers who graduated from universities at age 22 or 23.

	(1)	(2)	(3)	(4)	(5)	(6)
School	Kyoto	Hitotsubashi	T I T	Osaka	Waseda	Keio
1973 Graduation	0.003 (0.006)	0.015 (0.010)	-0.006 (0.007)	-0.007 (0.008)	-0.004 (0.005)	-0.011 (0.006)
Constant	Included	Included	Included	Included	Included	Included
f(Years from Graduation)	Included	Included	Included	Included	Included	Included
Observations	19	19	19	19	19	19

Note: Standard errors are in parentheses.

Table 3: Semi-Parametric Regression Predicting the Probability of Working in a Manager or Above Position in Selective Companies or the Central Government in 2002 or 2003.

Sample: Workers who graduated from universities at any age.

	(1)	(2)	(3)	(4)	(5)	(6)
School	Kyoto	Hitotsubashi	T I T	Osaka	Waseda	Keio
1973 Graduation	0.008 (0.008)	0.042 (0.013)	0.008 (0.009)	-0.000 (0.009)	-0.001 (0.005)	0.001 (0.009)
Constant	Included	Included	Included	Included	Included	Included
f(Years from Graduation)	Included	Included	Included	Included	Included	Included
Observations	19	19	19	19	19	19

Note: The same note applies as in Table 2.

Appendix Table 1: Proportion of Graduates Who Obtained Their First Job in the Private Sector.

Year of Graduation	University Major					
	Humanities	Social Sciences	Natural Sciences	Engineering	Agricultural Sciences	Education
1965	0.37	0.79	0.46	0.81	0.50	0.04
1966	0.32	0.74	0.39	0.76	0.43	0.03
1967	0.34	0.74	0.40	0.78	0.44	0.04
1968	0.35	0.74	0.46	0.79	0.46	0.07
1969	0.35	0.74	0.50	0.78	0.43	0.09
1970	0.43	0.76	0.52	0.82	0.50	0.10
1971	0.41	0.75	0.58	0.84	0.49	0.10
1972	0.38	0.70	0.45	0.78	0.45	0.09
1973	0.38	0.67	0.44	0.77	0.44	0.09
1974	0.41	0.67	0.49	0.77	0.46	0.10
1975	0.38	0.65	0.44	0.75	0.44	0.09
1976	0.29	0.62	0.36	0.72	0.44	0.12
1977	0.32	0.62	0.38	0.73	0.47	0.12
1978	0.34	0.59	0.37	0.73	0.43	0.12
1979	0.37	0.62	0.35	0.74	0.41	0.07
1980	0.33	0.64	0.36	0.76	0.44	0.05
1981	0.37	0.66	0.40	0.78	0.46	0.06
1982	0.38	0.66	0.45	0.79	0.47	0.06
1983	0.41	0.67	0.43	0.78	0.44	0.07

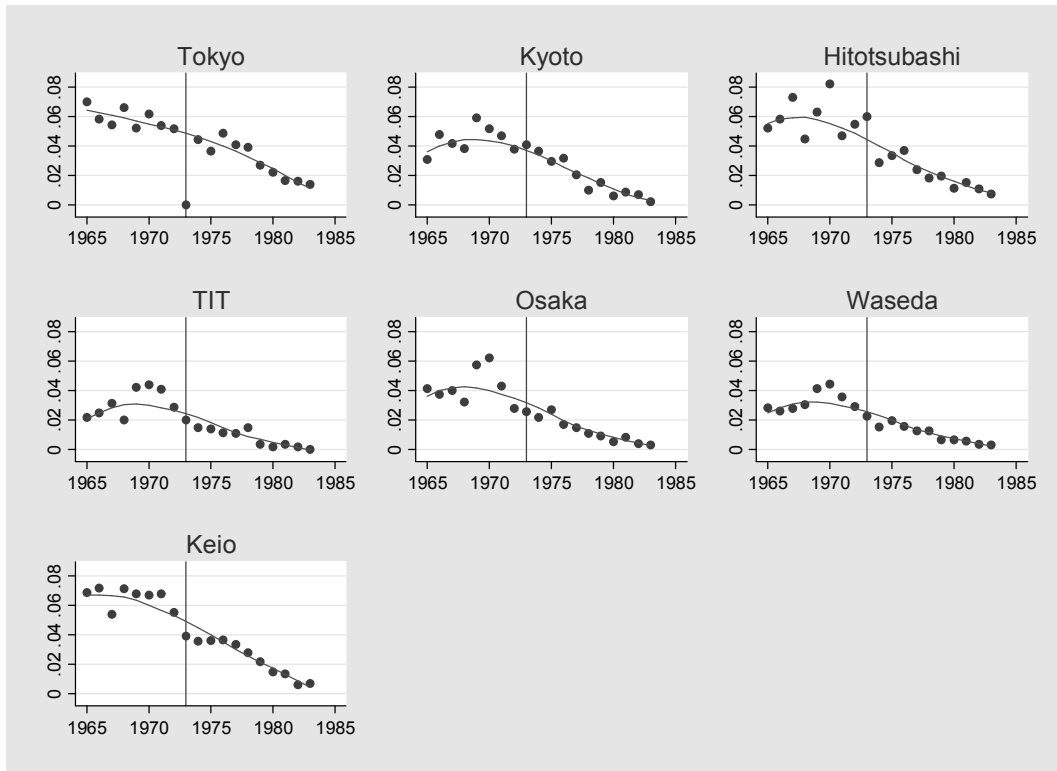
Note: Agriculture, forest, and fisheries are excluded from the private sector. None of the graduates is assumed to have obtained their first job in the private sector from medical college.

Appendix Table 2: Proportion of Graduates who Obtained Their First Job in the Private and Public Sector

Year of Graduation	Major in Universities					
	Humanities	Social Sciences	Natural Sciences	Engineering	Agricultural Sciences	Education
1965	0.39	0.90	0.49	0.84	0.64	0.05
1966	0.36	0.81	0.42	0.81	0.57	0.04
1967	0.37	0.81	0.42	0.82	0.57	0.05
1968	0.38	0.80	0.49	0.83	0.58	0.07
1969	0.37	0.79	0.52	0.81	0.55	0.42
1970	0.45	0.82	0.55	0.85	0.65	0.10
1971	0.45	0.82	0.61	0.87	0.63	0.10
1972	0.41	0.77	0.50	0.83	0.60	0.09
1973	0.42	0.77	0.48	0.81	0.59	0.09
1974	0.46	0.78	0.54	0.82	0.62	0.14
1975	0.43	0.75	0.49	0.80	0.55	0.11
1976	0.32	0.72	0.40	0.75	0.50	0.15
1977	0.36	0.73	0.42	0.78	0.55	0.15
1978	0.39	0.73	0.42	0.78	0.54	0.16
1979	0.42	0.73	0.41	0.81	0.55	0.08
1980	0.39	0.76	0.41	0.82	0.63	0.07
1981	0.43	0.78	0.46	0.82	0.64	0.08
1982	0.43	0.78	0.48	0.83	0.63	0.08
1983	0.46	0.79	0.47	0.82	0.58	0.10

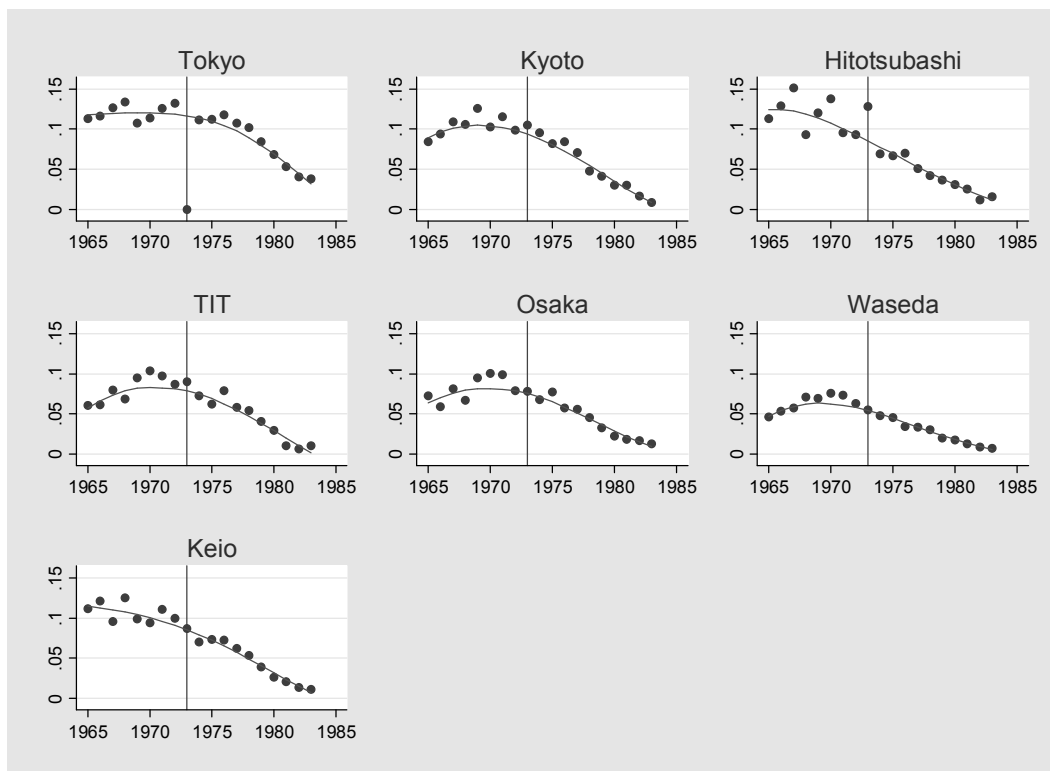
Note: Agriculture, forest, and fisheries are excluded from the private sector. None of the graduates is assumed to have obtained their first job in the private and public sector from medical college.

Figure 1: Nonparametric Estimates for the Probability of Holding Manager or Higher Positions in Selective Companies or Administrative Positions in the Central Government in 2002 or 2003  
 Sample: Workers who graduated from universities at age 22 or 23.



Note: The horizontal axis indicates the year of graduation. The vertical axis indicates the proportion of workers that appeared in Who's Who among all graduates who presumably work in private and public sectors. Local linear regression models using the Epanechnikov kernel with a bandwidth of 1 were used for regression. Observations from 1973 were dropped from the regression sample. The University of Tokyo, Hitotsubashi, TIT (Tokyo Institute of Technology), Waseda, and Keio are located in Tokyo. Kyoto and Osaka are located in Western Japan. Waseda and Keio are private universities and the other universities are national universities.

Figure 2: Nonparametric Estimates for the Probability of Holding Manager or Higher Positions in Selective Companies or Administrative Positions in the Central Government in 2002 or 2003  
Sample: All workers who had graduated from universities at any age.



Note: The same note applies as in Figure 1.